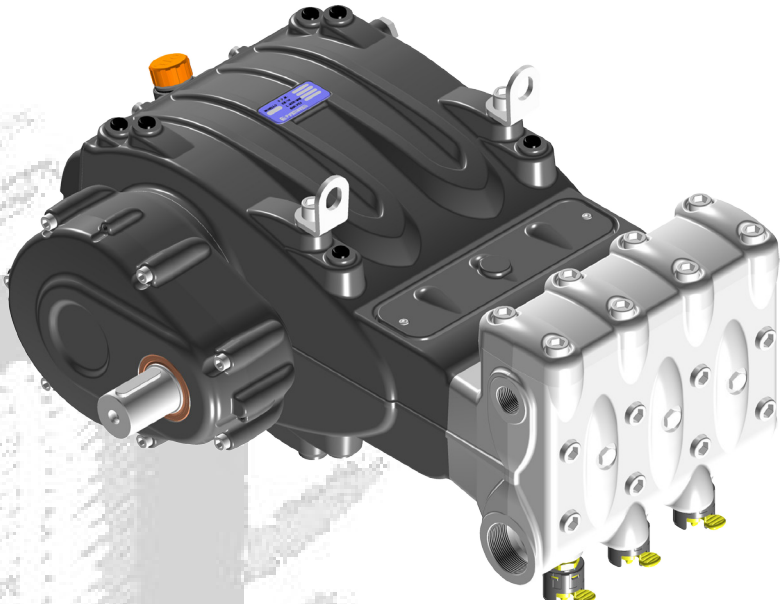
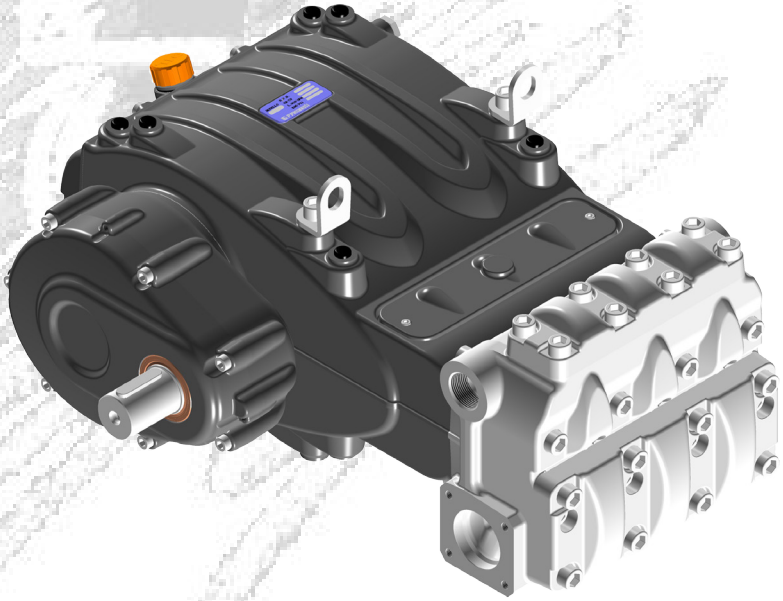
# Serie MW

Pratissoli

## MW-MWN-MWR-
## MWNR-MWF-MWM



MW32 – MW36 – MW40



MW45 – MW50 – MW55

Manuale di riparazione
Repair Manual
Manuel de réparation
Reparaturanleitung
Manual de reparación
Manual de reparação

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# 1 INTRODUZIONE

Questo manuale descrive le istruzioni per la riparazione delle pompe famiglia MW e deve essere attentamente letto e compreso prima di effettuare ed eseguire qualsiasi intervento sulla pompa.
Dal corretto uso e dalla adeguata manutenzione dipende il regolare funzionamento e durata della pompa.
Interpump Group declina ogni responsabilità per danni causati da negligenza e mancata osservanza delle norme descritte in questo manuale.

## 1.1 DESCRIZIONE SIMBOLI

Leggere attentamente quanto riportato in questo manuale prima di ogni operazione.

**Segnale di Avvertenza**

Leggere attentamente quanto riportato in questo manuale prima di ogni operazione.

**Segnale di Pericolo**
Munirsi di occhiali protettivi.

**Segnale di Pericolo**
Munirsi di guanti protettivi prima di ogni operazione.

# 2 NORME DI RIPARAZIONE

## 2.1 RIPARAZIONE DELLA PARTE MECCANICA

Le operazioni di riparazione della parte meccanica devono essere eseguite dopo aver rimosso l'olio dal carter.
Per togliere l'olio occorre rimuovere il tappo di carico olio pos. ①, Fig. 1 e successivamente il tappo di scarico pos. ②, Fig. 1.

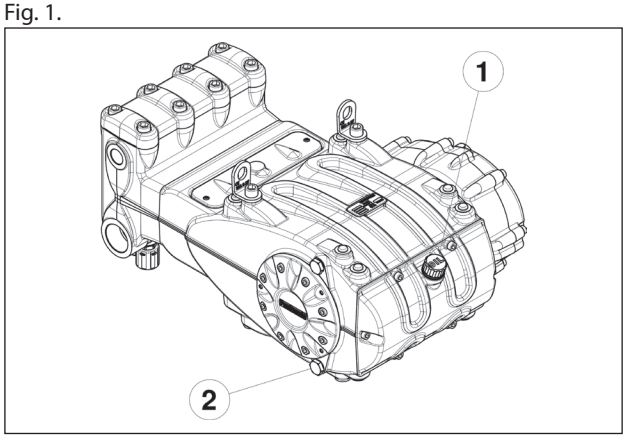


Fig. 1

**L'olio esausto deve essere messo in un apposito recipiente e smaltito negli appositi centri.**
**Non deve essere assolutamente disperso nell'ambiente.**

### 2.1.1 Smontaggio della parte meccanica

La corretta sequenza è la seguente.
Svuotare completamente la pompa dall'olio, quindi provvedere allo smontaggio del coperchio carter (e relativo O-ring) svitando le 6 viti M10 (pos. ①, Fig. 2).


Fig. 2

Rimuovere la linguetta dall'albero PTO (pos. ①, Fig. 3).

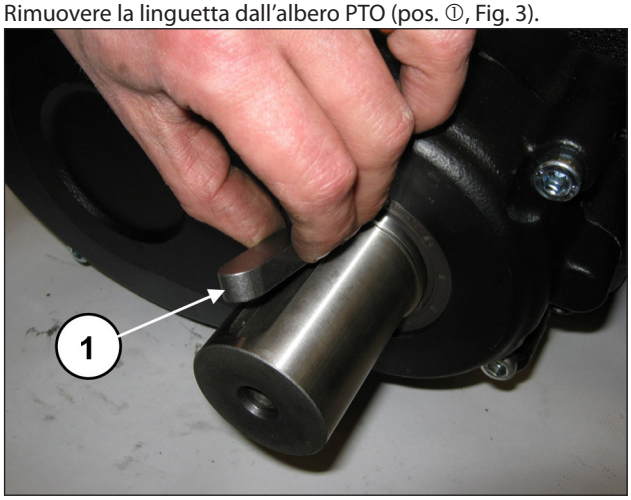


Fig. 3

Svitare le viti di fissaggio coperchio riduttore (pos. ①, Fig. 4).


Fig. 4

Posizionare n. 3 grani o viti filettate M8 (pos. ①, Fig. 5) con la funzione di estrattori negli appositi fori e due viti M10 sufficientemente lunghe con la funzione di sostegno coperchio (pos. ②, Fig. 5).

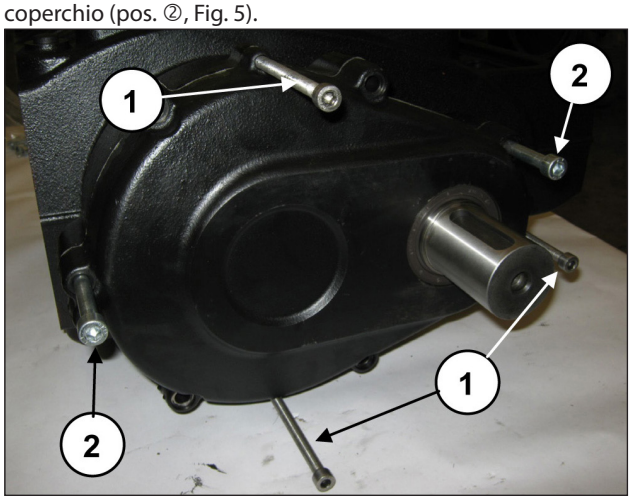


Fig. 5

Avvitare gradualmente le 3 viti M8 (pos. ①, Fig. 6) con la funzione di estrattori fino a rimuovere completamente il gruppo coperchio e pignone

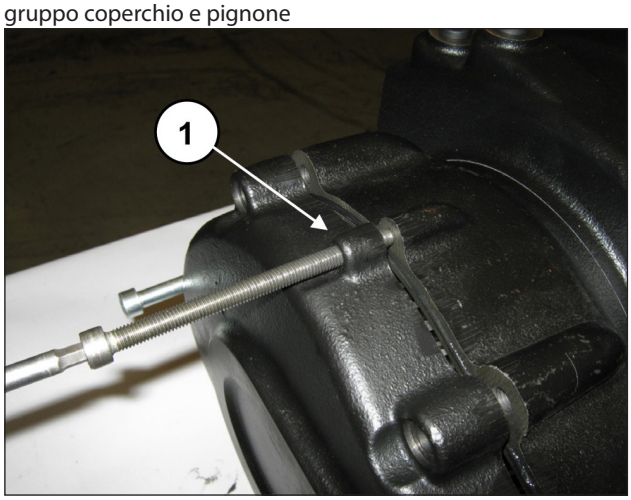


Fig. 6

È possibile provvedere allo smontaggio completo del coperchio riduttore dal pignone procedendo come segue: Rimuovere l'anello seeger Ø120 (pos. ①, Fig. 7).

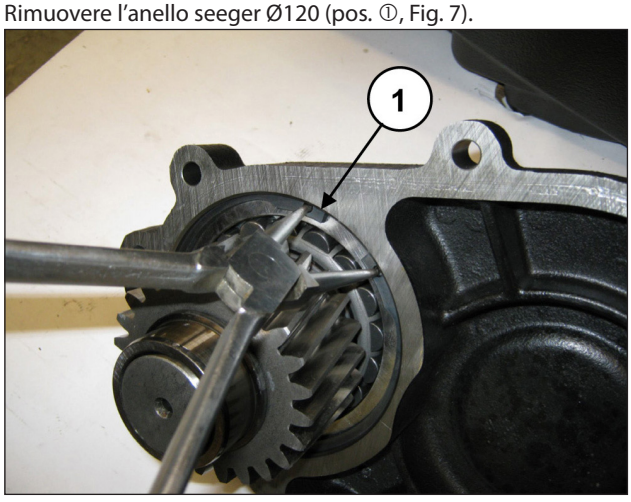


Fig. 7

Separare il pignone dal coperchio agendo mediante massa battente sul pignone stesso (pos. ①, Fig. 8).

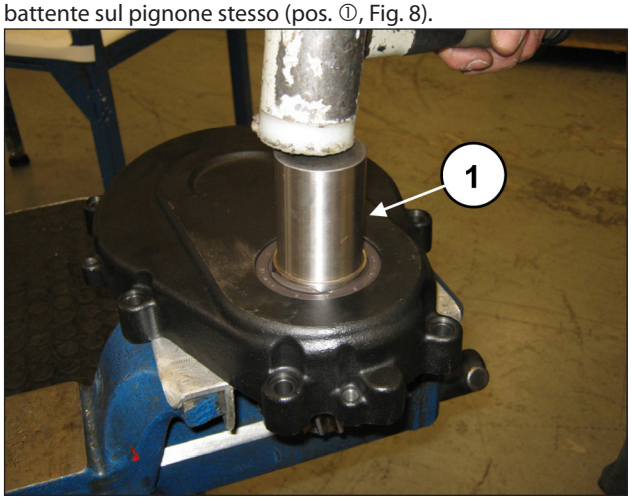


Fig. 8

Rimuovere l'anello seeger Ø55 (pos. ①, Fig. 9) e l'anello appoggio cuscinetto (pos. ①, Fig. 10) dal pignone


Fig. 9

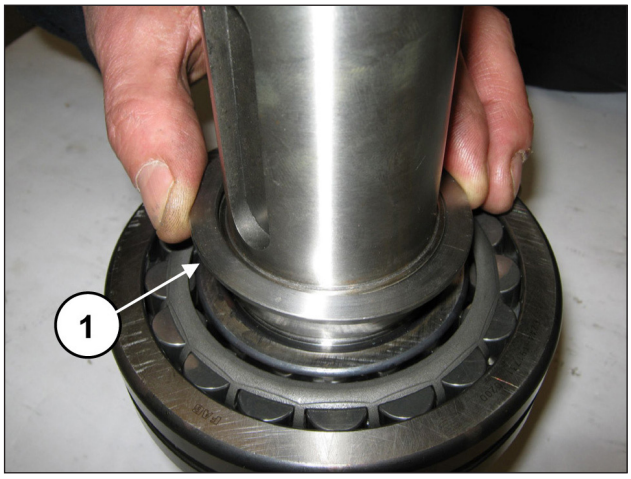


Fig. 10

Estrarre il paraolio dal coperchio riduttore agendo dal lato interno del coperchio (pos. ①, Fig. 11).

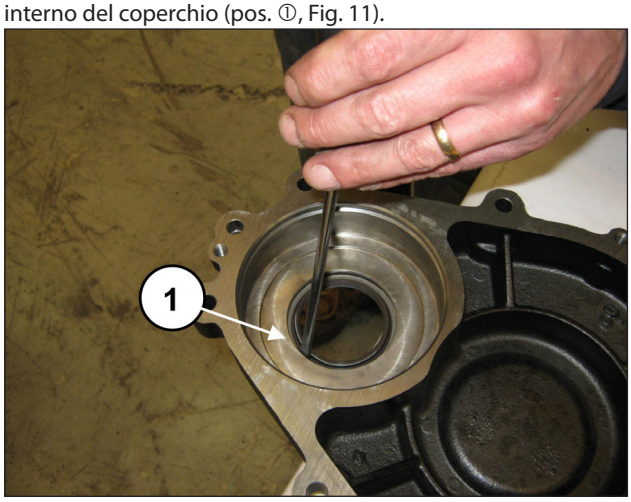


Fig. 11

Svitare le viti che fissano il fermo corona (pos. ①, Fig. 12) e rimuoverlo (pos. ①, Fig. 13).

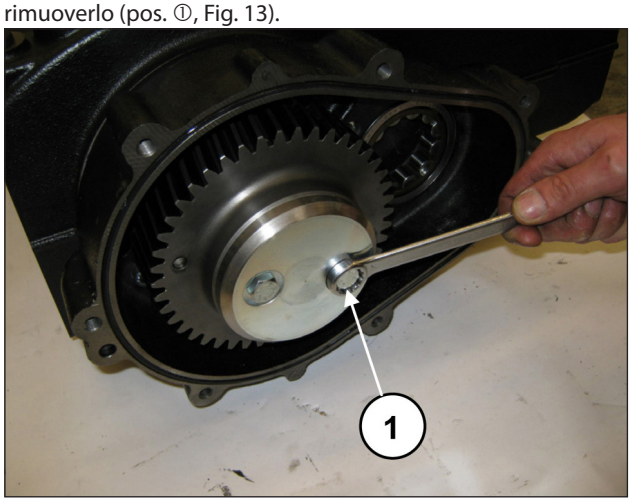


Fig. 12

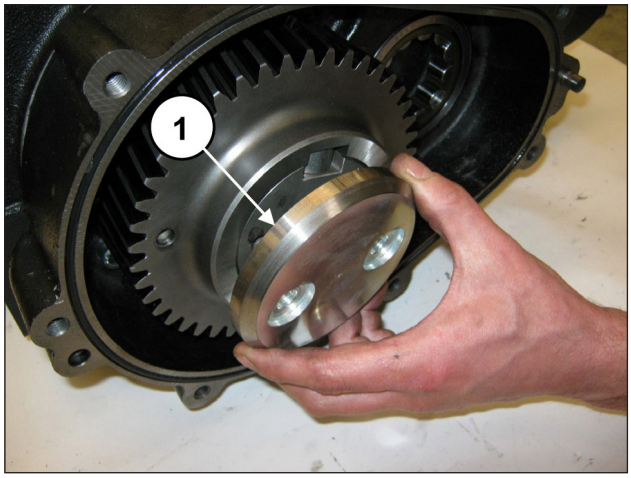


Fig. 13

Sfilare la corona (pos. ①, Fig. 14). Qualora fosse necessario è possibile utilizzare un estrattore a massa battente da applicare ai 2 fori M8 (pos. ②, Fig. 14).

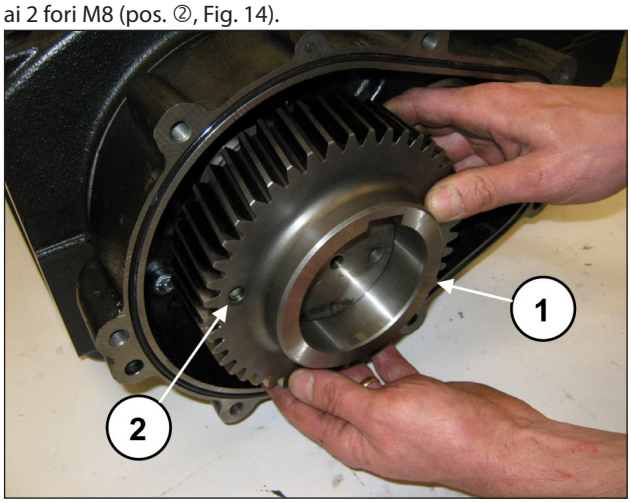


Fig. 14

Togliere la linguetta dall'albero (pos. ①, Fig. 15).

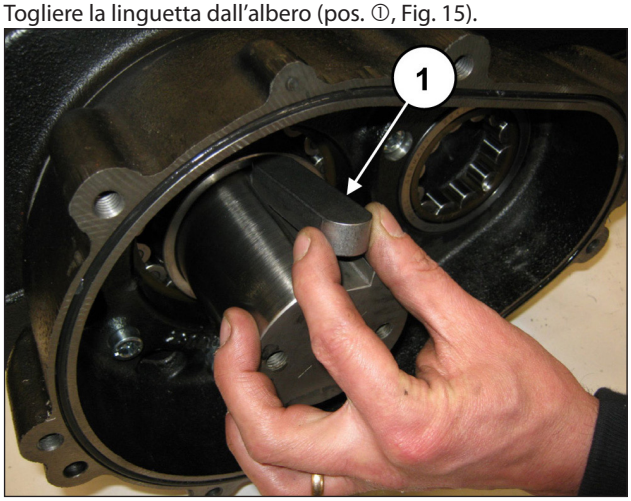


Fig. 15

Sfilare l'anello di appoggio corona (pos. ①, Fig. 16).

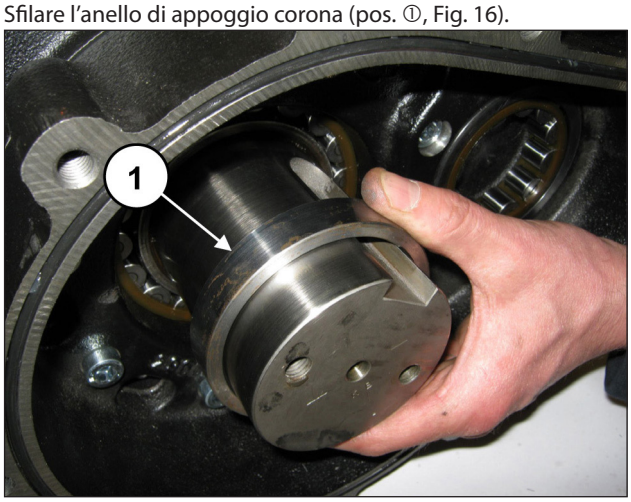


Fig. 16

Svitare le viti di biella (pos. ①, Fig. 17).

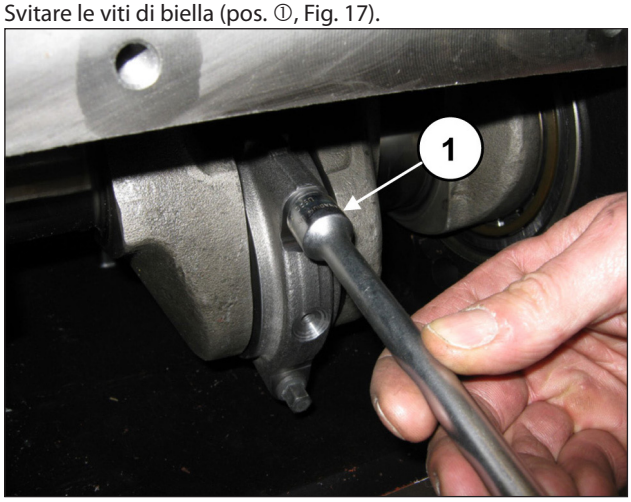


Fig. 17

Smontare i cappelli di biella con i semicuscinetti inferiori avendo particolare cura, durante lo smontaggio, dell'ordine in cui vengono smontati.

**I cappelli di biella e le relative semibielle devono essere rimontati esattamente nello stesso ordine e accoppiamento in cui sono stati smontati.**

Per evitare possibili errori cappelli e semibielle sono stati numerati su un lato (pos. ①, Fig. 18).

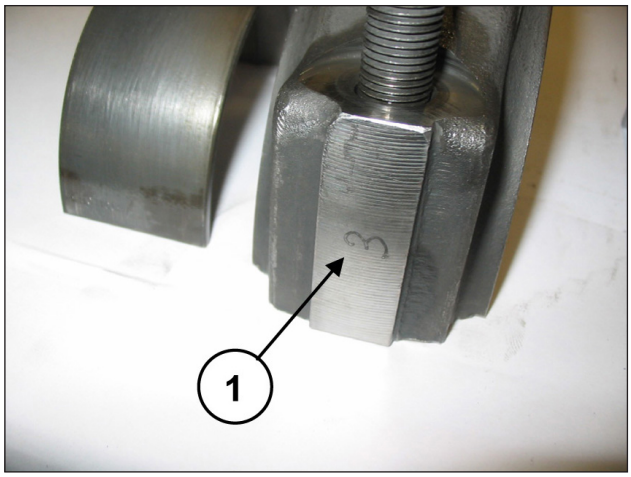


Fig. 18

Fare avanzare completamente le semibielle nella direzione della parte idraulica per consentire la fuoriuscita dell'albero a gomiti. Per facilitare l'operazione utilizzare l'apposito attrezzo (cod. 27566200), (pos. ①, Fig. 19).

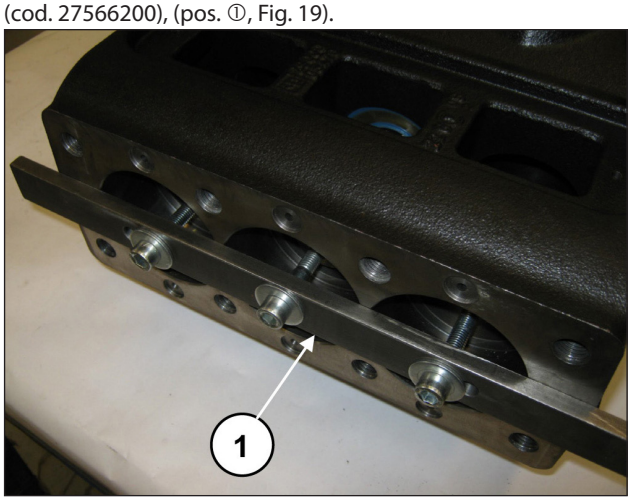


Fig. 19

Sfilare i tre semicuscinetti superiori delle semibielle (pos. ①, Fig. 20).

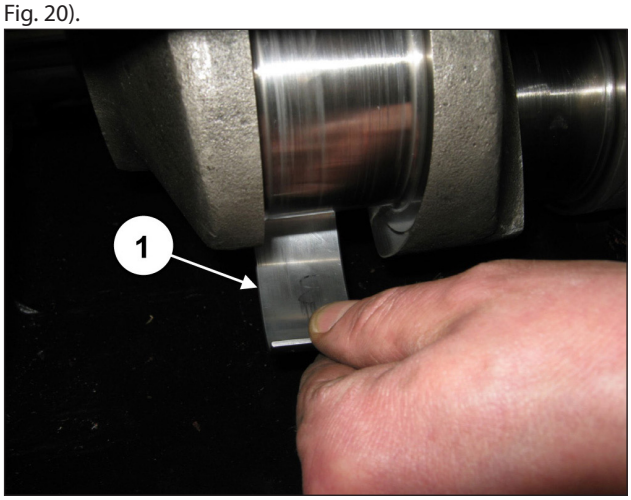


Fig. 20

Svitare le viti di fissaggio della scatola riduttore (pos. ①, Fig. 21 e Fig. 22).

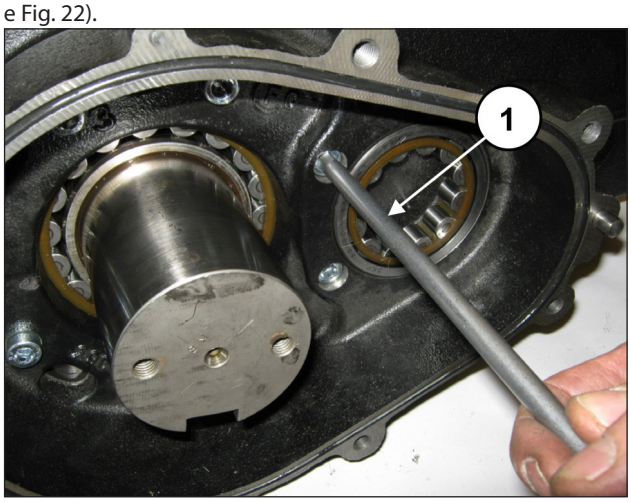


Fig. 21

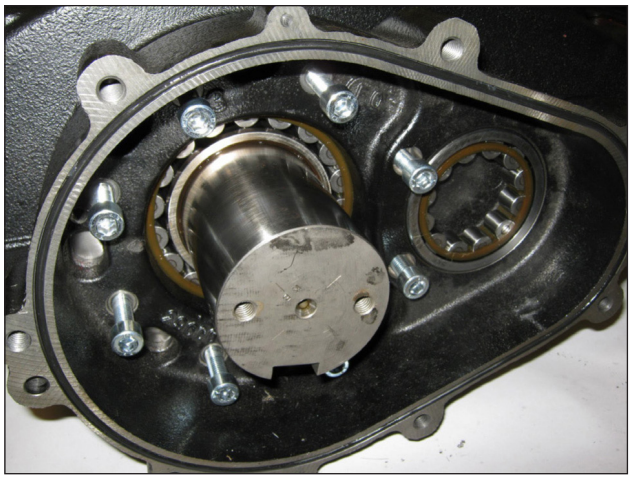

Fig. 22

Posizionare n. 3 grani o viti filettate M8 (pos. ①, Fig. 23) con la funzione di estrattori negli appositi fori e due viti M10 sufficientemente lunghe con la funzione di sostegno alla scatola riduttore (pos. ②, Fig. 23).

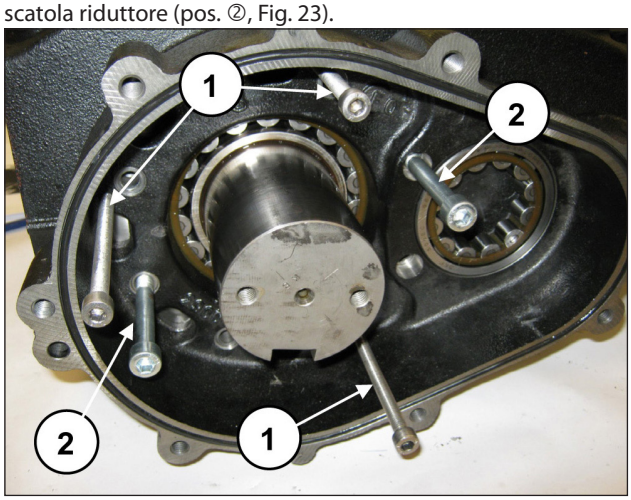


Fig. 23

Avvitare le 3 viti M8 gradualmente (pos. ①, Fig. 24) per evitare che la scatola possa inclinarsi troppo e bloccarsi in sede. Provvedere alla rimozione della scatola sostenendo l'albero per evitare danneggiamenti (pos. ①, Fig. 25).

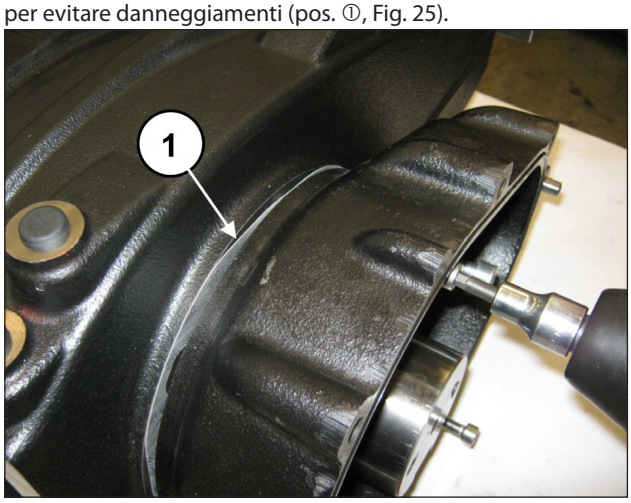


Fig. 24

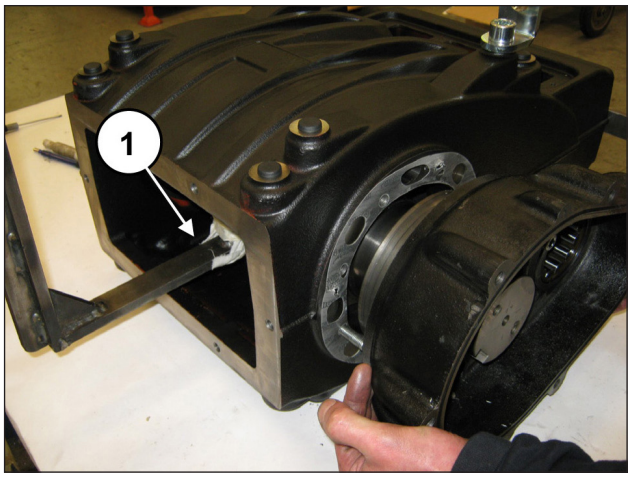


Fig. 25

Dalla parte opposta svitare le viti di fissaggio coperchio cuscinetto (pos. ①, Fig. 26 e Fig. 27).

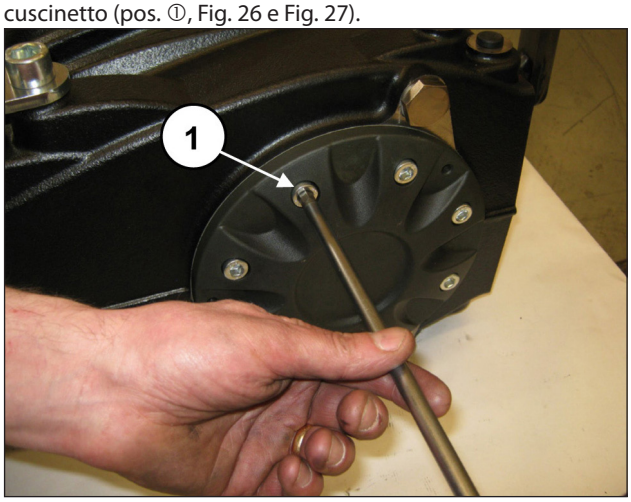


Fig. 26

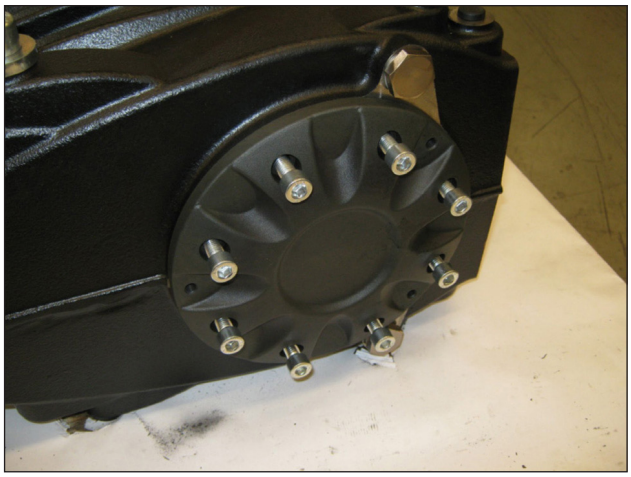

Fig. 27

Posizionare n. 3 grani o viti filettate M8 (pos. ①, Fig. 28) con la funzione di estrattori negli appositi fori

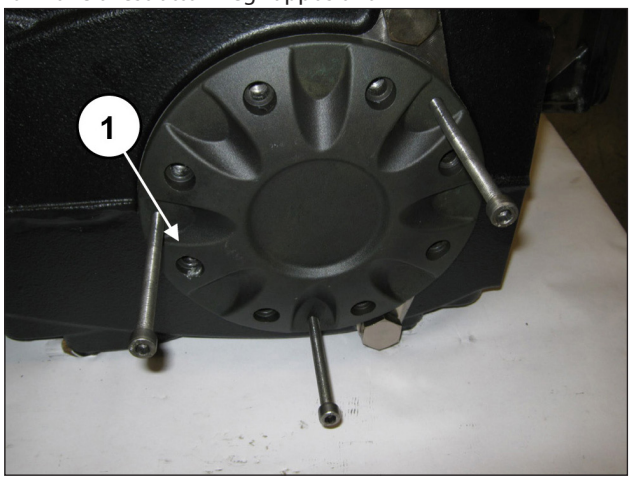


Fig. 28

Avvitare le 3 viti M8 gradualmente (pos. ①, Fig. 29) per evitare che il coperchio possa inclinarsi troppo e bloccarsi in sede. Provvedere alla rimozione del coperchio cuscinetto sostenendo l'albero per evitare danneggiamenti (pos. ①, Fig. 30).

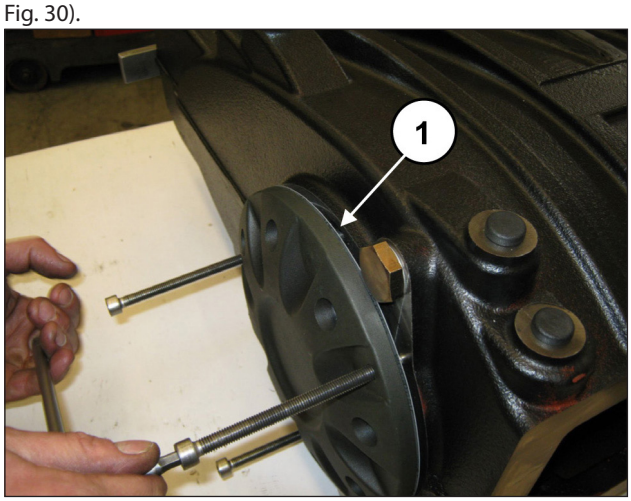


Fig. 29

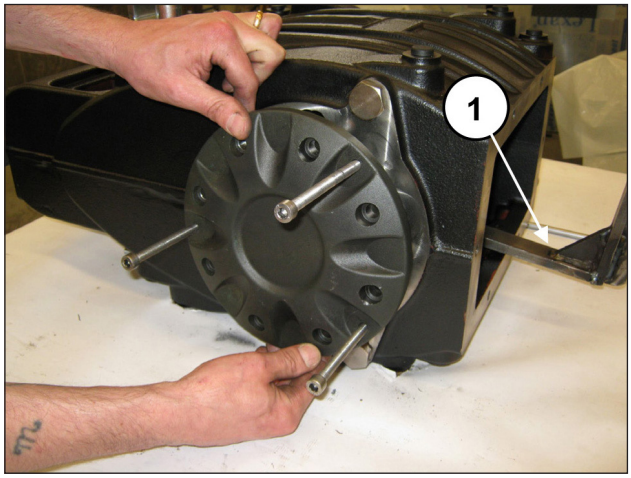


Fig. 30

Sfilare dal carter l'albero a gomiti dal lato PTO (pos. ①, Fig. 31).


Fig. 31

Nell'eventualità fosse necessario sostituire una o più bielle o guide pistone occorre operare come segue:
Procedere a svitare le viti dell'attrezzo cod. 27566200 per sbloccare le bielle (pos. ①, Fig. 32) e successivamente estrarre i gruppi biella-guida pistone dall'apertura posteriore del carter (pos. ①, Fig. 33).

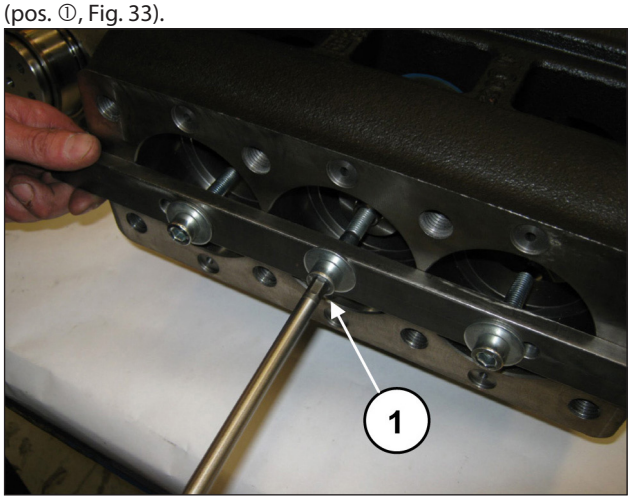


Fig. 32

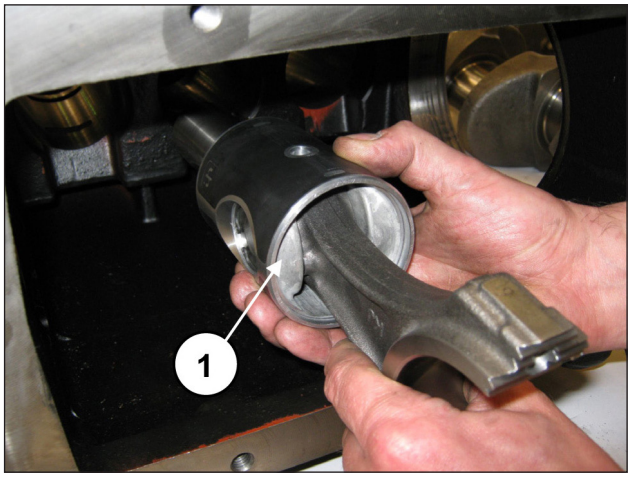


Fig. 33

Ora è possibile provvedere allo smontaggio dei paraoli guida pistone facendo attenzione a non danneggiare la canna di scorrimento del guida pistone.

**Qualora si rendesse necessaria la sostituzione dei paraoli guida pistone senza dover smontare tutta la parte meccanica, è possibile estrarre i paraoli utilizzando l'apposito attrezzo cod. 27918500 operando come segue:**

Inserire l'attrezzo tra lo stelo e il labbro del paraolio (pos. ①, Fig. 34) e mediante massa battente provvedere al completo inserimento del tratto conico all'interno del paraolio (pos. ①, Fig. 35).

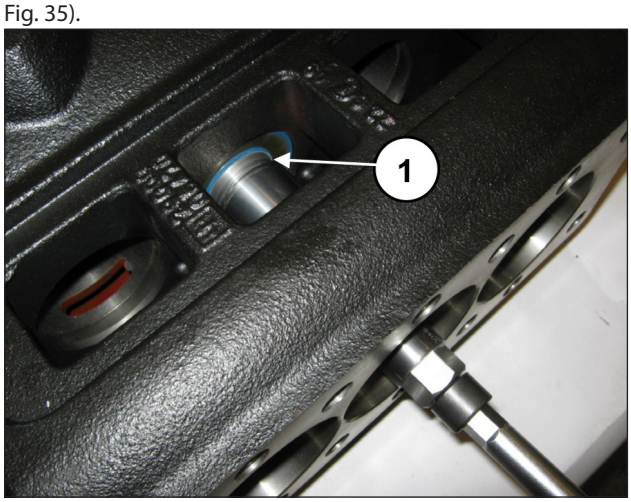


Fig. 34

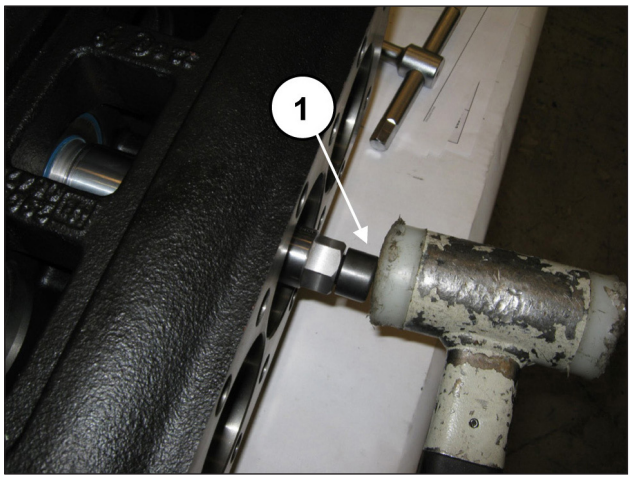


Fig. 35

Estrarre il paraolio utilizzando la massa battente dell'attrezzo (pos. ①, Fig. 36).

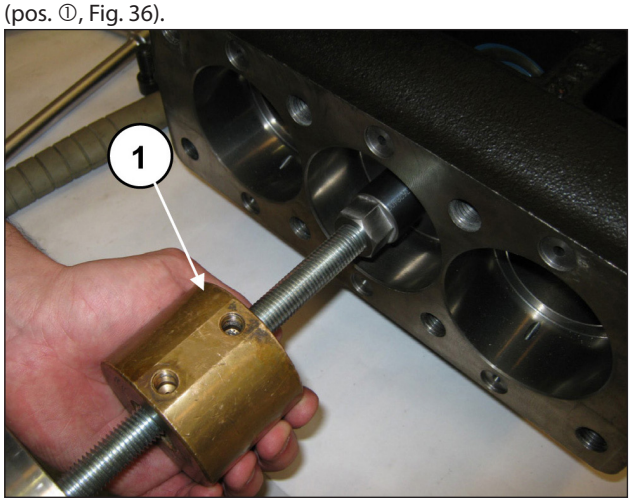


Fig. 36

Rimuovere i due anelli seeger di bloccaggio spinotto (pos. ①, Fig. 37).

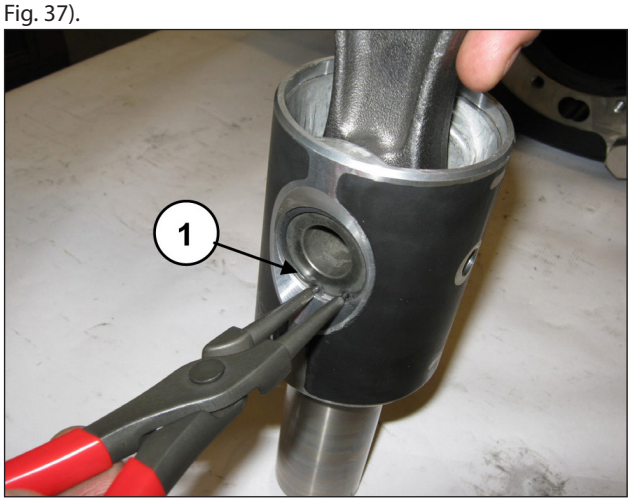


Fig. 37

Sfilare lo spinotto (pos. ①, Fig. 38) e provvedere all'estrazione della biella (pos. ①, Fig. 39).


Fig. 38

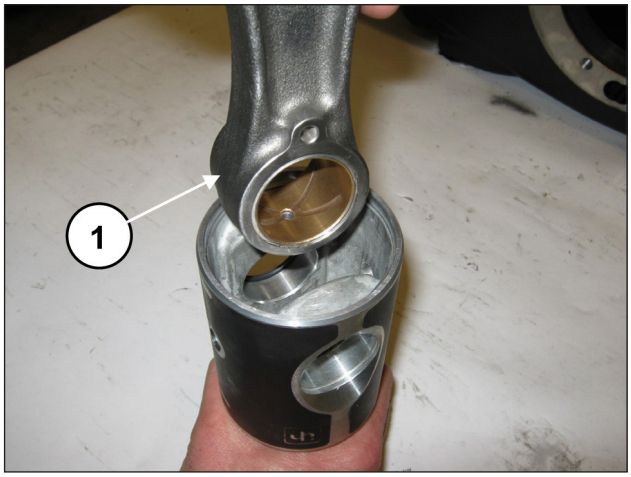


Fig. 39

Accoppiare le semibielle ai cappelli precedentemente smontati facendo riferimento alla numerazione (pos. ①, Fig. 40).

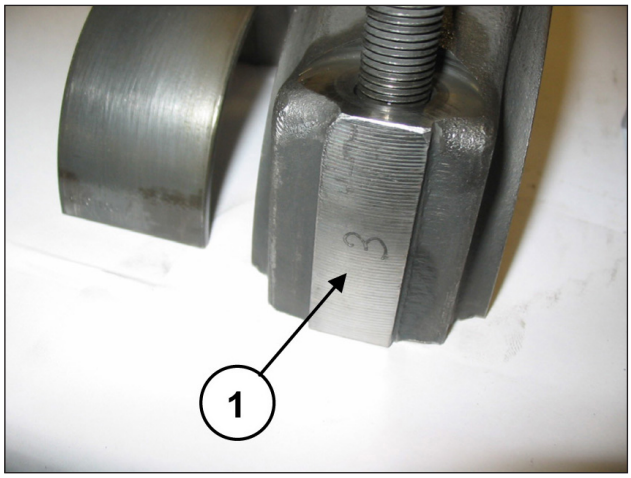


Fig. 40

Per separare lo stelo dal guida pistone occorre svitare le viti a testa cilindrica M6 mediante apposita chiave (pos. ①, Fig. 41).

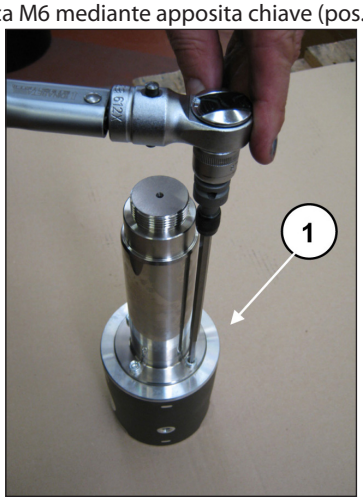


Fig. 41

### 2.1.2 Montaggio parte meccanica

Procedere al montaggio seguendo il procedimento inverso indicato al par. 2.1.1.
La corretta sequenza è la seguente:
Assemblare lo stelo al guida pistone.
Inserire lo stelo guida pistone nell'apposita sede sul guida pistone (pos. ①, Fig. 42) e fissarlo a quest'ultimo mediante le 4 viti a testa cilindrica M6x20 (pos. ①, Fig. 43).


Fig. 42


Fig. 43

Bloccare il guida pistone in morsa con l'ausilio di apposito attrezzo e procedere alla taratura delle viti con chiave dinamometrica (pos. ①, Fig. 44) come indicato nel capitolo 3.

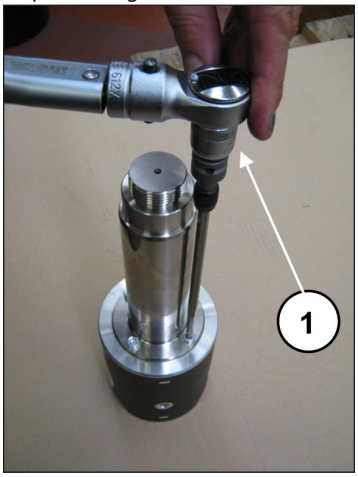


Fig. 44

Inserire la biella nel guida pistone (pos. ①, Fig. 39) e successivamente inserire lo spinotto (pos. ①, Fig. 38).
Applicare i due seeger di spallamento (pos. ①, Fig. 37).

**Il corretto montaggio è garantito se piede biella, guida pistone e spinotto ruotano liberamente.**

Separare i cappelli dalle semibielle; il corretto accoppiamento sarà garantito dalla numerazione posta su un lato (pos. ①, Fig. 40).
Dopo aver verificato la perfetta pulizia del carter inserire il gruppo semibiella-guida pistone all'interno delle canne del carter (pos. ①, Fig. 33).

**L'inserimento del gruppo semibiella-guida pistone nel carter deve essere fatto orientando le semibielle con la numerazione visibile dall'alto.**

Bloccare i tre gruppi utilizzando l'apposito attrezzo cod. 27566200 (pos. ①, Fig. 32).
Premontare l'anello interno dei cuscinetti dell'albero a gomiti (da entrambi i lati dell'albero fino a battuta) utilizzando l'apposito attrezzo cod. 27604700 (pos. ①, Fig. 45) (pos. ①, Fig. 46).

**Gli anelli interni ed esterni dei cuscinetti devono essere rimontati mantenendo lo stesso accoppiamento con cui sono stati smontati.**


Fig. 45


Fig. 46

Inserire l'albero dal lato PTO prestando attenzione a non urtare i fusti delle bielle montati precedentemente (pos. ①, Fig. 47) e (pos. ①, Fig. 48).

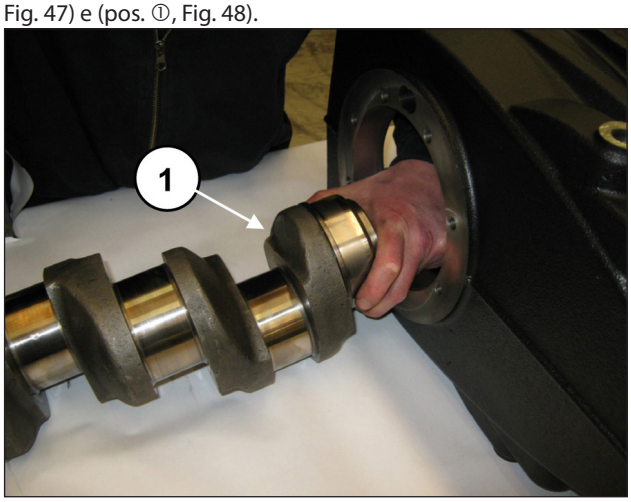


Fig. 47

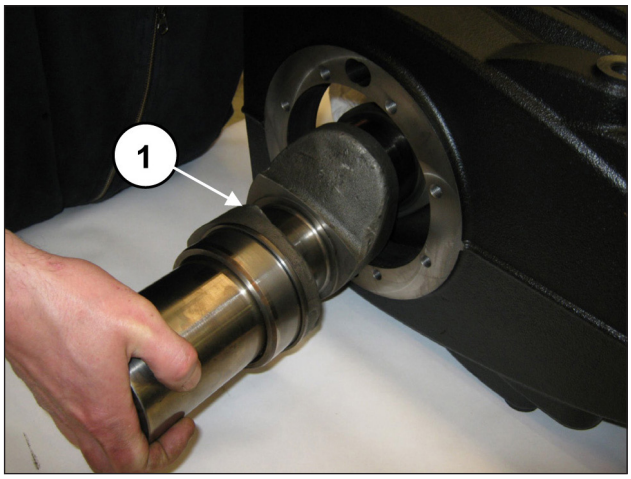


Fig. 48

**L'albero a gomiti deve essere tassativamente montato con il lato PTO dalla parte opposta rispetto ai fori G1/2" per i tappi di scarico olio del carter pompa (pos. ②, Fig. 50).**

Arrivare fino al completo inserimento dell'albero nel carter (pos. ①, Fig. 49 e Fig. 50).

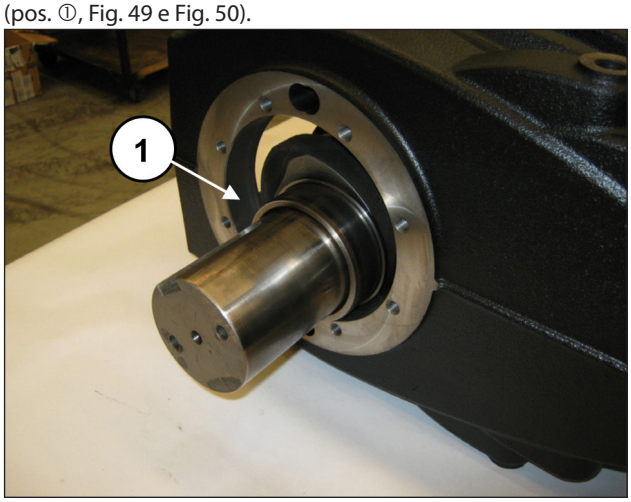


Fig. 49

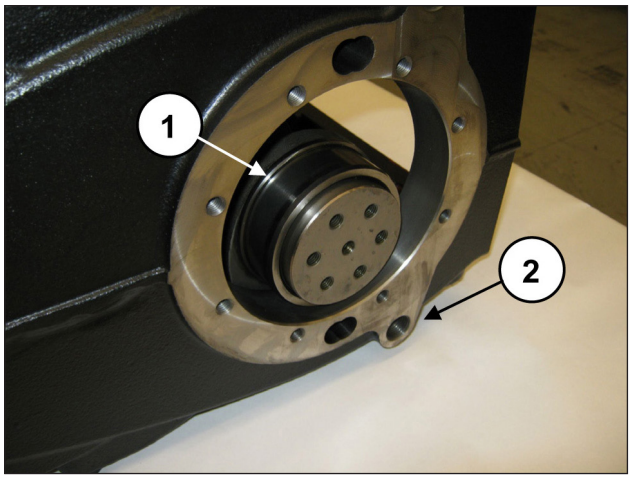


Fig. 50

Sulla scatola riduttore premontare l'anello esterno del cuscinetto pignone utilizzando l'attrezzo cod. 27604900 (pos. ①, Fig. 51) fino al suo completo inserimento a battuta (pos. ①, Fig. 52).

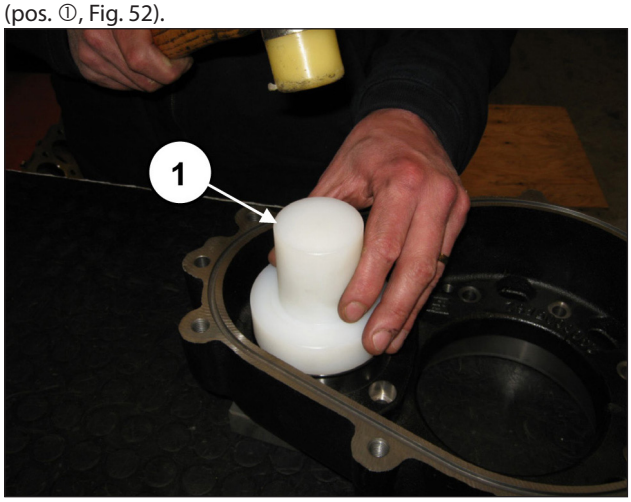


Fig. 51

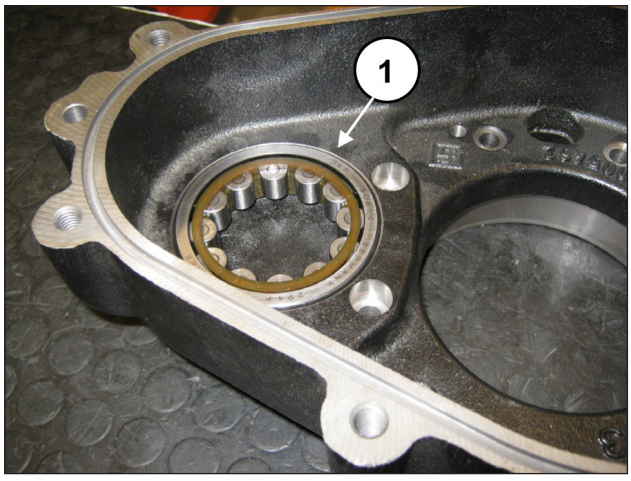


Fig. 52

Dal lato opposto della scatola riduttore premontare l'anello esterno del cuscinetto albero a gomiti utilizzando l'attrezzo cod. 27605000 (pos. ①, Fig. 53) fino al suo completo inserimento a battuta (pos. ①, Fig. 54).

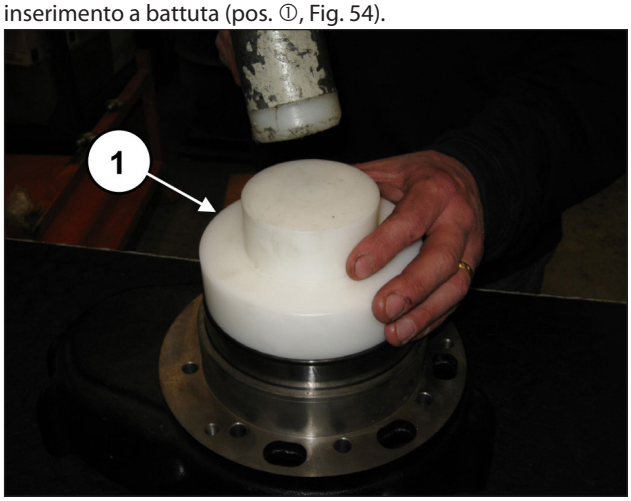


Fig. 53

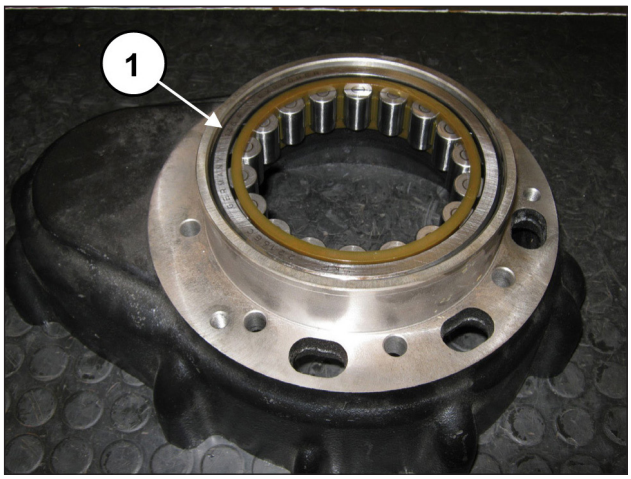


Fig. 54

Ripetere l'operazione sul coperchio cuscinetto premontando l'anello esterno del cuscinetto albero a gomiti mediante l'attrezzo cod. 27605000 (pos. ①, Fig. 55) fino al suo completo inserimento a battuta (pos. ①, Fig. 56).

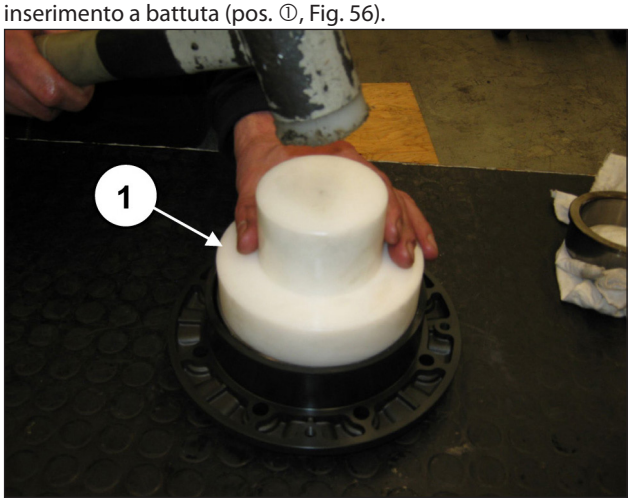


Fig. 55

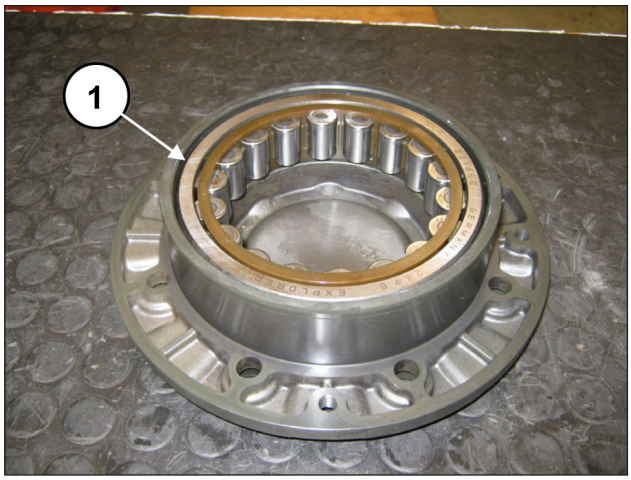


Fig. 56

Inserire la guarnizione laterale sul coperchio cuscinetto (pos. ①, Fig. 57) e sollevare l'albero a gomiti per favorire l'inserimento del coperchio (pos. ①, Fig. 58).


Fig. 57

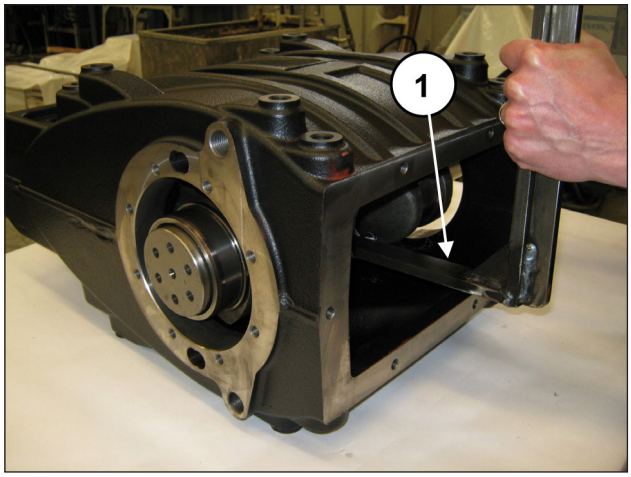


Fig. 58

Montare il coperchio cuscinetto (e relativa guarnizione) utilizzando una massa battente (pos. ①, Fig. 59)

**Orientare il coperchio cuscinetto in modo che il logo "Pratissoli" risulti perfettamente orizzontale.**

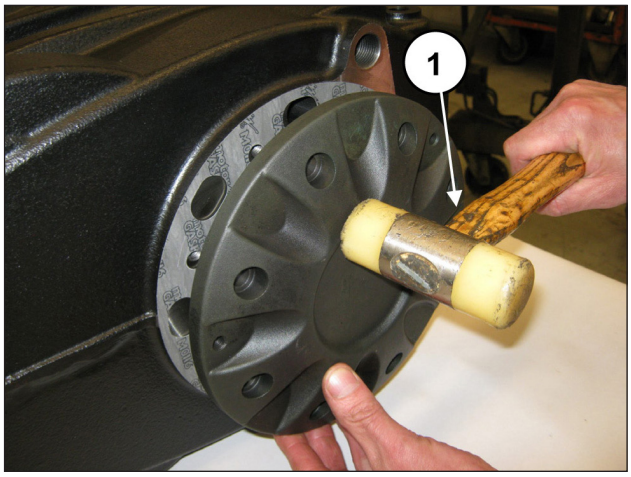


Fig. 59

Serrare le 8 viti M10x30 (pos. ①, Fig. 60).
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3.

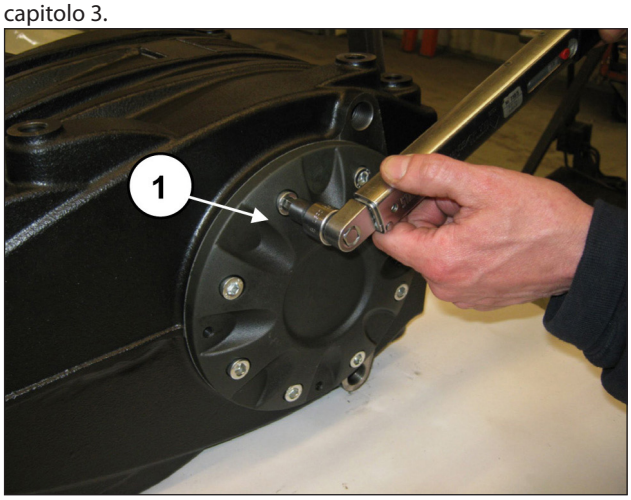


Fig. 60

Dal lato opposto inserire la guarnizione laterale sulla scatola riduttore (pos. ①, Fig. 61) e sollevare l'albero a gomiti per favorire l'inserimento del coperchio (pos. ①, Fig. 62).

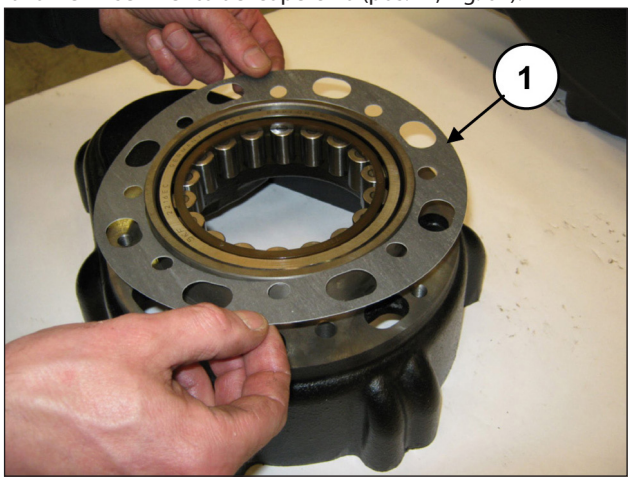


Fig. 61

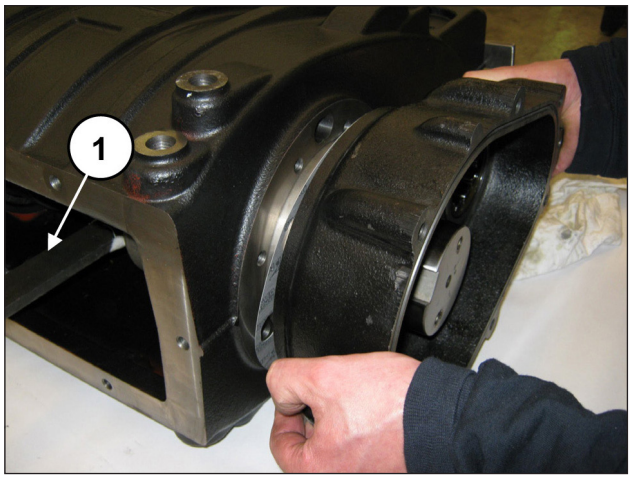


Fig. 62

Montare la scatola riduttore (e relativa guarnizione) utilizzando una massa battente (pos. ①, Fig. 63).

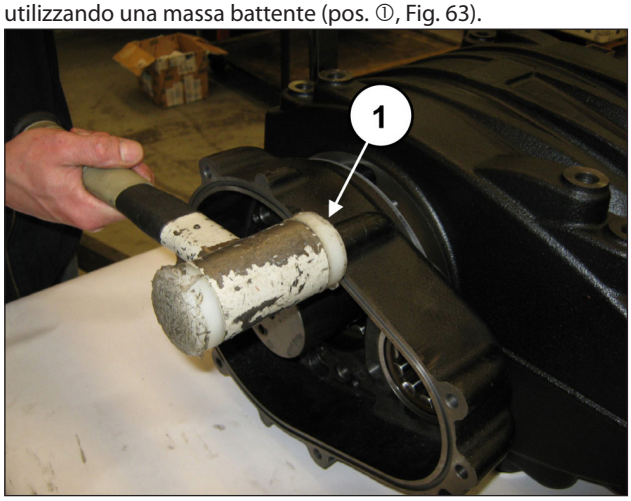


Fig. 63

Serrare le 8 viti M10x40 (pos. ①, Fig. 64).
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI.

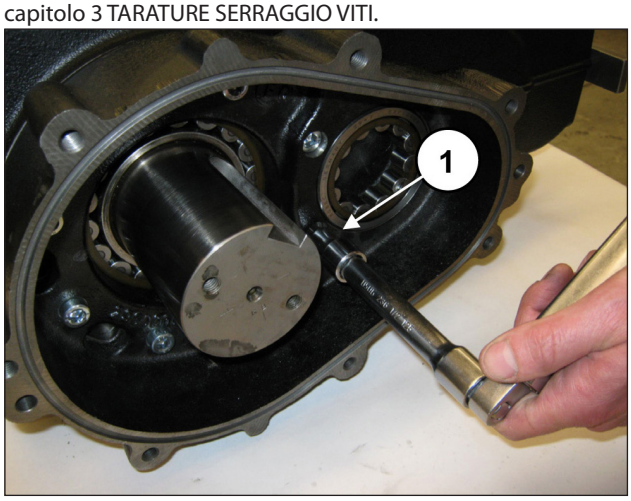


Fig. 64

Rimuovere l'attrezzo per il bloccaggio delle bielle cod. 27566200 (pos. ①, Fig. 32).

Inserire i semicuscinetti superiori tra le bielle e l'albero (pos. ①, Fig. 65).

**Per un corretto montaggio dei semicuscinetti assicurarsi che la linguetta di riferimento dei semicuscinetti venga posizionata nell'apposito alloggiamento sulla semibiella (pos. ①, Fig. 66).**

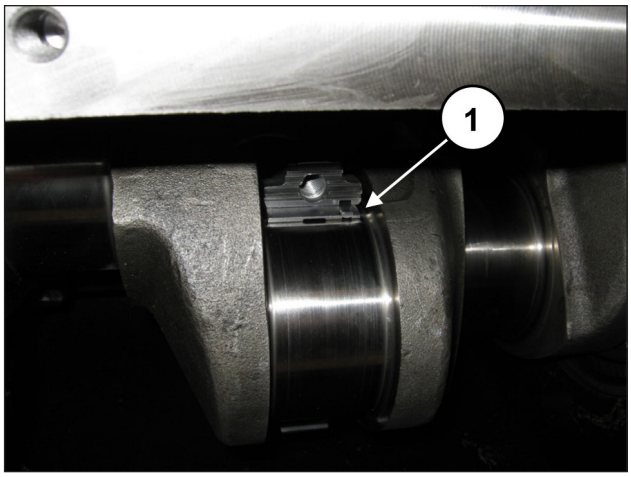


Fig. 65

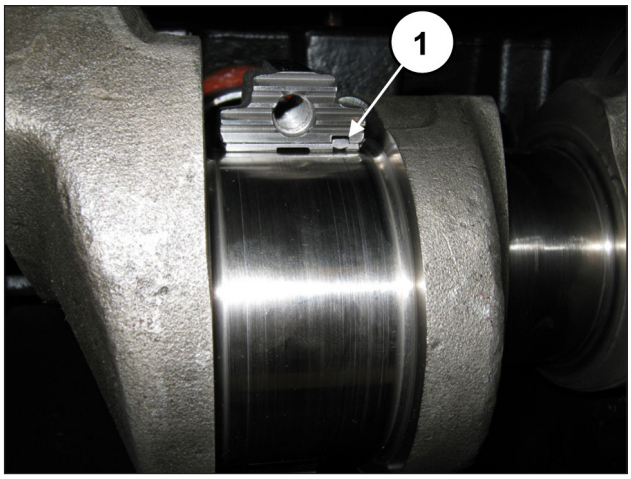


Fig. 66

Applicare i semicuscinetti inferiori ai cappelli (pos. ①, Fig. 67) assicurandosi che la linguetta di riferimento dei semicuscinetti venga posizionata nell'apposito alloggiamento sul cappello (pos. ②, Fig. 67).
Fissare i cappelli alle semibielle mediante le viti M10x1.5x80 (pos. ①, Fig. 68).

**Prestare attenzione al corretto senso di montaggio dei cappelli. La numerazione deve essere rivolta verso l'alto.**

Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI, portando le viti alla coppia di serraggio contemporaneamente.

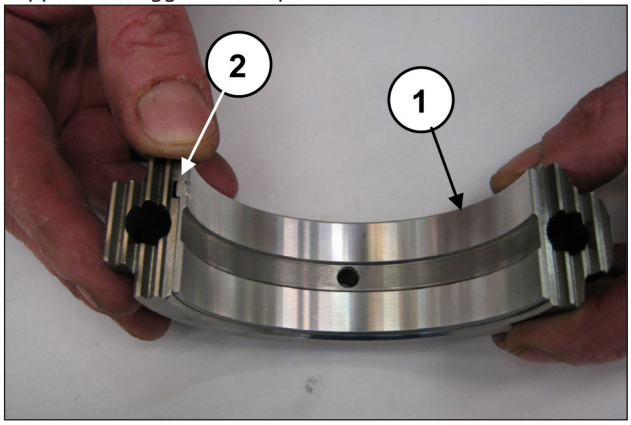


Fig. 67

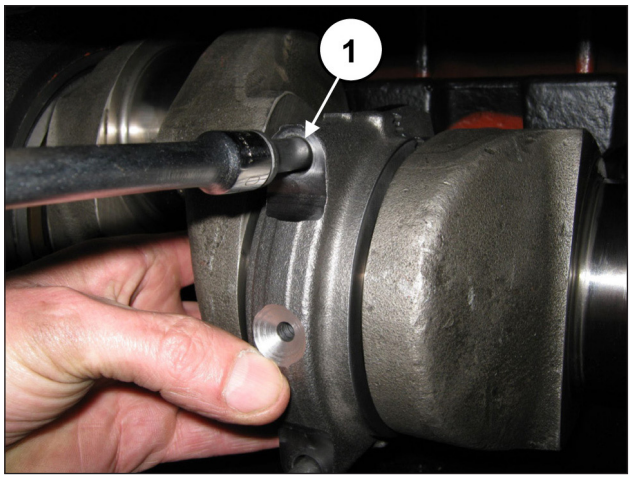


Fig. 68

**Ad operazione conclusa verificare che le bielle abbiano gioco assiale in entrambe le direzioni.**

Inserire i paraoli guida pistone nella sede sul carter mediante l'utilizzo dell'apposito attrezzo cod. 27605300 (pos. ① e ②, Fig. 69/a e Fig. 69/b).

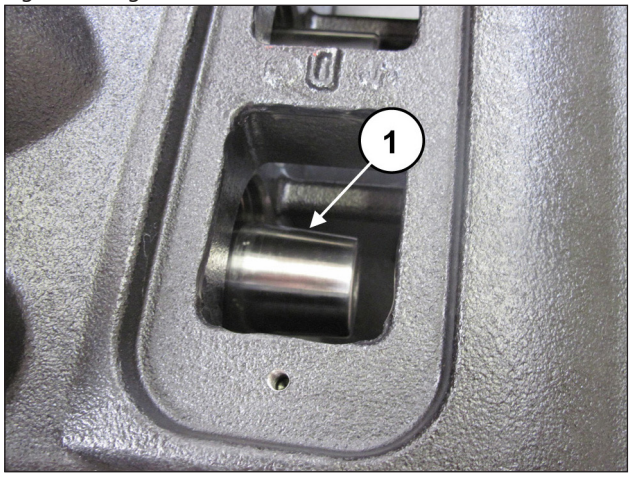


Fig. 69/a

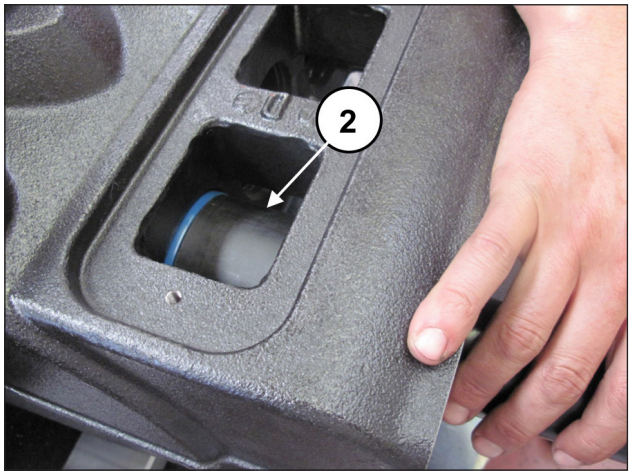


Fig. 69/b

Inserire l'O-ring nel coperchio posteriore (pos. ①, Fig. 70) e montare il coperchio al carter mediante 6 viti M10x30 (pos. ①, Fig. 71).

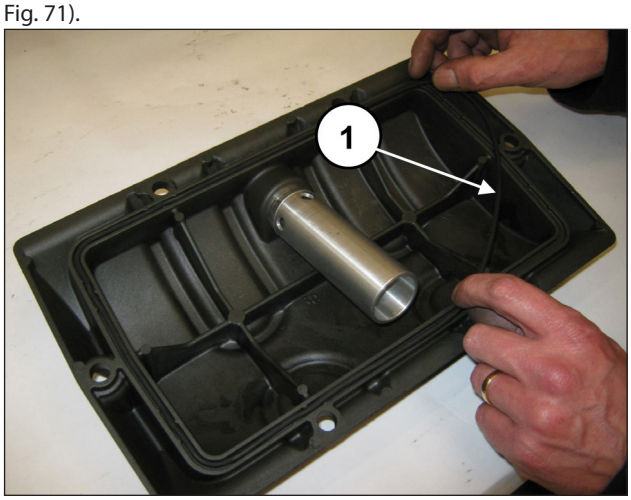


Fig. 70

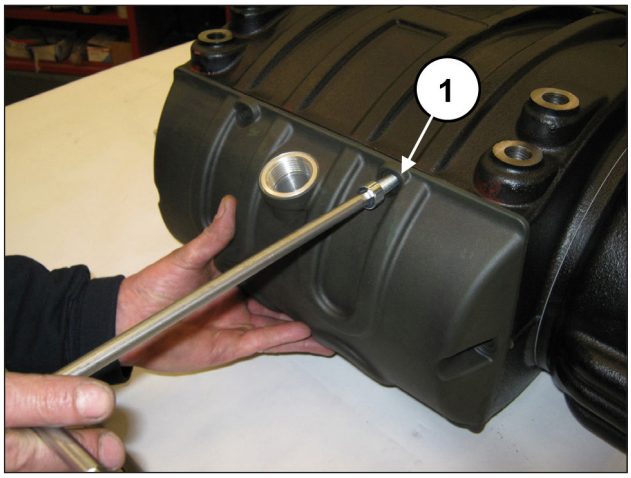


Fig. 71

**Prestare attenzione al corretto e completo inserimento dell'O-ring nell'apposita sede sul coperchio per evitare che possa danneggiarsi durante il serraggio delle viti.**

Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI.
Inserire l'anello appoggio corona nel codolo dell'albero a gomiti (pos. ①, Fig. 72) fino a battuta (pos. ①, Fig. 73).

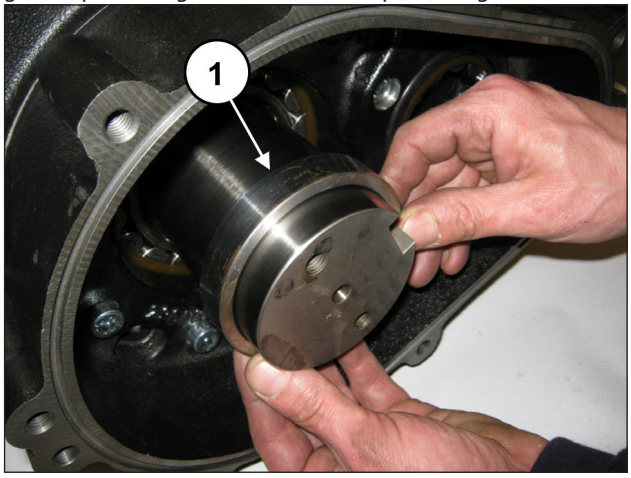


Fig. 72

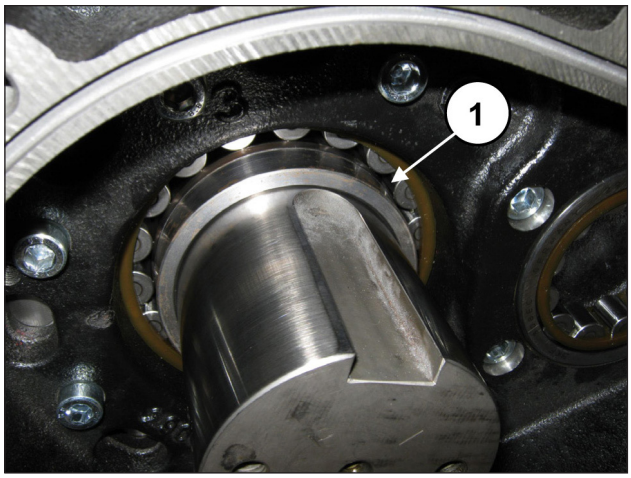


Fig. 73

Applicare la linguetta 22x14x80 nella sede dell'albero (pos. ①, Fig. 74) e inserire la corona sull'albero (pos. ①, Fig. 75).

**La corona deve essere montata assicurandosi che i due fori M8 (da utilizzarsi per l'estrazione) risultino rivolti verso l'esterno della pompa (pos. ②, Fig. 75).**

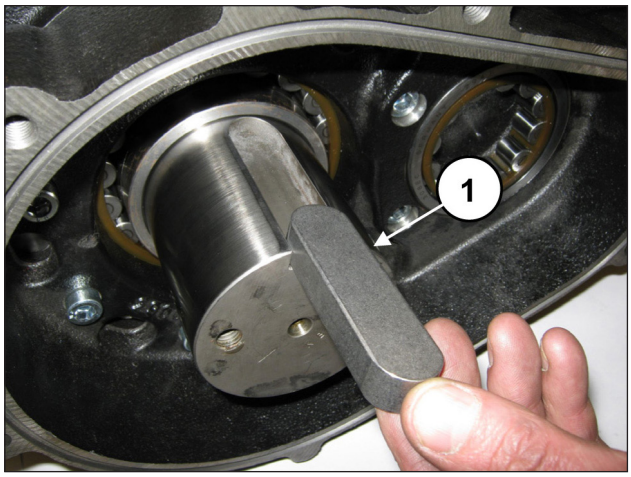


Fig. 74

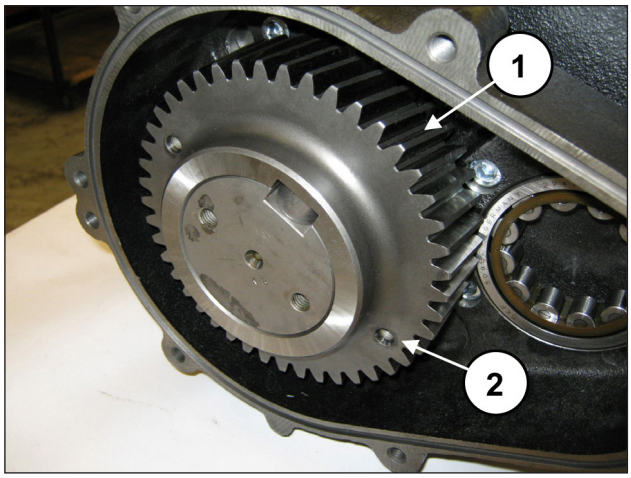


Fig. 75

Fissare il fermo corona (pos. ①, Fig. 76) utilizzando le 2 viti M10x25.
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 (pos. ①, Fig. 77).

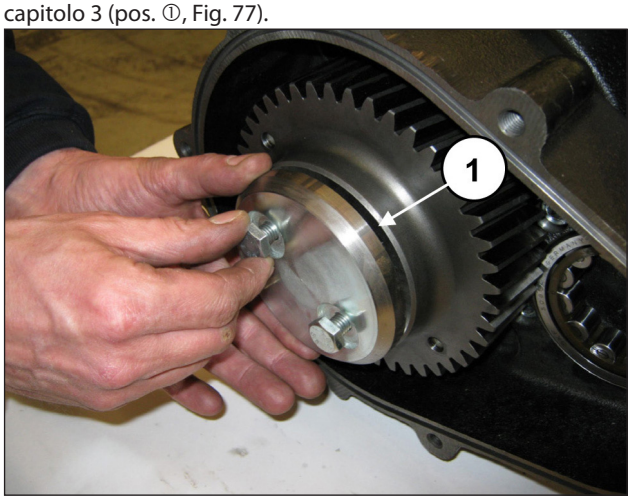


Fig. 76

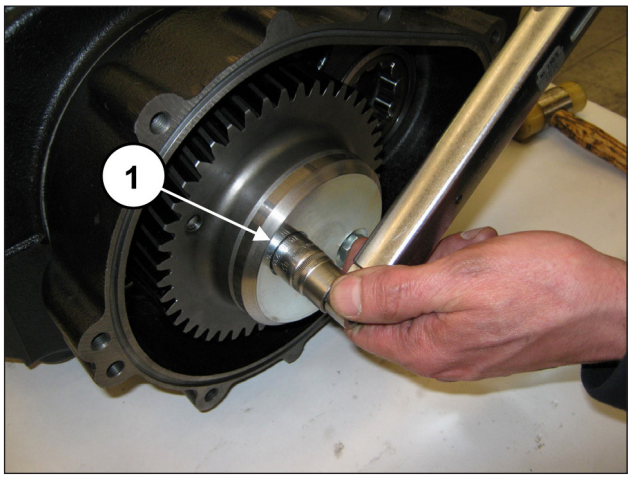


Fig. 77

Applicare le 2 spine Ø10x24 alla scatola riduttore (pos. ①, Fig. 78) e inserire l'O-ring (pos. ①, Fig. 79).

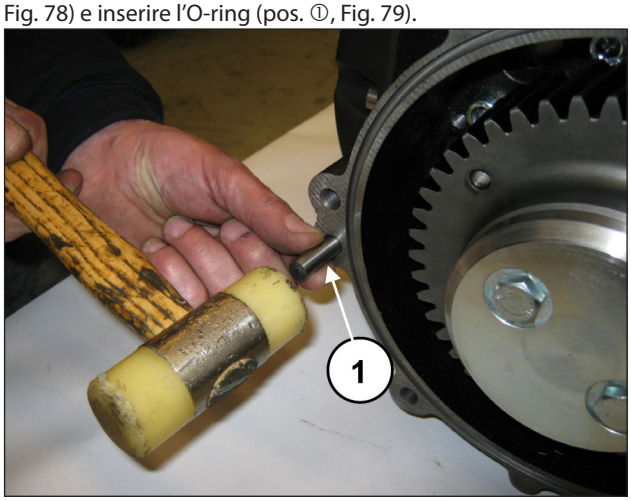


Fig. 78

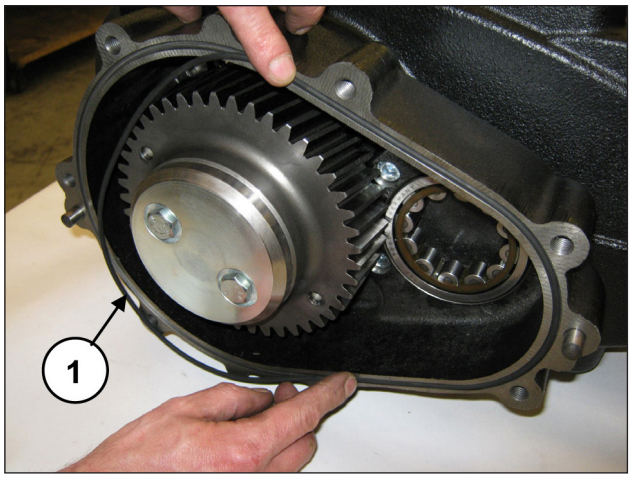


Fig. 79

Proseguire con l'assemblaggio del pignone sul coperchio riduttore procedendo come segue:
Premontare sul pignone l'anello interno del cuscinetto 40x90x23 (pos. ①, Fig. 80) posizionandolo fino a battuta.

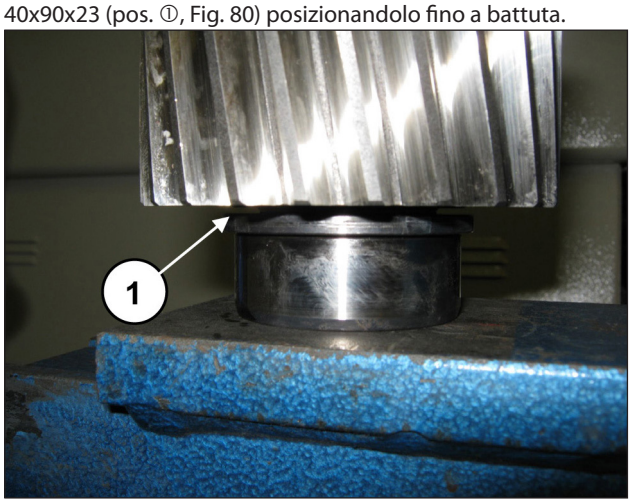


Fig. 80

Dall'altro lato del pignone premontare il cuscinetto 55x120x29 (pos. ①, Fig. 81) posizionandolo fino a battuta utilizzando l'attrezzo cod. 27604800 (pos. ①, Fig. 82).

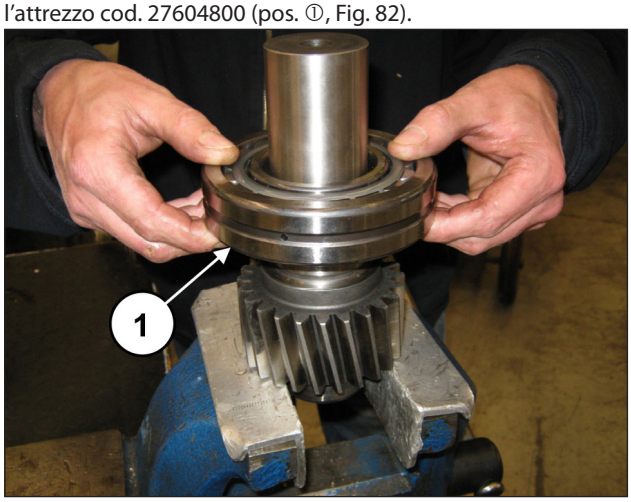


Fig. 81

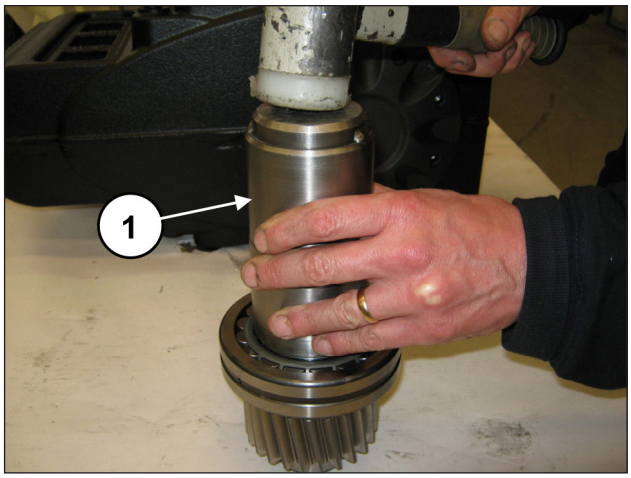


Fig. 82

Inserire l'anello appoggio cuscinetto (pos. ①, Fig. 83) e posizionare l'anello seeger Ø55 (pos. ①, Fig. 84).

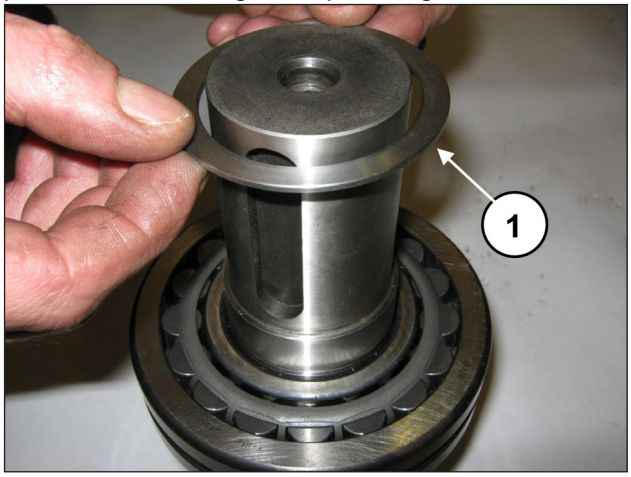


Fig. 83

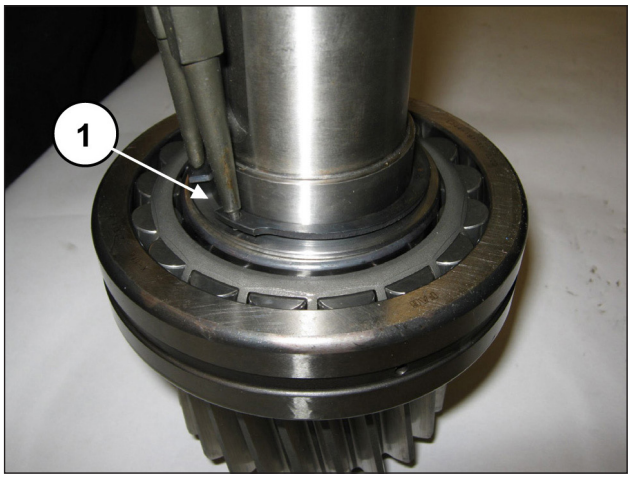


Fig. 84

Inserire il pignone premontato all'interno dell'apposita sede nel coperchio riduttore mediante l'utilizzo di una massa battente (pos. ①, Fig. 85).

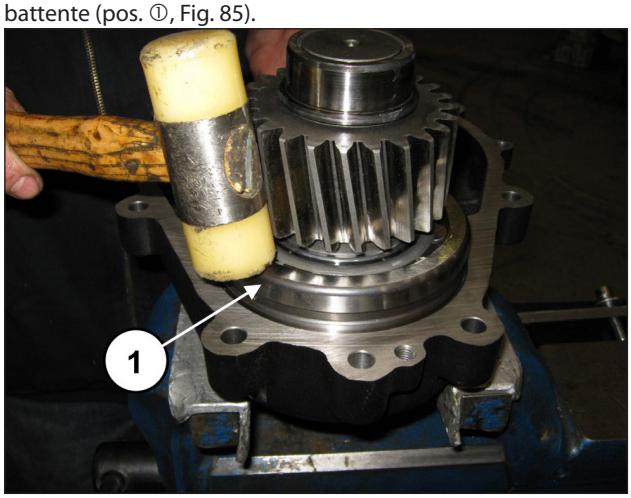


Fig. 85

Inserire in sede l'anello seeger Ø120 (pos. ①, Fig. 86).

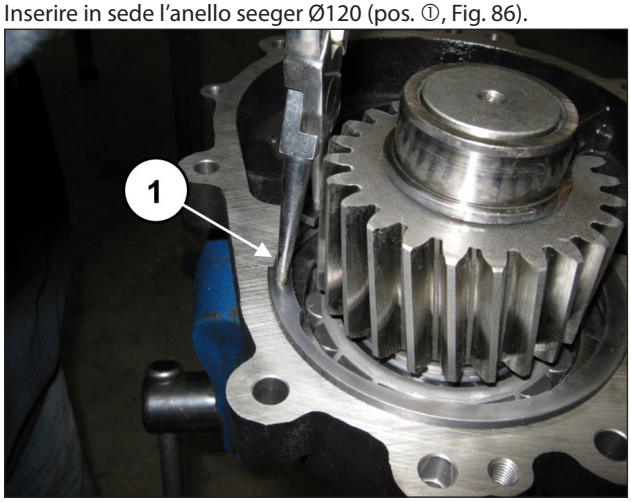


Fig. 86

Montare il coperchio riduttore mediante massa battente (pos. ①, Fig. 87) e fissarlo mediante 7 viti M10x40 (pos. ①, Fig. 88).
Prestare attenzione al corretto accoppiamento dei due elementi del cuscinetto 40x90x23.
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3.

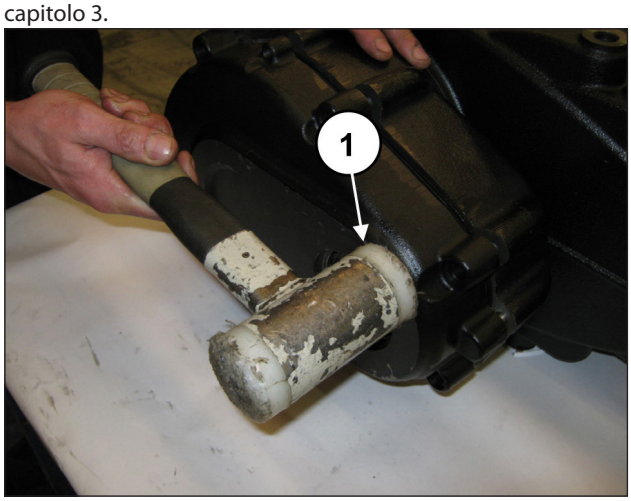


Fig. 87

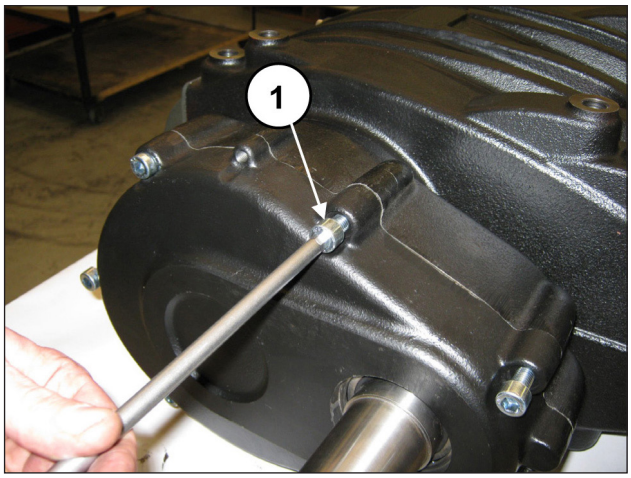


Fig. 88

Inserire il paraolio all'interno del coperchio riduttore mediante l'utilizzo dell'attrezzo cod. 27605200 (pos. ①, Fig. 89).
Prima di procedere con il montaggio del paraolio verificare le condizioni del labbro di tenuta. Se si rende necessaria la sostituzione posizionare il nuovo anello sul fondo della cava come indicato in Fig. 90.

**Qualora l'albero presentasse una usura diametrale corrispondente al labbro di tenuta per evitare l'operazione di rettifica si può posizionare l'anello in seconda battuta come indicato nella Fig. 90.**

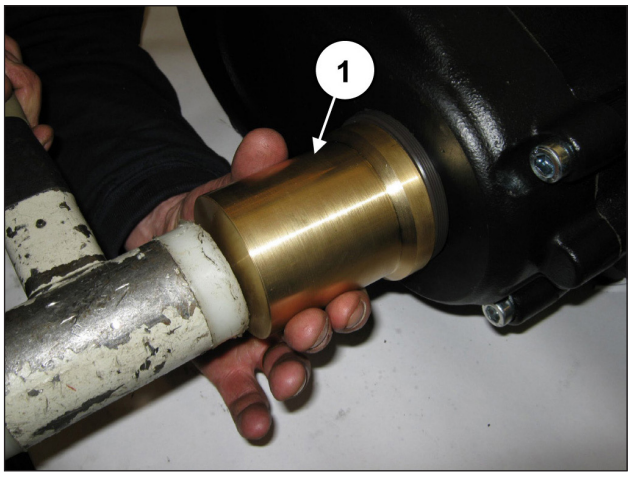


Fig. 89

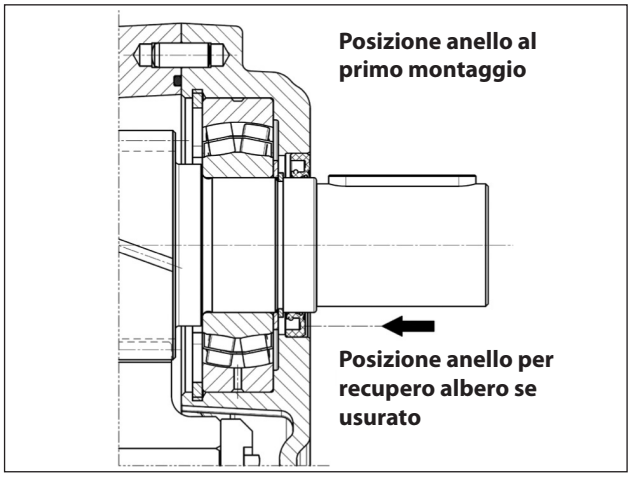


Fig. 90

**Per evitare di danneggiare il paraolio prestare particolare attenzione all'inserimento della paraolio sul pignone.**

Applicare i coperchi ispezione con O-ring (pos. ①, Fig. 91) e serrare mediante 2+2 viti M6x14 (pos. ①, Fig. 92).
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI.


Fig. 91

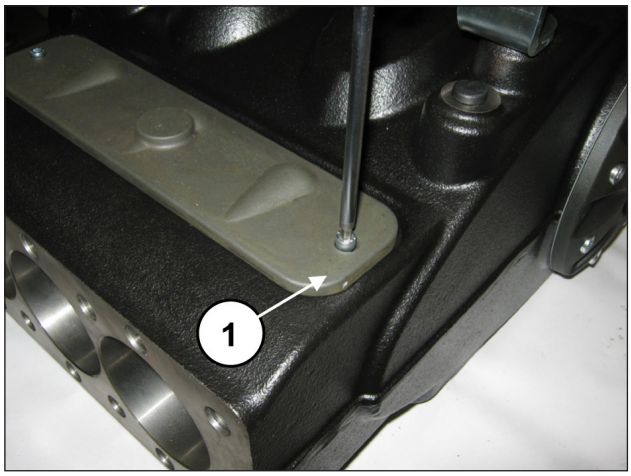


Fig. 92

Inserire la linguetta 14x9x60 nel pignone.
Applicare i tappi e le staffe di sollevamento mediante le apposite viti M16x30 (pos. ①, Fig. 93).
Tarare le viti con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI.


Fig. 93

Inserire l'olio nel carter come indicato nel ***Manuale uso e manutenzione***, par. 7.4.

### 2.1.3 Classi di maggiorazione e minorazione previste

| TABELLA MINORAZIONE PER ALBERO A GOMITI E SEMICUSCINETTI DI BIELLA | | | |
|---|---|---|---|
| **Classi di recupero (mm)** | **Codice Semicuscinetto Superiore** | **Codice Semicuscinetto Inferiore** | **Rettifica sul diametro perno dell'albero (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| TABELLA MAGGIORAZIONE PER CARTER POMPA E GUIDA PISTONE | | |
|---|---|---|
| **Classi di recupero (mm)** | **Codice Guida Pistone** | **Rettifica sulla sede Carter Pompa (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 RIPARAZIONE DELLA PARTE IDRAULICA

### 2.2.1 Smontaggio della testata MW32 MW36 MW40 - gruppi valvole

La testata necessita di una manutenzione preventiva come indicato nel ***Manuale uso e manutenzione***.
Gli interventi sono limitati all'ispezione o sostituzione delle valvole, qualora necessario.
Per l'estrazione dei gruppi valvola operare come segue:
Svitare le 8 viti M16x55 del coperchio valvole (pos. ①, Fig. 94) e rimuovere il coperchio (pos. ①, Fig. 95).

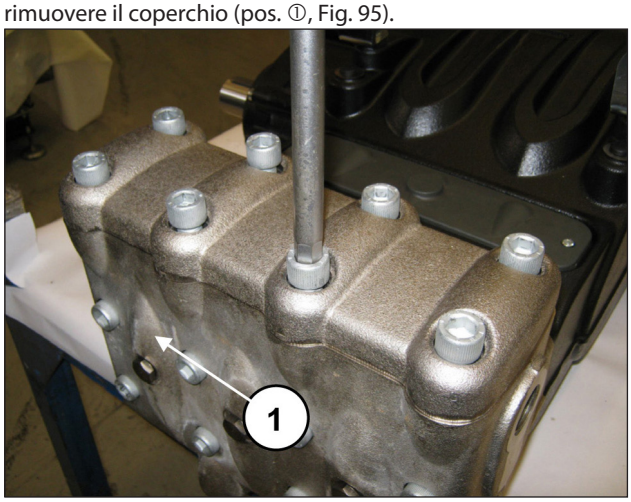


Fig. 94

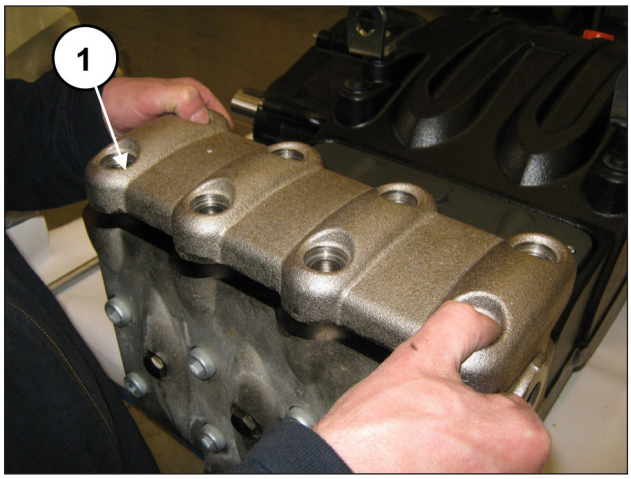


Fig. 95

Estrarre il tappo valvola mediante l'utilizzo di un estrattore a massa battente da applicare al foro M10 del tappo valvola (pos. ①, Fig. 96).

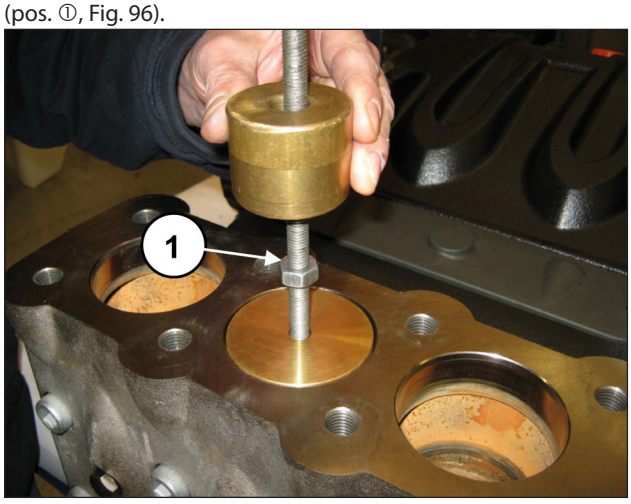


Fig. 96

Sfilare la molla (pos. ①, Fig. 97).

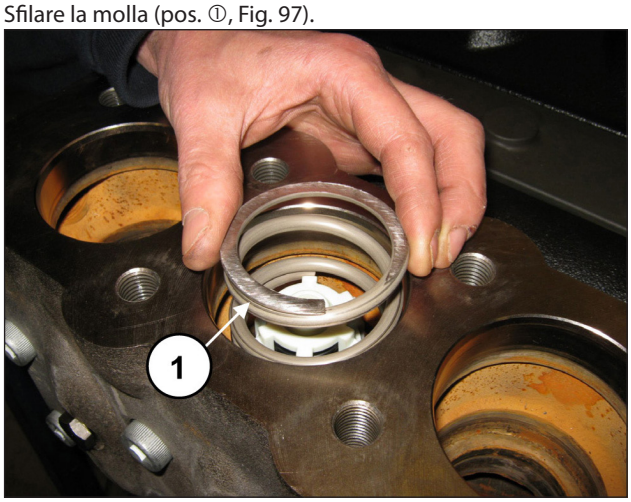


Fig. 97

Estrarre il gruppo valvola mandata mediante l'utilizzo di un estrattore a massa battente (cod. 27516400) da applicare al foro M10 del guida valvola (pos. ①, Fig. 98).


Fig. 98

Estrarre l'anello distanziale sede valvola (pos. ①, Fig. 99).

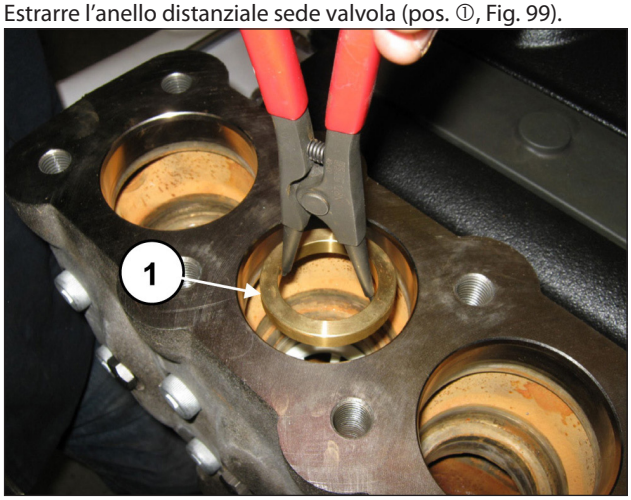


Fig. 99

Estrarre il distanziale guida valvola inserendo una chiave esagonale da 8 mm nell'apposita sede e facendo leva per facilitarne la rimozione (pos. ①, Fig. 100).

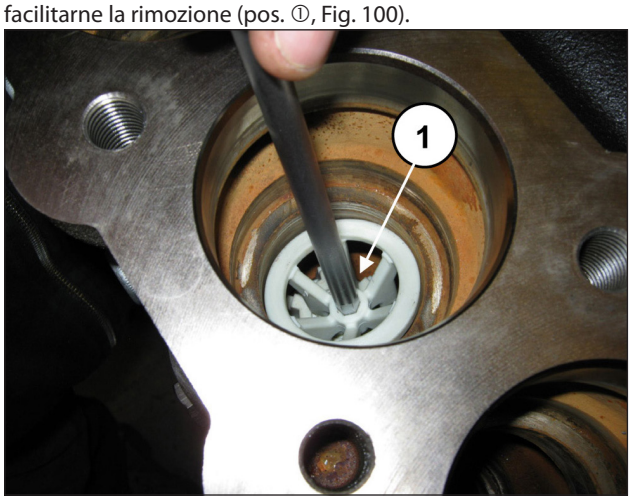


Fig. 100

Estrarre il gruppo valvola aspirazione mediante l'utilizzo di un estrattore a massa battente (cod. 27516400) da applicare al foro M10 del guida valvola (pos. ①, Fig. 101).

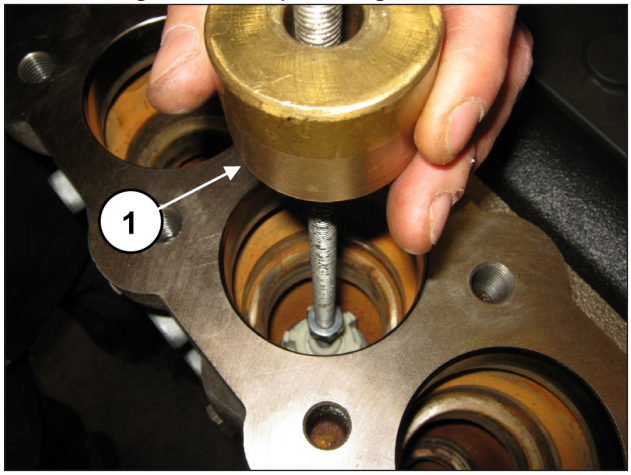


Fig. 101

**Qualora l'estrazione del gruppo valvola di aspirazione risultasse particolarmente difficoltosa (ad es. per incrostazioni dovute ad un prolungato inutilizzo della pompa) utilizzare l'attrezzo estrattore cod. 27516200 (pos. ①, Fig. 102) ed agire come indicato.**

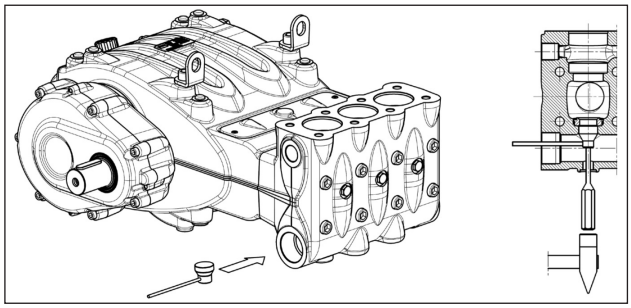

Fig. 102

Svitare il dispositivo apertura valvole mediante chiave da 30 mm (pos. ①, Fig. 103).

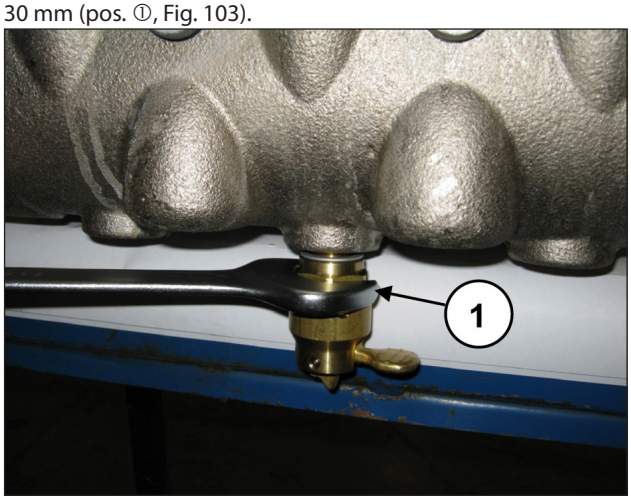


Fig. 103

Smontare i gruppi valvola di aspirazione e mandata avvitando una vite M10 in modo da premere sulla guida interna ed estrarre il guida valvola dalla sede valvola (pos. ①, Fig. 104).

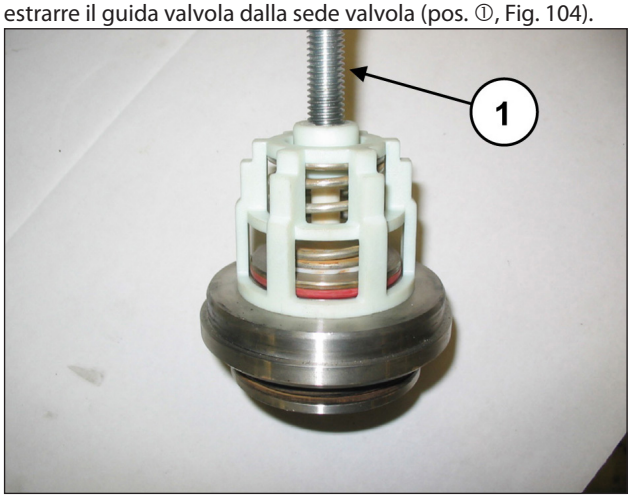


Fig. 104

Completare lo smontaggio togliendo i tappi G1/4" frontali della testata.
Ora è possibile togliere la testata dal carter pompa provvedendo a svitare le 8 viti M16x180 (pos. ①, Fig. 105).
Durante lo smontaggio della testata prestare particolare attenzione a non urtare i pistoni (pos. ①, Fig. 106).

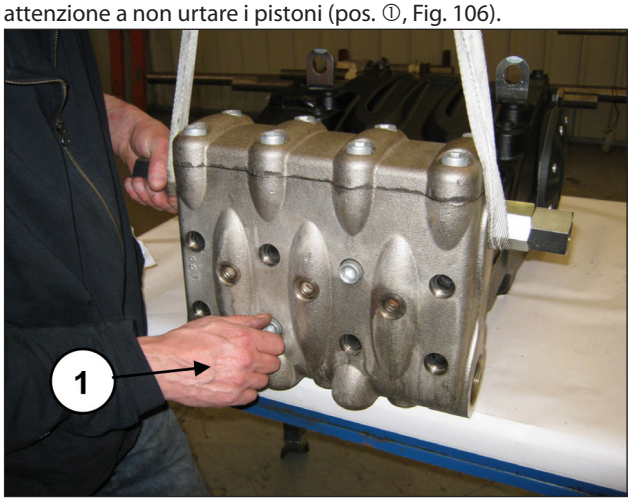


Fig. 105

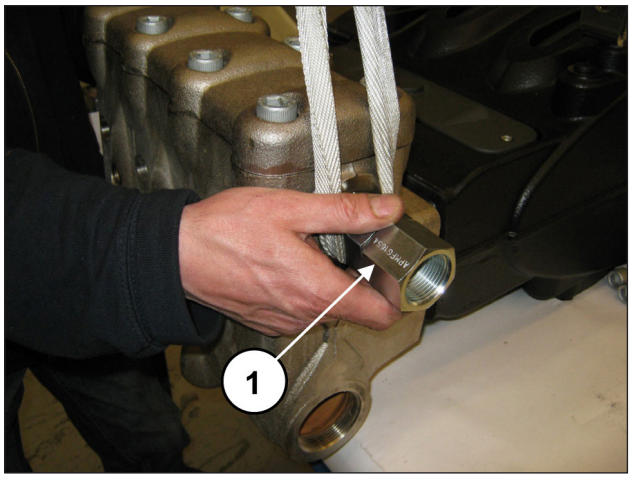


Fig. 106

### 2.2.2 Montaggio della testata MW32 MW36 MW40 - gruppi valvole

**Prestare particolare attenzione allo stato di usura dei vari componenti e sostituirli qualora necessario.**
**Ad ogni ispezione delle valvole sostituire tutti gli O-ring sia dei gruppi valvola che dei tappi valvola.**

**Prima di riposizionare i gruppi valvola pulire ed asciugare perfettamente i relativi alloggiamenti nella testata indicati dalle frecce (pos. ①, Fig. 107).**

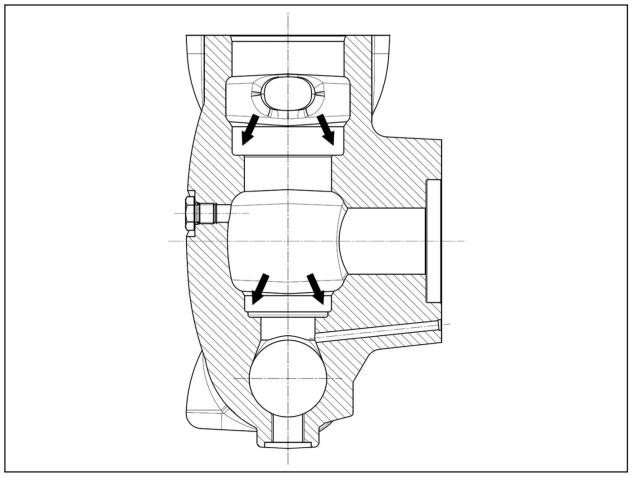

Fig. 107

Procedere al rimontaggio seguendo il procedimento inverso allo smontaggio indicato al par. 2.2.1.

Assemblare i gruppi valvola di aspirazione e mandata (Fig. 108 e Fig. 109) prestando attenzione a non invertire le molle precedentemente smontate.
Per facilitare l'inserimento della guida valvola nella sede si può utilizzare un tubo che appoggi sui pianetti orizzontali della guida (Fig. 110) e utilizzare una massa battente agendo su tutta la circonferenza.

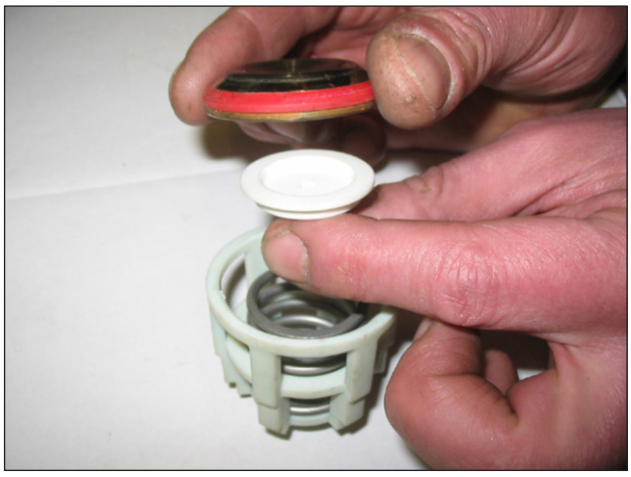

Fig. 108

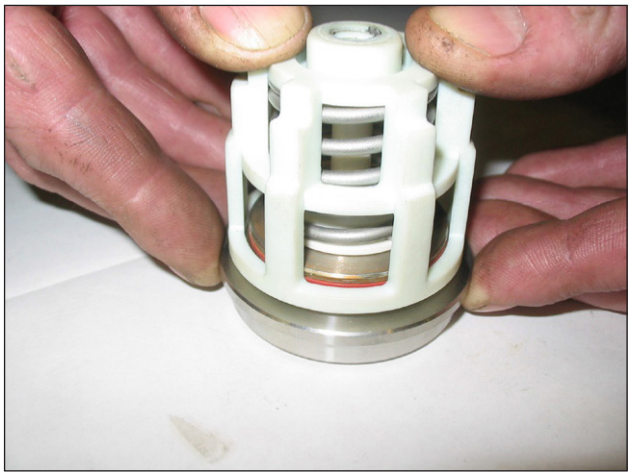

Fig. 109

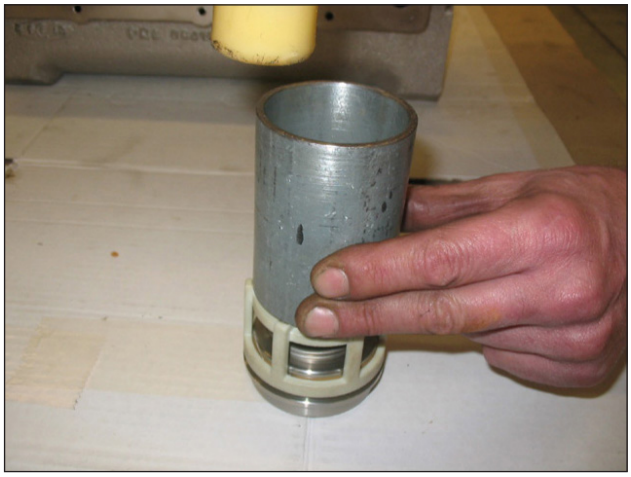

Fig. 110

**Procedere con l'inserimento dei gruppi valvola (aspirazione e mandata) nella testata prestando attenzione alla sequenza corretta di inserimento degli O-ring e degli anelli antiestrusione.**

La corretta sequenza di montaggio dei gruppi valvola nella testata è la seguente:
Inserire l'anello antiestrusione, pos. esploso n. 5 (pos. ①, Fig. 111).

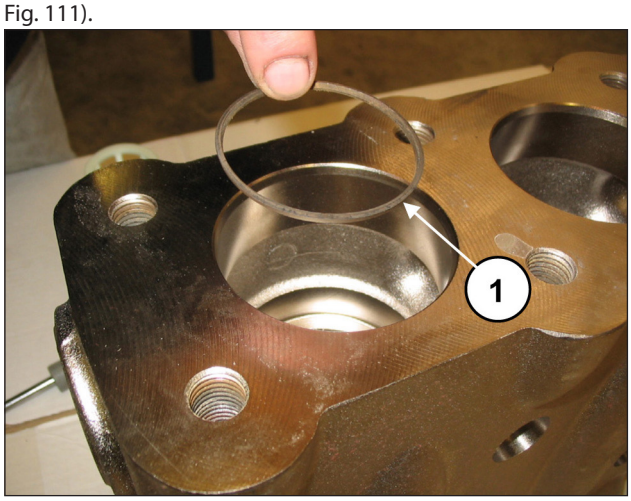


Fig. 111

Inserire l'O-ring, pos. esploso n. 6 (pos. ①, Fig. 112).

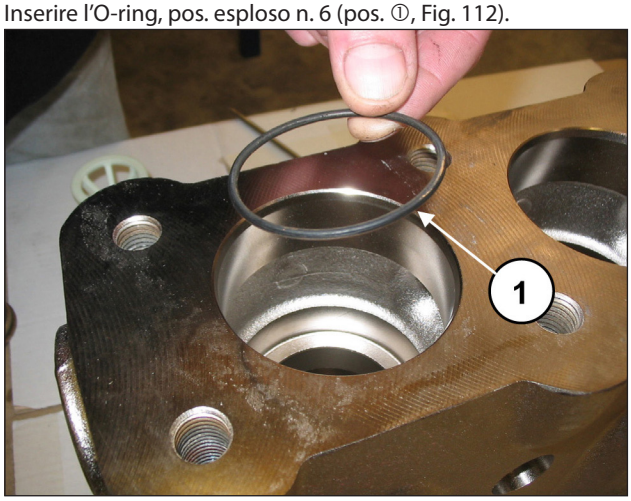


Fig. 112

Accertarsi che O-ring e anello antiestrusione vengano alloggiati perfettamente in sede.
Inserire il gruppo valvola di aspirazione (pos. ①, Fig. 113) e successivamente il distanziale (pos. ①, Fig. 114).
Il gruppo valvola completo deve essere inserito completamente a fondo e presentarsi come in pos. ①, Fig. 114.

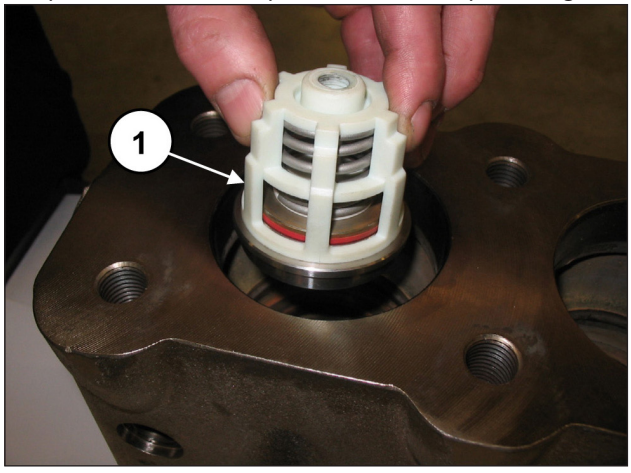


Fig. 113

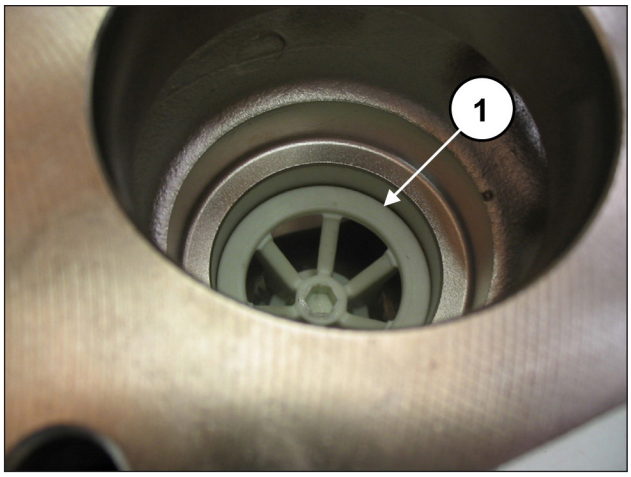


Fig. 114

Inserire l'anello distanziale sede valvola (pos. ①, Fig. 115), in appoggio sul distanziale (pos. ①, Fig. 116).

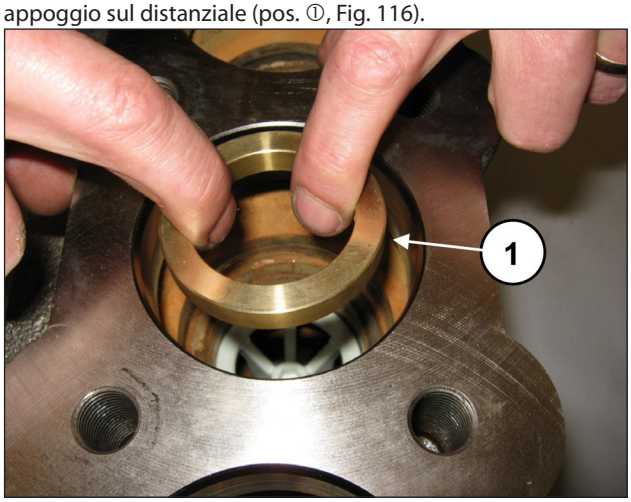


Fig. 115

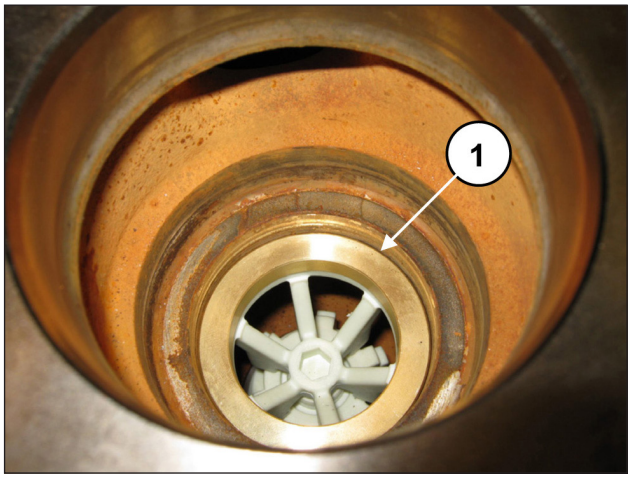


Fig. 116

Montare O-ring, pos. esploso n. 6 (pos. ①, Fig. 117) e anello antiestrusione, pos. esploso n. 16 (pos. ②, Fig. 117) sulla sede valvola di mandata.

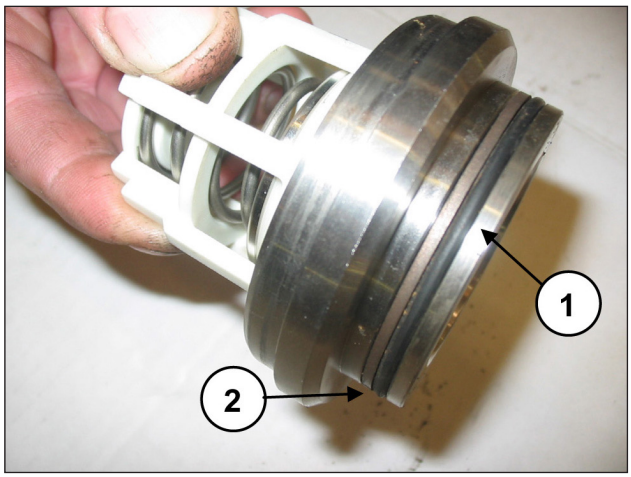


Fig. 117

Inserire il gruppo valvola di mandata (pos. ①, Fig. 118). Il gruppo valvola deve essere inserito completamente a fondo e presentarsi come in pos. ①, Fig. 119.

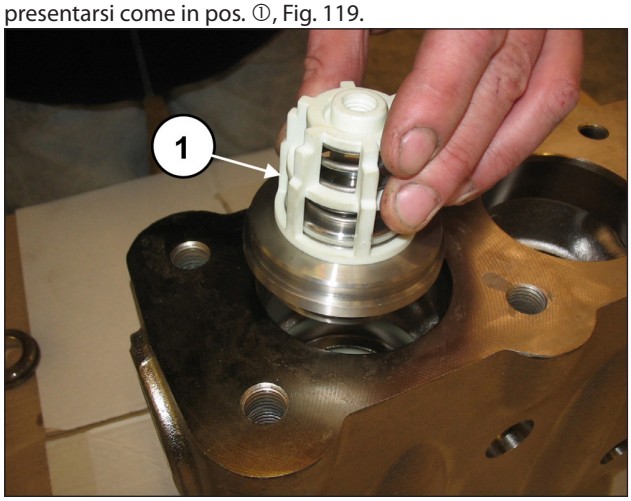


Fig. 118

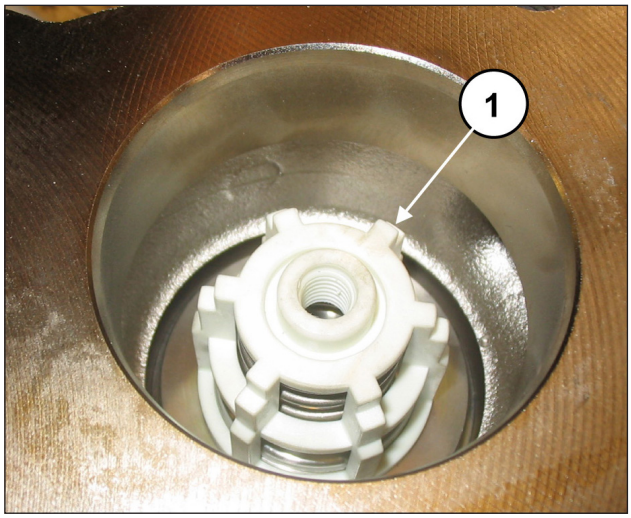


Fig. 119

Inserire l'anello antiestrusione, pos. esploso n. 18 (pos. ①, Fig. 120).

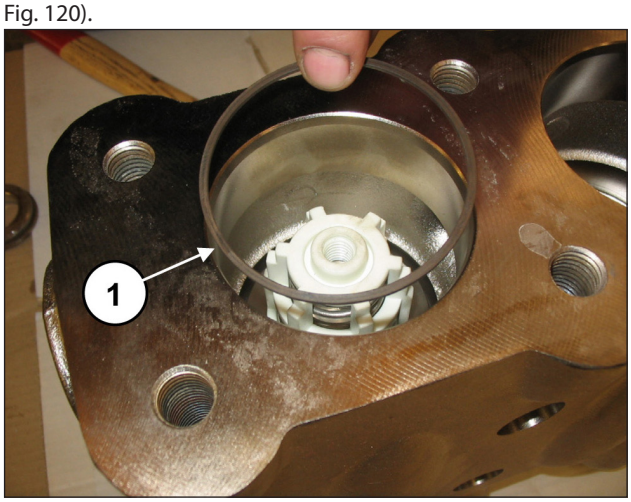


Fig. 120

Inserire l'O-ring, pos. esploso n. 19 (pos. ①, Fig. 121).

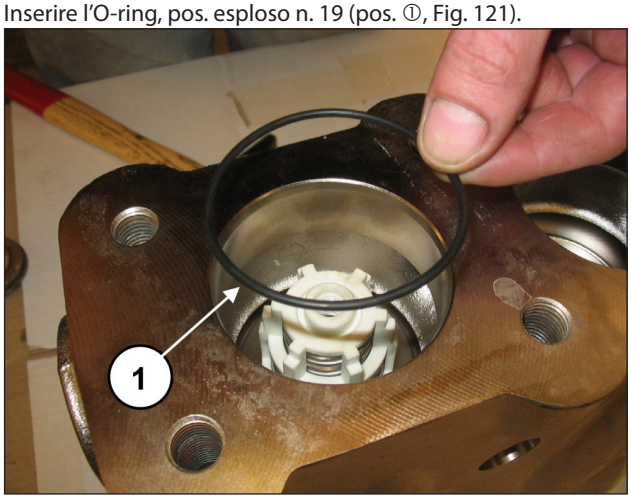


Fig. 121

**Prestare particolare attenzione all'inserimento dell'O-ring indicato in pos. ①, Fig. 122.**
**Si consiglia l'utilizzo dell'attrezzo cod. 27516000 per evitare che l'O-ring possa tagliarsi durante l'inserimento.**

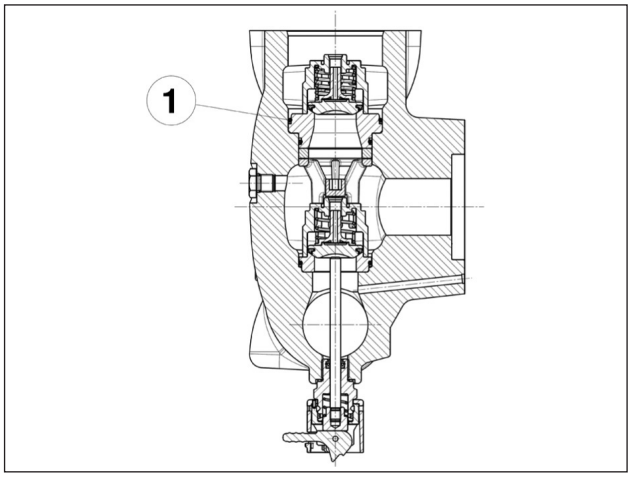


Fig. 122

Inserire l'anello sede valvola (pos. ①, Fig. 123) e la molla (pos. ①, Fig. 124).

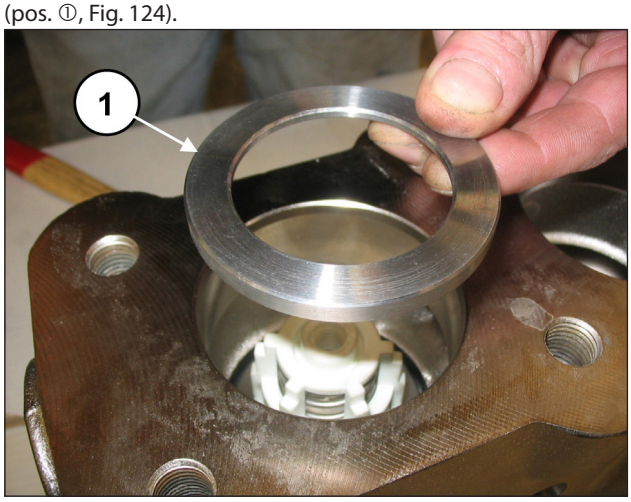


Fig. 123

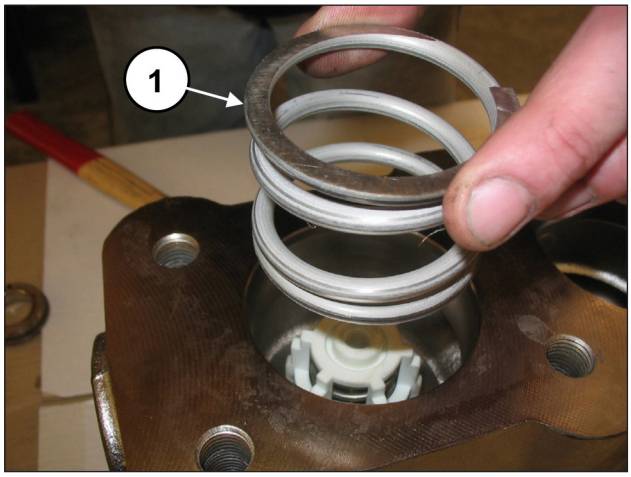


Fig. 124

Montare O-ring, pos. esploso n. 19 (pos. ①, Fig. 125) e anello antiestrusione, pos. esploso n. 23 (pos. ②, Fig. 125) sul tappo valvola di mandata.

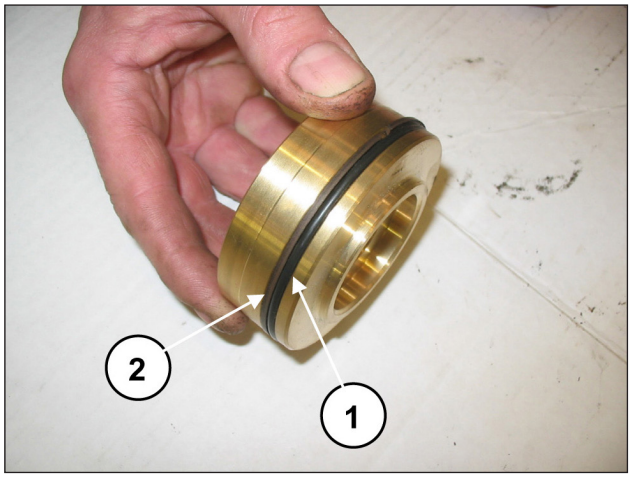


Fig. 125

Inserire il tappo valvola completo di O-ring e anelli antiestrusione.
Dopo aver terminato il montaggio dei gruppi valvola e del tappo valvola applicare il coperchio valvole (pos. ①, Fig. 126) e avvitare le 8 viti M16x55 (pos. ①, Fig. 127).

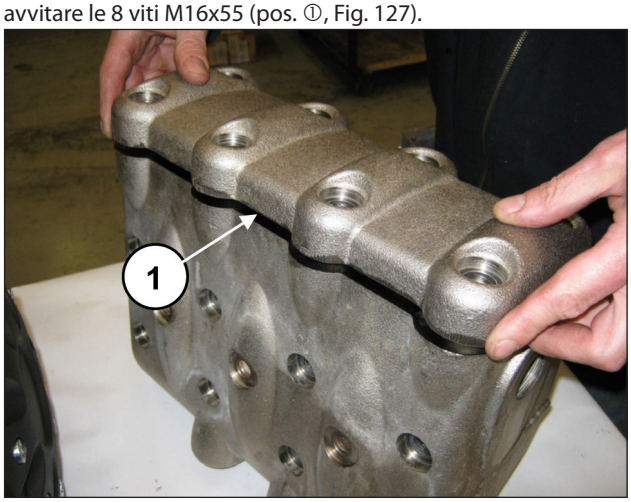


Fig. 126

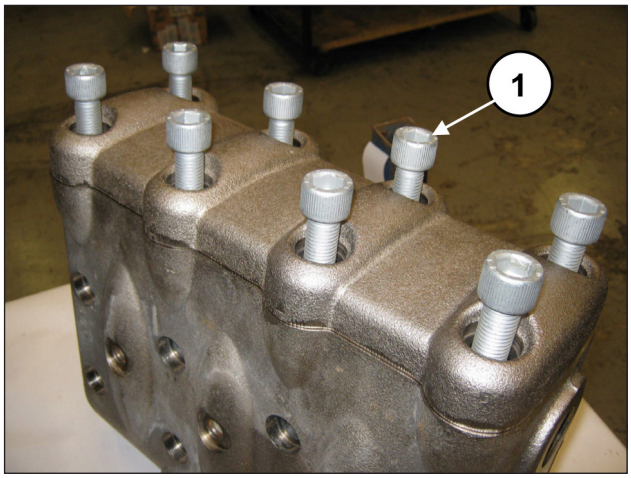


Fig. 127

Applicare i 6 O-ring frontali del carter pompa (pos. ①, Fig. 128).

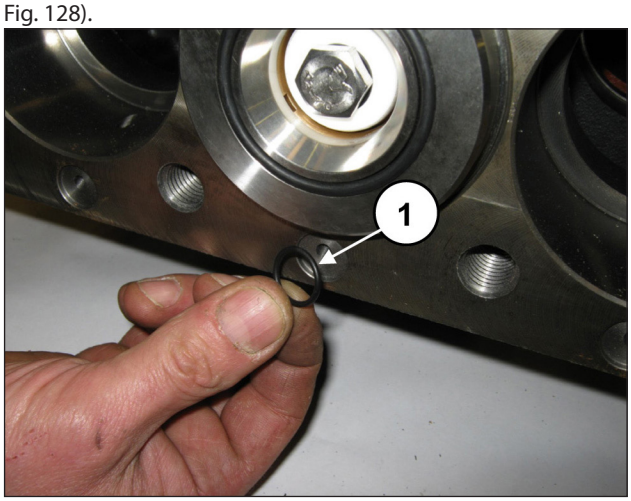


Fig. 128

Montare la testata sul carter pompa (pos. ①, Fig. 129) facendo attenzione a non urtare i pistoni ed avvitare le 8 viti M16x180 (pos. ①, Fig. 130).

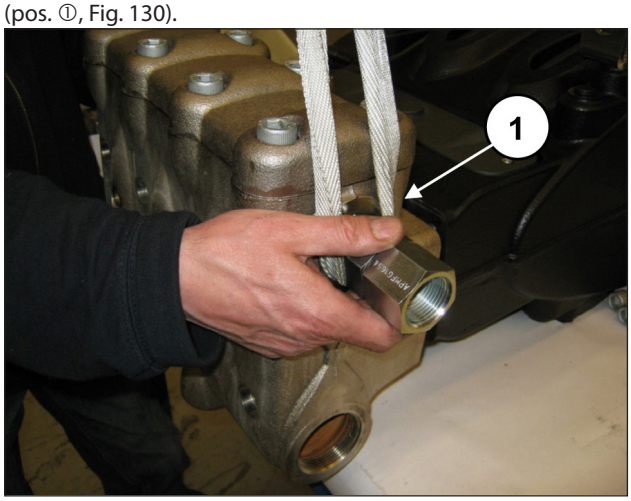


Fig. 129

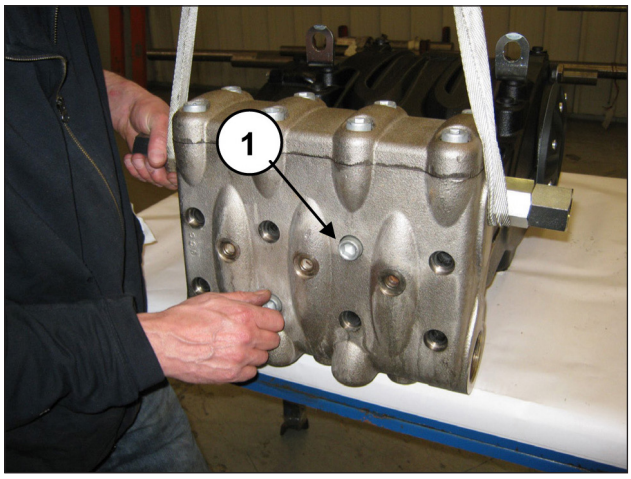


Fig. 130

Procedere alla taratura delle viti M16x180 con chiave dinamometrica come indicato nel capitolo 3.

**Serrare le 8 viti M16x180 partendo dalle 4 viti interne in modo incrociato, per poi proseguire con le 4 viti esterne, sempre serrando in modo incrociato.**

Tarare le viti M16x55 del coperchio con chiave dinamometrica come indicato nel capitolo 3.
Applicare i dispositivi apertura valvole (pos. ①, Fig. 131) ed avvitarli mediante chiave da 30 mm (pos. ①, Fig. 132).

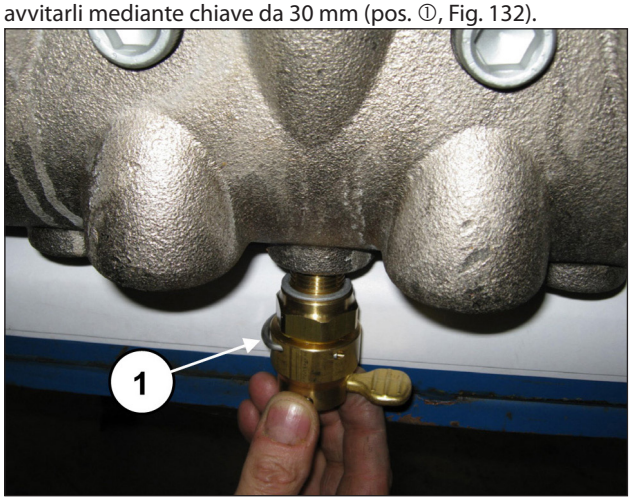


Fig. 131

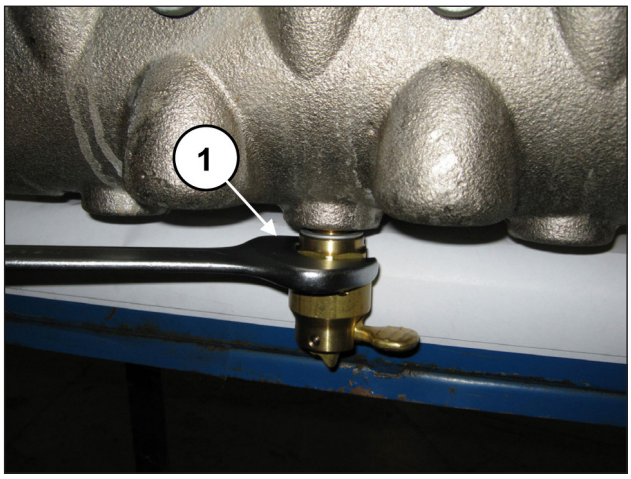


Fig. 132

Applicare i tappi G1/4" frontali della testata con relativo O-ring. Procedere alla taratura dei tappi G1/4" con chiave dinamometrica come indicato nel capitolo 3.

### 2.2.3 Smontaggio della testata MW45 MW50 MW55 - gruppi valvole

La testata necessita di una manutenzione preventiva come indicato nel ***Manuale uso e manutenzione***.
Gli interventi sono limitati all'ispezione o sostituzione delle valvole, qualora necessario.
Per l'estrazione dei gruppi valvola operare come segue:
Svitare le 8 viti M16x45 del coperchio valvole mandata (pos. ①, Fig. 133) e rimuovere il coperchio (pos. ①, Fig. 134).

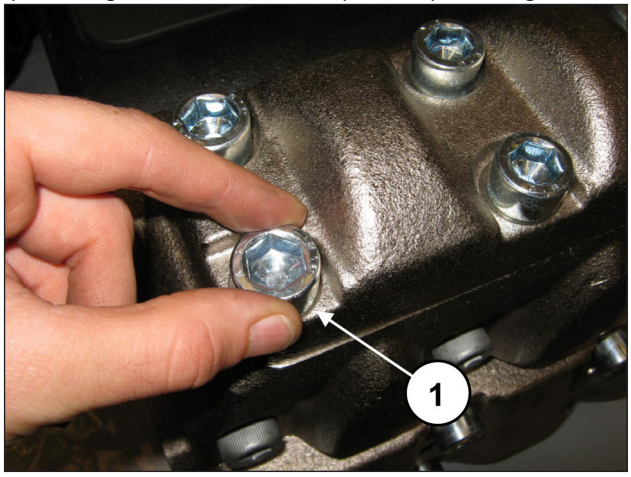


Fig. 133

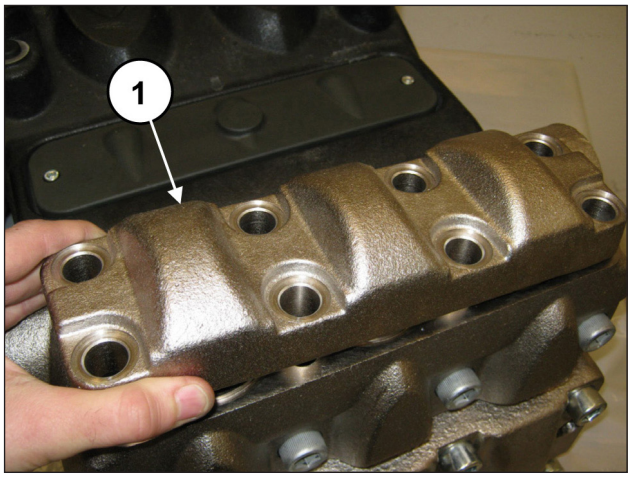


Fig. 134

Estrarre il gruppo valvola mandata mediante l'utilizzo di un estrattore a massa battente (cod. 27516400) da applicare al foro M10 del guida valvola (pos. ①, Fig. 135).

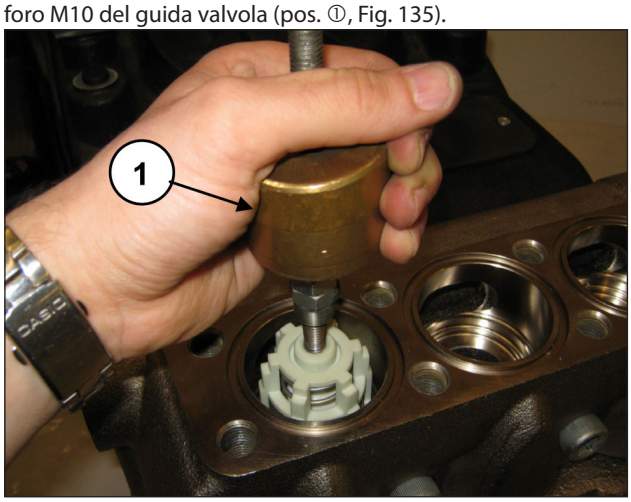


Fig. 135

Svitare le 8 viti M16x45 del coperchio valvole aspirazione (pos. ①, Fig. 136) e rimuovere il coperchio (pos. ①, Fig. 137).

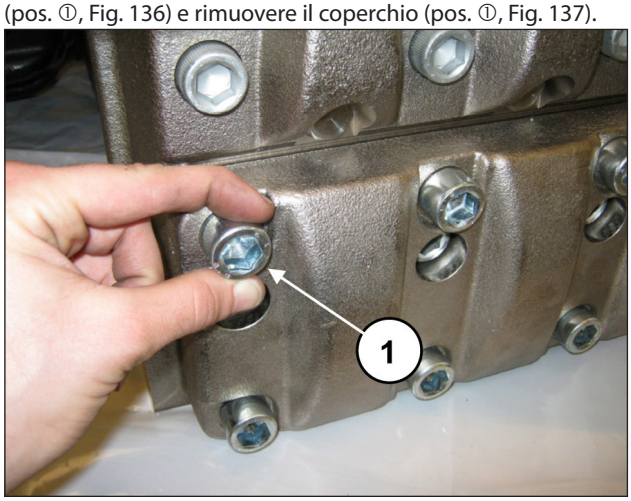


Fig. 136

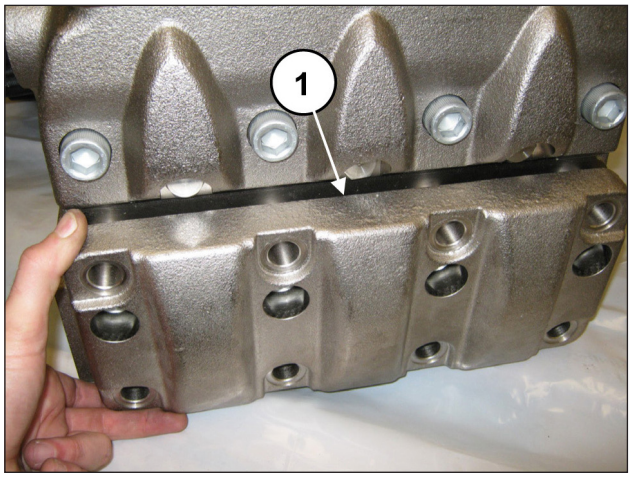


Fig. 137

Estrarre il gruppo valvola aspirazione mediante l'utilizzo di un estrattore a massa battente (cod. 27516400) da applicare al foro M10 del guida valvola (pos. ①, Fig. 138).


Fig. 138

Svitare il dispositivo apertura valvole mediante chiave da 30 mm (pos. ①, Fig. 139).

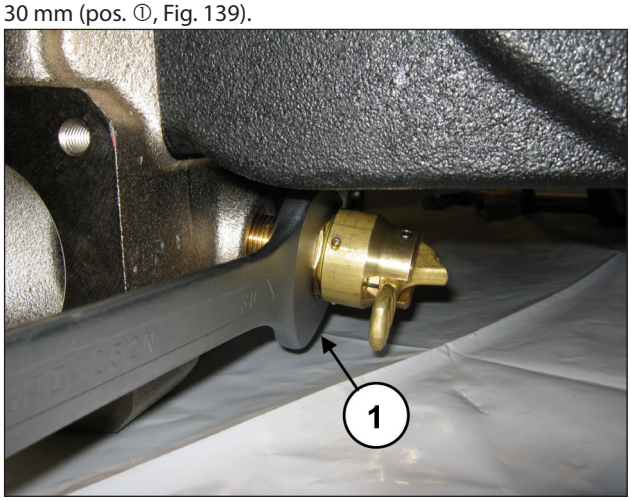


Fig. 139

Smontare i gruppi valvola di aspirazione e mandata avvitando una vite M10 in modo da premere sulla guida interna ed estrarre il guida valvola dalla sede valvola (pos. ①, Fig. 140).

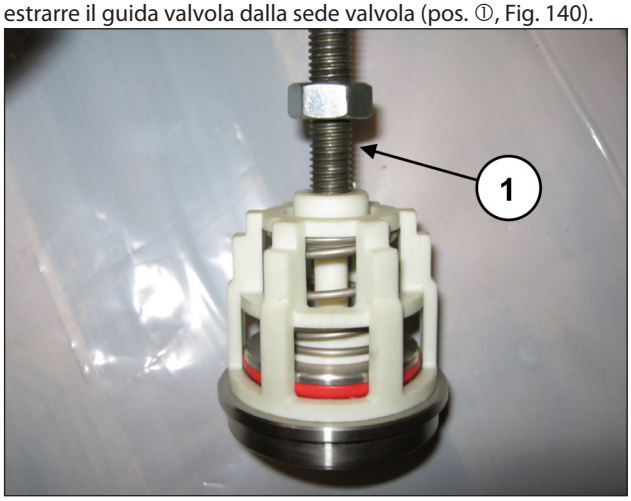


Fig. 140

Completare lo smontaggio togliendo i tappi G1/4" frontali e i tappi G1/2" nella parte inferiore della testata.
Ora è possibile togliere la testata dal carter pompa provvedendo a svitare le 8 viti M16x150 (pos. ①, Fig. 141).
Durante lo smontaggio della testata prestare particolare attenzione a non urtare i pistoni (Fig. 142).

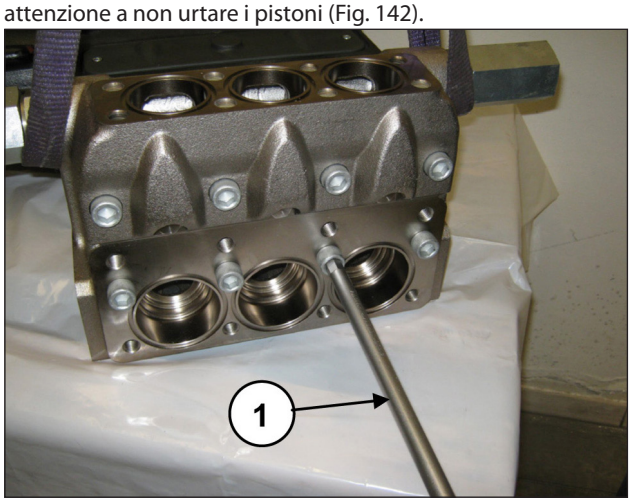


Fig. 141

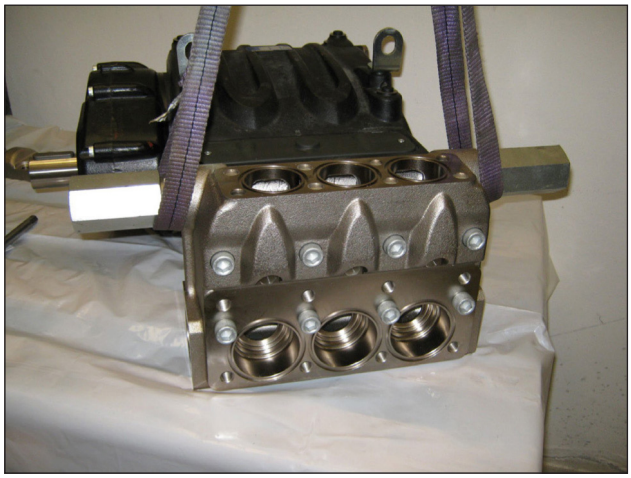

Fig. 142

### 2.2.4 Montaggio della testata MW45 MW50 MW55 - gruppi valvole

**Prestare particolare attenzione allo stato di usura dei vari componenti e sostituirli qualora necessario.**
**Ad ogni ispezione delle valvole sostituire tutti gli O-ring sia dei gruppi valvola che dei tappi valvola.**

**Prima di riposizionare i gruppi valvola pulire ed asciugare perfettamente i relativi alloggiamenti nella testata indicati dalle frecce (pos. ①, Fig. 143).**

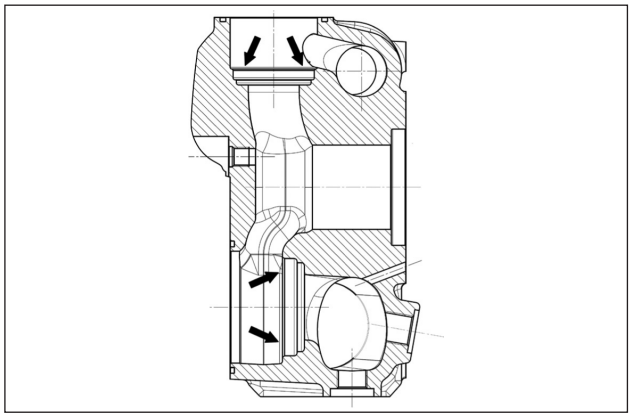

Fig. 143

Procedere al rimontaggio seguendo il procedimento inverso allo smontaggio indicato al par. 2.2.3.
Assemblare i gruppi valvola di aspirazione e mandata (Fig. 144 e Fig. 145).
Per facilitare l'inserimento della guida valvola nella sede si può utilizzare un tubo che appoggi sui pianetti orizzontali della guida (Fig. 146) e utilizzare una massa battente agendo su tutta la circonferenza

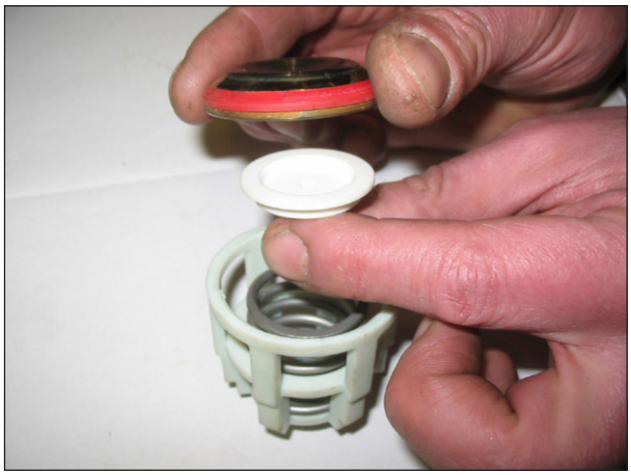

Fig. 144

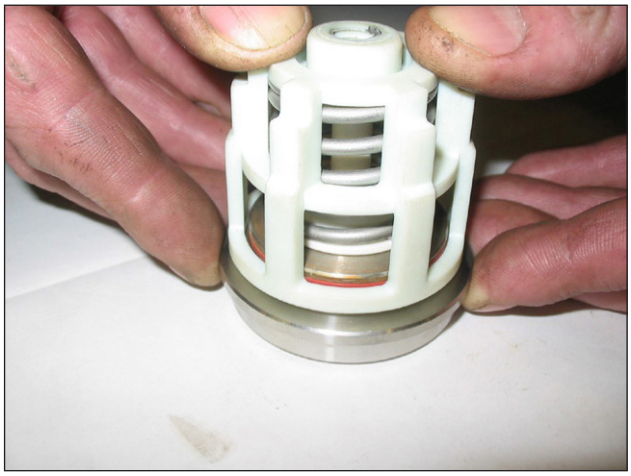

Fig. 145

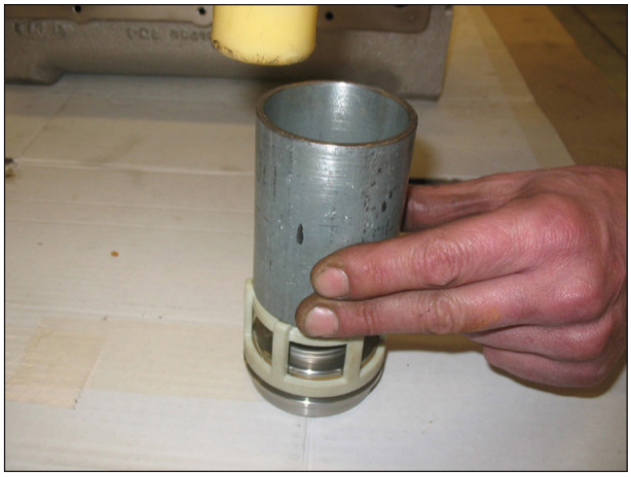

Fig. 146

**Procedere con l'inserimento dei gruppi valvola (aspirazione e mandata) nella testata prestando attenzione alla sequenza corretta di inserimento degli O-ring e degli anelli antiestrusione.**

La corretta sequenza di montaggio dei gruppi valvola nella testata è la seguente:
In aspirazione inserire l'anello antiestrusione, pos. esploso n. 6 (pos. ①, Fig. 147).

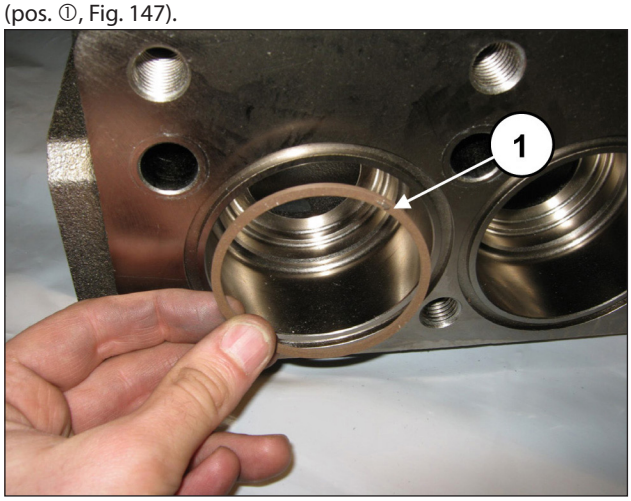


Fig. 147

Inserire l'O-ring, pos. esploso n. 7 (pos. ①, Fig. 148).

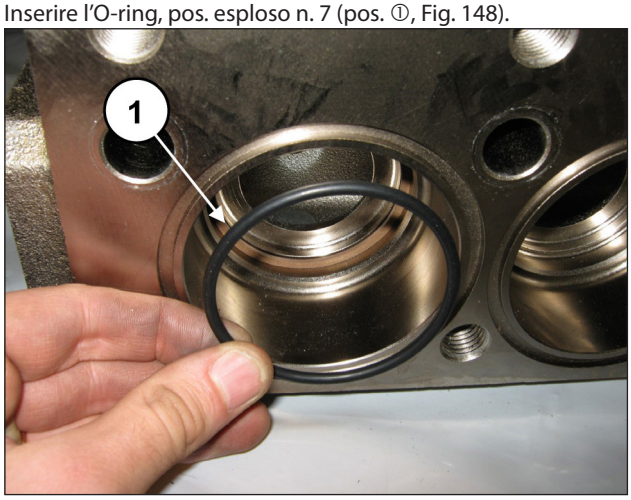


Fig. 148

Accertarsi che O-ring e anello antiestrusione vengano alloggiati perfettamente in sede.
Inserire il gruppo valvola di aspirazione (pos. ①, Fig. 149).
Il gruppo valvola completo deve essere inserito completamente a fondo e presentarsi come in pos. ①, Fig. 150.


Fig. 149

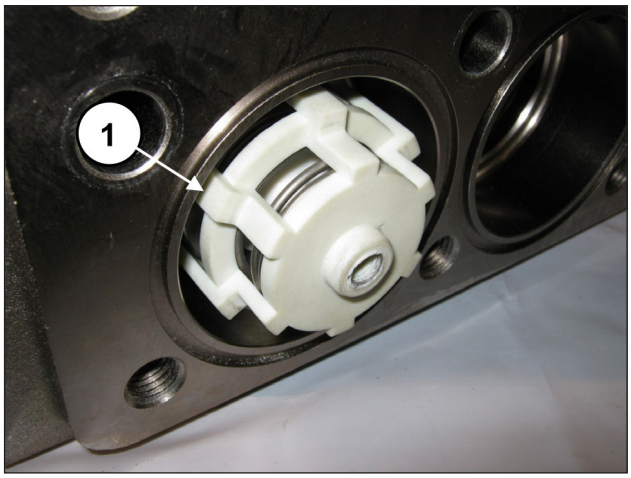


Fig. 150

Applicare l'O-ring frontale alle valvole di aspirazione (pos. ①, Fig. 151).

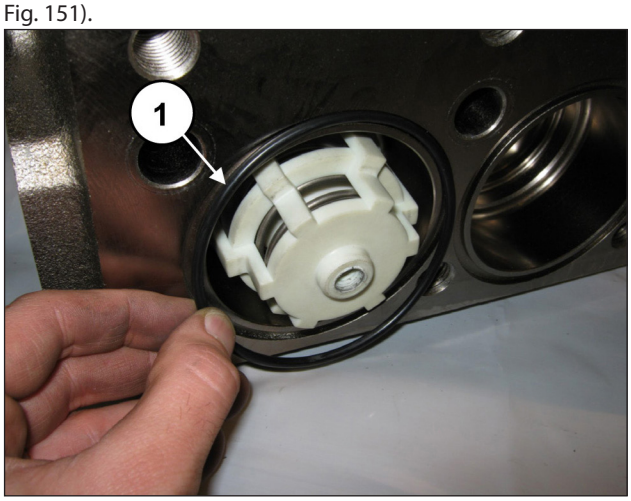


Fig. 151

Dopo aver terminato il montaggio dei gruppi valvola aspirazione applicare il coperchio valvole aspirazione (pos. ①, Fig. 152) e avvitare le 8 viti M16x45 (pos. ①, Fig. 153).

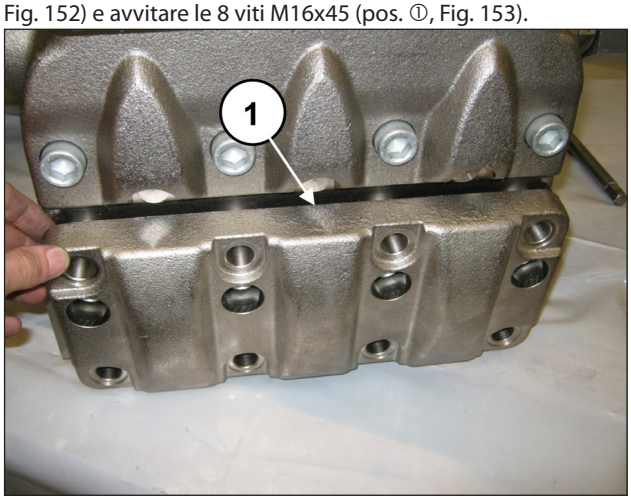


Fig. 152

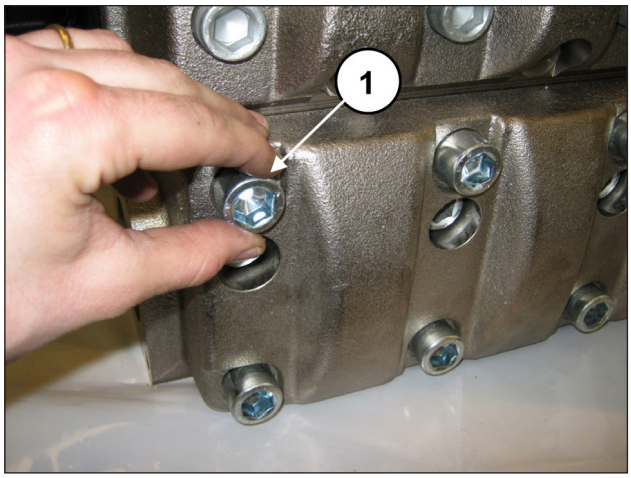


Fig. 153

Proseguire con il montaggio dei gruppi valvola di mandata:
Inserire l'anello antiestrusione, pos. esploso n. 23 (pos. ①, Fig. 154).

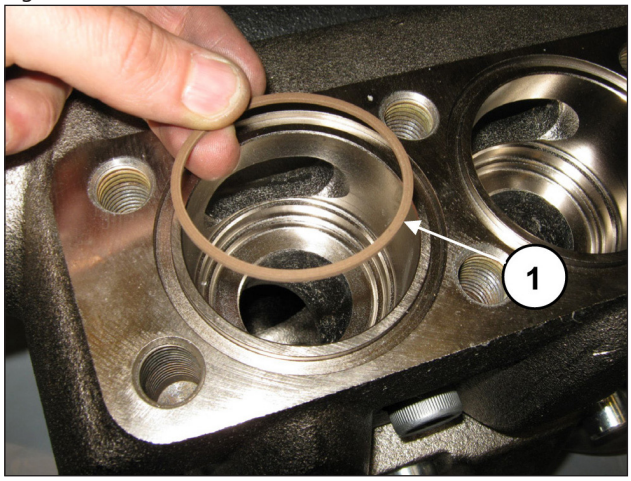


Fig. 154

Inserire l'O-ring, pos. esploso n. 24 (pos. ①, Fig. 155).

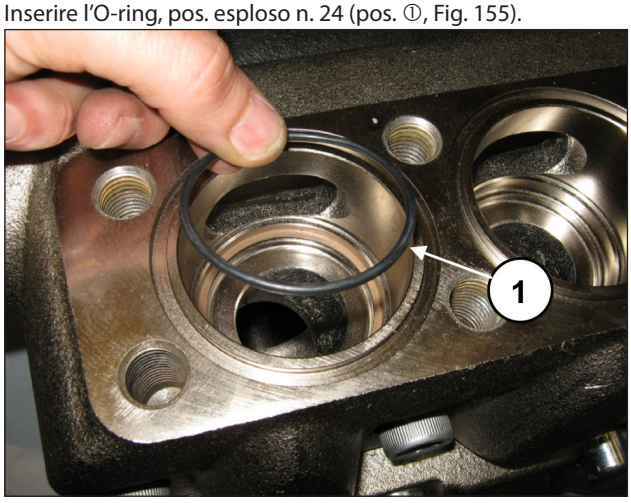


Fig. 155

Accertarsi che O-ring e anello antiestrusione vengano alloggiati perfettamente in sede.
Inserire il gruppo valvola di mandata (pos. ①, Fig. 156).
Il gruppo valvola completo deve essere inserito completamente a fondo e presentarsi come in pos. ①, Fig. 157.

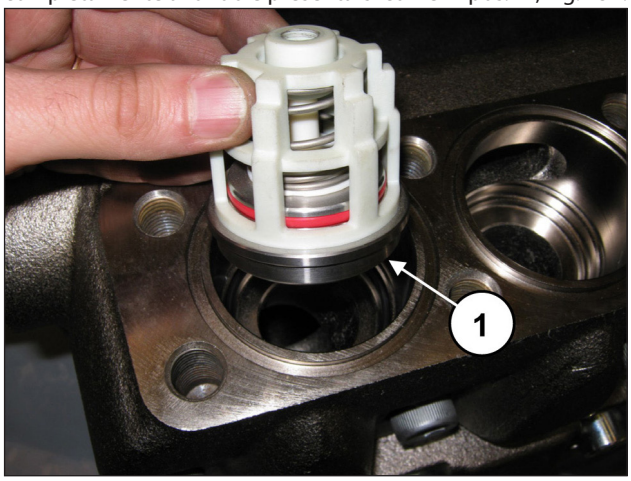


Fig. 156

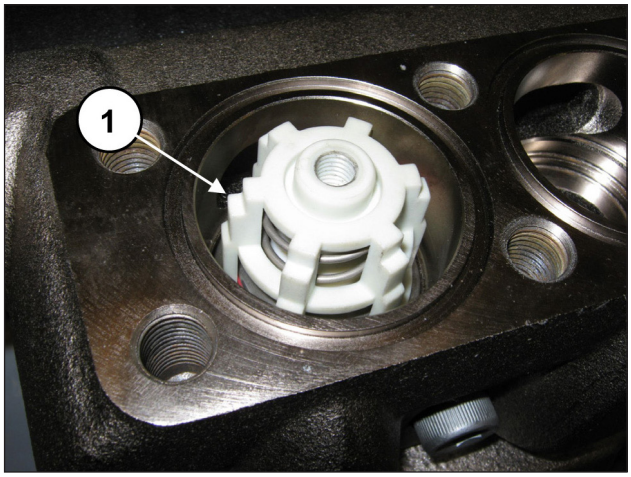


Fig. 157

Applicare l'O-ring frontale alle valvole di mandata (pos. ①, Fig. 158).

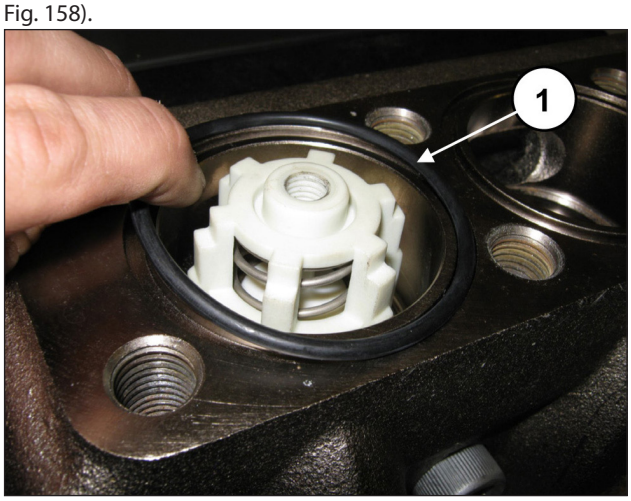


Fig. 158

Dopo aver terminato il montaggio dei gruppi valvola di mandata applicare il coperchio valvole mandata (pos. ①, Fig. 159) e avvitare le 8 viti M16x45 (pos. ①, Fig. 160).

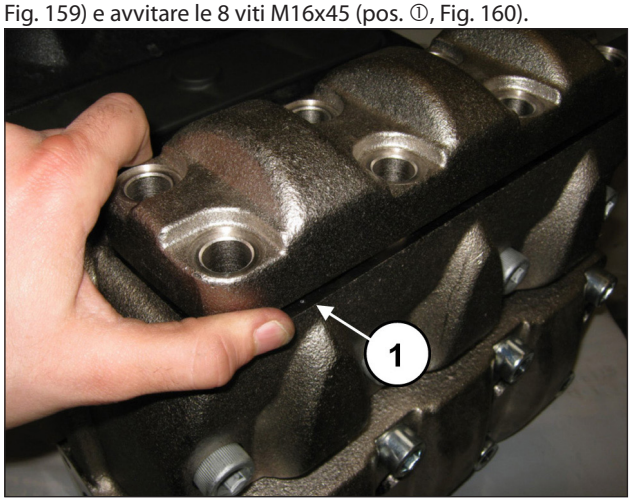


Fig. 159

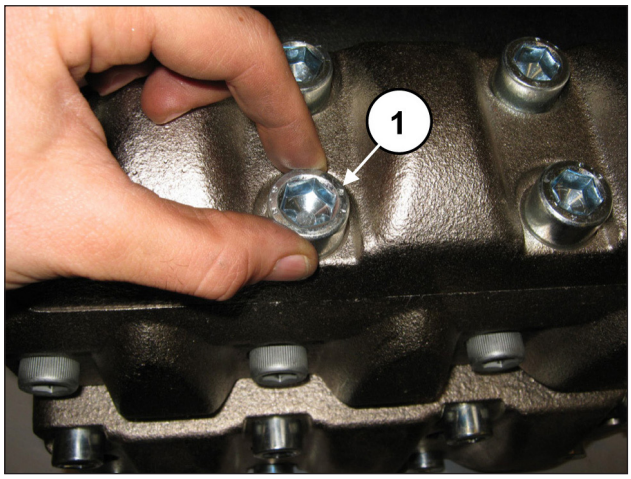


Fig. 160

Applicare i 6 O-ring frontali del carter pompa (pos. ①, Fig. 161).

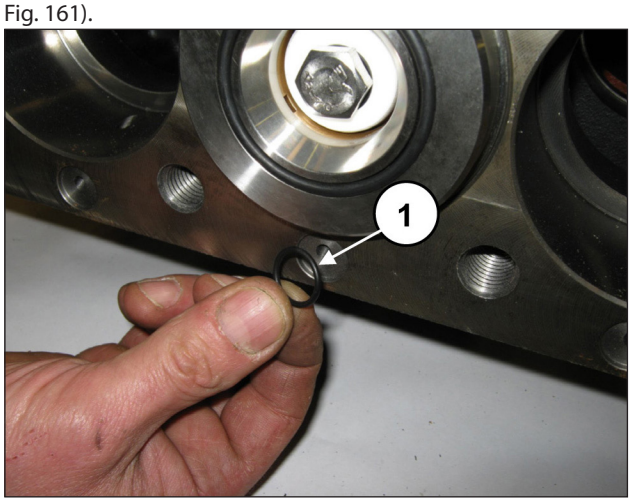


Fig. 161

Montare la testata sul carter pompa (pos. ①, Fig. 162) facendo attenzione a non urtare i pistoni ed avvitare le 8 viti M16x150 (pos. ①, Fig. 163).

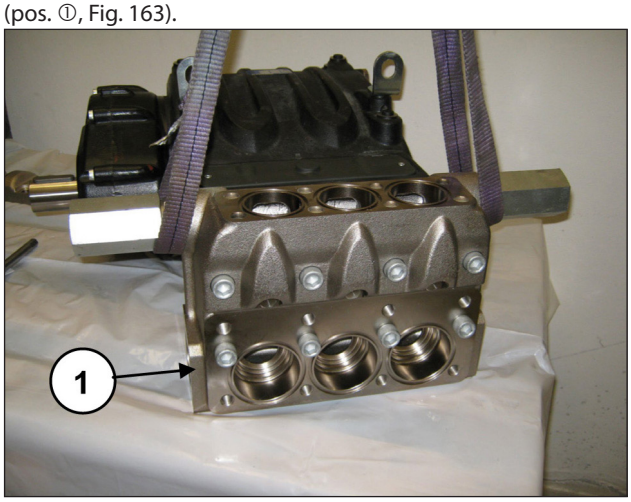


Fig. 162

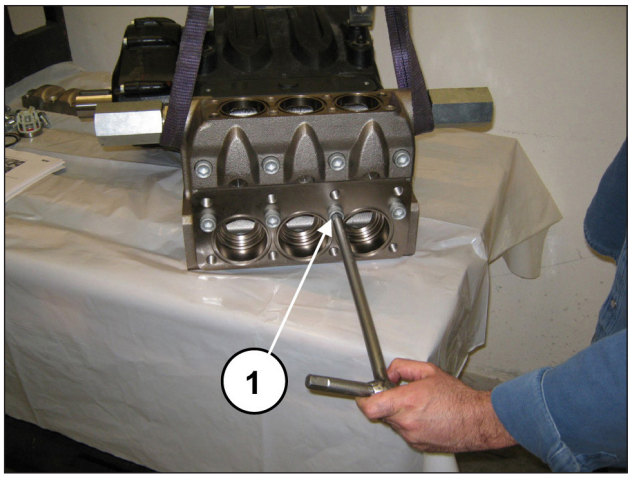


Fig. 163

Procedere alla taratura delle viti M16x150 con chiave dinamometrica come indicato nel capitolo 3.

**Serrare le 8 viti M16x150 partendo dalle 4 viti interne in modo incrociato, per poi proseguire con le 4 viti esterne, sempre serrando in modo incrociato**

Tarare le viti M16x45 dei coperchi di aspirazione e mandata con chiave dinamometrica come indicato nel capitolo 3 TARATURE SERRAGGIO VITI.
Applicare i dispositivi apertura valvole (pos. ①, Fig. 164) ed avvitarli mediante chiave da 30 mm (pos. ①, Fig. 165).

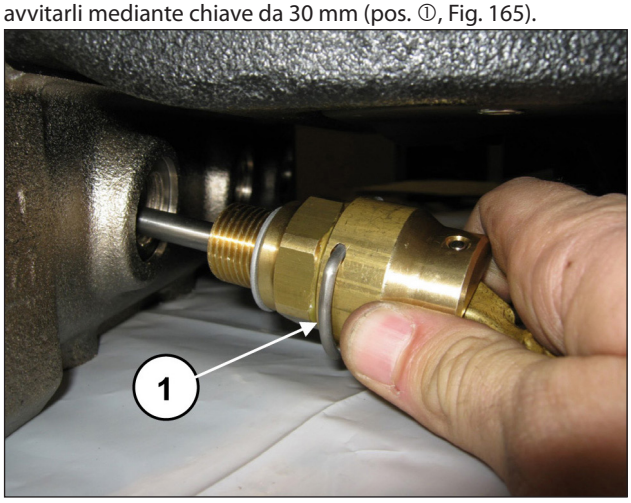


Fig. 164

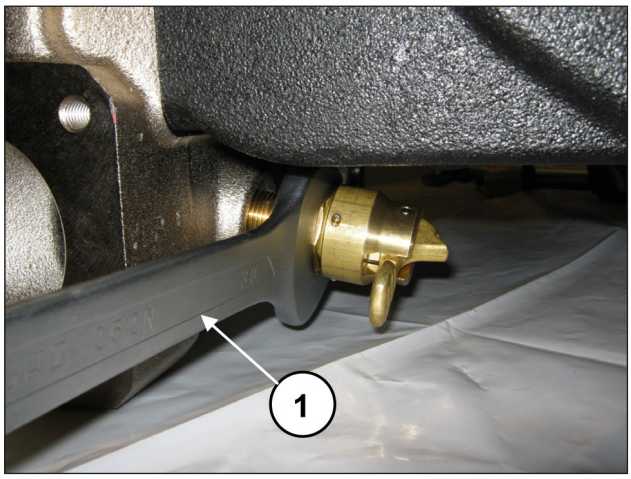


Fig. 165

Applicare i tappi G1/2" alla parte inferiore della testata con relative rosette.
Procedere alla taratura dei tappi G1/2" con chiave dinamometrica come indicato nel capitolo 3.
Applicare i tappi G1/4" frontali della testata con relativo O-ring.
Procedere alla taratura dei tappi G1/4" con chiave dinamometrica come indicato nel capitolo 3.

### 2.2.5 Smontaggio del gruppo pistone - supporti - tenute

Il gruppo pistone necessita di una verifica periodica come indicato nella tabella di manutenzione preventiva del ***Manuale uso e manutenzione***.
Gli interventi sono limitati al solo controllo visivo dell'eventuale drenaggio dal foro presente sul coperchio di ispezione inferiore. Qualora si presentassero anomalie / oscillazioni sul manometro di mandata o gocciolamenti dal foro di drenaggio sarà necessario procedere al controllo e alla eventuale sostituzione del pacco tenute.
Per l'estrazione dei gruppi pistone operare come segue:
Per accedere al gruppo pistone occorre svitare le viti M16x180 (per MW32-MW36-MW40) o le viti M16x150 (per MW45-MW50-MW55) e smontare la testata.

**Sfilare la testata con il massimo di attenzione per evitare di urtare i pistoni.**

Provvedere allo smontaggio dei pistoni svitando le viti di fissaggio (pos. ①, Fig. 166).
Sfilare il pistone dal supporto guarnizioni e controllare che la superficie dello stesso non presenti graffi, segni di usura o di cavitazione

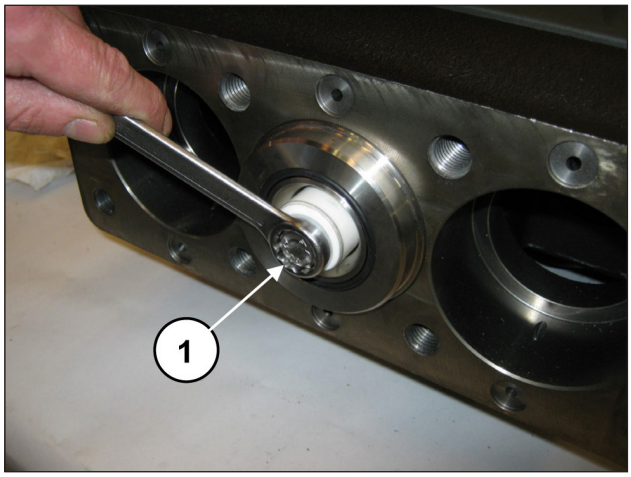


Fig. 166

Rimuovere il coperchio di ispezione superiore svitando le 2 viti di fissaggio (pos. ①, Fig. 167).

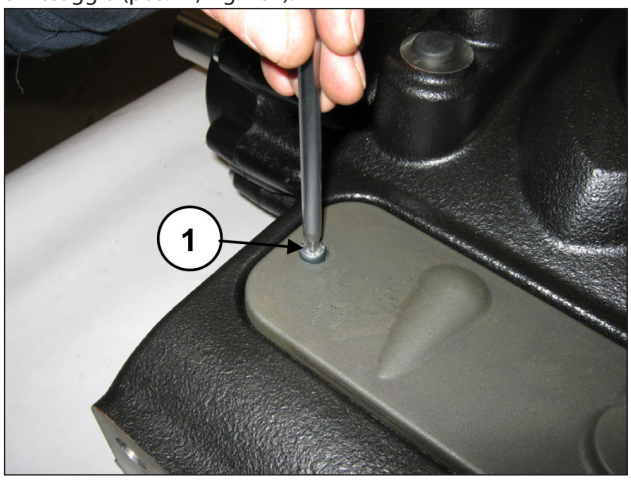


Fig. 167

Ruotare manualmente l'albero in modo da portare i 3 pistoni nella posizione di punto morto superiore.
Inserire l'attrezzo tampone cod. 27632500 tra il guida pistone e il pistone (pos. ①, Fig. 168).

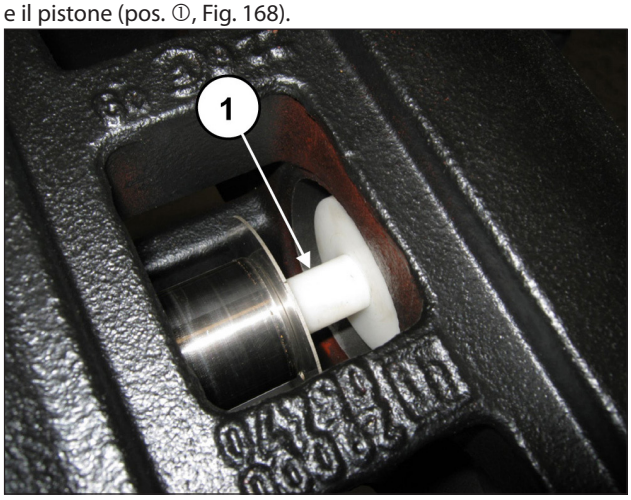


Fig. 168

Ruotando l'albero fare avanzare il guida pistone in modo che il tampone, avanzando a sua volta, possa espellere il supporto guarnizioni e tutto il gruppo pistone (pos. ①, Fig. 169).

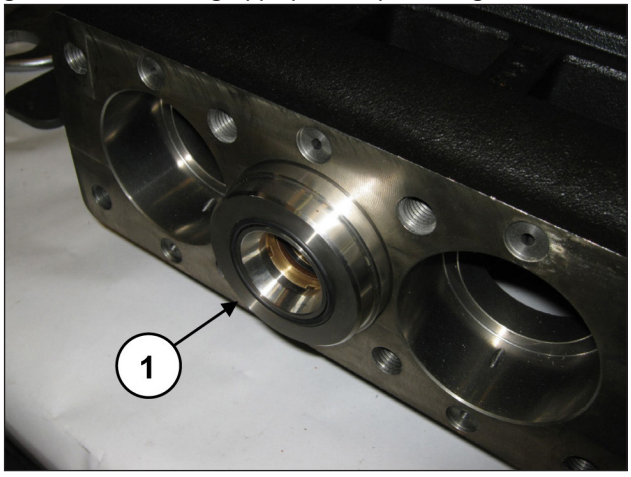


Fig. 169

Estrarre il gruppo supporto guarnizioni e l'attrezzo tampone. Rimuovere l'O-ring di fondo supporto guarnizione qualora rimanesse all'interno del carter pompa (pos. ①, Fig. 170).

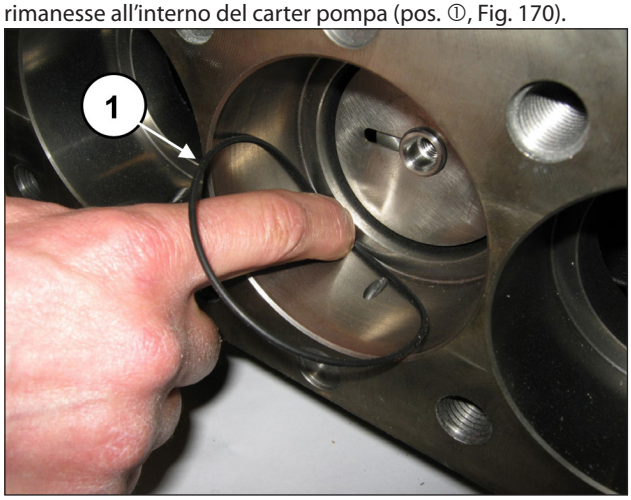


Fig. 170

Sfilare gli anelli paraspruzzi dai guida pistoni (pos. ①, Fig. 171).

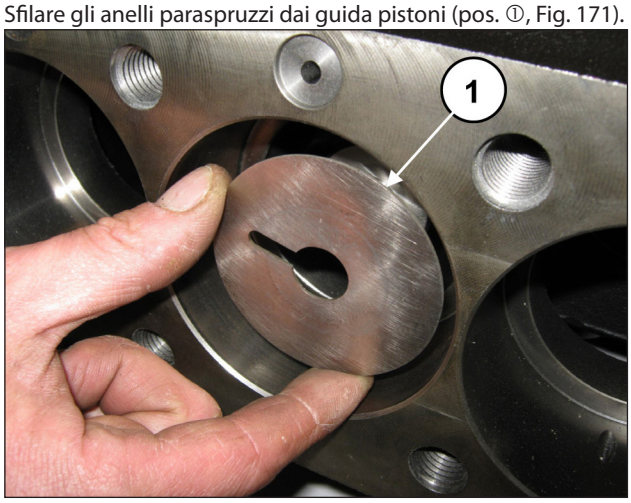


Fig. 171

Separare il supporto guarnizioni dalla camicia (pos. ①, Fig. 172) per accedere alle guarnizioni di pressione (pos. ①, Fig. 173).

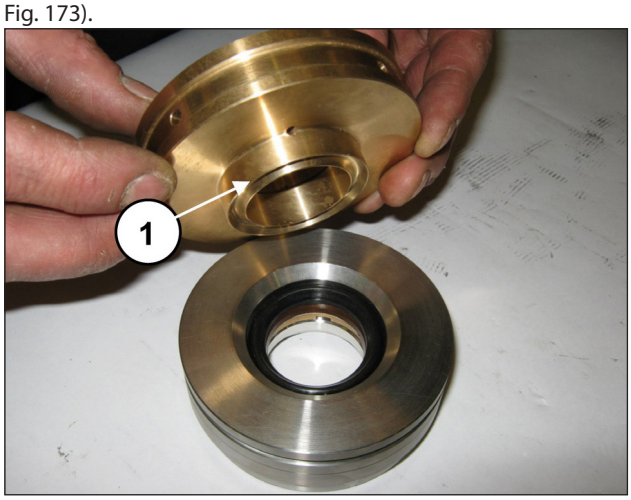


Fig. 172

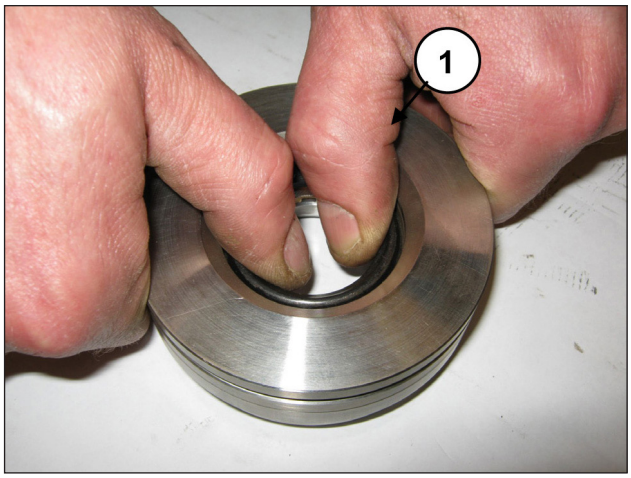


Fig. 173

Per togliere la guarnizione di bassa pressione è necessario utilizzare uno spessimetro o un attrezzo che non danneggi la sede del supporto guarnizione (pos. ①, Fig. 174).

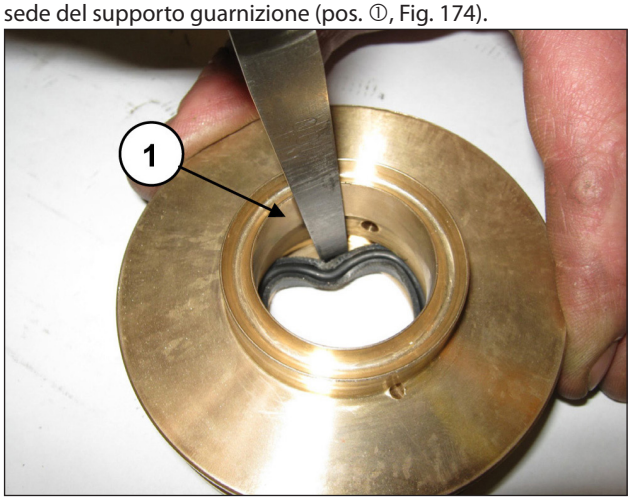


Fig. 174

### 2.2.6 Montaggio del gruppo pistone - supporti - tenute

Procedere al rimontaggio seguendo il procedimento inverso allo smontaggio indicato al par. 2.2.5.

**Sostituire le guarnizioni di pressione inumidendone i labbri con grasso al silicone (senza cospargerle), facendo molta attenzione a non danneggiarle durante l'inserimento nella camicia.**

**Ad ogni smontaggio le guarnizioni di pressione devono essere sempre sostituite assieme a tutti gli O-ring.**

Inserire la guarnizione di bassa pressione nel supporto guarnizione (pos. ①, Fig. 175) facendo attenzione al senso di montaggio che prevede il labbro di tenuta in avanti (verso la testata).

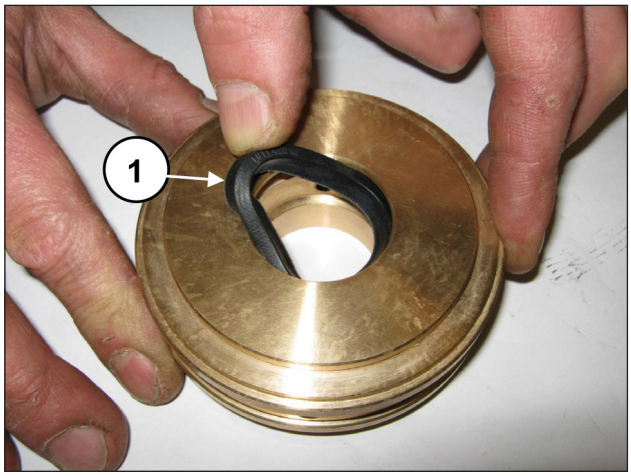


Fig. 175

Montare l'anello di testa (pos. ①, Fig. 176), la guarnizione di alta pressione (pos. ①, Fig. 177) e l'anello restop (pos. ①, Fig. 178).

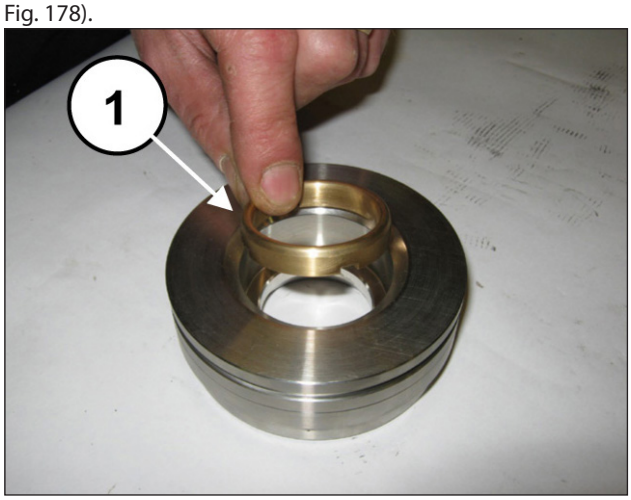


Fig. 176

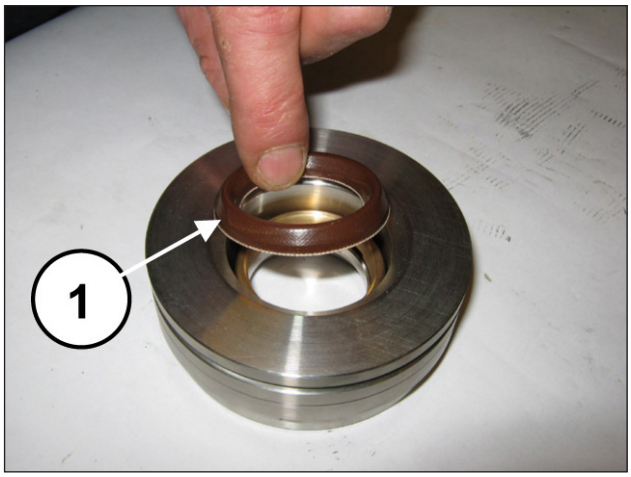


Fig. 177

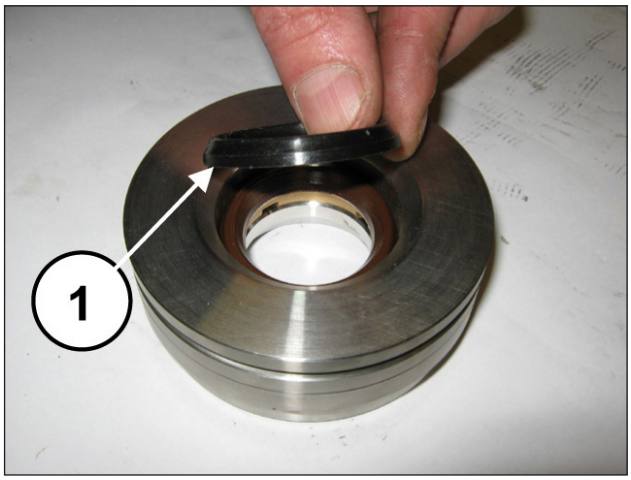


Fig. 178

Unire il supporto guarnizioni alla camicia (pos. ①, Fig. 179).

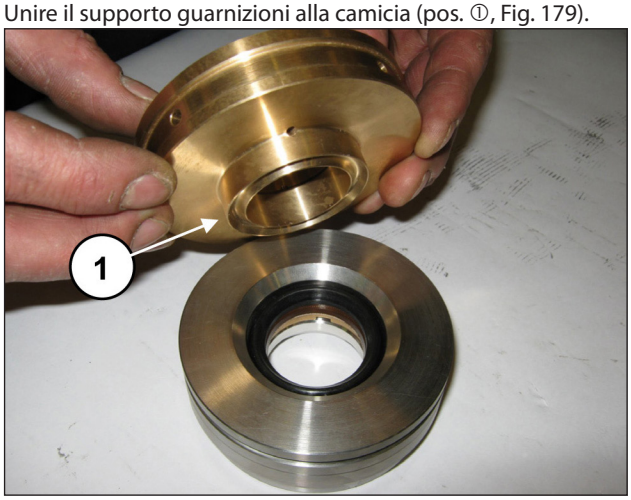


Fig. 179

Posizionare il paraspruzzi nell'alloggiamento sul guida pistone (pos. ①, Fig. 180).

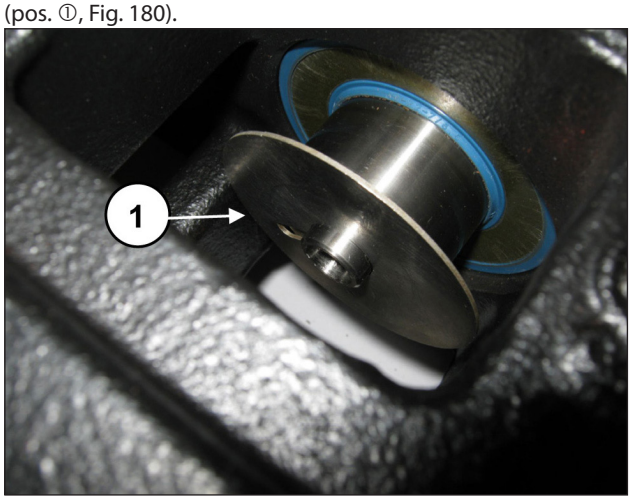


Fig. 180

Inserire la rosetta Ø10x18x0.9 nella vite fissaggio pistone (pos. ①, Fig. 181).

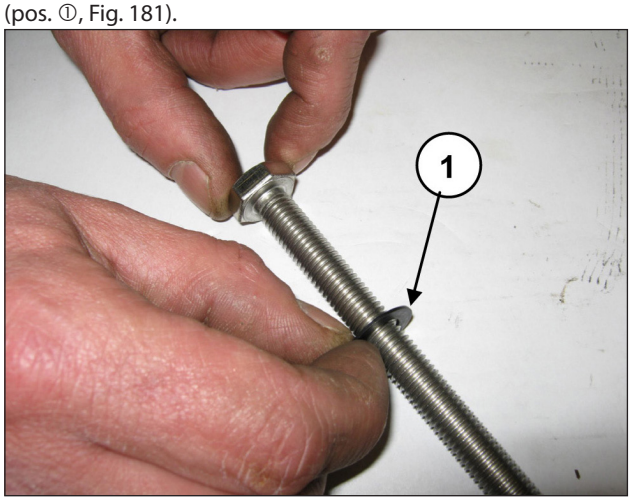


Fig. 181

Montare i pistoni sulle rispettive guide (pos. ①, Fig. 182) e fissarli come da pos. ①, Fig. 183.

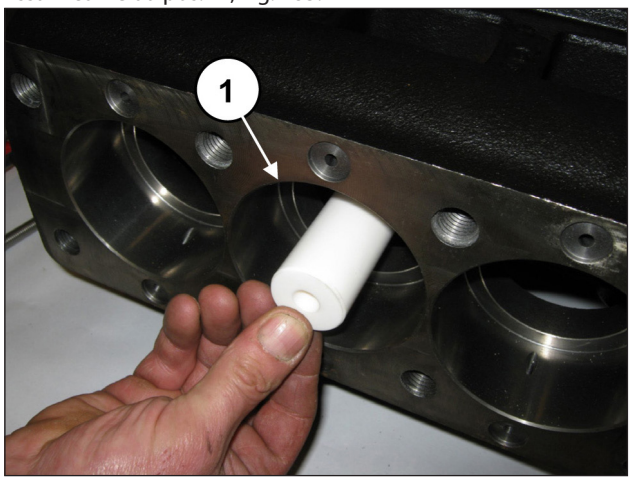


Fig. 182

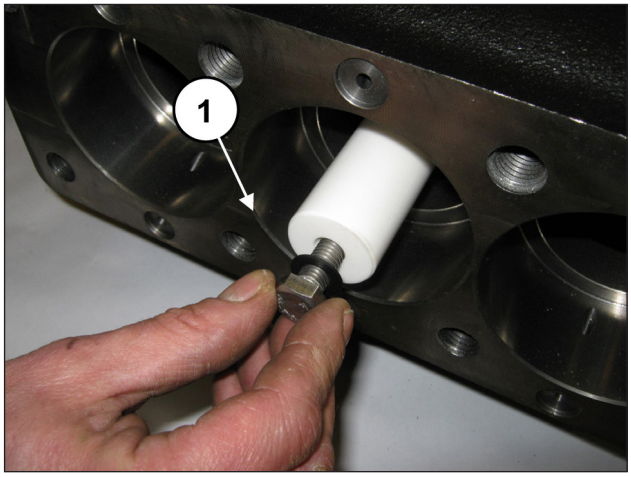


Fig. 183

Tarare le viti con chiave dinamometrica come indicato nel capitolo 3.
Inserire l'O-ring all'interno del carter pompa (pos. ①, Fig. 184) e successivamente il blocco camicia-supporto guarnizione (completo del medesimo O-ring) precedentemente assemblato fino a battuta (pos. ①, Fig. 185).

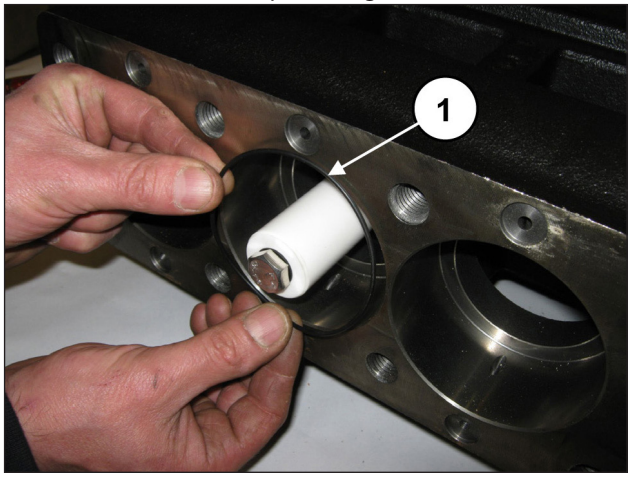


Fig. 184

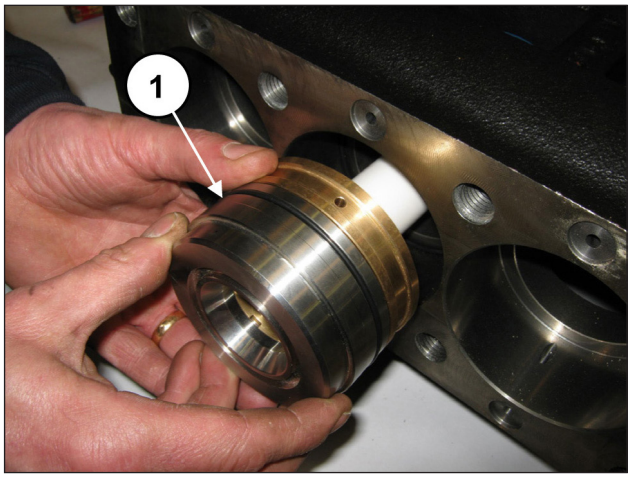


Fig. 185

Assicurarsi che il blocco camicia-supporto arrivi a posizionarsi correttamente fino a fondo sede (pos. ①, Fig. 186).

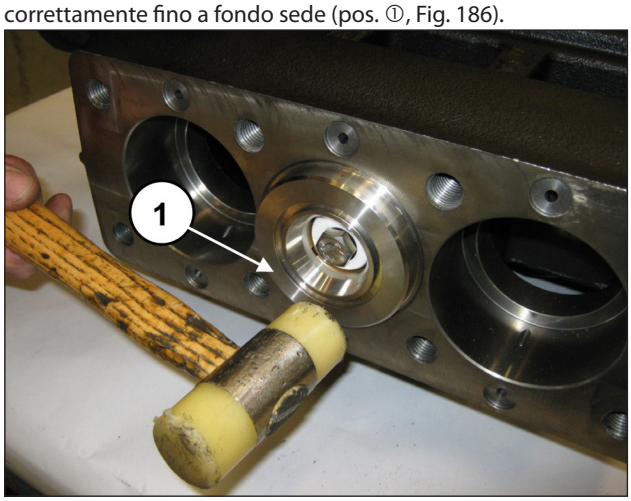


Fig. 186

Montare l'O-ring frontale della camicia (pos. ①, Fig. 187) e l'O-ring del foro di ricircolo (pos. ①, Fig. 188).

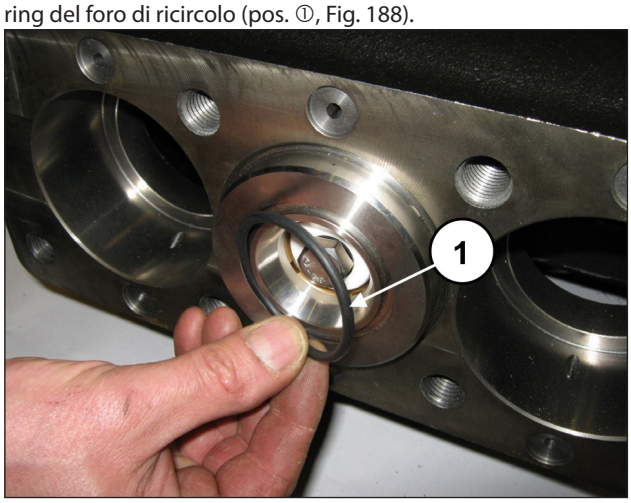


Fig. 187

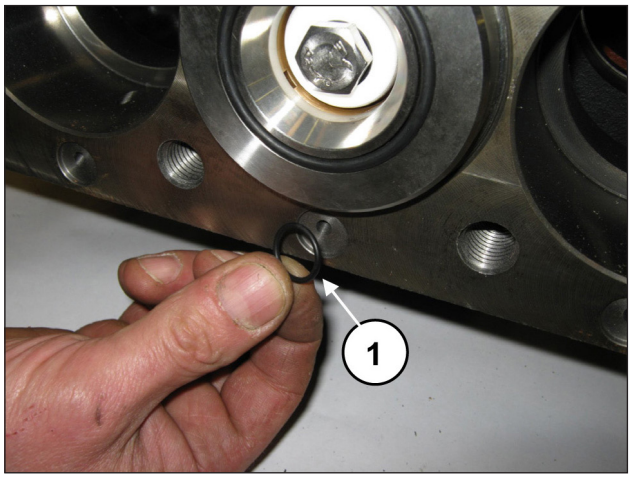


Fig. 188

Sui coperchi ispezione inserire l'O-ring (pos. ①, Fig. 189) e montare i coperchi mediante l'utilizzo di 2+2 viti M6x14 (pos. ①, Fig. 190).

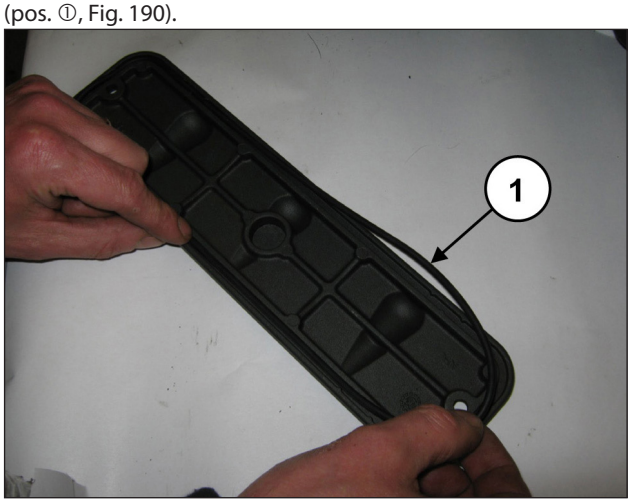


Fig. 189

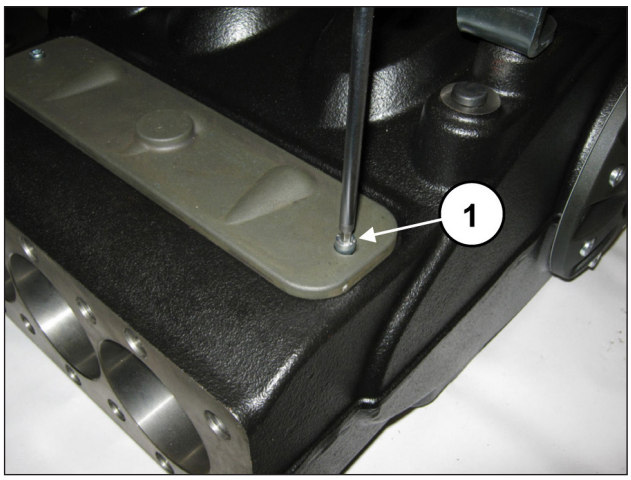


Fig. 190

Tarare le viti con chiave dinamometrica come indicato nel capitolo 3.

## 3 TARATURE SERRAGGIO VITI

Il serraggio delle viti è da eseguirsi esclusivamente con chiave dinamometrica.

| Descrizione | Posizione Esploso | Coppia Serraggio Nm |
|---|---|---|
| Vite M10x30 coperchio carter | 89 H.P. - 91 L.P. | 45 |
| Tappo G1/2x13 carter | 91 H.P. - 93 L.P. | 40 |
| Vite M16x30 staffa di sollevamento | 51 H.P. - 53 L.P. | 200 |
| Vite M10x40 coperchio riduttore | 81 H.P. - 83 L.P. | 45 |
| Vite M10x25 fermo corona | 76 H.P. - 78 L.P. | 45 |
| Vite M10x40 scatola riduttore | 81 H.P. - 83 L.P. | 45 |
| Vite M6x14 coperchi super. e infer. | 60 H.P. - 62 L.P. | 10 |
| Vite M10x30 coperchio cuscinetto | 89 H.P. - 91 L.P. | 45 |
| Vite M10x1.5x80 serraggio biella | 53 H.P. - 55 L.P. | 65* |
| Vite M6x20 guida pistone | 47 H.P. - 49 L.P. | 10 |
| Vite M10x140 fissaggio pistone | 28 H.P. - 18 L.P. | 40 |
| Vite M16x55 coperchio valvole HP | 24 | 333 |
| Vite M16x45 coperchio valvole LP | 19 | 333 |
| Tappo G1/2" testata LP | 4 | 40 |
| Tappo G1/4"x13 testata | 100 H.P. - 21 L.P. | 40 |
| Vite M16x180 testata HP | 26 | 333** |
| Vite M16x150 testata LP | 43 | 333** |
| Dispositivo apertura valvole | 2 | 40 |

* Raggiungere la coppia di serraggio serrando le viti contemporaneamente

** Serrare le viti partendo dalle 4 viti interne in modo incrociato, per poi proseguire con le 4 viti esterne, sempre serrando in modo incrociato.

## 4 ATTREZZI PER LA RIPARAZIONE

La manutenzione della pompa può essere eseguita tramite semplice attrezzi per lo smontaggio e il rimontaggio dei componenti.
Sono disponibili i seguenti attrezzi:

**Per il montaggio:**

| | |
|---|---|
| Albero (bloccaggio bielle) | cod. 27566200 |
| Cuscinetto su albero a gomiti | cod. 27604700 |
| Cuscinetto pignone su scatola riduttore | cod. 27604900 |
| Cuscinetto albero a gomiti su scatola riduttore | cod. 27605000 |
| Cuscinetto albero a gomiti su coperchio cuscinetto | cod. 27605000 |
| Paraolio guida pistone | cod. 27605300 |
| Cuscinetto su pignone | cod. 27604800 |
| Paraolio pignone | cod. 27605200 |
| O-ring sede valvola mandata MW32-MW36-MW40 | cod. 27516000 |

**Per lo smontaggio:**

| | |
|---|---|
| Paraolio guida pistone | cod. 27918500 |
| Albero (bloccaggio bielle) | cod. 27566200 |
| Gruppo valvola aspirazione e mandata | cod. 27516400 |
| Sede valvola aspirazione MW32-MW36-MW40 | cod. 27516200 |
| Blocco camicia + supporto guarnizioni | cod. 27632500 |

# 5 VERSIONI SPECIALI

Di seguito vengono riportate le indicazioni relative alla riparazione delle versioni speciali. Dove non diversamente specificato attenersi a quanto riportato in precedenza per la pompa MW versione standard.

- Pompe MWN - MWF: per la riparazione valgono le indicazioni relative alla pompa MW standard.
- Pompe MWR - MWNR: per la riparazione valgono le indicazioni relative alla pompa MW standard escluse le guarnizioni di pressione di cui occorre seguire il paragrafo dedicato.

## 5.1 POMPA VERSIONE MWR - MWNR

### 5.1.1 Smontaggio del gruppo - supporti - tenute

Separare il supporto guarnizioni dalla camicia, togliere l'anello per molla e l'anello raschiatore (pos. ①②, Fig. 191) per accedere alle guarnizioni di pressione (pos. ①, Fig. 192).

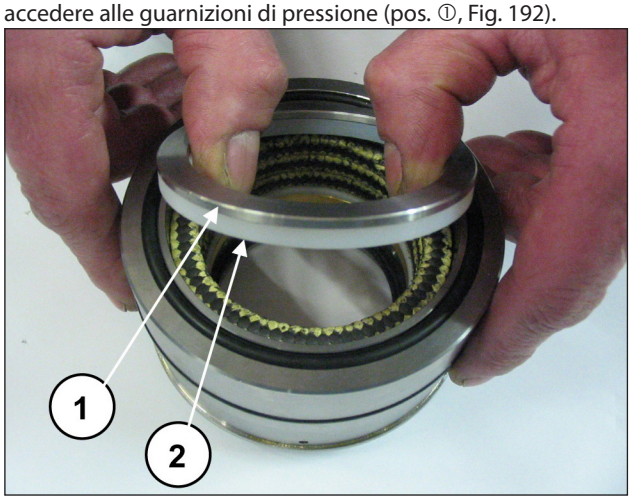


Fig. 191

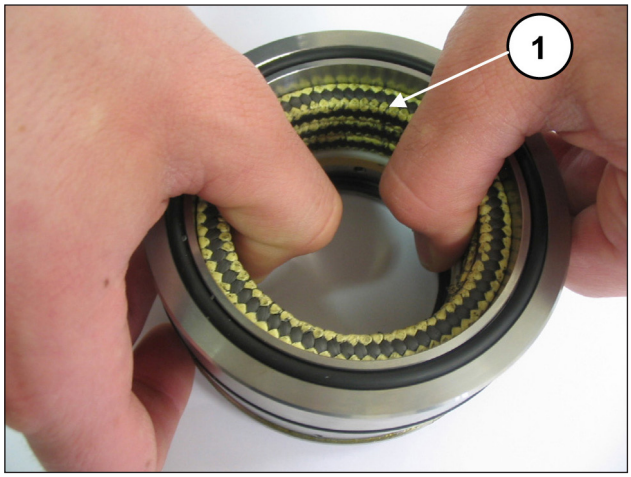


Fig. 192

Per togliere la guarnizione di bassa pressione è necessario utilizzare uno spessimetro o un attrezzo che non danneggi la sede del supporto guarnizione (pos. ①, Fig. 193).

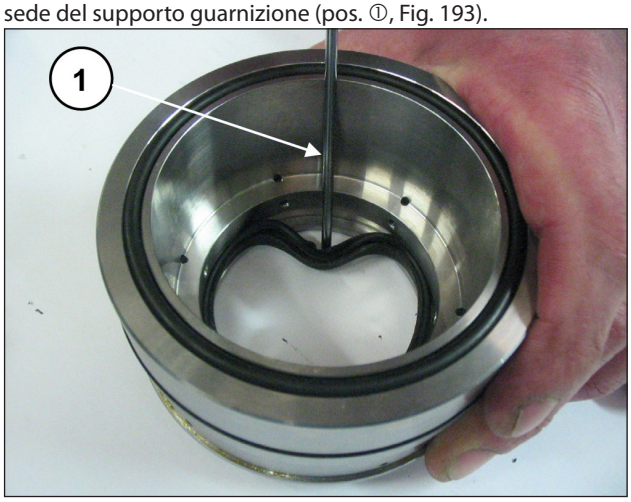


Fig. 193

### 5.1.2 Montaggio del gruppo supporti - tenute

Procedere al rimontaggio seguendo il procedimento inverso allo smontaggio indicato al par. 2.2.3.

**Sostituire le guarnizioni di pressione inumidendone i labbri con grasso al silicone (senza cospargerle), facendo molta attenzione a non danneggiarle durante l'inserimento nella camicia.**

**Ad ogni smontaggio le guarnizioni di pressione devono essere sempre sostituite assieme a tutti gli O-ring.**

Inserire la guarnizione di bassa pressione nel supporto baderne (pos. ①, Fig. 194) facendo attenzione al senso di montaggio che prevede il labbro di tenuta in avanti (verso la testata) e l'O-ring (pos. ②, Fig. 122).

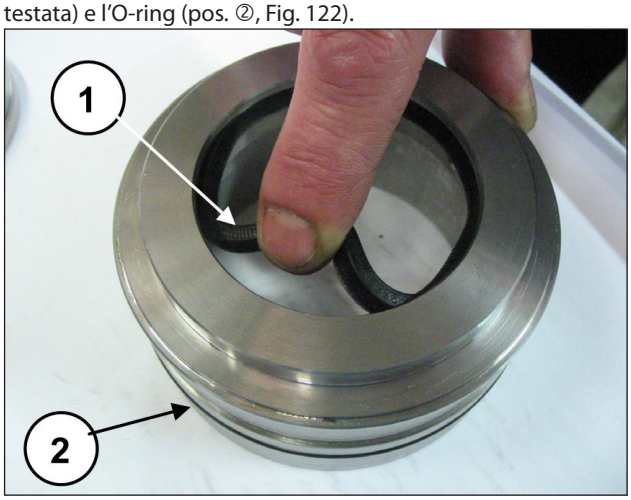


Fig. 194

Montare l'anello di supporto e l'anello antiestrusione (pos. ①②, Fig. 195), le tre baderne ponendo attenzione affinché gli intagli vengano a trovarsi a 120° l'uno dall'altro (pos. ①, Fig. 196), l'anello raschiatore baderne e l'anello per molla (pos. ①②, Fig. 197).

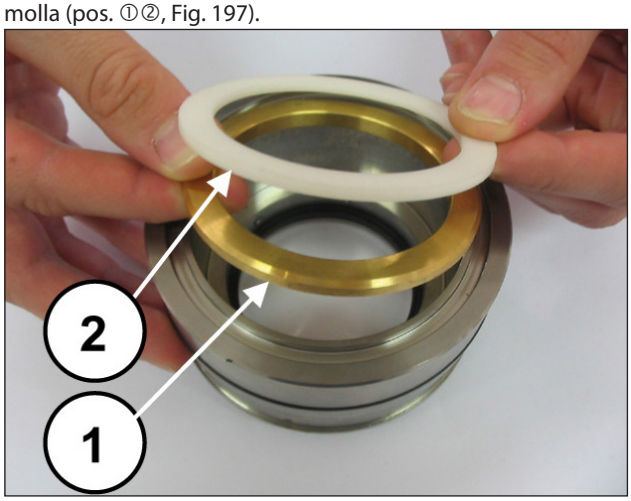


Fig. 195

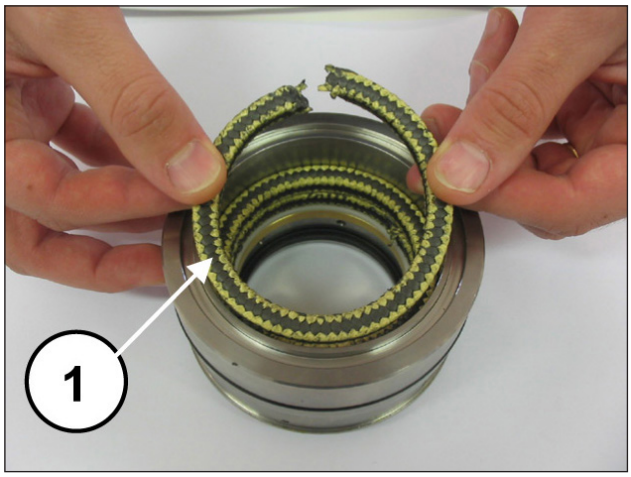


Fig. 196

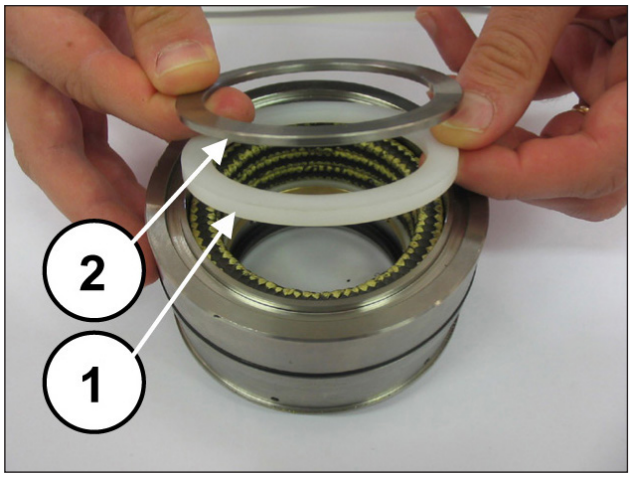


Fig. 197

Montare ora sull'anello di testa baderne l'O-ring (pos. ①, Fig. 198) e posizionarlo nella sede sulla testata.


Fig. 198

## 6 RECUPERO TESTATA POMPA

Qualora la testata presentasse all'interno delle camere dei pistoni evidenti segni di cavitazione, dovuti ad una non corretta alimentazione della pompa, è possibile recuperare la testata danneggiata evitandone la sostituzione.
Per il recupero della testata eseguire le lavorazioni indicate nella Fig. 199 per MW 32-36-40 e versioni MWF-MWR, nella Fig. 200 per MW 45-50-55 e versioni MWF-MWR:

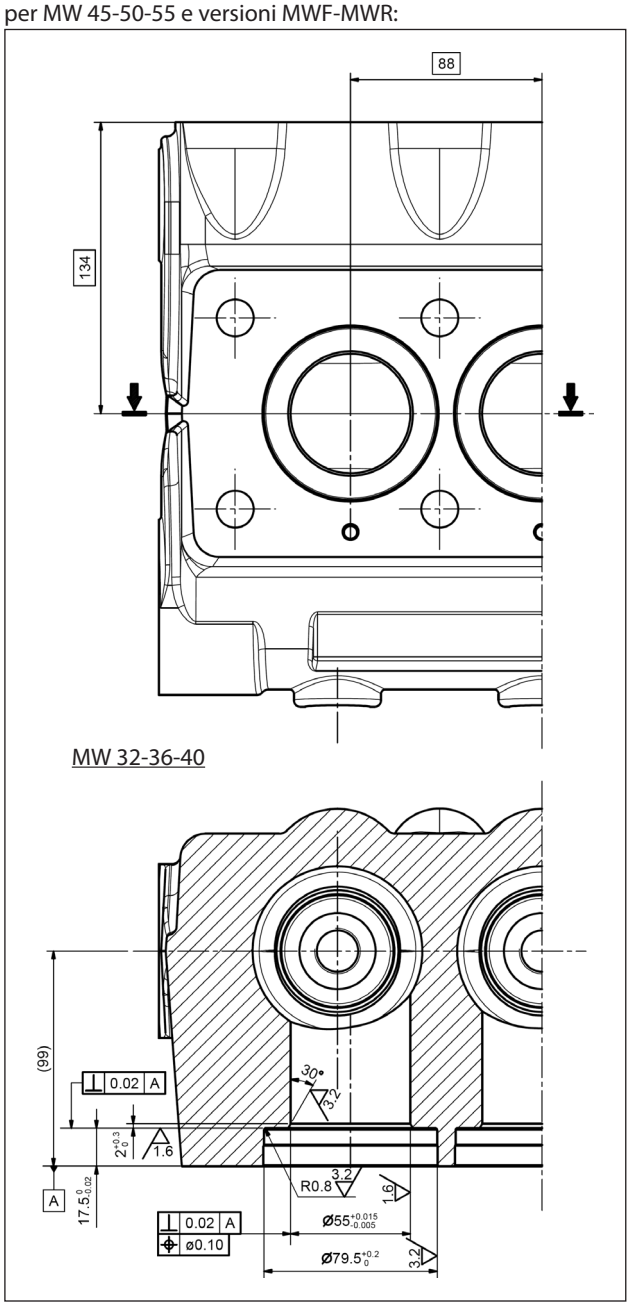


Fig. 199

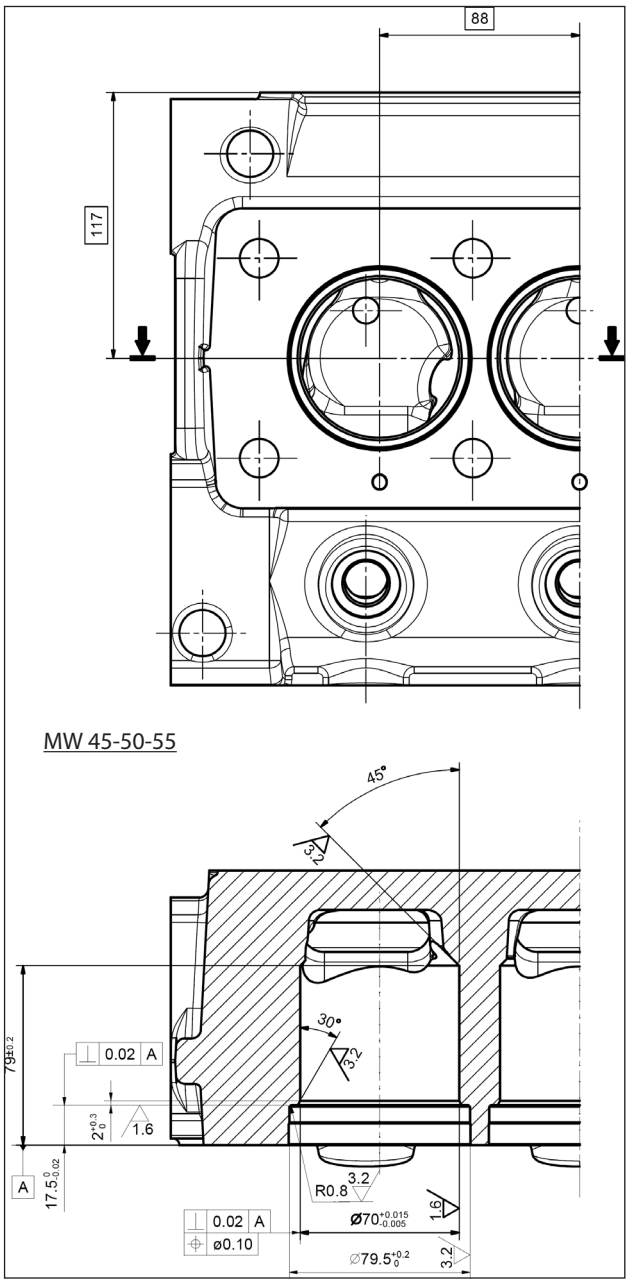


Fig. 200

**MW 32-36-40 e versioni MWF-MWR (Fig. 201)**

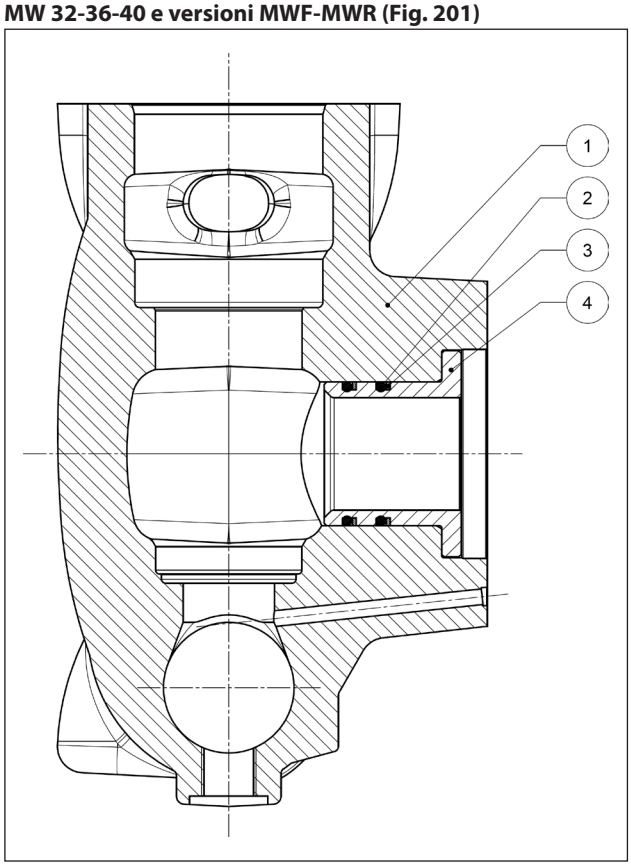


Fig. 201

① Testata MW HP - cod. 73120015 - q.tà 1
② O-ring - cod. 90408000 - q.tà 6
③ Anello antiestrusore - cod. 90523800 - q.tà 6
④ Boccola MW HP - cod. 73215956 - q.tà 3

**MW 45-50-55 e versioni MWF-MWR (Fig. 202)**

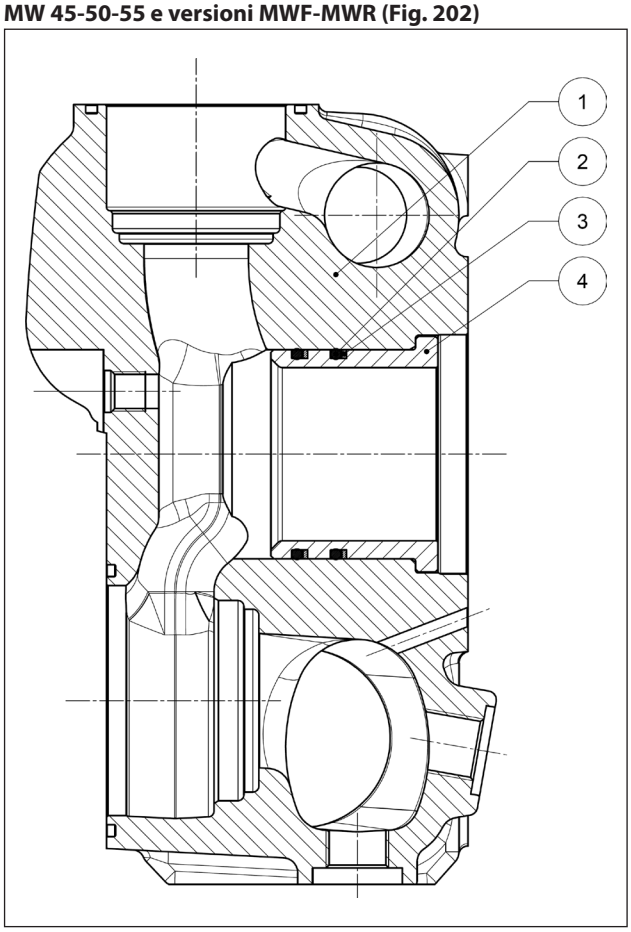


Fig. 202

① Testata MW LP - cod. 73120115 - q.tà 1
② O-ring - cod. 90411500 - q.tà 6
③ Anello antiestrusore - cod. 90527400 - q.tà 6
④ Boccola MW LP - cod. 73216056 - q.tà 3

## 7 SOSTITUZIONE DELLA BOCCOLA DI PIEDE BIELLA

Eseguire il piantaggio a freddo della bronzina e le successive lavorazioni attenendosi alle dimensioni e tolleranze della sottostante Fig. 203.

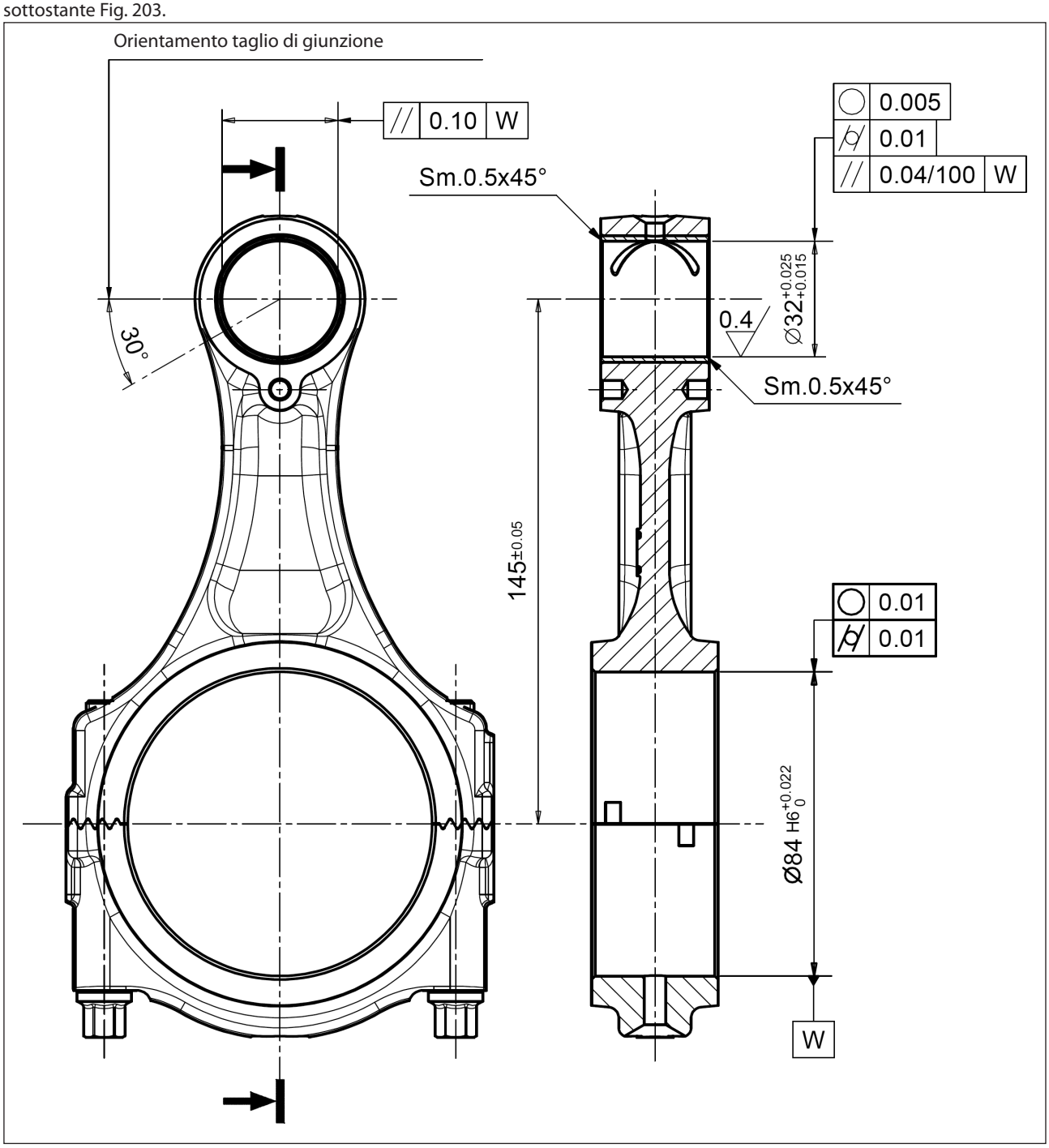


Fig. 203

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# 1 INTRODUCTION

This manual describes the instructions for repairing MW series pumps and should be carefully read and understood before any intervention on the pump.
Proper pump operation and duration depend on correct use and maintenance.
Interpump Group disclaims any responsibility for damage caused by negligence or failure to observe the standards described in this manual.

## 1.1 DESCRIPTION OF SYMBOLS

Read the contents of this manual carefully before each operation.

**Warning Sign**

Read the contents of this manual carefully before each operation.

**Danger Sign**
Wear protective goggles.

**Danger Sign**
Put on protective gloves before each operation.

# 2 REPAIR GUIDELINES

## 2.1 REPAIRING MECHANICAL PARTS

Mechanical parts must be repaired after the oil has been removing from the casing.
To remove oil, you must remove the oil filler cap pos. ①, Fig. 1 and then the drain plug pos. ②, Fig. 1.

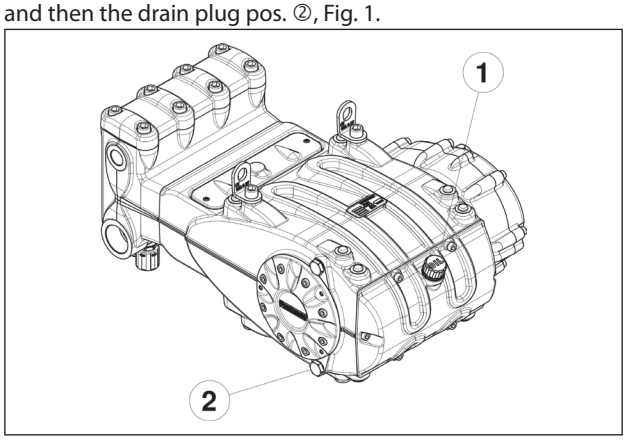



Fig. 1

**The used oil must be placed in a suitable container and disposed of in special centres. It absolutely should not be discarded into the environment.**

### 2.1.1 Disassembly of mechanical parts

The correct sequence is as follows.
Fully empty the oil from the pump, then disassemble the casing cover (and relative O-ring), unscrewing the 6 M10 screws (pos. ①, Fig. 2).

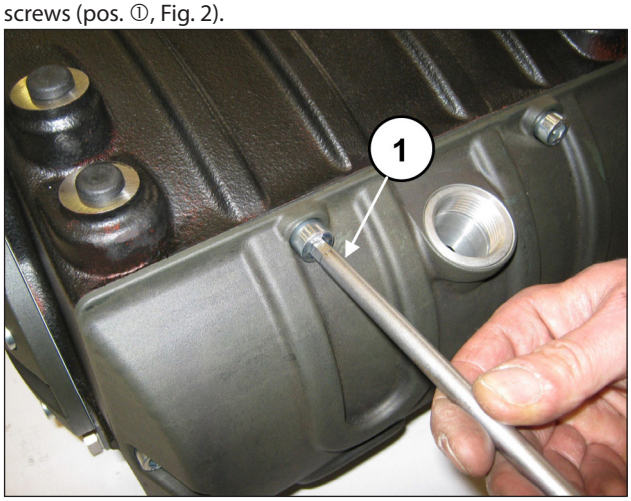



Fig. 2

Remove the tab from the PTO shaft (pos. ①, Fig. 3).

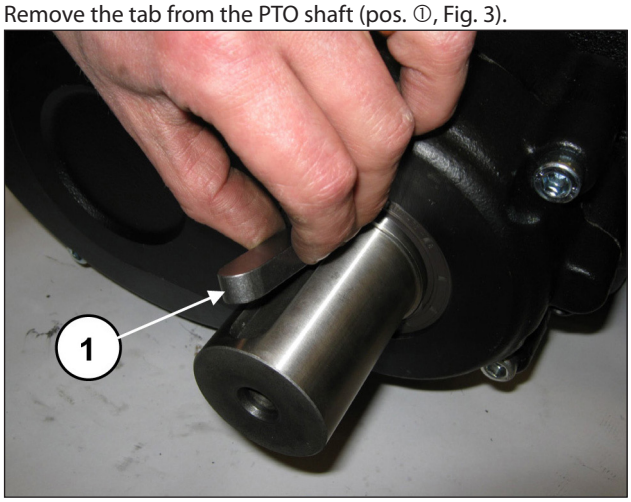



Fig. 3

Unscrew the reduction gear cover fixing screws (pos. ①, Fig. 4).

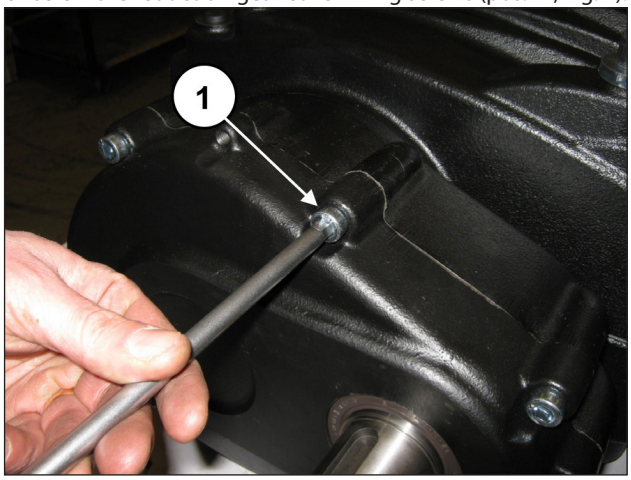



Fig. 4

Position the 3 grub screws or M8 threaded screws (pos. ①, Fig. 5) with the function of extractors in the holes and two sufficiently long M10 screws with the function of supporting the cover (pos. ②, Fig. 5).

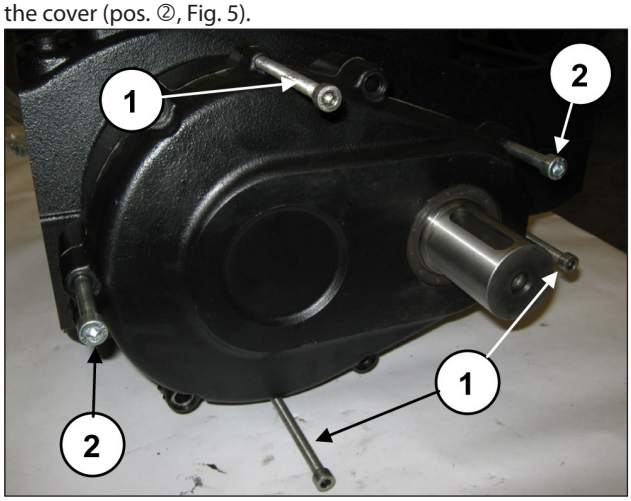



Fig. 5

Slowly screw in the 3 M8 screws (pos. ①, Fig. 6) with the function of extractors to fully remove the cover unit and pinion

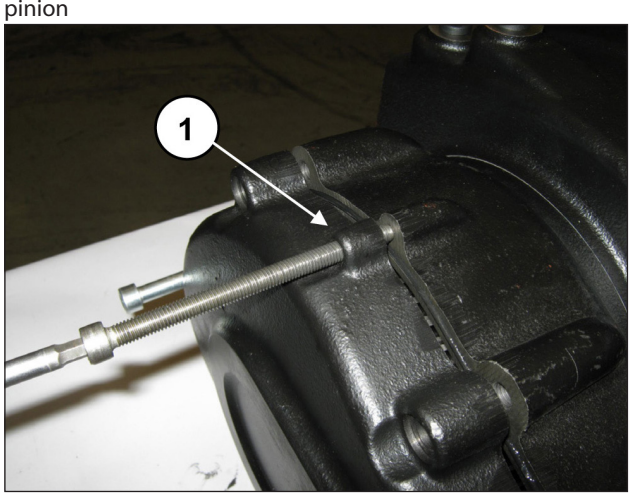



Fig. 6

Complete disassembly of the reduction gear cover from the pinion is possible following these steps:
Remove the Seeger ring Ø120 (pos. ①, Fig. 7).

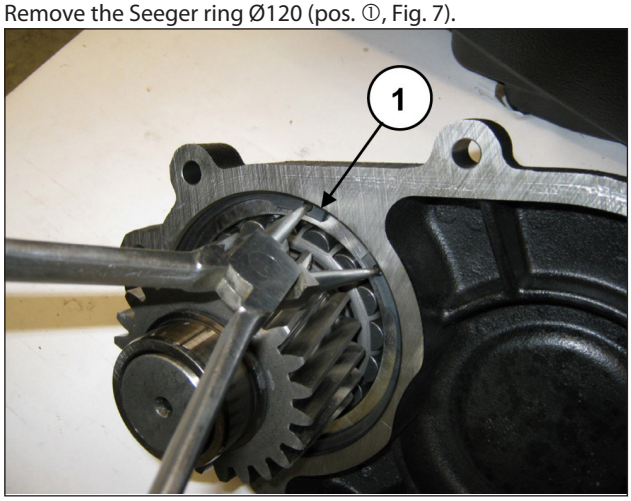



Fig. 7

Separate the pinion from the cover, working with an extractor hammer on the pinion itself (pos. ①, Fig. 8).

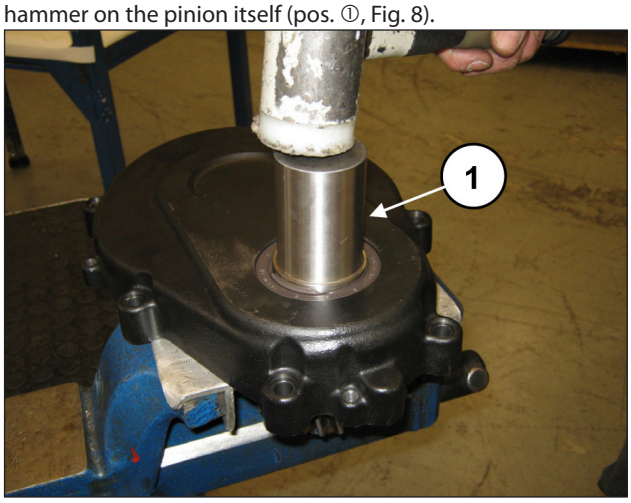



Fig. 8

Remove the Seeger ring Ø55 (pos. ①, Fig. 9) and the bearing support ring (pos. ①, Fig. 10) from the pinion

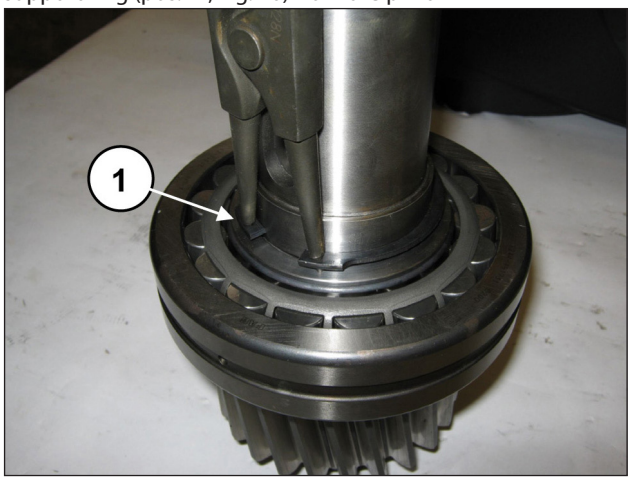



Fig. 9

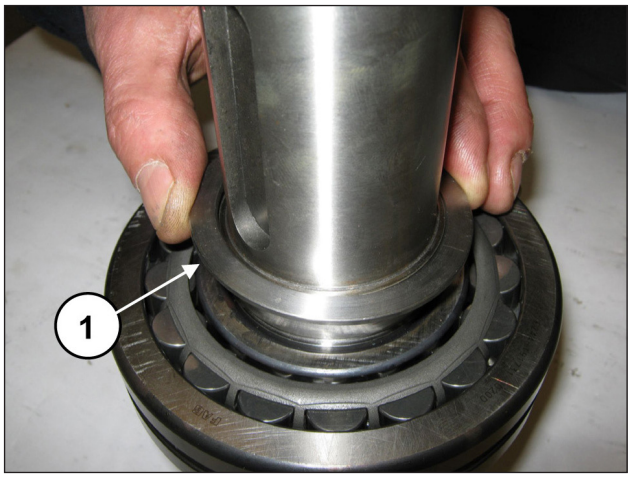



Fig. 10

Extract the seal ring from the reduction gear cover, working from the inner side of the cover (pos. ①, Fig. 11).

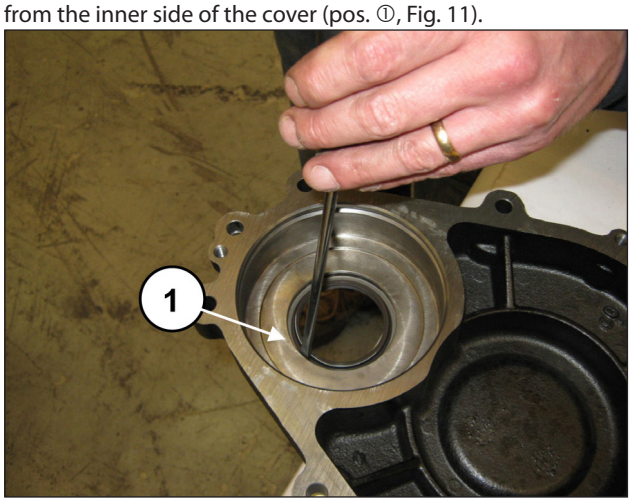



Fig. 11

Unscrew the screws holding in the ring gear (pos. ①, Fig. 12) and remove it (pos. ①, Fig. 13).

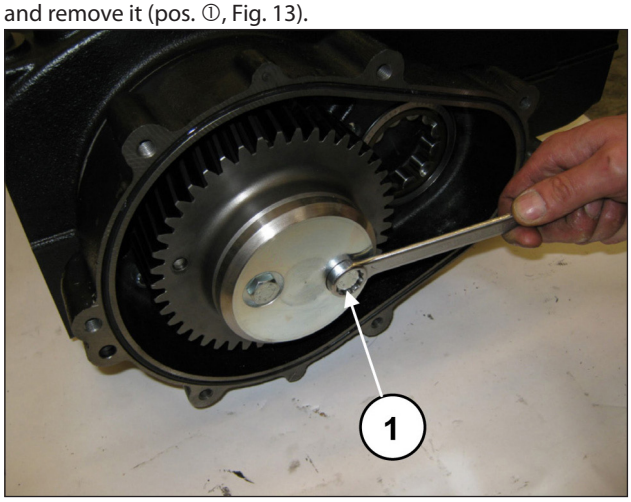



Fig. 12

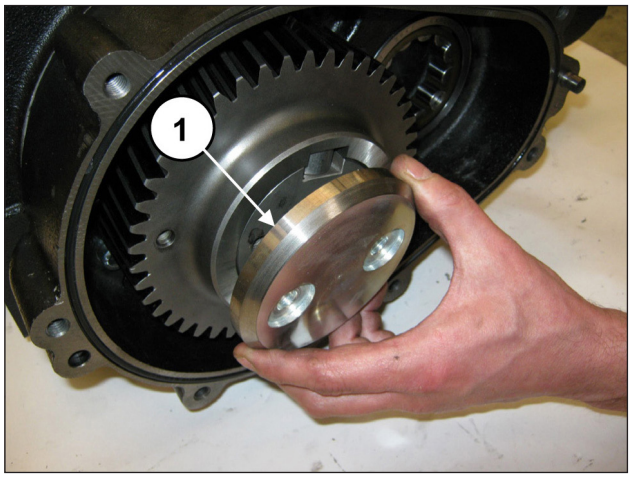



Fig. 13

Remove the ring gear (pos. ①, Fig. 14). If necessary, it is possible to use an extractor hammer to be applied on the 2 M8 holes (pos. ②, Fig. 14).

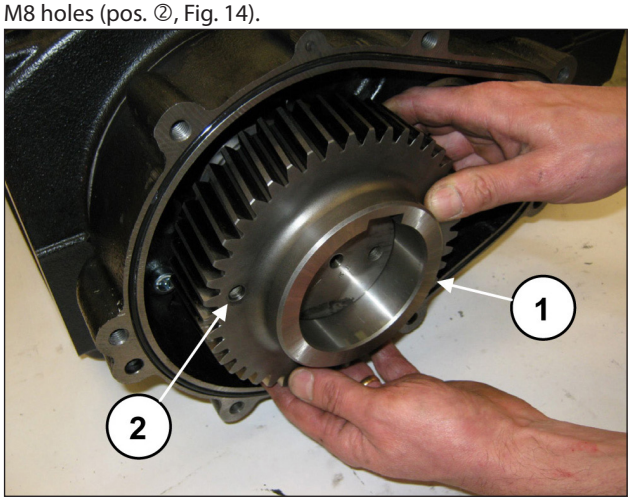



Fig. 14

Remove the tab from the shaft (pos. ①, Fig. 15).

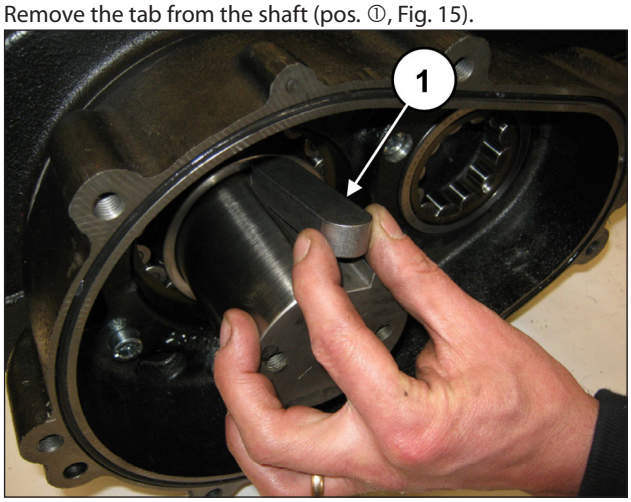



Fig. 15

Remove the ring gear support ring (pos. ①, Fig. 16).

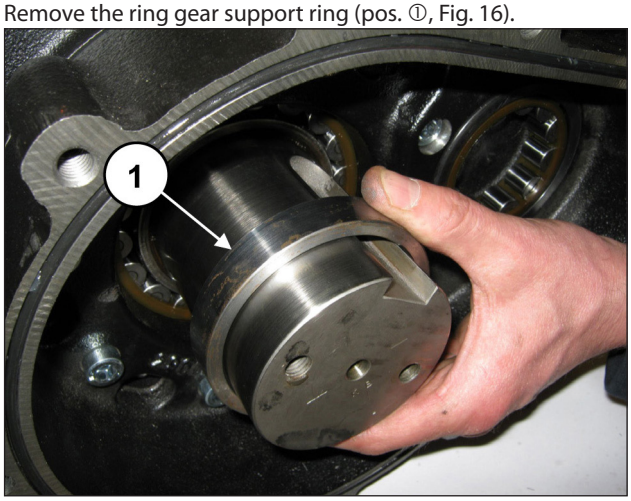



Fig. 16

Unscrew the con-rod screws (pos. ①, Fig. 17).

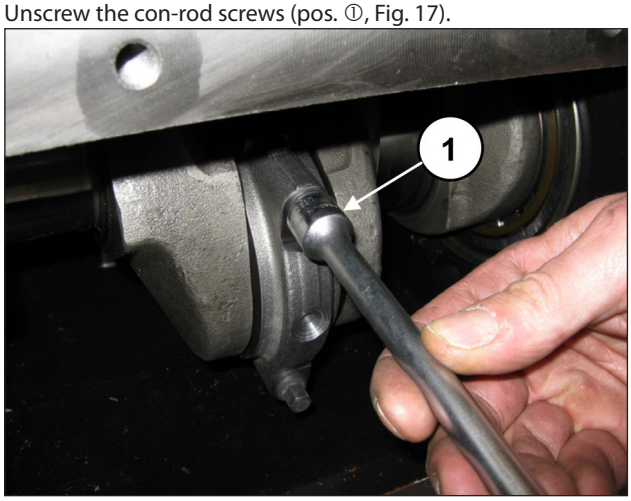
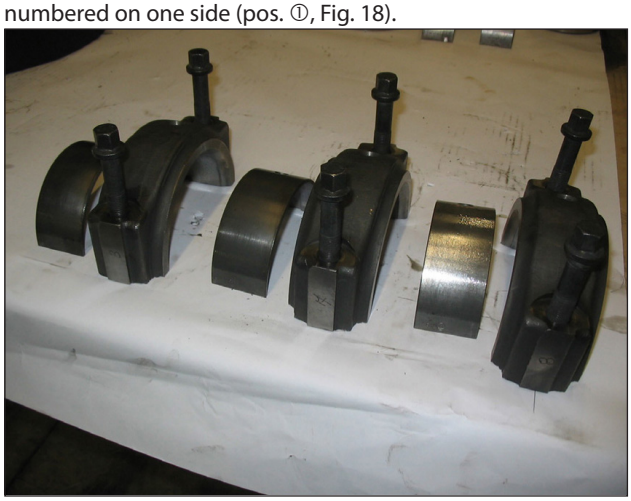



Fig. 17

Remove the con-rod caps with the lower semi-bearings, taking special care of the disassembly sequence during disassembly.

**The con-rod caps and their relative half supports must be reassembled in exactly the same order and coupling with which they were disassembled.**

To avoid possible errors, caps and half supports have been numbered on one side (pos. ①, Fig. 18).



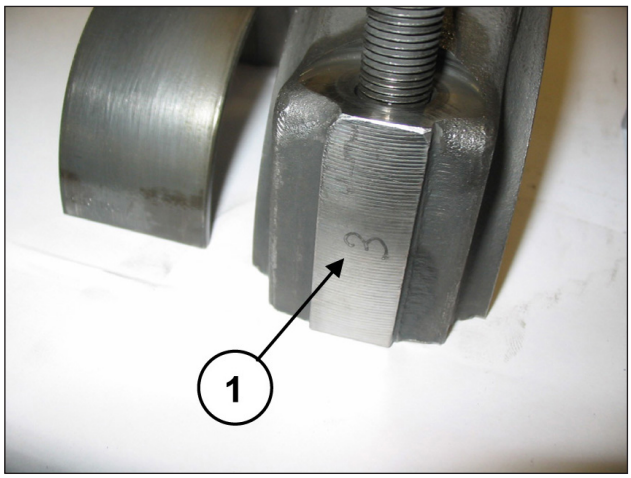



Fig. 18

Advance the half supports completely in the direction of the hydraulic part to allow the bend shaft to come out. To facilitate this operation, use special tool (code 27566200), (pos. ①, Fig. 19).

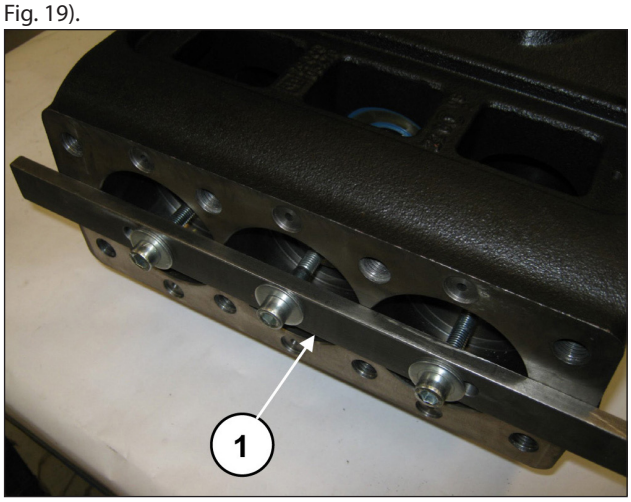



Fig. 19

Remove the three upper half-bearings of the half supports (pos. ①, Fig. 20).

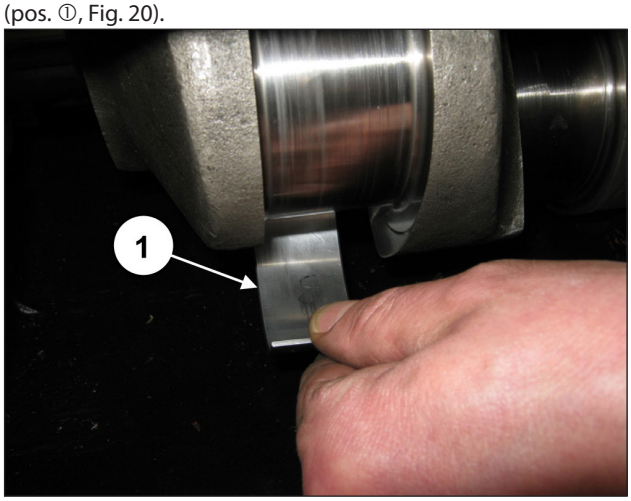



Fig. 20

Unscrew the reduction gear box fixing screws (pos. ①, Fig. 21 and Fig. 22).

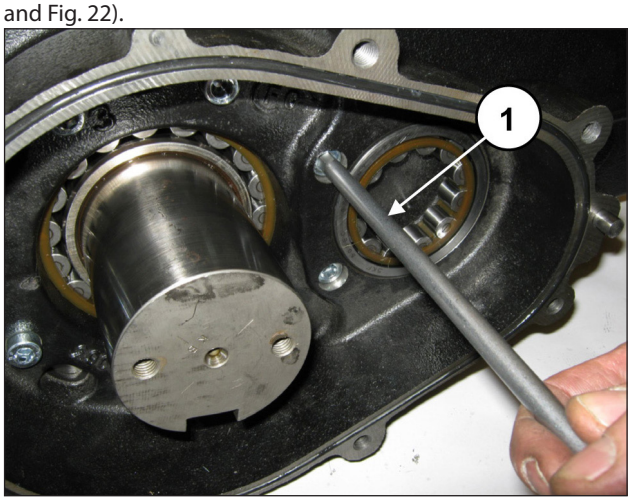



Fig. 21

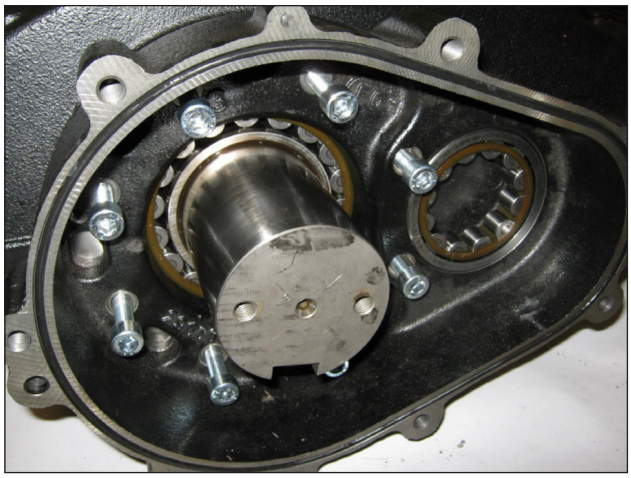


Fig. 22

Position the 3 grub screws or M8 threaded screws (pos. ①, Fig. 23) with the function of extractors in the holes and two sufficiently long M10 screws with the function of supporting the reduction gear box (pos. ②, Fig. 23).

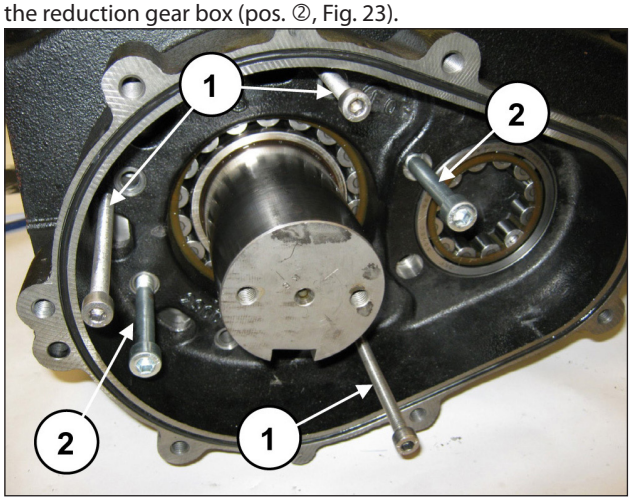



Fig. 23

Slowly screw in the 3 M8 screws (pos. ①, Fig. 24) to prevent that the box can tilt too far and get locked in the housing. Remove the box while supporting the shaft to prevent damage (pos. ①, Fig. 25).

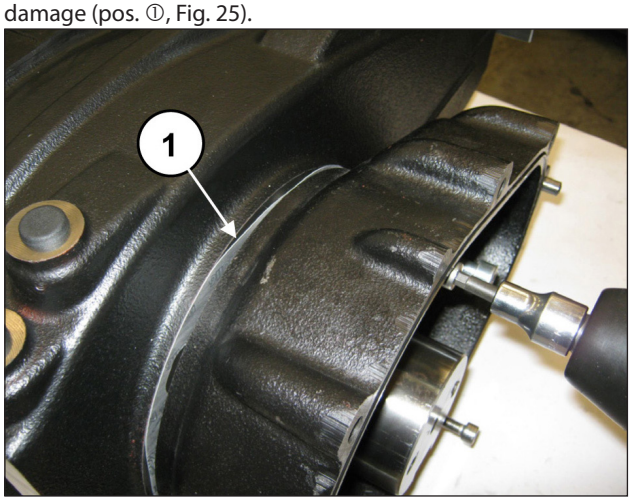



Fig. 24

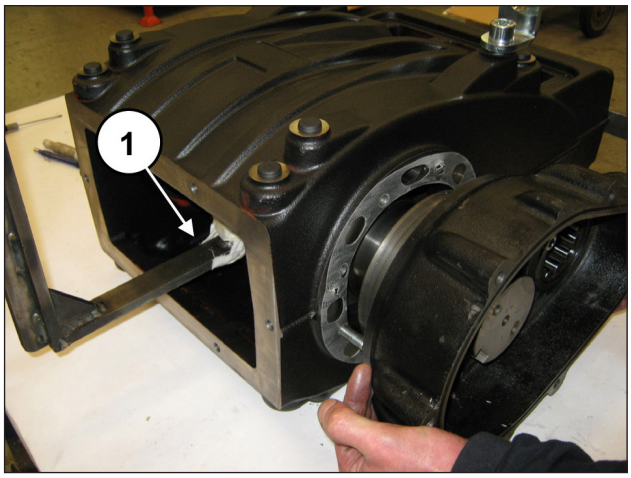



Fig. 25

Unscrew the bearing cover fixing screws from the opposite side (pos. ①, Fig. 26 and Fig. 27).

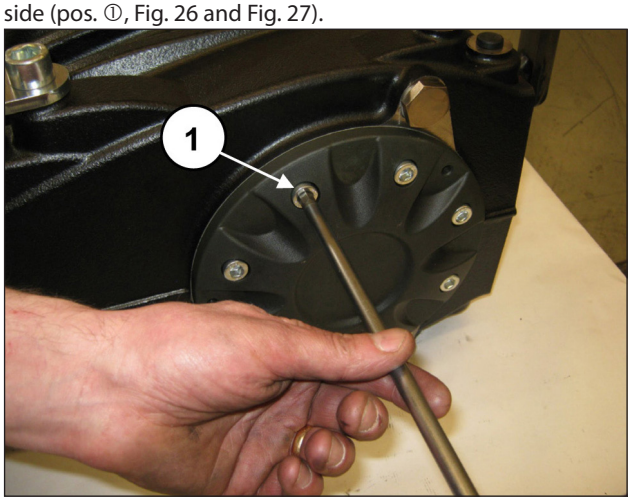



Fig. 26

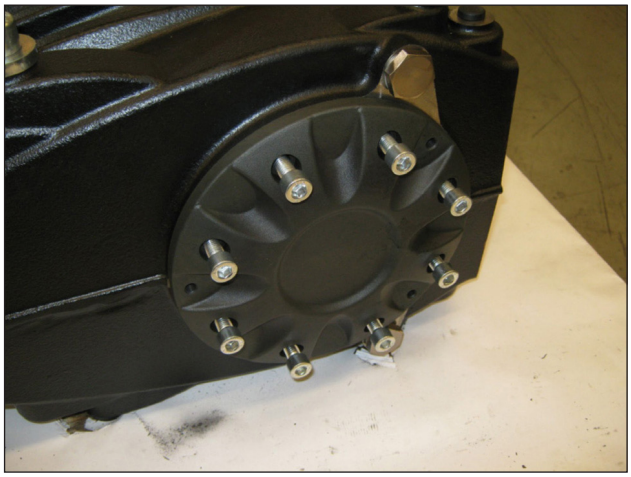


Fig. 27

Position the 3 grub screws or M8 threaded screws (pos. ①, Fig. 28) with the function of extractors in the holes

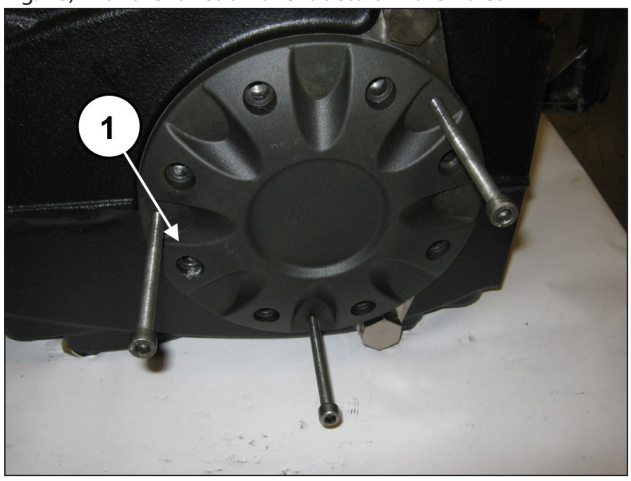



Fig. 28

Slowly screw in the 3 M8 screws (pos. ①, Fig. 29) to prevent that the cover can tilt too far and get locked in the housing. Remove the bearing cover while supporting the shaft to prevent damage (pos. ①, Fig. 30).

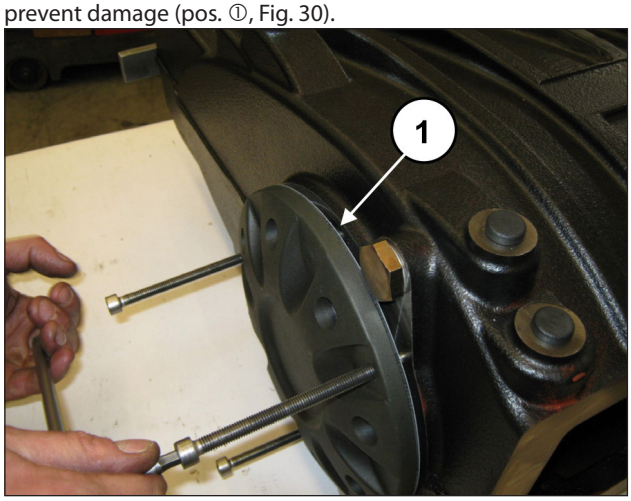



Fig. 29

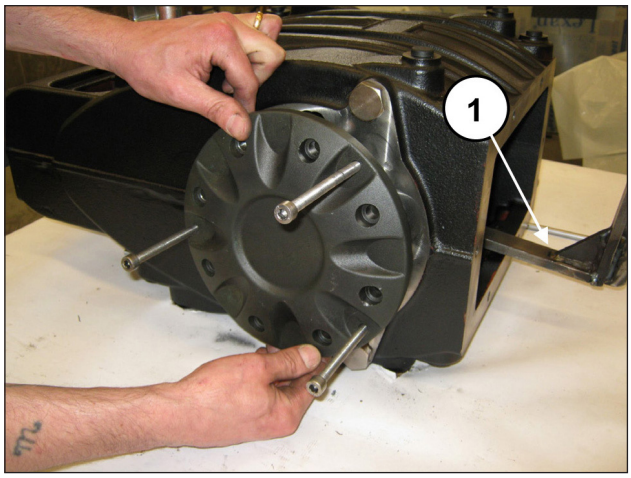



Fig. 30

Remove the bend shaft casing from the PTO side (pos. ①, Fig. 31).

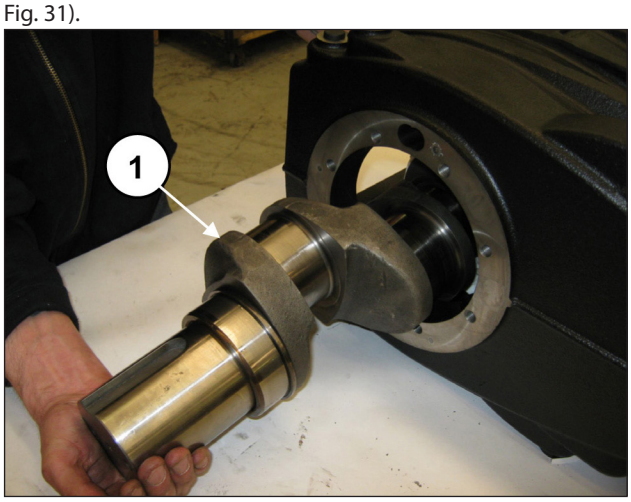



Fig. 31

In the event that it is necessary to replace one or more con-rods or piston guides, operate as follows:
Unscrew the screws with tool code 27566200 to unlock the con-rods (pos. ①, Fig. 32) and then extract the con-rod-piston guide units from the back casing opening (pos. ①, Fig. 33).

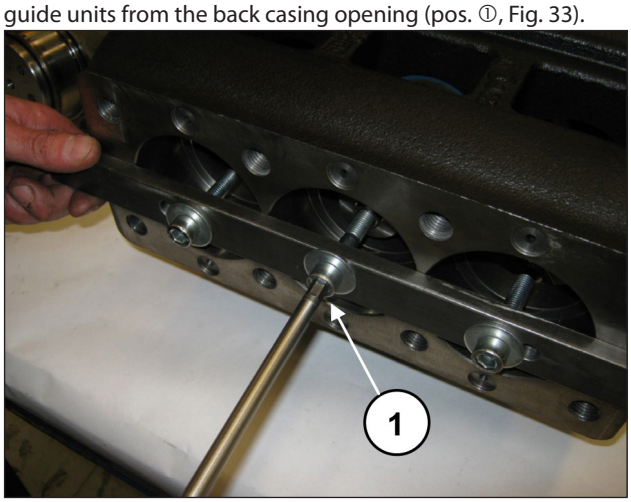



Fig. 32

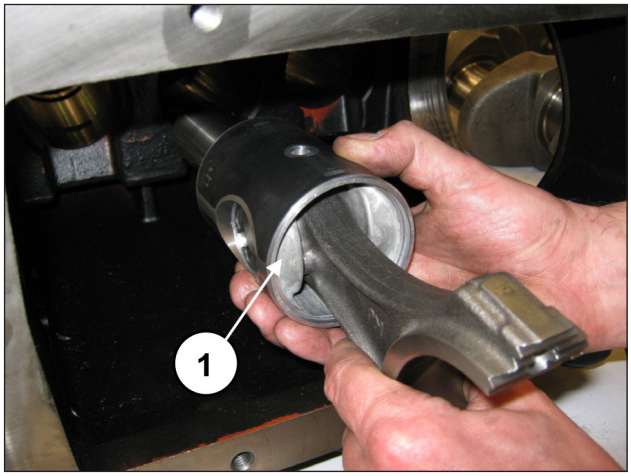



Fig. 33

It is now possible to disassemble the piston guide seal rings, taking care to not damage the piston guide sliding rod.

**Whenever it becomes necessary to replace the piston guide seal rings without dismantling the entire mechanical part, it is possible to extract the seal rings with the use of tool code 27918500 operating as follows:**

Insert the tool between the rod and the seal ring (pos. ①, Fig. 34) and, with the extractor hammer, complete insertion of the tapered section inside the seal ring (pos. ①, Fig. 35).


Fig. 34

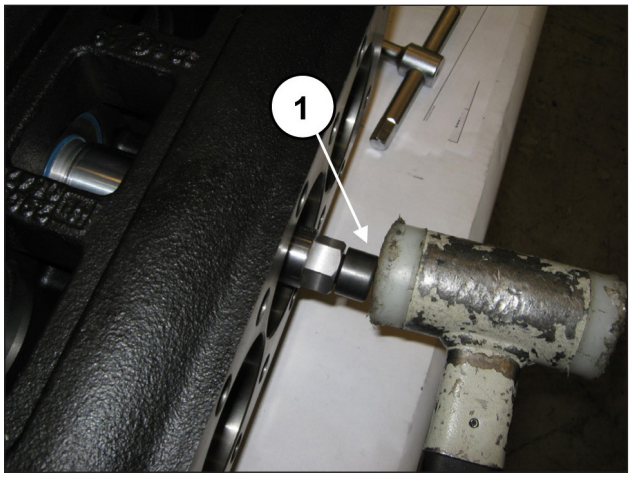



Fig. 35

Extract the seal ring using the tool extractor hammer (pos. ①, Fig. 36).

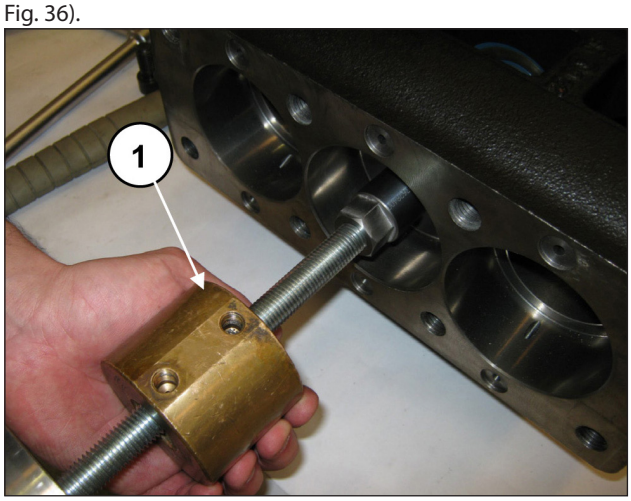



Fig. 36

Remove the two spindle locking Seeger rings (pos. ①, Fig. 37).

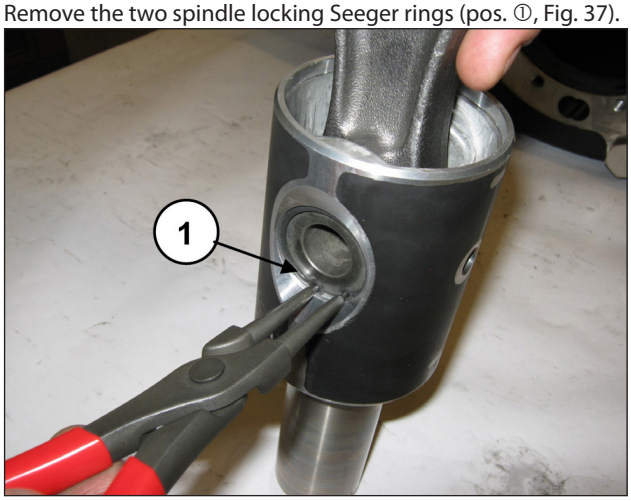



Fig. 37

Remove the spindle (pos. ①, Fig. 38) and extract the con-rod (pos. ①, Fig. 39).

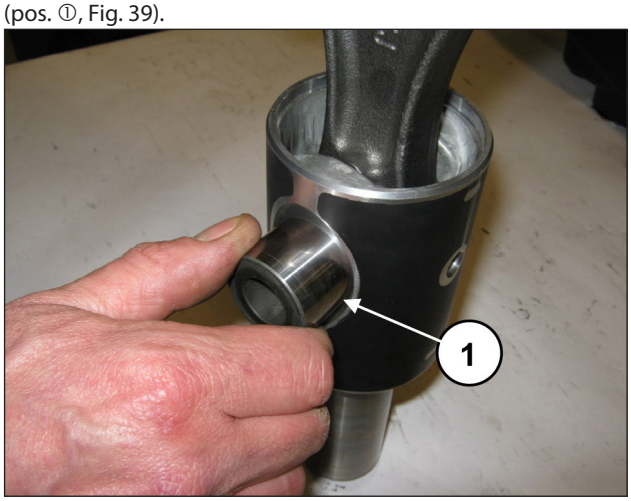



Fig. 38

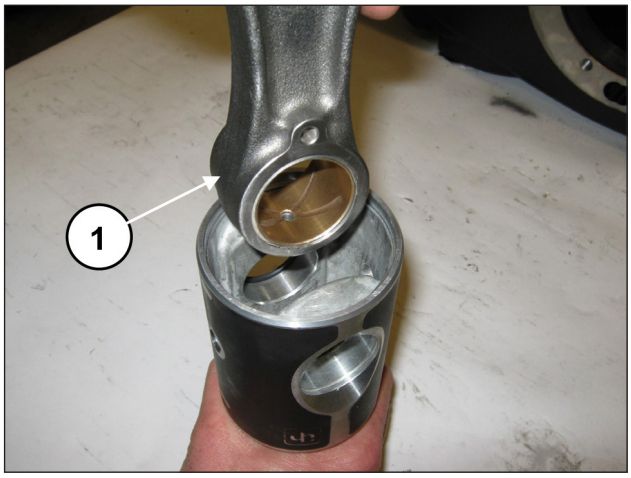



Fig. 39

Couple the half supports to the previously disassembled caps, referring to the numbering (pos. ①, Fig. 40).

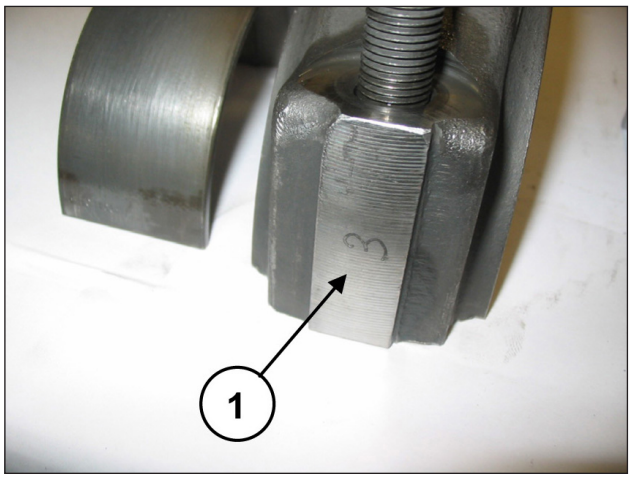



Fig. 40

To separate the rod from the piston guide, unscrew the hexagonal head M6 screws with a special wrench (pos. ①, Fig. 41).

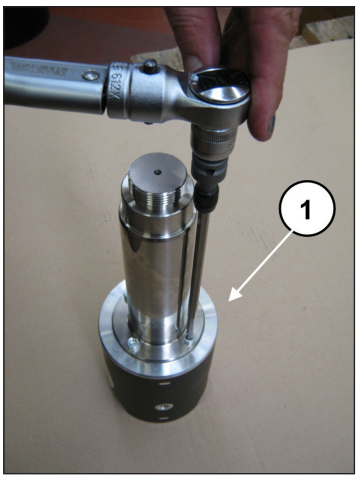



Fig. 41

### 2.1.2 Assembly of mechanical parts

Proceed with assembly following the reverse order indicated in par. 2.1.1.
The correct sequence is as follows:
Assembly the red to the piston guide.
Insert the piston guide rod into its seat on the piston guide (pos. ①, Fig. 42) and join the rod to the piston guide by means of the 4 M6x20 screws (pos. ①, Fig. 43).


Fig. 42


Fig. 43

Lock the piston guide in a vice with the aid of a special tool and calibrate the screws with a torque wrench (pos. ①, Fig. 44) as indicated in chapter 3.

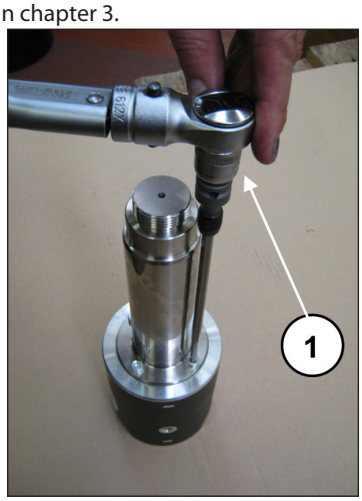



Fig. 44

Insert the con-rod in the piston guide (pos. ①, Fig. 39) and then insert the spindle (pos. ①, Fig. 38). Apply the two shoulder Seeger rings (pos. ①, Fig. 37).

**Assembly has been carried out properly if the con-rod foot, piston guide and spindle rotate freely.**

Separate the caps from the half supports. Proper coupling can be verified by the numbering on the side (pos. ①, Fig. 40). After having checked casing cleaning, proceed with assembly of half support-piston guide unit inside casing rods (pos. ①, Fig. 33).

**Insertion of the half support-piston guide unit in the casing must be made with the half bearings set in the direction in which numbers are visible from above.**

Block the three units with the use of special tool code 27566200 (pos. ①, Fig. 32).
Pre-assemble the ring inside the bend shaft bearings (on both sides of the shaft as far as possible) using special tool code 27604700 (pos. ①, Fig. 45) (pos. ①, Fig. 46).

**The inner and outer rings of the bearings must be reassembled keeping the same coupling with which they were disassembled.**


Fig. 45


Fig. 46

Insert the shaft from the PTO side, taking care not to hit the previously assembled con-rod shanks (pos. ①, Fig. 47) and (pos. ①, Fig. 48).

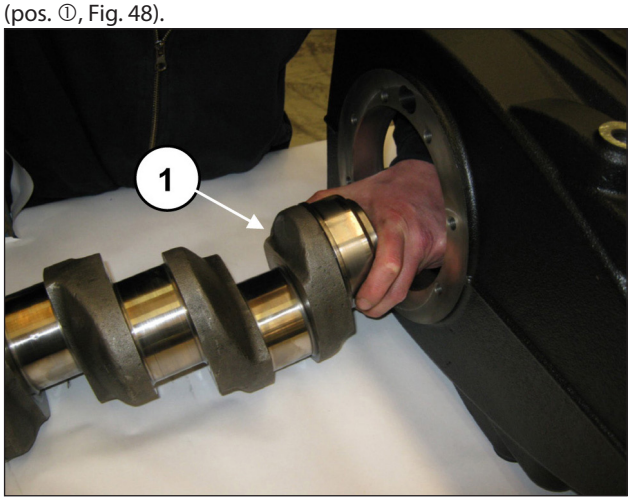



Fig. 47

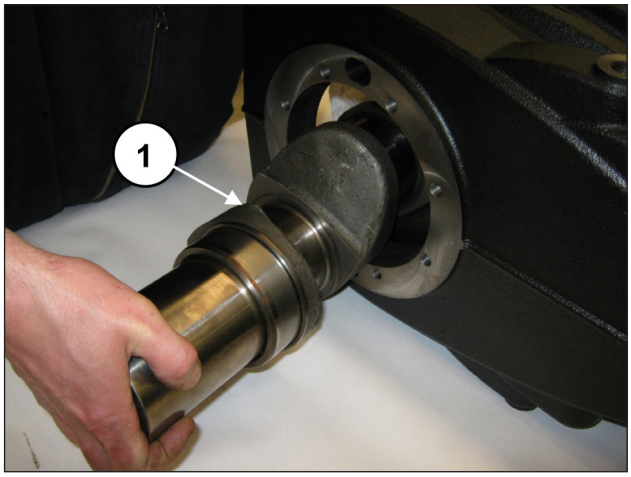



Fig. 48

**The bend shaft must always be assembled with the PTO on the opposite side with respect to the G1/2" holes for the oil discharge plugs on the pump casing (pos. ②, Fig. 50).**

Fully insert the shaft in the casing (pos. ①, Fig. 49 and Fig. 50).

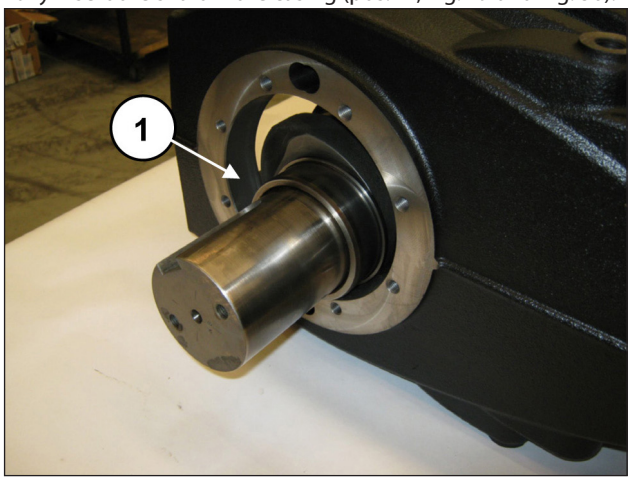



Fig. 49

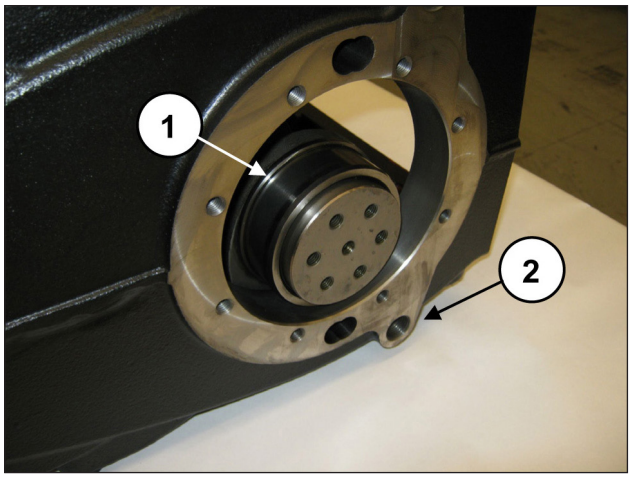



Fig. 50

Pre-assemble the outer ring of the pinion bearing on the reduction gear with the aid of special tool code 27604900 (pos. ①, Fig. 51) inserting fully down to end stroke (pos. ①, Fig. 52).

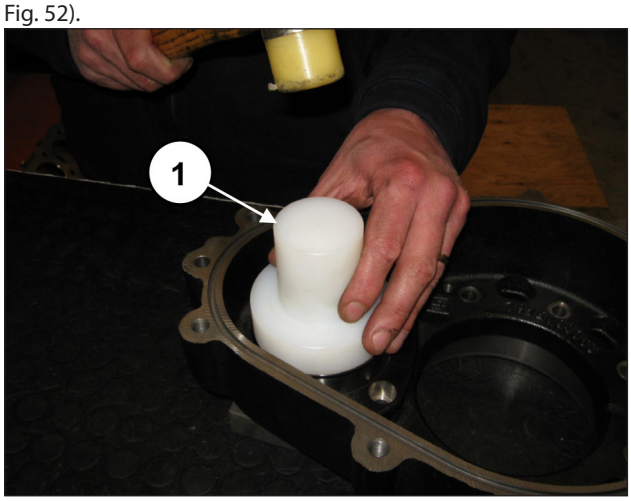



Fig. 51

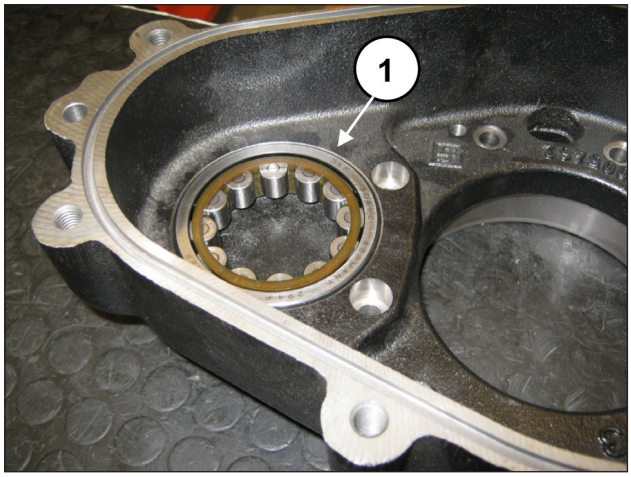



Fig. 52

From the opposite side of the reduction gear box, pre-assemble the external ring of the bend shaft bearing using the tool code 27605000 (pos. ①, Fig. 53) inserting fully down to end stroke (pos. ①, Fig. 54).

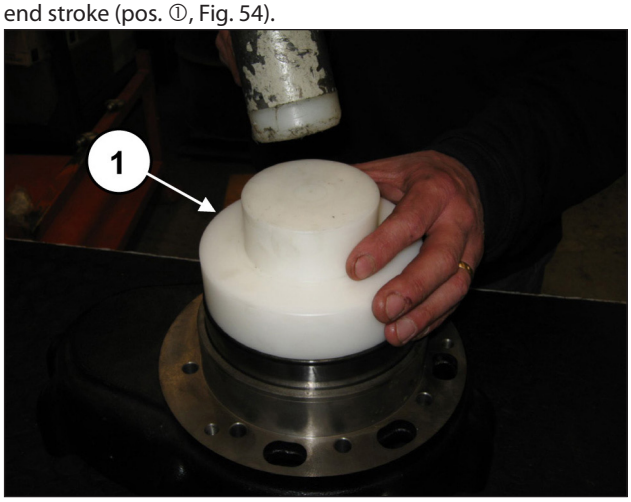



Fig. 53

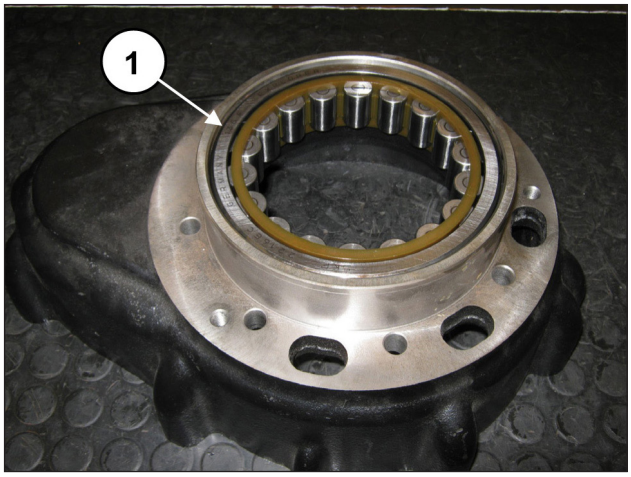



Fig. 54

Repeat this operation on the bearing cover, pre-assembling the external bend shaft bearing ring with the help of the tool code 27605000 (pos. ①, Fig. 55) inserting fully down to end stroke (pos. ①, Fig. 56).

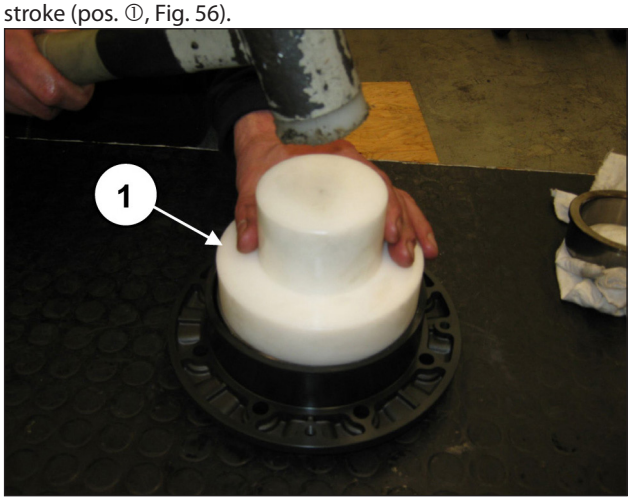



Fig. 55

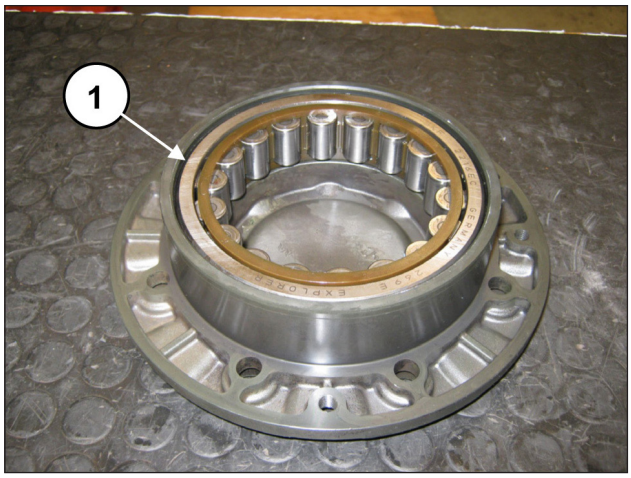



Fig. 56

Insert the side seal on the bearing cover (pos. ①, Fig. 57) and lift the bend shaft to favour cover insertion (pos. ①, Fig. 58).

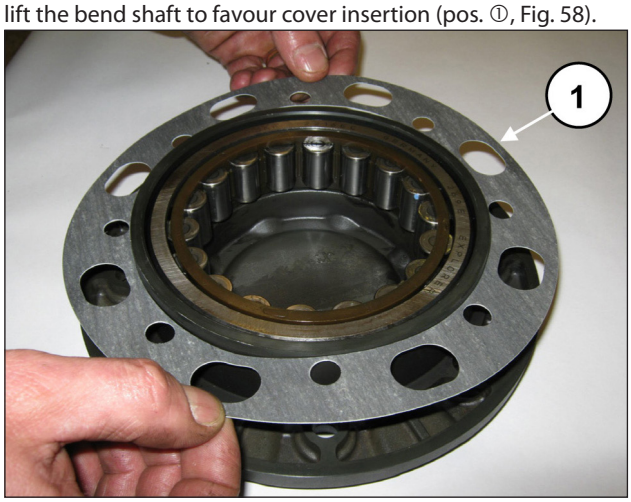



Fig. 57

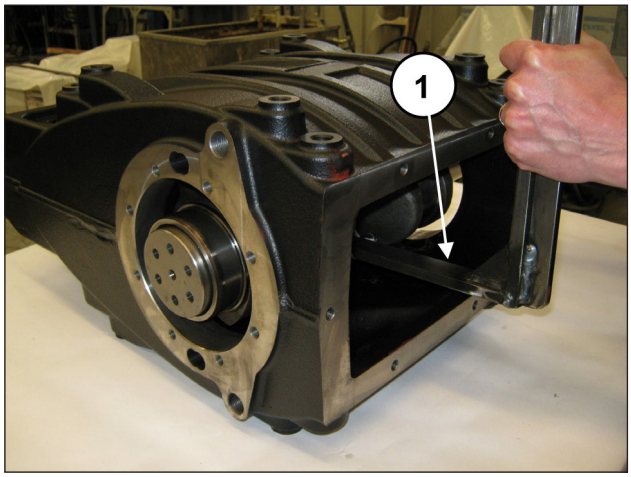



Fig. 58

Assemble the bearing cover (and relative seal) using an extractor hammer (pos. ①, Fig. 59)

**Position the bearing cover in such a way that the "Pratissoli" logo is perfectly horizontal.**

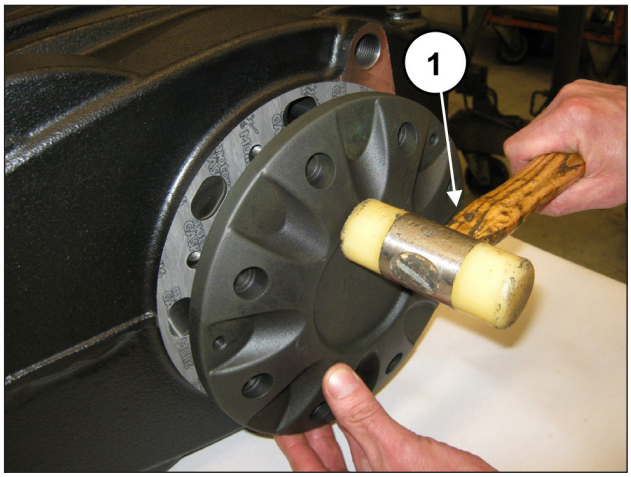



Fig. 59

Tighten the 8 M10x30 screws (pos. ①, Fig. 60).
Calibrate the screws with a torque wrench as indicated in chapter 3.

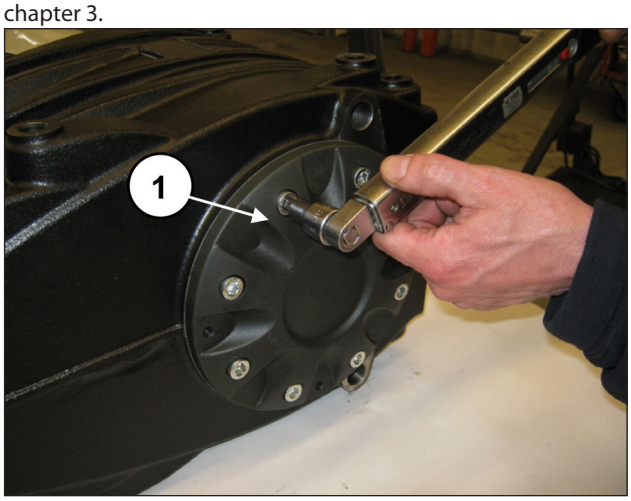



Fig. 60

From the opposite side, insert the side seal on the reduction gear box (pos. ①, Fig. 61) and lift the bend shaft to favour cover insertion (pos. ①, Fig. 62).

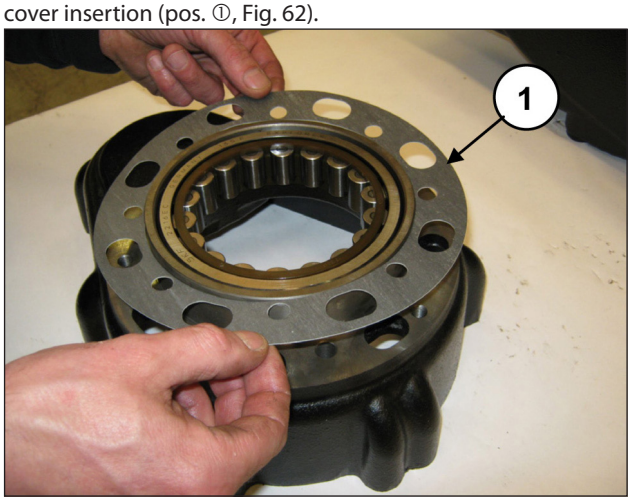



Fig. 61

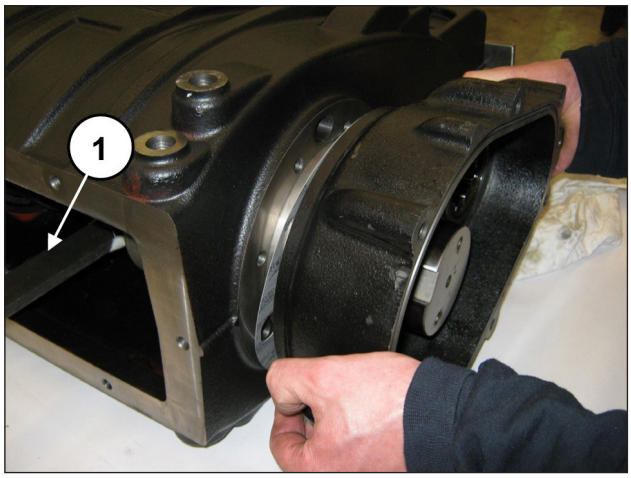



Fig. 62

Assemble the reduction gear box (and relative seal) using an extractor hammer (pos. ①, Fig. 63).

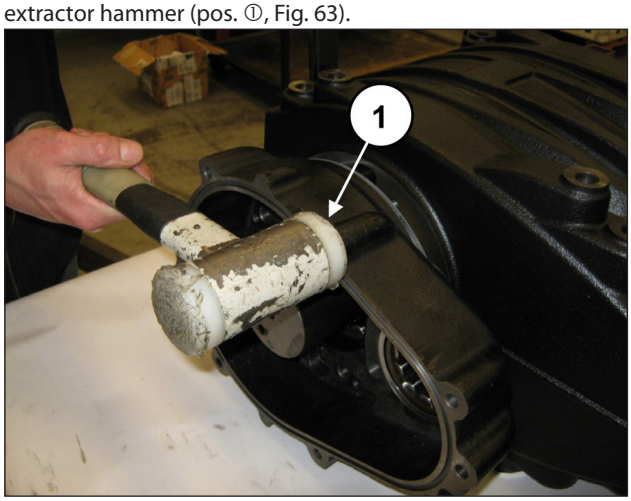



Fig. 63

Tighten the 8 M10x40 screws (pos. ①, Fig. 64).
Calibrate the screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION.

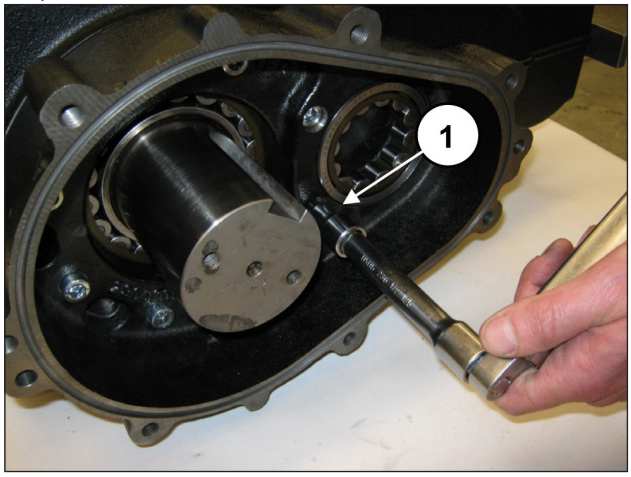



Fig. 64

Remove the tool for blocking the con-rods code 27566200 (pos. ①, Fig. 32).

Insert the upper half-bearings between the con-rods and the shaft (pos. ①, Fig. 65).

**For proper assembly of the half-bearings, ensure that the reference tab on the half-bearings are positioned in their housing on the half support (pos. ①, Fig. 66).**

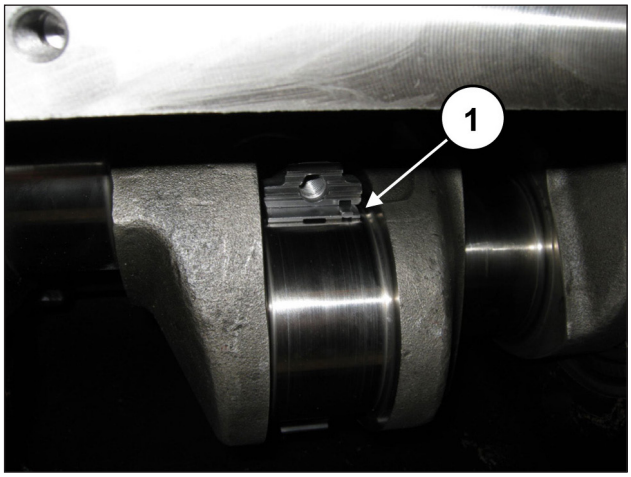



Fig. 65

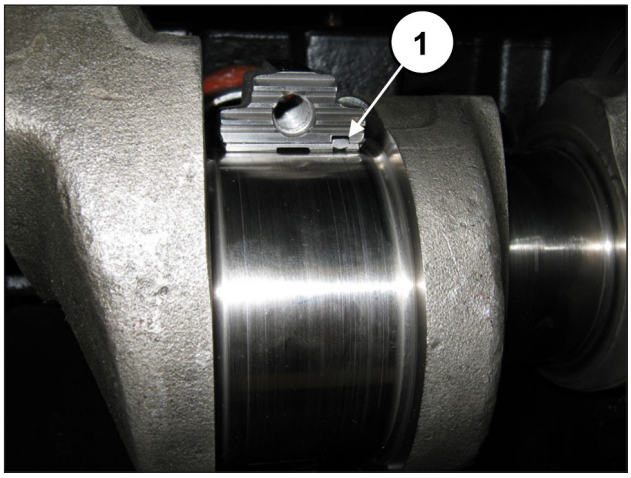



Fig. 66

Apply the lower half-bearings to the caps (pos. ①, Fig. 67) ensuring that the half-bearing reference notches are positioned in their housing on the cap (pos. ②, Fig. 67).
Fasten the caps to the half supports by means of M10x1.5x80 screws (pos. ①, Fig. 68).

**Note the correct assembly direction of the caps. Numbering must be turned upward.**

Calibrate the screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION, bringing the screws to tightening torque at the same time.

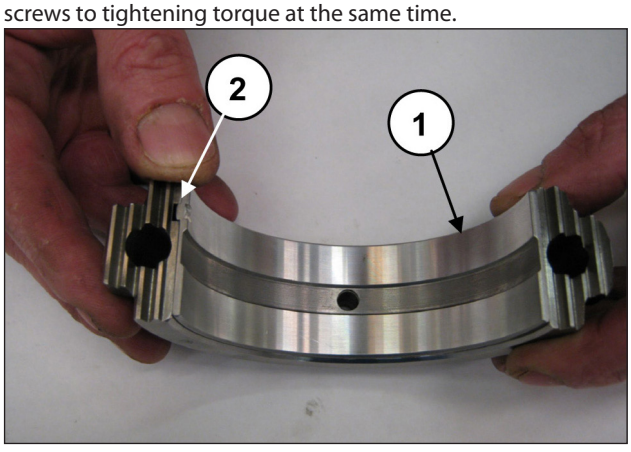



Fig. 67

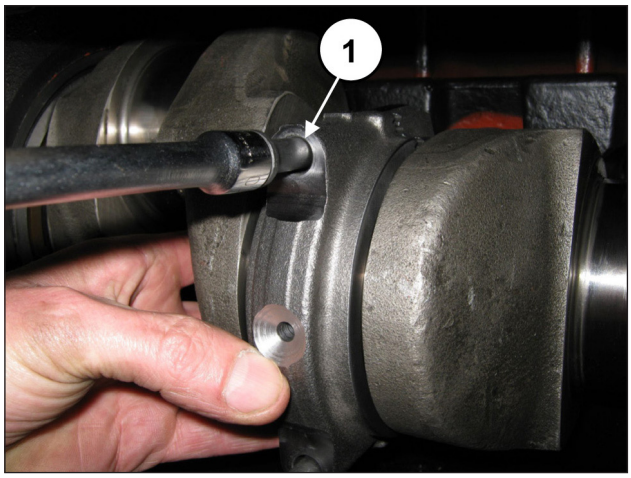



Fig. 68

**After finishing this operation, verify that the con-rods have axial clearance in both directions.**

Insert the piston guide seal rings in their casing housing by means of a special tool code 27605300 (pos. ① and ②, Fig. 69/a and Fig. 69/b).

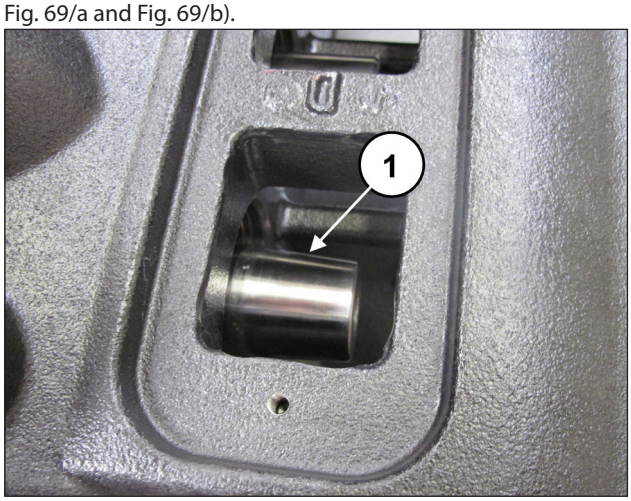



Fig. 69/a

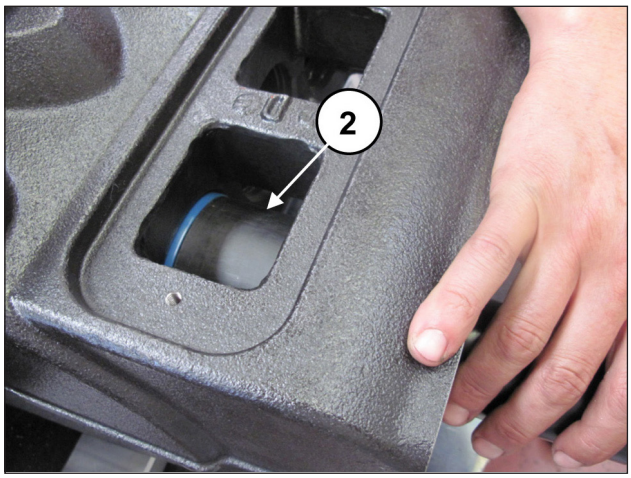



Fig. 69/b

Insert the O-ring on the rear cover (pos. ①, Fig. 70) and assemble the cover on the casing with the aid of 6 M10x30 screws (pos. ①, Fig. 71).

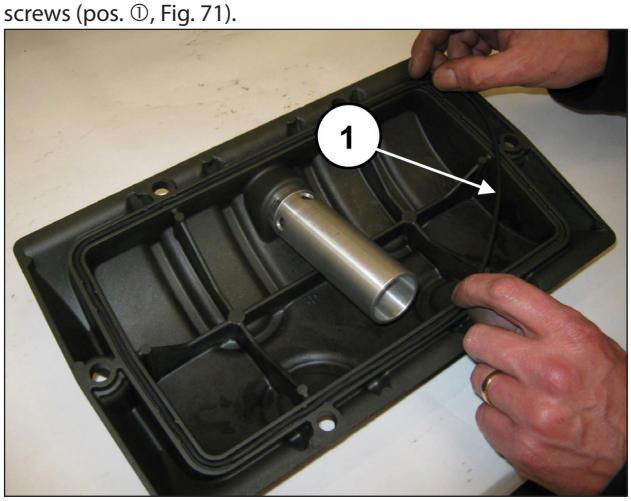



Fig. 70

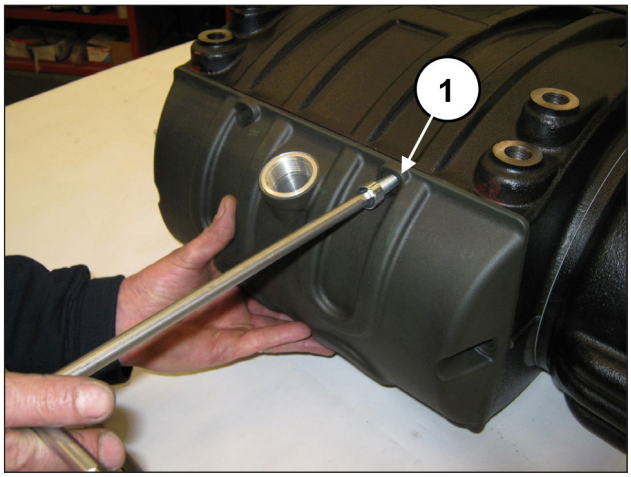



Fig. 71

**Take care to fully and properly insert the O-ring in its housing on the cover to prevent these can become damaged during screw tightening.**

Calibrate the screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION.
Insert the ring gear support ring in the bend shaft shank (pos. ①, Fig. 72) to end stroke (pos. ①, Fig. 73).

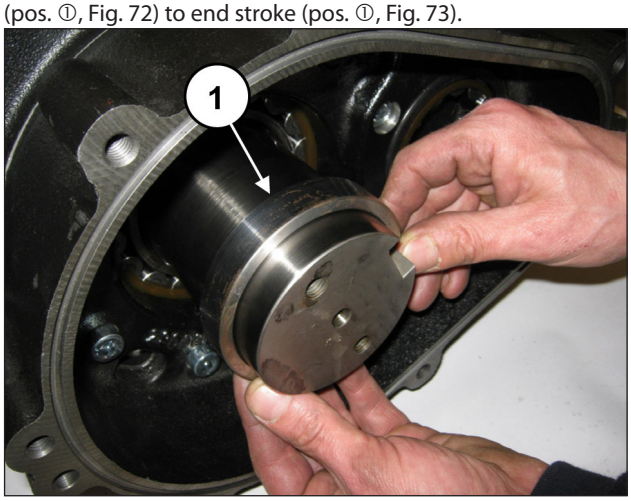



Fig. 72

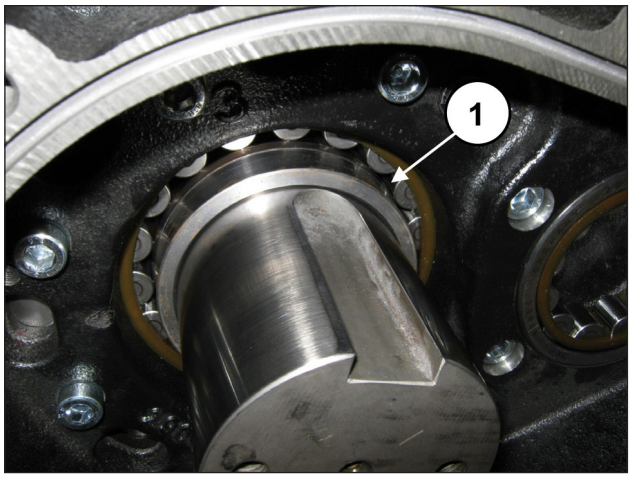



Fig. 73

Apply tab 22x14x80 in the shaft housing (pos. ①, Fig. 74) and insert the ring gear on the shaft (pos. ①, Fig. 75).

**The ring gear must be assembled making sure that the two M8 holes (to be used for extraction) be turned outward of the pump (pos. ②, Fig. 75).**

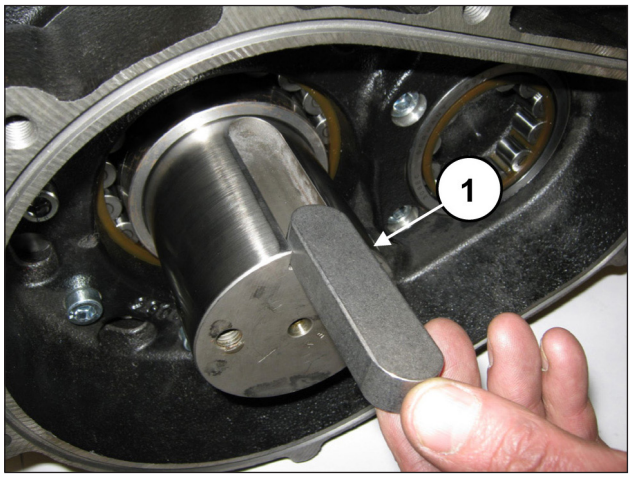



Fig. 74

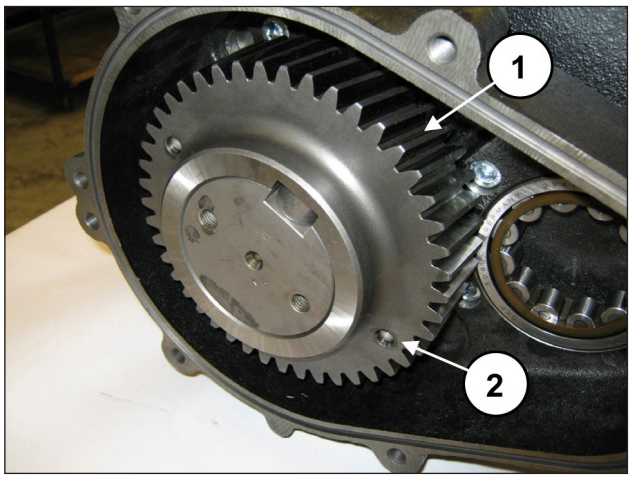



Fig. 75

Fasten the ring gear stop (pos. ①, Fig. 76) using 2 M10x25 screws.
Calibrate the screws with a torque wrench as indicated in chapter 3 (pos. ①, Fig. 77).

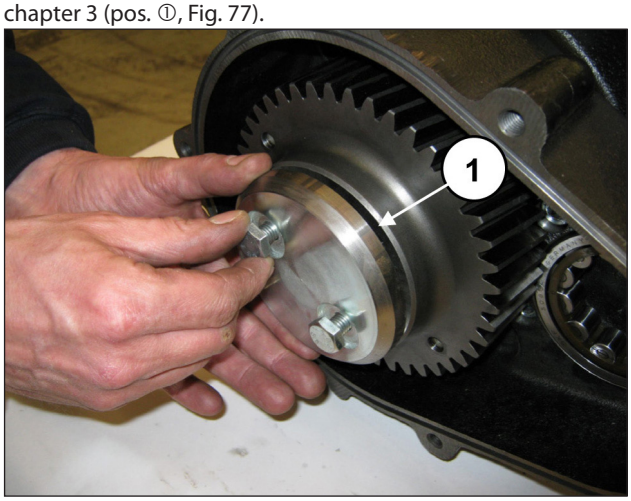



Fig. 76

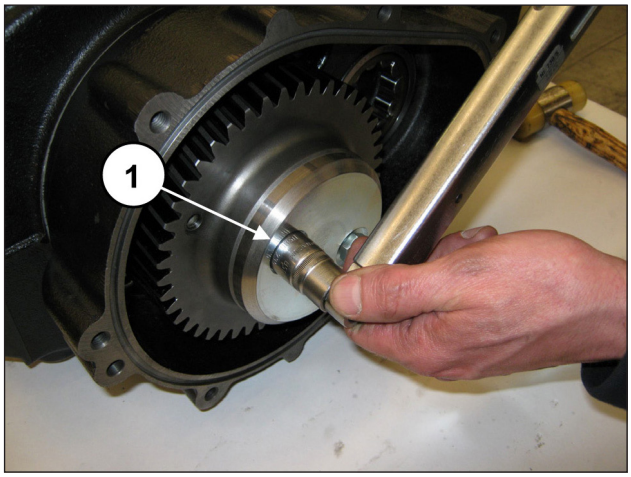



Fig. 77

Apply the 2 Ø10x24 pins on the reduction gear box (pos. ①, Fig. 78) and insert the O-ring (pos. ①, Fig. 79).

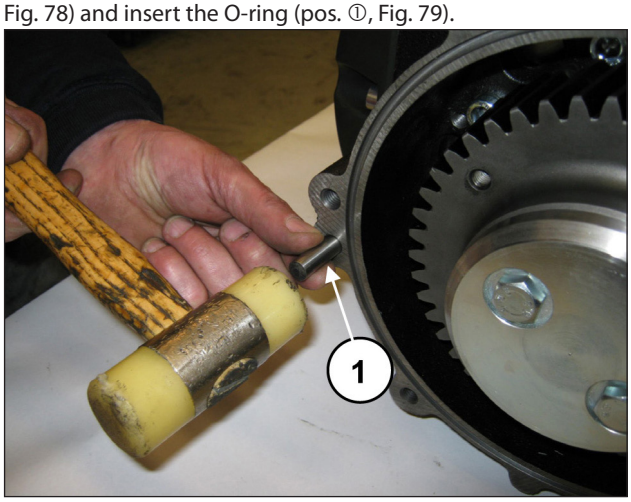



Fig. 78

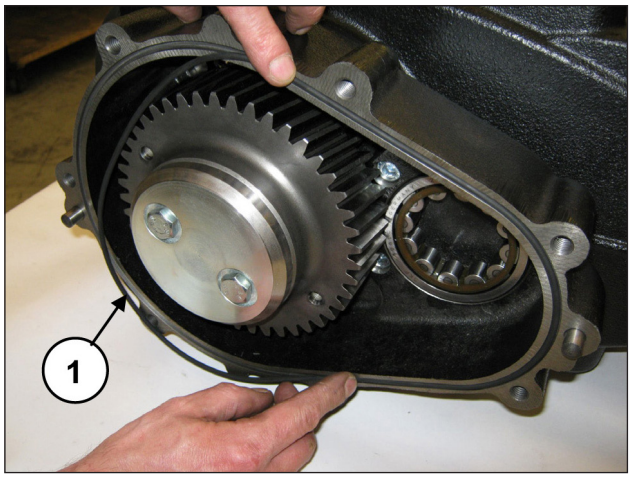



Fig. 79

Complete assembly of the pinion on the reduction gear cover, proceeding as follows:
Pre-assemble the inner bearing ring 40x90x23 on the pinion (pos. ①, Fig. 80) positioning it to end stroke.

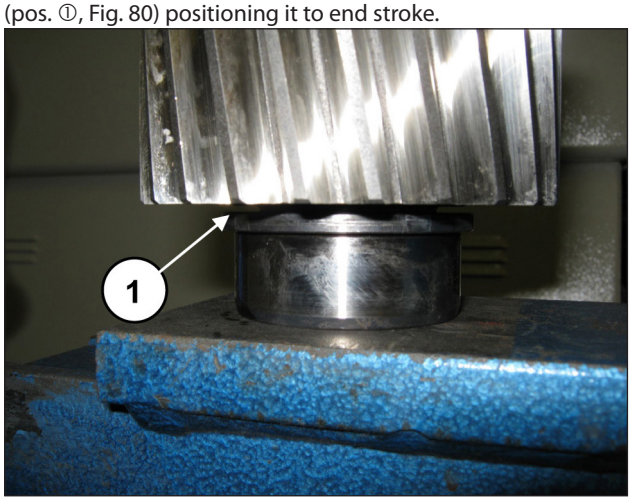



Fig. 80

From the other side of the pinion, pre-assemble the bearing 55x120x29 (pos. ①, Fig. 81) positioning it to end stroke using tool code 27604800 (pos. ①, Fig. 82).

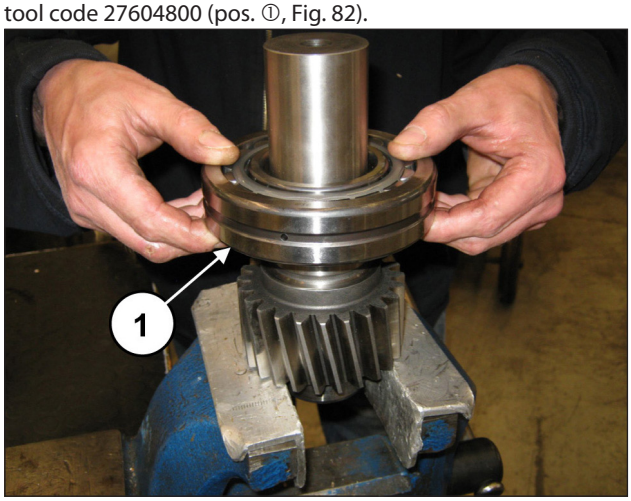



Fig. 81

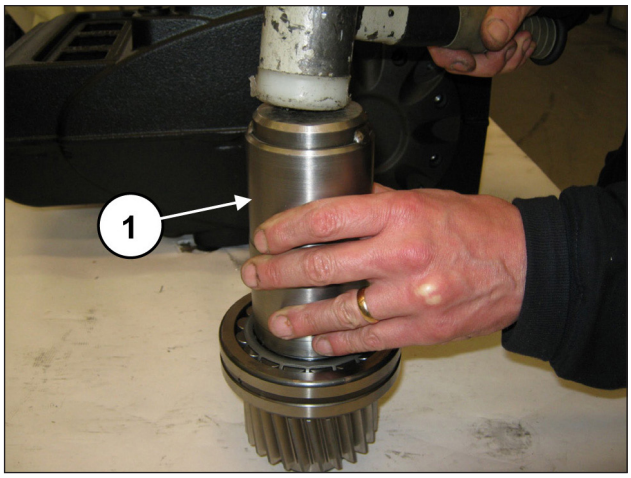



Fig. 82

Insert the bearing support ring (pos. ①, Fig. 83) and position the Seeger ring Ø55 (pos. ①, Fig. 84).

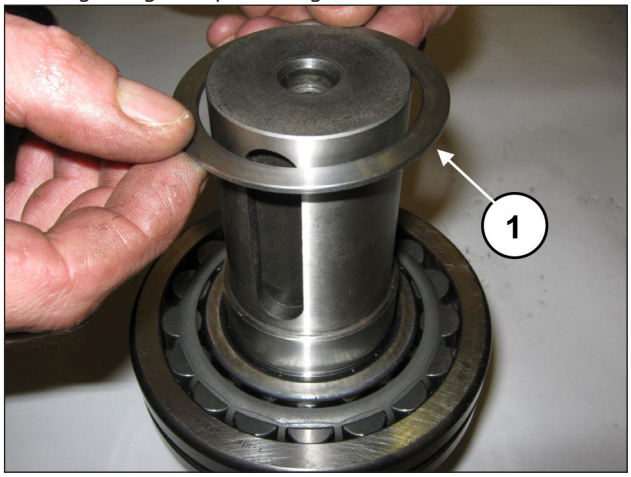



Fig. 83

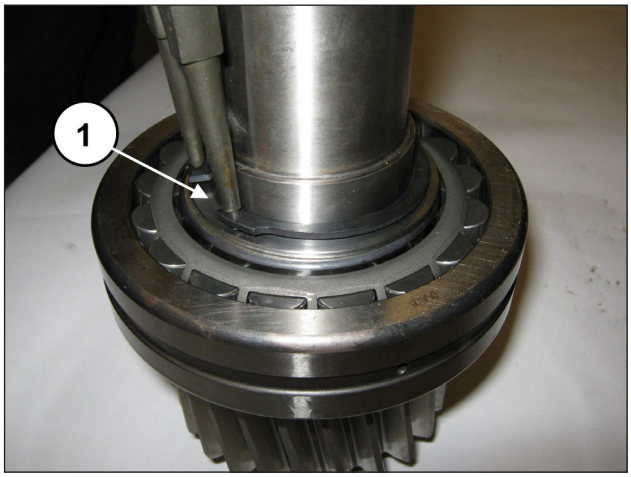



Fig. 84

Insert the pinion pre-assembled inside its housing in the reduction gear cover, with the aid of an extractor hammer (pos. ①, Fig. 85).

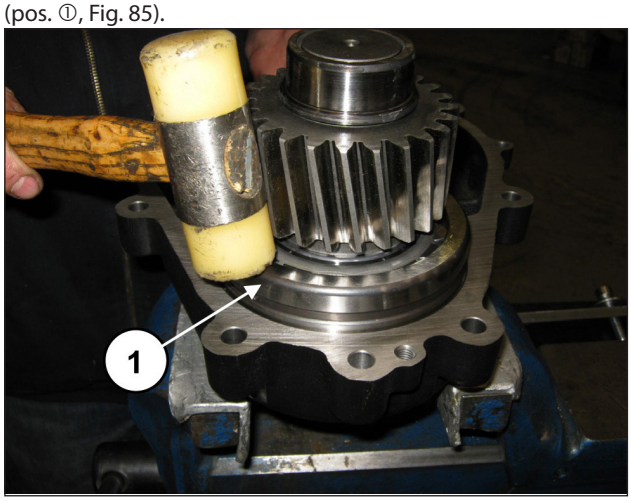



Fig. 85

Insert the Seeger ring Ø120 in the housing (pos. ①, Fig. 86).

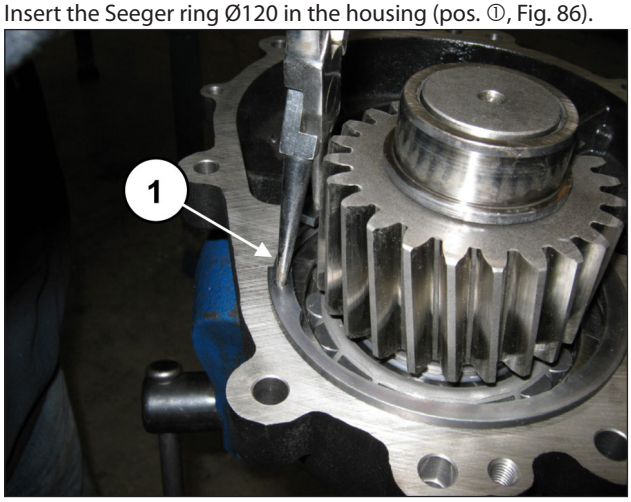



Fig. 86

Assemble the reduction gear cover with the aid of an extractor hammer (pos. ①, Fig. 87) and fasten it with 7 M10x40 screws (pos. ①, Fig. 88).
Take care to properly couple the two components on the bearing 40x90x23.
Calibrate the screws with a torque wrench as indicated in chapter 3.

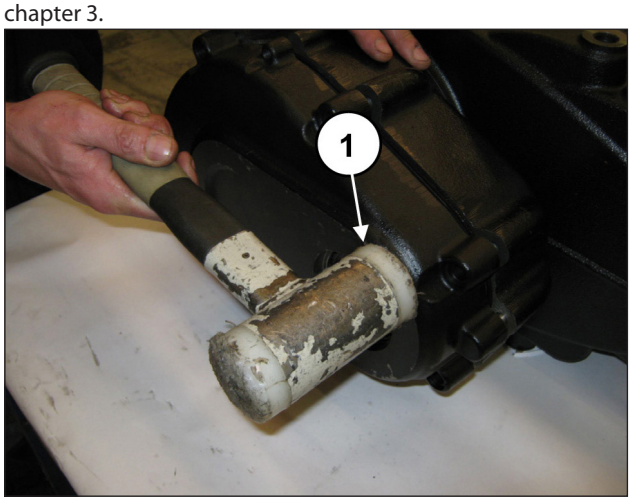



Fig. 87

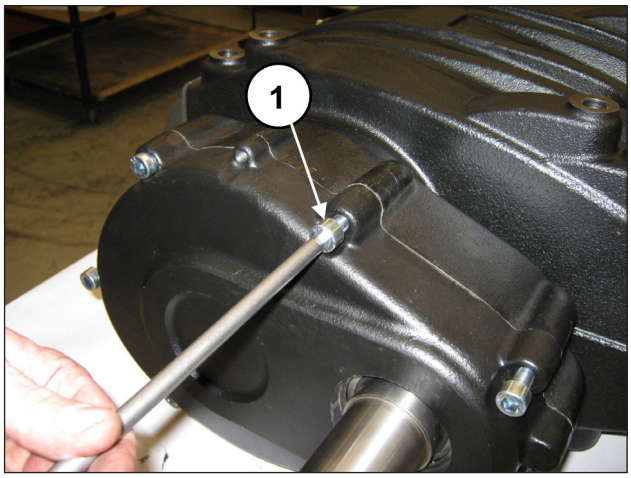



Fig. 88

Insert the seal ring inside the reduction gear cover with the use of special tool code 27605200 (pos. ①, Fig. 89).
Before proceeding with seal ring assembly, check lip seal conditions. If replacement is necessary, position the new ring on the bottom of the groove as indicated in Fig. 90.

**If the shaft should present a diameter wear corresponding to the lip seal, to prevent grinding, position the ring in the second stroke as indicated in Fig. 90.**

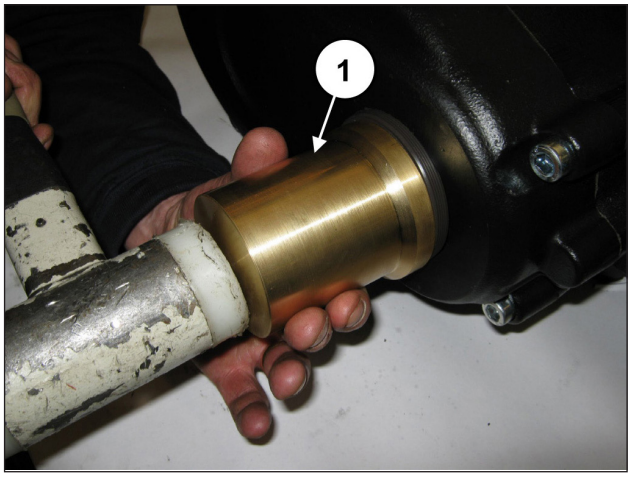



Fig. 89

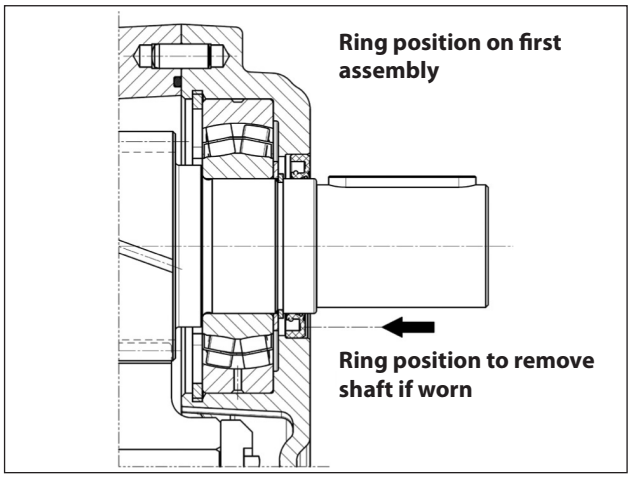



Fig. 90

**To prevent damage to the seal ring, take special care when inserting the seal ring on the pinion.**

Apply O-rings on the inspection covers (pos. ①, Fig. 91) and tighten with 2+2 M6x14 screws (pos. ①, Fig. 92).
Calibrate the screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION.

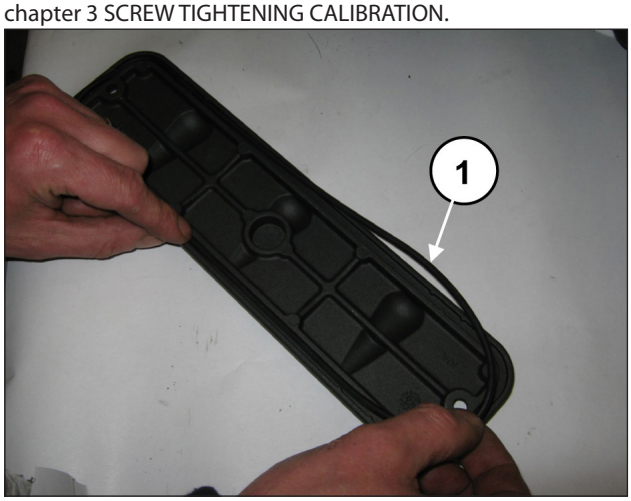



Fig. 91

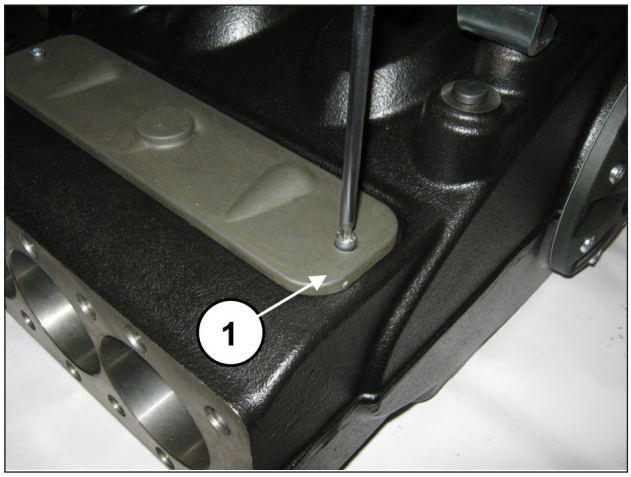



Fig. 92

Insert the tab 14x9x60 on the pinion.
Apply plugs and lifting brackets with the use of M16x30 screws (pos. ①, Fig. 93).
Calibrate the screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION.

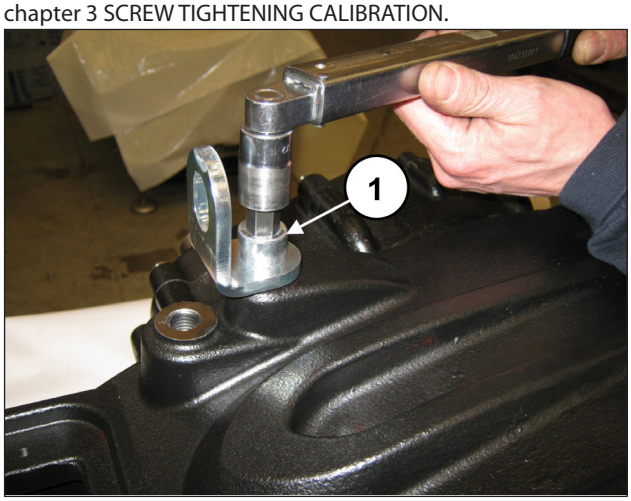



Fig. 93

Insert oil in the casing as indicated in the ***Use and maintenance manual***, par. 7.4.

### 2.1.3 Increase and reduction classes

| TABLE OF REDUCTIONS FOR BEND SHAFTS AND CON-ROD HALF-BEARINGS | | | |
|---|---|---|---|
| **Recovery classes (mm)** | **Upper Half-Bearing Code** | **Lower Half-Bearing Code** | **Correction on the shaft pin diameter (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| INCREASE TABLE FOR PUMP CASING AND PISTON GUIDE | | |
|---|---|---|
| **Recovery classes (mm)** | **Piston Guide Code** | **Adjustments on the Pump Casing housing (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 REPAIRING HYDRAULIC PARTS

### 2.2.1 Dismantling the MW32 MW36 MW40 head – valve units

The head needs preventive maintenance as indicated in the ***Use and maintenance manual***.
Operations are limited to inspection or replacement of valves, if necessary.
Proceed as follows to remove the valve units:
Unscrew the 8 M16x55 screws of the valve cover (pos. ①, Fig. 94) and remove the cover (pos. ①, Fig. 95).

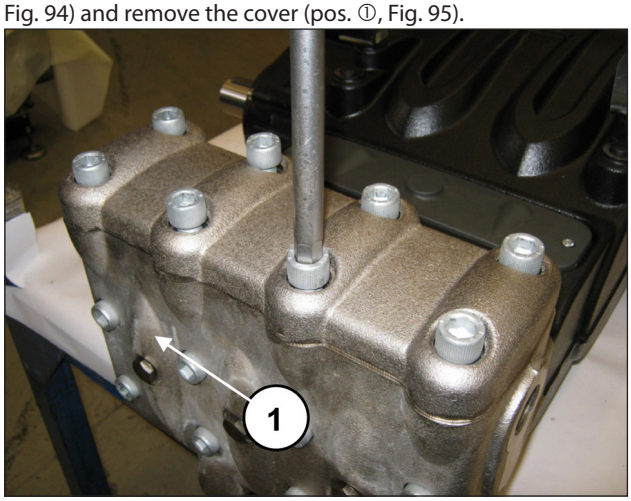



Fig. 94

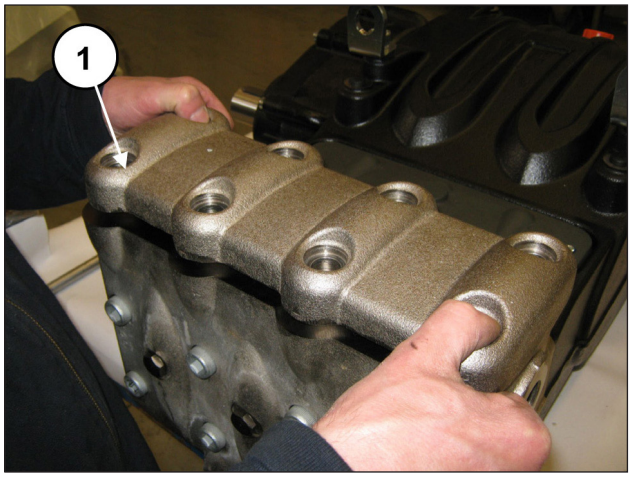



Fig. 95

Extract the valve plug with the use of an extractor hammer to be applied on the M10 hole of the valve plug (pos. ①, Fig. 96).

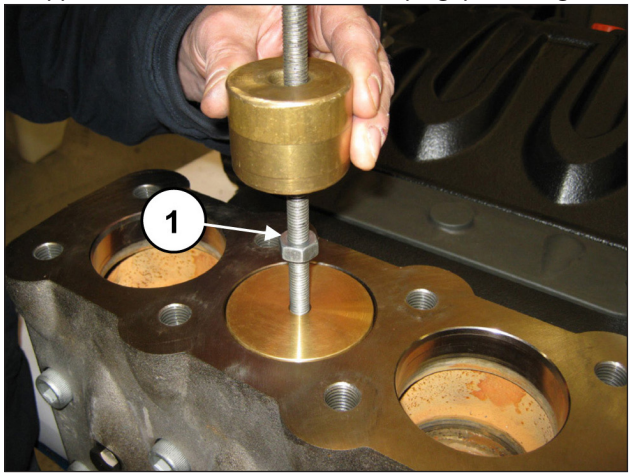



Fig. 96

Remove the spring (pos. ①, Fig. 97).

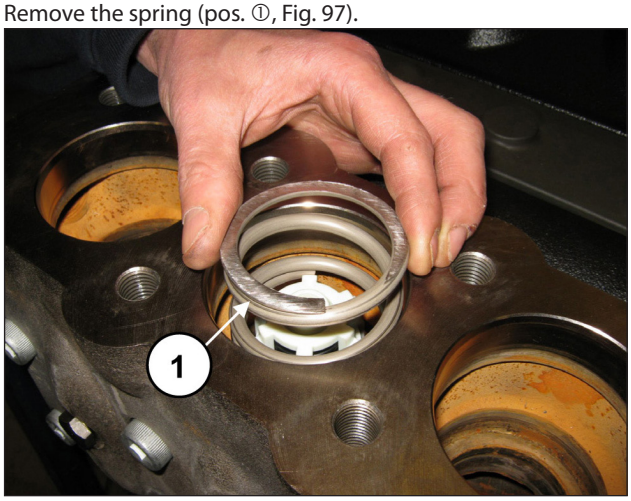



Fig. 97

Extract the outlet valve unit with the use of an extractor hammer (code 27516400) to be applied on the M10 hole of the valve guide (pos. ①, Fig. 98).

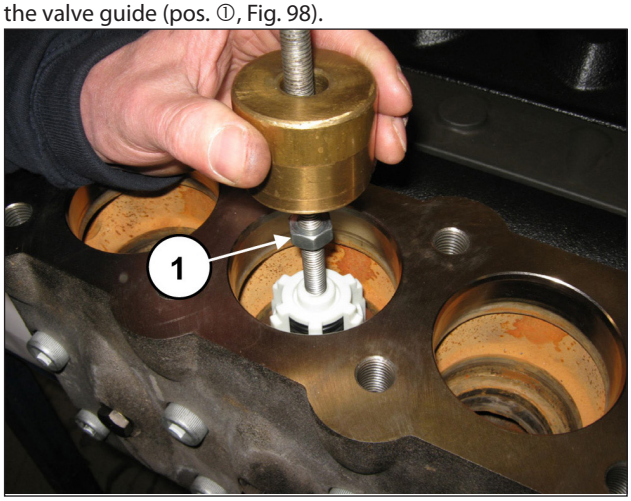



Fig. 98

Remove the valve housing spacer ring (pos. ①, Fig. 99).

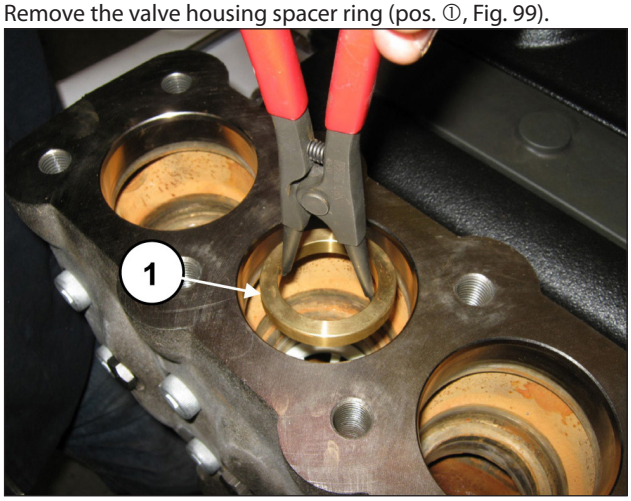



Fig. 99

Remove the valve guide spacer inserting an 8 mm hexagon spanner in the housing and lifting it to facilitate removal (pos. ①, Fig. 100).

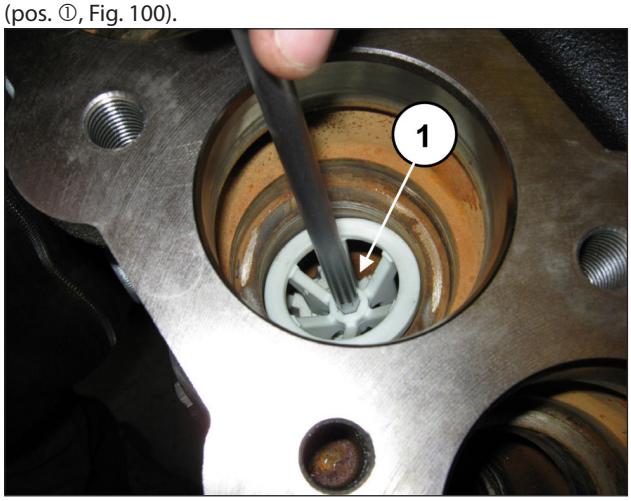



Fig. 100

Extract the suction valve unit with the use of an extractor hammer (code 27516400) to be applied on the M10 hole of the valve guide (pos. ①, Fig. 101).

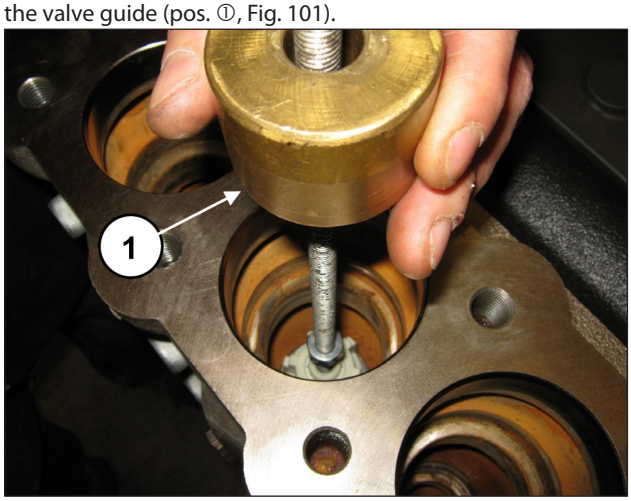



Fig. 101

**If removing the suction valve unit proves to be particularly difficult (for example because of incrustations due to prolonged inactivity of the pump), use the extractor tool (code 27516200 (pos. ①, Fig. 102) as indicated.**

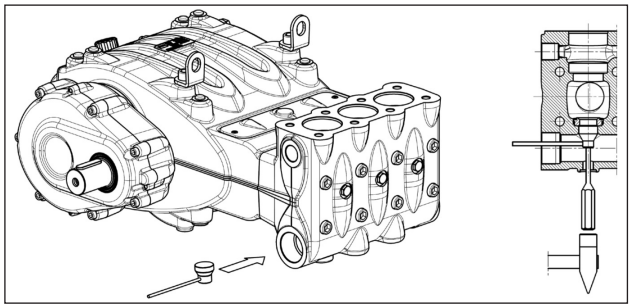


Fig. 102

Unscrew the valve opening device by means of a 30 mm spanner (pos. ①, Fig. 103).

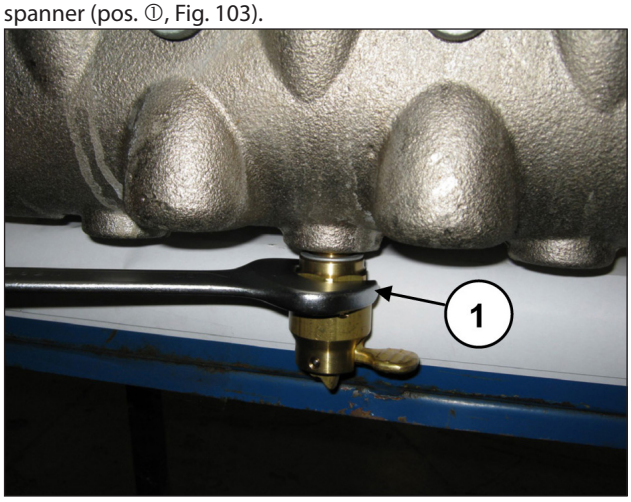



Fig. 103

Remove the suction and outlet valve units, unscrewing an M10 screw in such a way to press on the inner guide and remove the valve guide from the valve housing (pos. ①, Fig. 104).

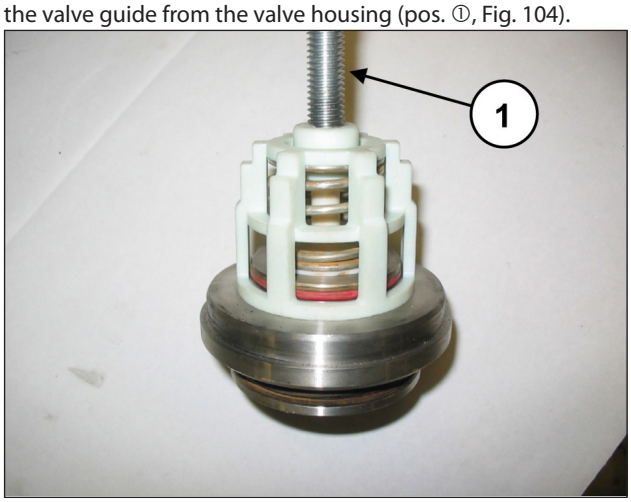



Fig. 104

Complete disassembly removing the G1/4" plugs on the front of the head.
It is now possible to remove the head from the pump casing, unscrewing the 8 M16x180 screws (pos. ①, Fig. 105).
During disassembly of the head, pay special attention not to hit the pistons (pos. ①, Fig. 106).

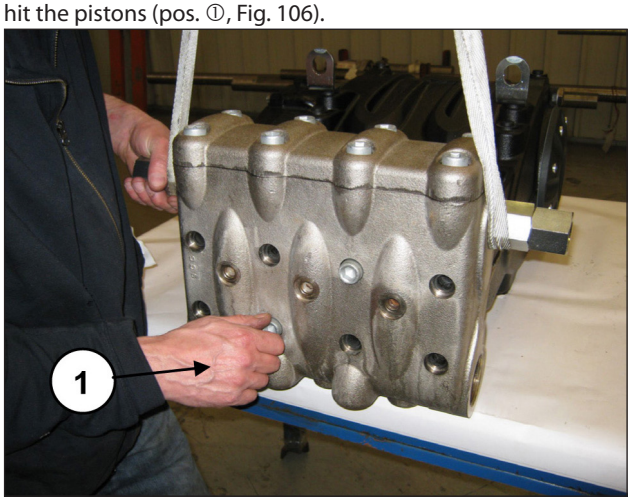



Fig. 105

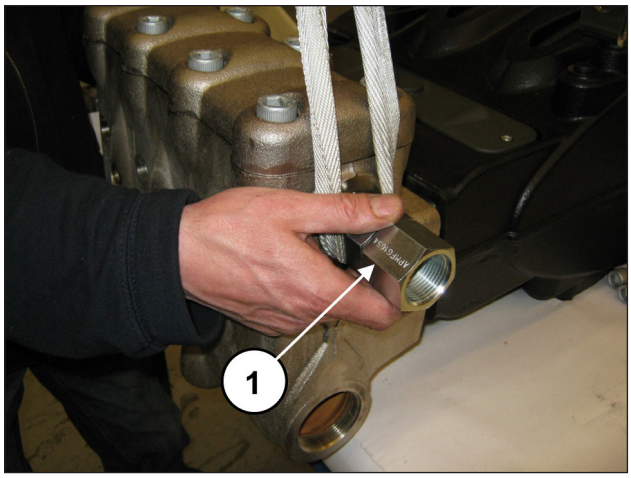



Fig. 106

### 2.2.2 Assembling the MW32 MW36 MW40 head – valve units

**Pay particular attention to the conditions of the various components and replace if necessary. At every valve inspection, replace all O-rings both in the valve unit and**

**in the valve plugs.**

**Before repositioning the valve units, thoroughly clean and dry the relative housings on the head indicated by the arrows (pos. ①, Fig. 107).**

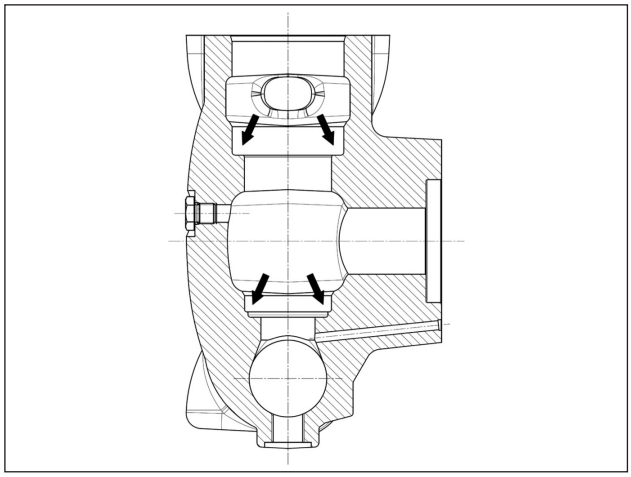


Fig. 107

Proceed with reassembly following the reverse order indicated in par. 2.2.1.

Assemble the suction and outlet valve units (Fig. 108 and Fig. 109) taking care not to invert the previously disassembled springs.
To facilitate insertion of the valve guide in its housing, you can use a pipe resting on the horizontal guide planes (Fig. 110) and use an extractor hammer acting on the whole circumference.

Fig. 108

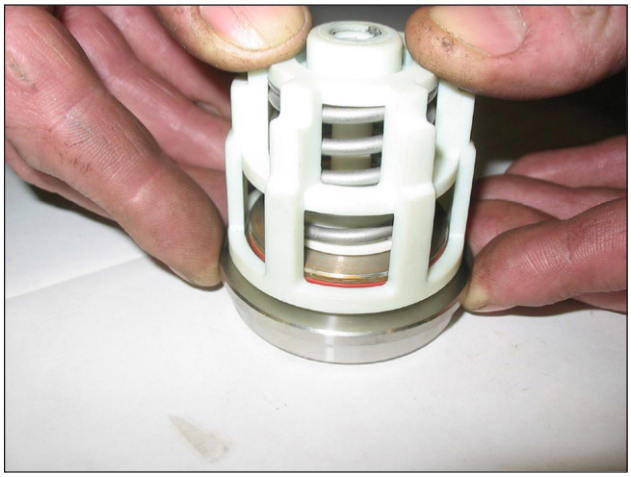


Fig. 109

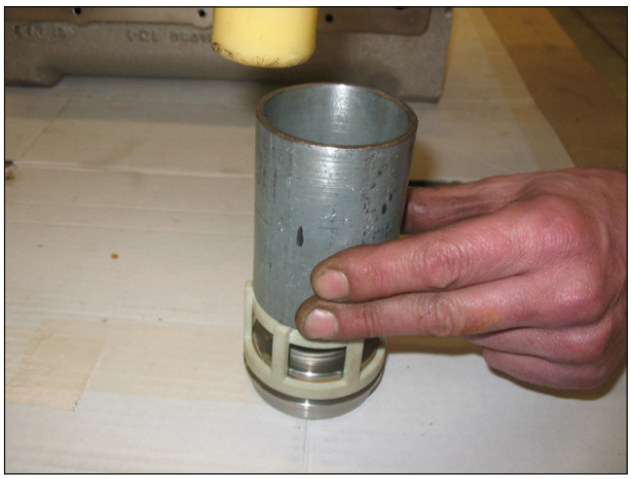


Fig. 110

**Proceed with insertion of the valve units (suction and outlet) in the head, taking care to follow the correct insertion sequence of O-rings and anti-extrusion rings.**

The proper sequence of valve unit assembly on the head is as follows:
Insert the anti-extrusion ring, exploded view pos. 5 (pos. ①, Fig. 111).

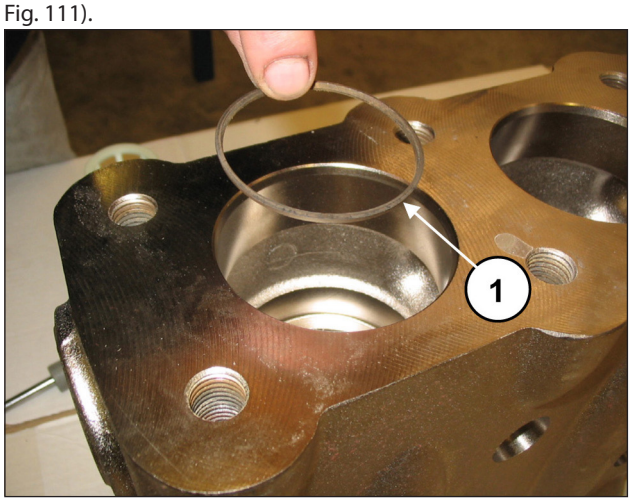



Fig. 111

Insert the O-ring, exploded view pos. 6 (pos. ①, Fig. 112).

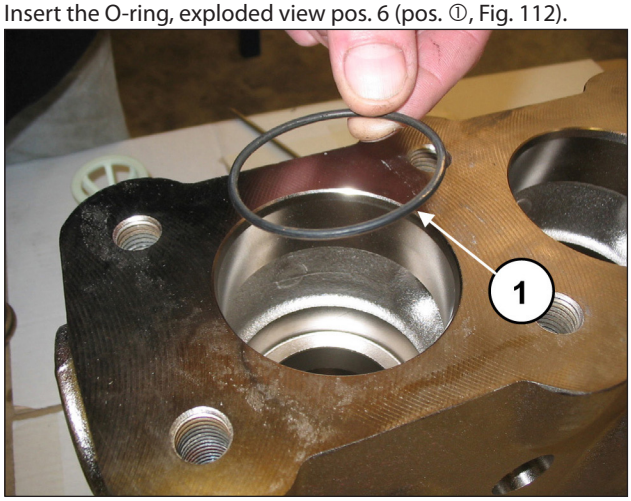



Fig. 112

Ensure that the O-ring and anti-extrusion ring are perfectly placed in their housings.
Insert the suction valve unit (pos. ①, Fig. 113) and then the spacer (pos. ①, Fig. 114).
The complete valve unit must be fully inserted into the bottom and should look like the image in pos. ①, Fig. 114.

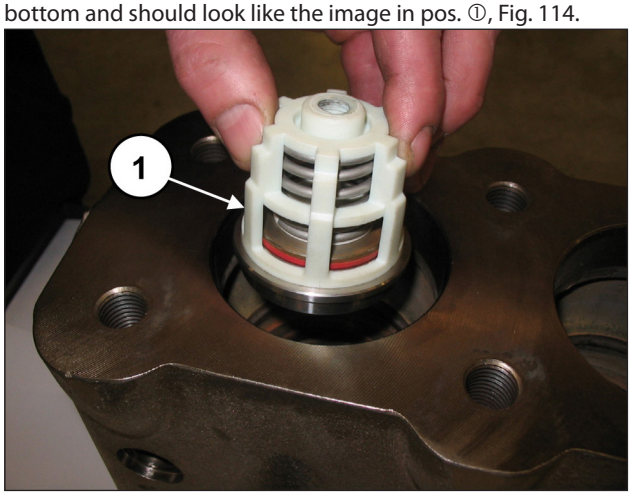



Fig. 113

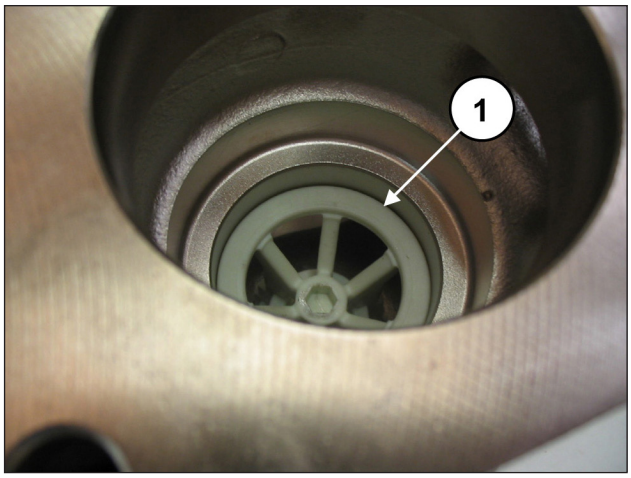



Fig. 114

Insert the valve housing spacer ring (pos. ①, Fig. 115), resting on the spacer (pos. ①, Fig. 116).

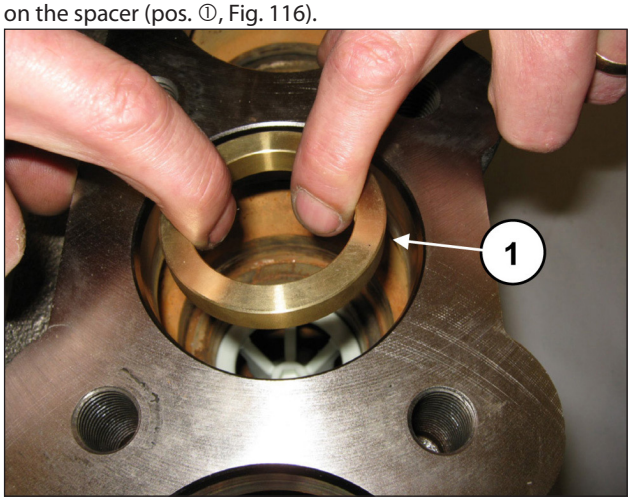



Fig. 115

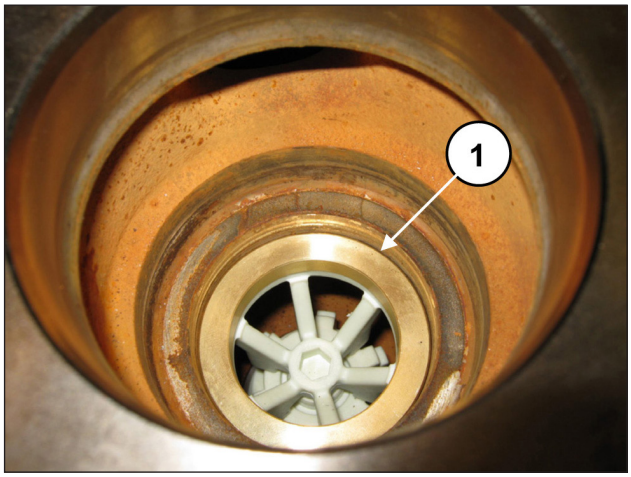



Fig. 116

Assemble the O-ring, exploded view pos. 6 (pos. ①, Fig. 117) and the anti-extrusion ring, exploded view pos. 16 (pos. ②, Fig. 117) on the outlet valve housing.

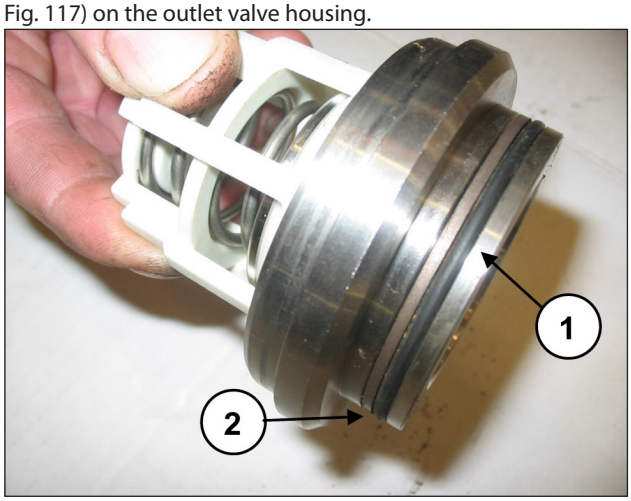



Fig. 117

Insert the outlet valve unit (pos. ①, Fig. 118). The valve unit must be fully inserted into the bottom and should look like the image in pos. ①, Fig. 119.

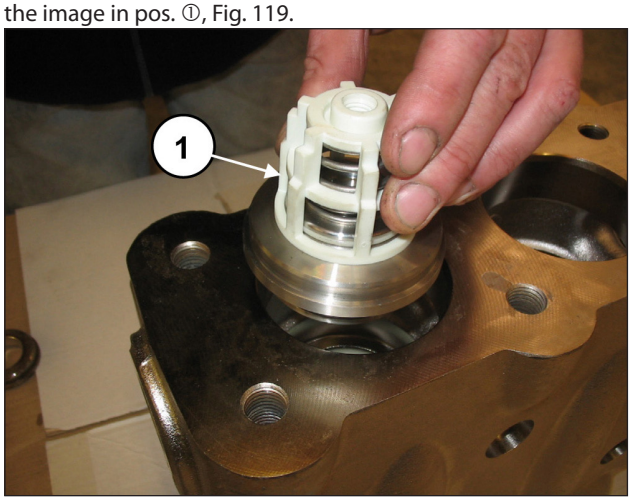



Fig. 118

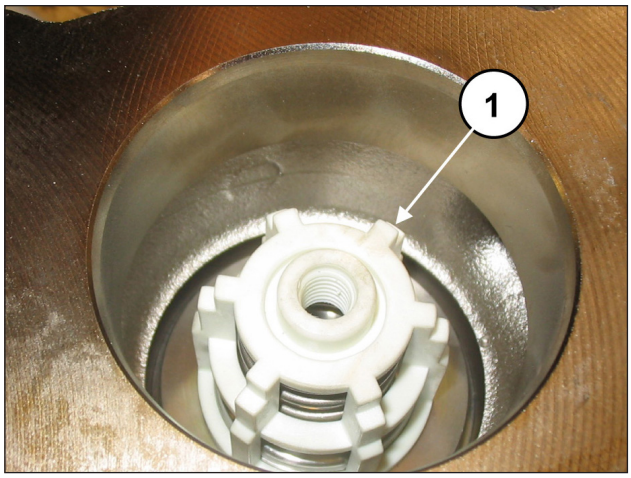



Fig. 119

Insert the anti-extrusion ring, exploded view pos. 18 (pos. ①, Fig. 120).

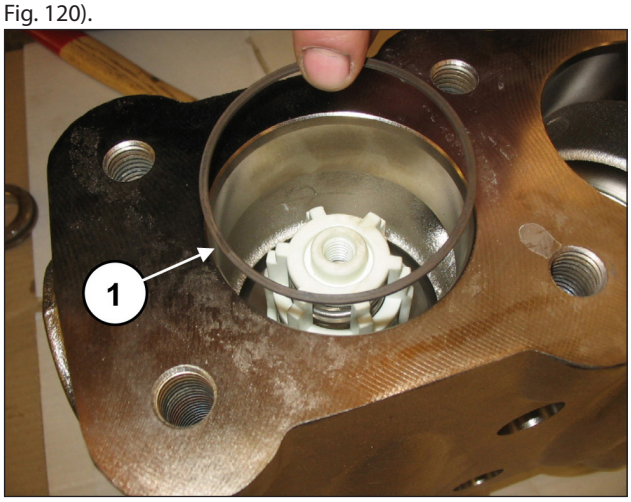



Fig. 120

Insert the O-ring, exploded view pos. 19 (pos. ①, Fig. 121).

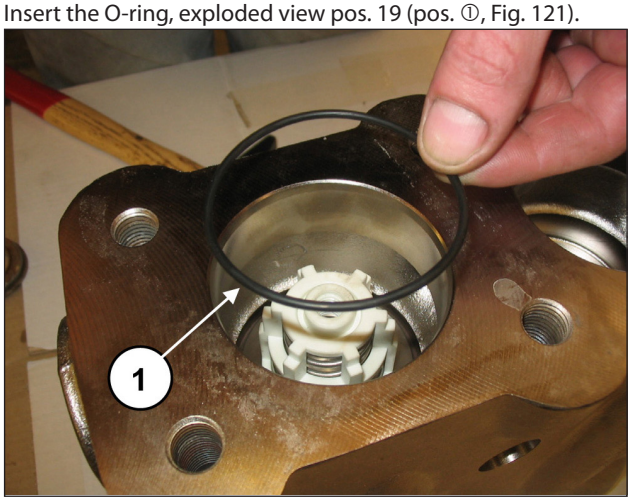



Fig. 121

**Pay special attention to O-ring insertion indicated in pos. ①, Fig. 122.**
**Use a special tool code 27516000 to prevent that the O-ring can cut itself during insertion.**

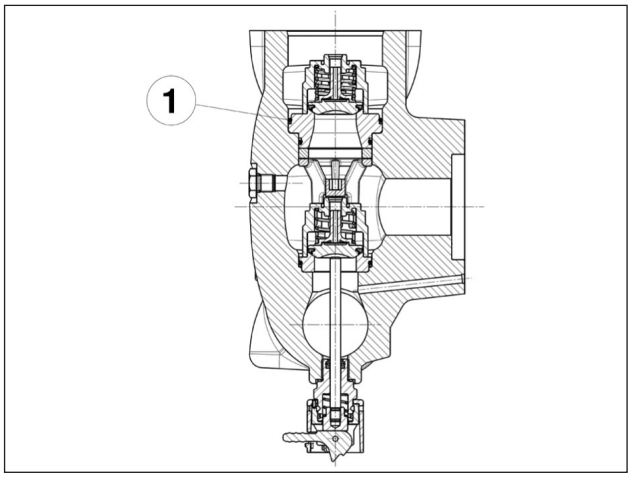



Fig. 122

Insert the valve housing ring (pos. ①, Fig. 123) and the spring (pos. ①, Fig. 124).

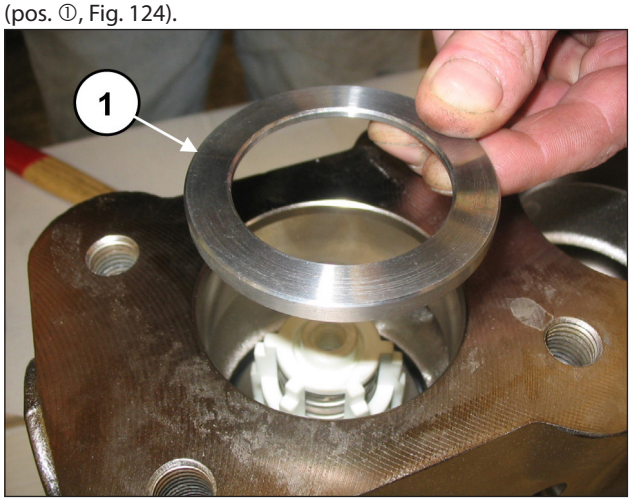



Fig. 123

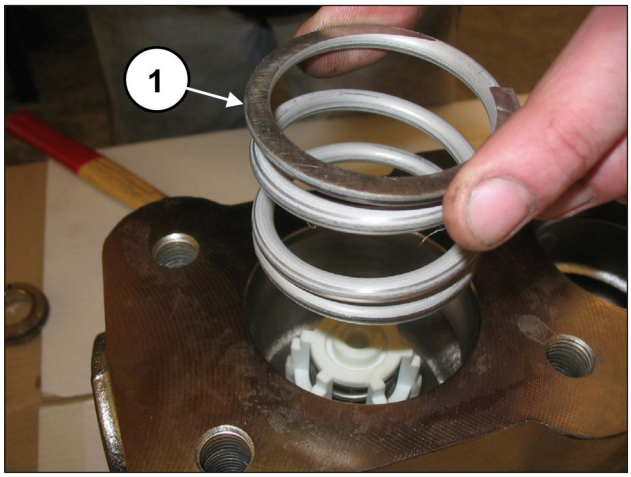



Fig. 124

Assemble the O-ring, exploded view pos. 19 (pos. ①, Fig. 125) and the anti-extrusion ring, exploded view pos. 23 (pos. ②, Fig. 125) on the outlet valve plug.

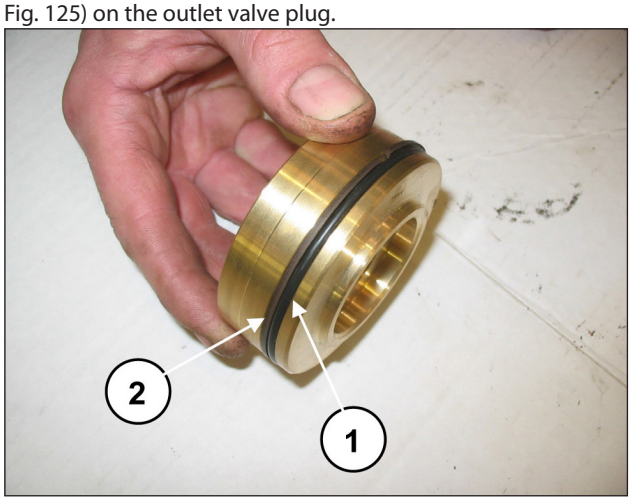



Fig. 125

Insert the valve plug housing complete with O-ring and anti-extrusion rings.

After having completed assembly of the valve units and the valve plug, apply the valve cover (pos. ①, Fig. 126) and screw in the 8 M16x55 screws (pos. ①, Fig. 127).

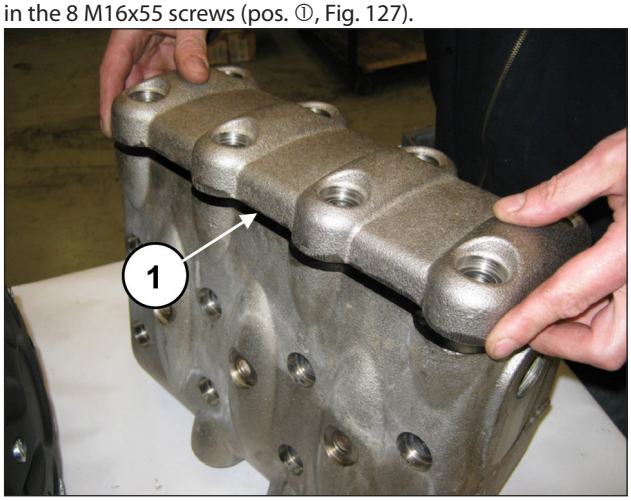



Fig. 126

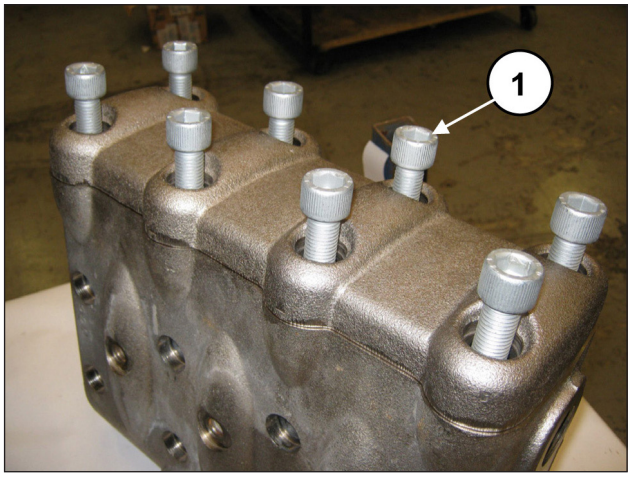



Fig. 127

Apply 6 front O-rings on the pump casing (pos. ①, Fig. 128).

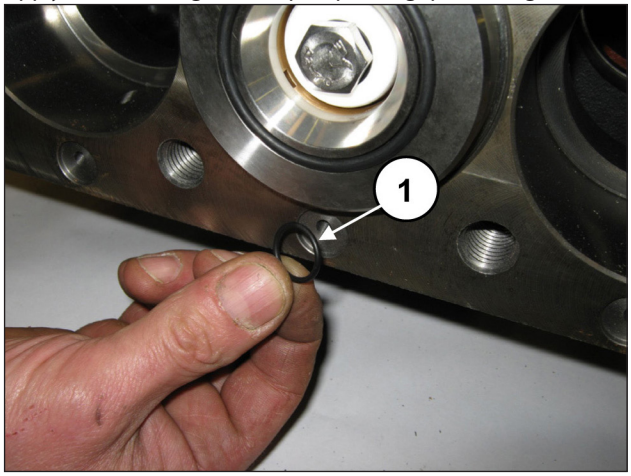



Fig. 128

Assemble the pump casing head (pos. ①, Fig. 129) taking care not to hit the pistons and screw in the 8 M16x180 screws (pos. ①, Fig. 130).

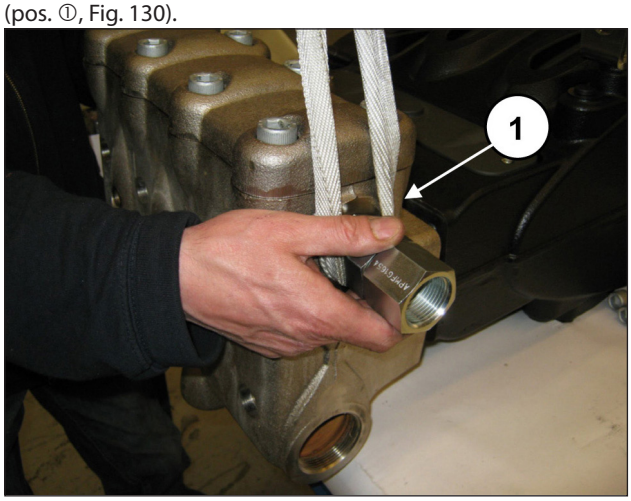



Fig. 129

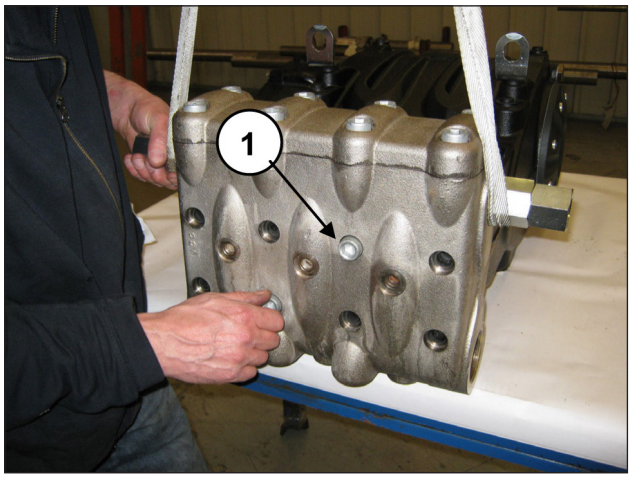



Fig. 130

Proceed with calibration of the M16x180 screws with a torque wrench as indicated in chapter 3.

**Tighten the 8 M16x180 screws starting crosswise from the 4 inner screws, to then continue with the 4 outer screws, always tightening crosswise.**

Calibrate the M16x55 cover screws with a torque wrench as indicated in chapter 3.
Apply the valve opening devices (pos. ①, Fig. 131) and screw them in with the use of a 30 mm spanner (pos. ①, Fig. 132).

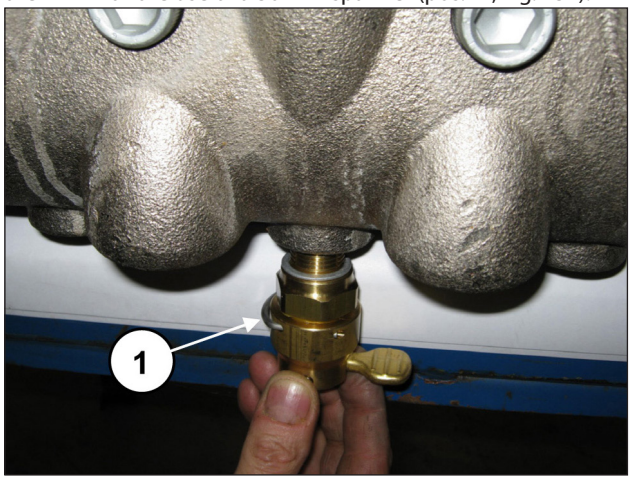



Fig. 131

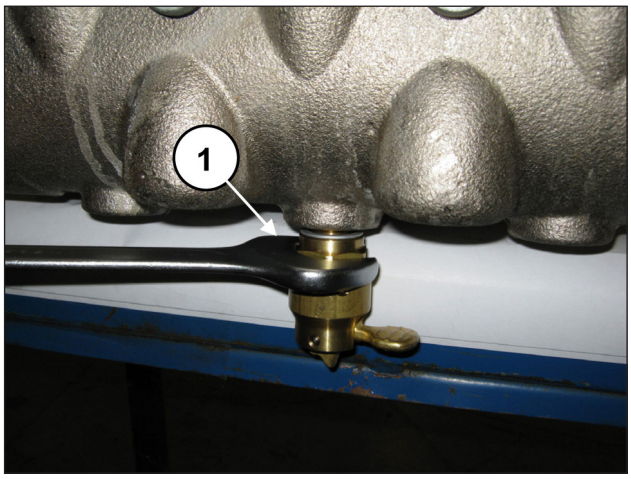



Fig. 132

Apply the G1/4" plugs on the front of the head with relative O-rings.
Proceed with calibration of the G1/4" plugs with a torque wrench as indicated in chapter 3.

### 2.2.3 Dismantling the MW45 MW50 MW55 head – valve units

The head needs preventive maintenance as indicated in the ***Use and maintenance manual***.
Operations are limited to inspection or replacement of valves, if necessary.
Proceed as follows to remove the valve units:
Unscrew the 8 M16x45 screws of the outlet valve cover (pos. ①, Fig. 133) and remove the cover (pos. ①, Fig. 134).

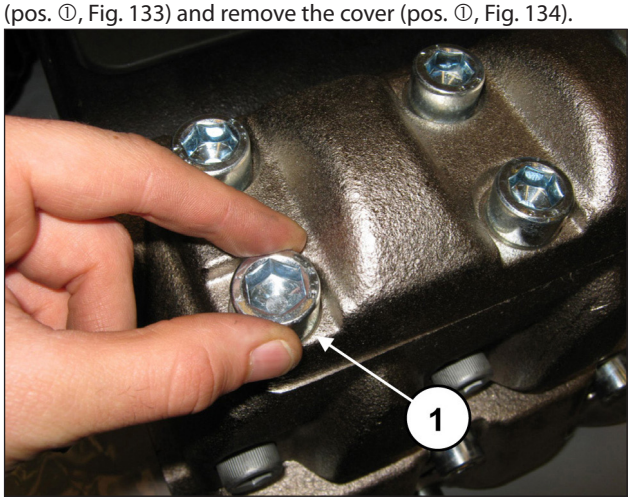



Fig. 133

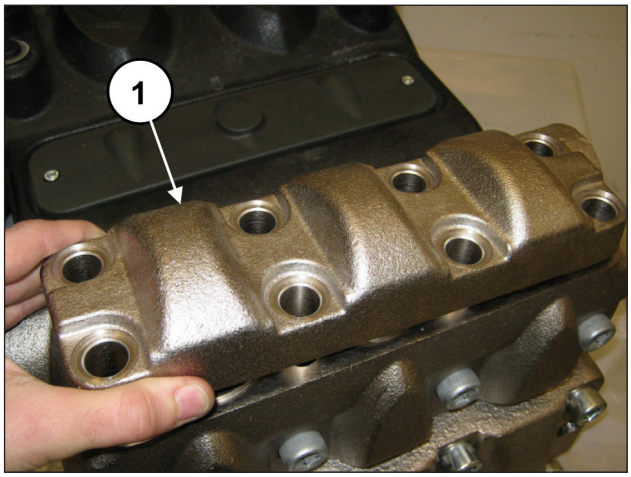



Fig. 134

Extract the outlet valve unit with the use of an extractor hammer (code 27516400) to be applied on the M10 hole of the valve guide (pos. ①, Fig. 135).

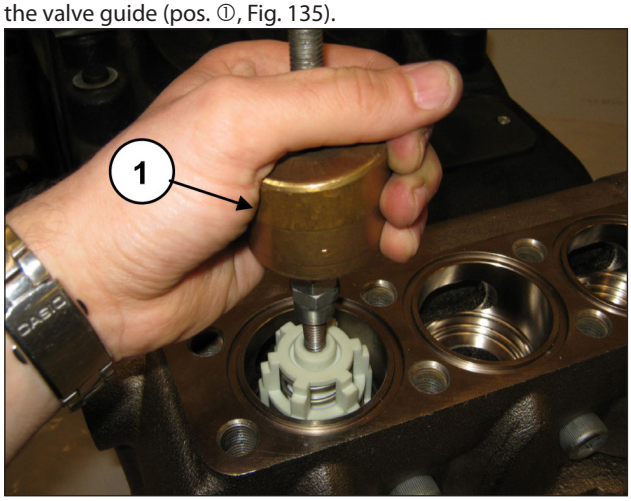



Fig. 135

Unscrew the 8 M16x45 screws of the suction valve cover (pos. ①, Fig. 136) and remove the cover (pos. ①, Fig. 137).

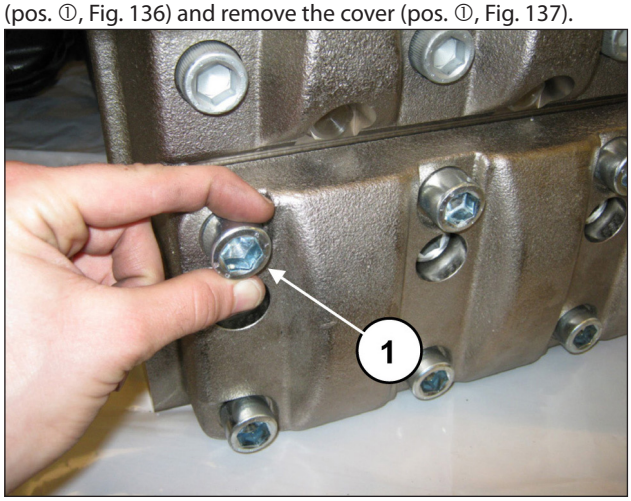



Fig. 136

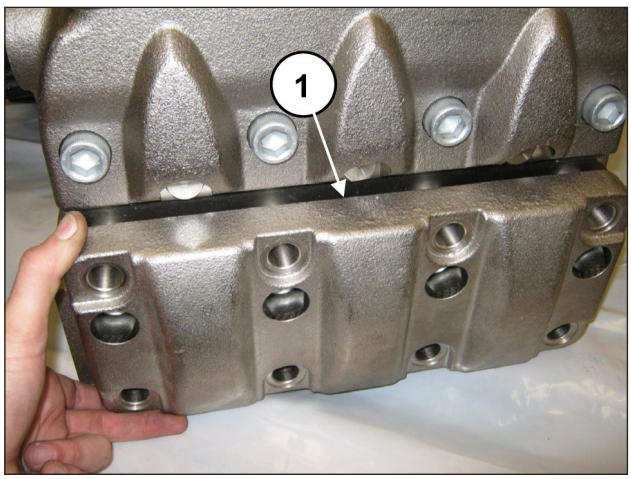



Fig. 137

Extract the suction valve unit with the use of an extractor hammer (code 27516400) to be applied on the M10 hole of the valve guide (pos. ①, Fig. 138).


Fig. 138

Unscrew the valve opening device by means of a 30 mm spanner (pos. ①, Fig. 139).

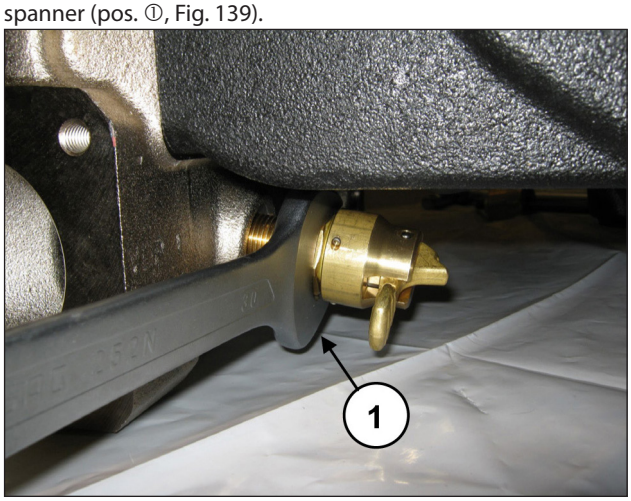



Fig. 139

Remove the suction and outlet valve units, unscrewing an M10 screw in such a way to press on the inner guide and remove the valve guide from the valve housing (pos. ①, Fig. 140).

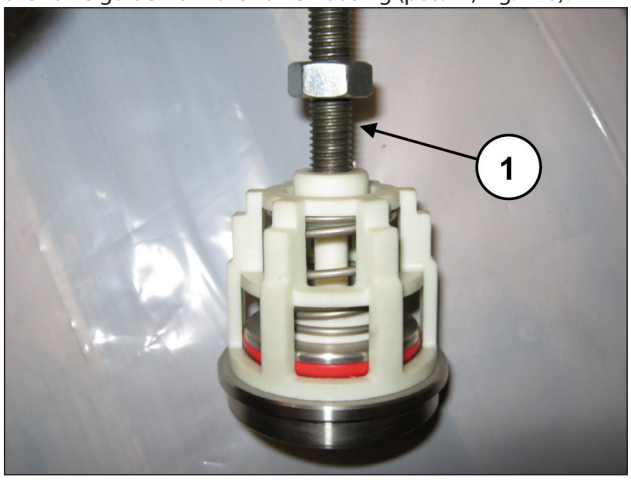



Fig. 140

Complete disassembly removing the G1/4" plugs on the front of the head and the G1/2" plugs on the lower part of the head. It is now possible to remove the head from the pump casing, unscrewing the 8 M16x150 screws (pos. ①, Fig. 141).
During disassembly of the head, pay special attention not to hit the pistons (Fig. 142).

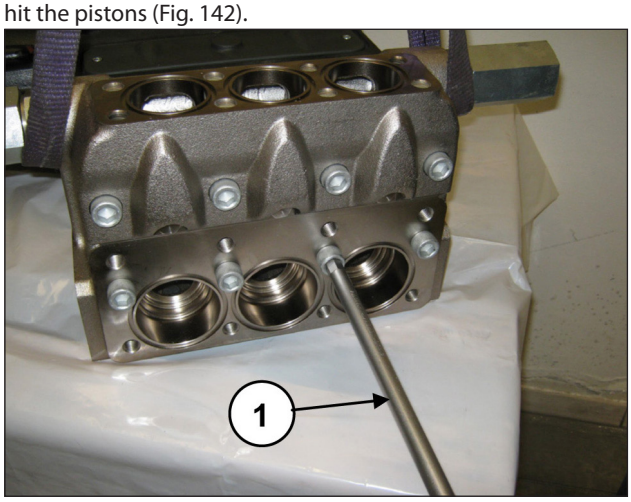



Fig. 141

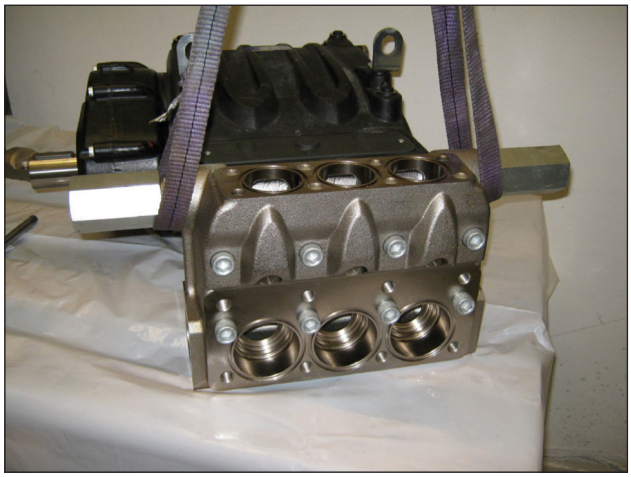


Fig. 142

### 2.2.4 Assembling the MW45 MW50 MW55 head – valve units

**Pay particular attention to the conditions of the various components and replace if necessary. At every valve inspection, replace all O-rings both in the valve unit and**

**in the valve plugs.**

**Before repositioning the valve units, thoroughly clean and dry the relative housings on the head indicated by the arrows (pos. ①, Fig. 143).**

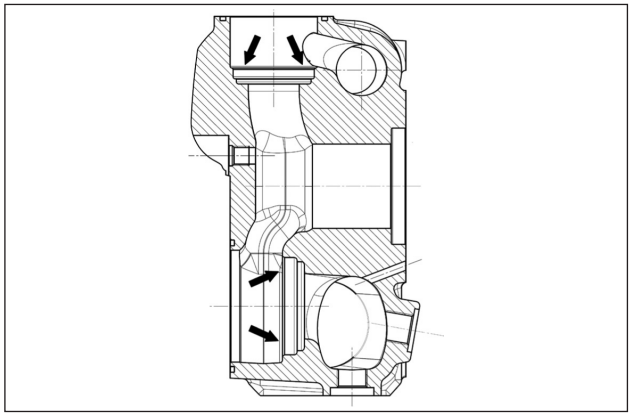


Fig. 143

Proceed with reassembly following the reverse order indicated in par. 2.2.3.
Assemble the suction and outlet valve units (Fig. 144 and Fig. 145).
To facilitate insertion of the valve guide in its housing, you can use a pipe resting on the horizontal guide planes (Fig. 146) and use an extractor hammer acting on the whole circumference

Fig. 144

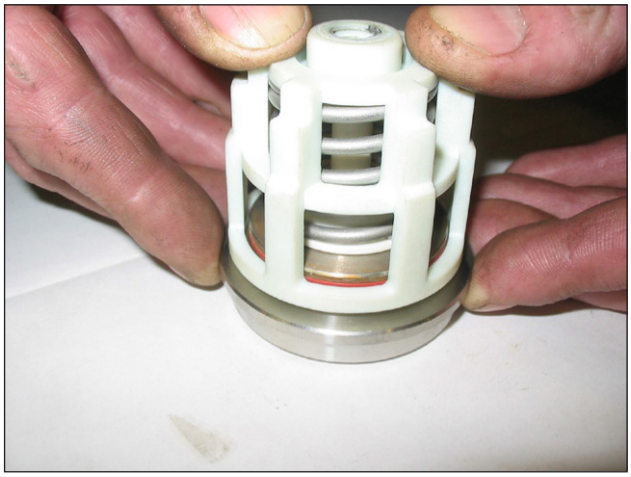


Fig. 145

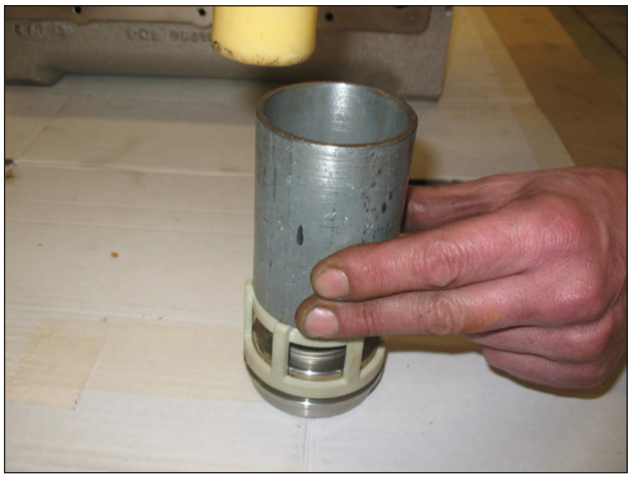


Fig. 146

**Proceed with insertion of the valve units (suction and outlet) in the head, taking care to follow the correct insertion sequence of O-rings and anti-extrusion rings.**

The proper sequence of valve unit assembly on the head is as follows:

During suction, insert the anti-extrusion ring, exploded view pos. 6 (pos. ①, Fig. 147).

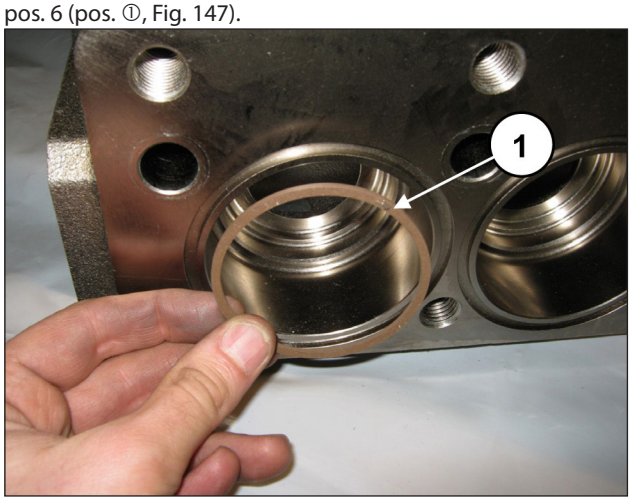



Fig. 147

Insert the O-ring, exploded view pos. 7 (pos. ①, Fig. 148).

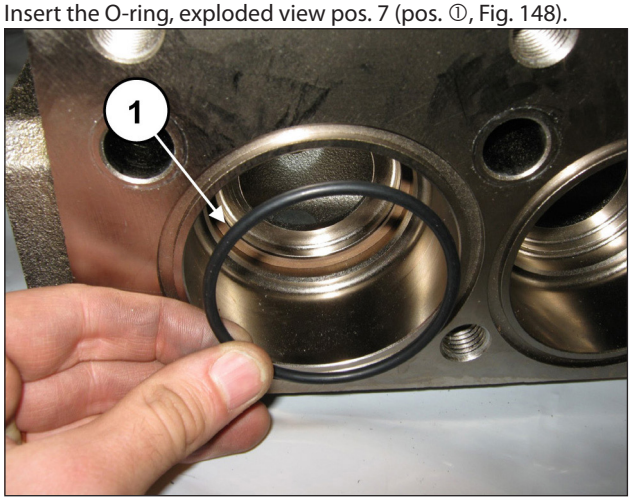



Fig. 148

Ensure that the O-ring and anti-extrusion ring are perfectly placed in their housings.
Insert the suction valve unit (pos. ①, Fig. 149).
The complete valve unit must be fully inserted into the bottom and should look like the image in pos. ①, Fig. 150.

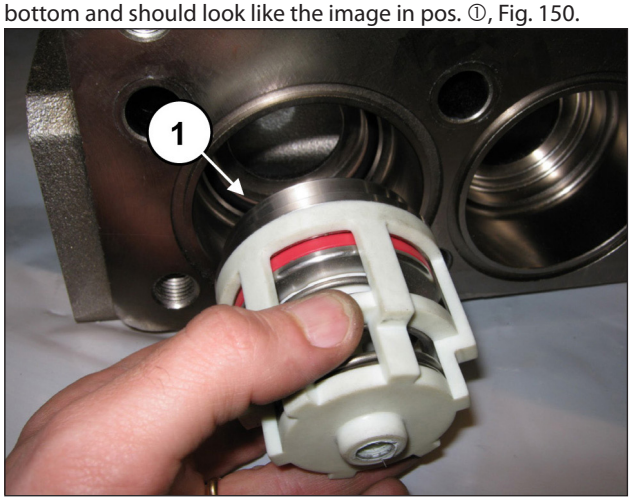



Fig. 149

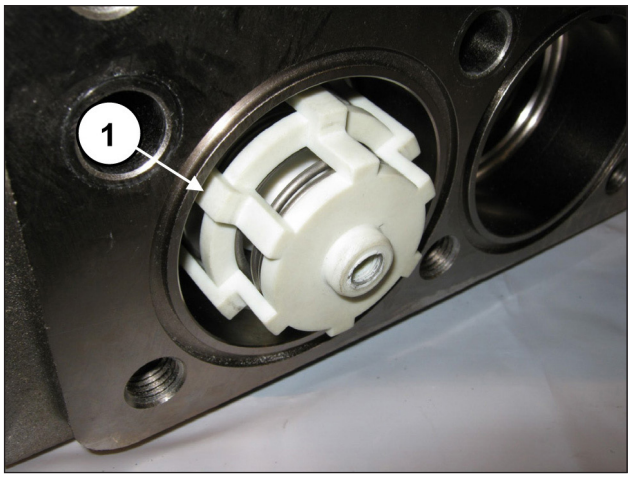



Fig. 150

Insert the front O-ring in the suction valves (pos. ①, Fig. 151).

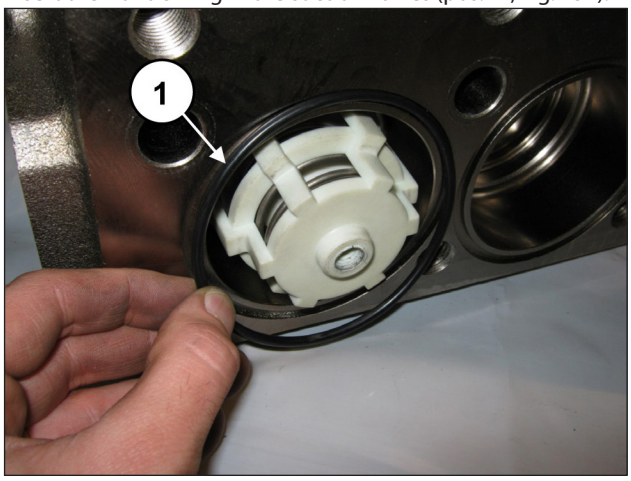



Fig. 151

After having completed assembly of the suction valve units, apply the suction valve cover (pos. ①, Fig. 152) and screw in the 8 M16x45 screws (pos. ①, Fig. 153).

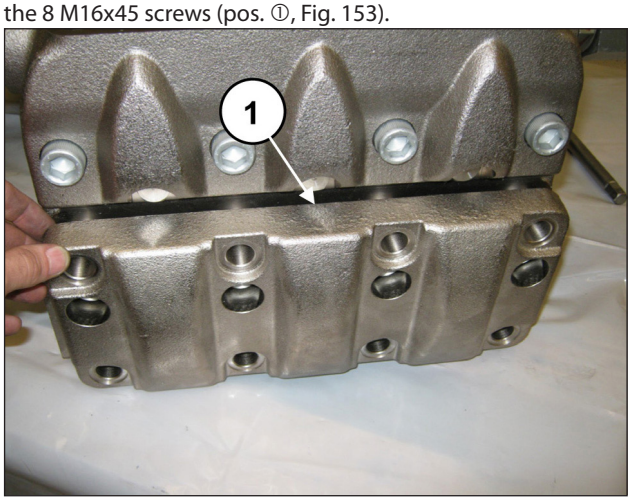



Fig. 152

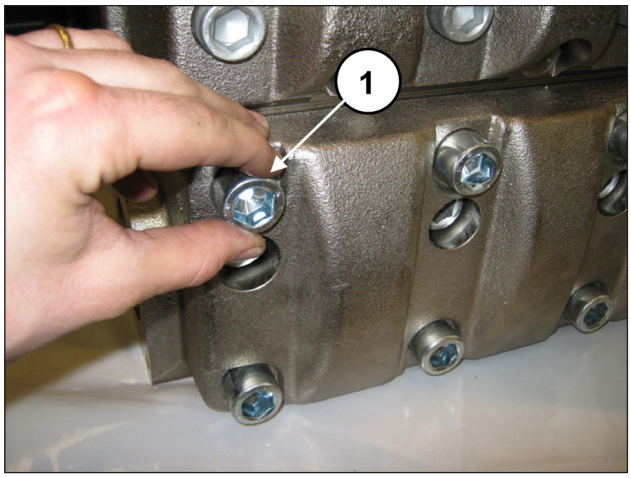



Fig. 153

Proceed with outlet valve units assembly:
Insert the anti-extrusion ring, exploded view pos. 23 (pos. ①, Fig. 154).

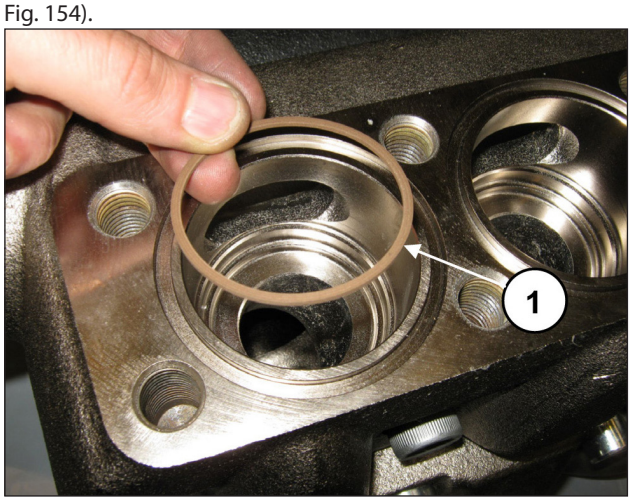



Fig. 154

Insert the O-ring, exploded view pos. 24 (pos. ①, Fig. 155).

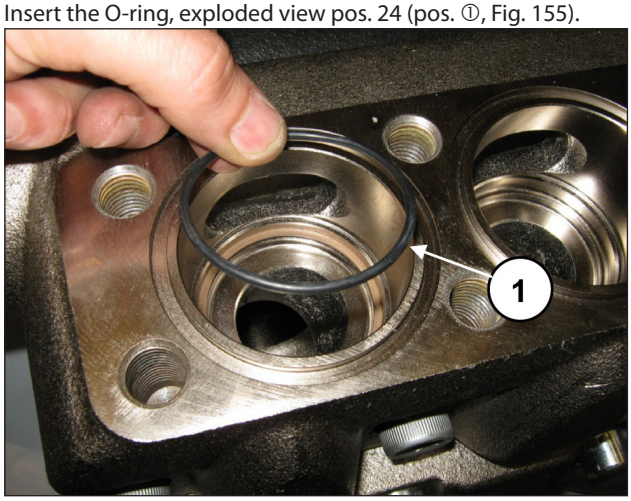



Fig. 155

Ensure that the O-ring and anti-extrusion ring are perfectly placed in their housings.

Insert the outlet valve unit (pos. ①, Fig. 156).
The complete valve unit must be fully inserted into the bottom and should look like the image in pos. ①, Fig. 157.

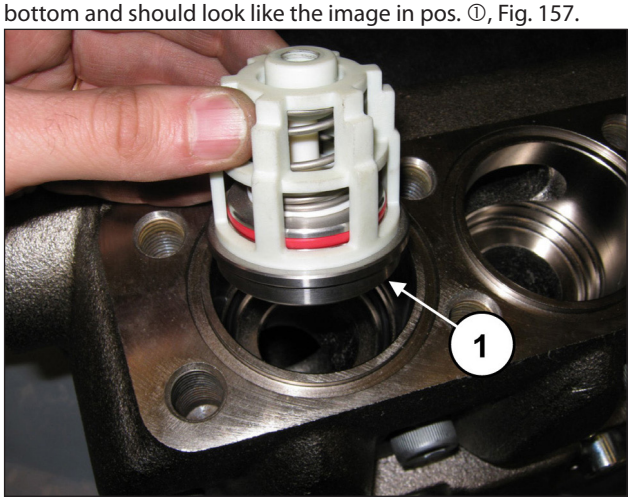



Fig. 156

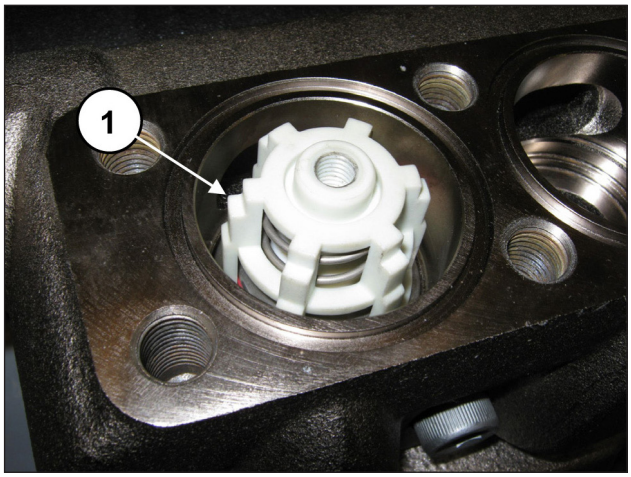



Fig. 157

Insert the front O-ring in the outlet valves (pos. ①, Fig. 158).

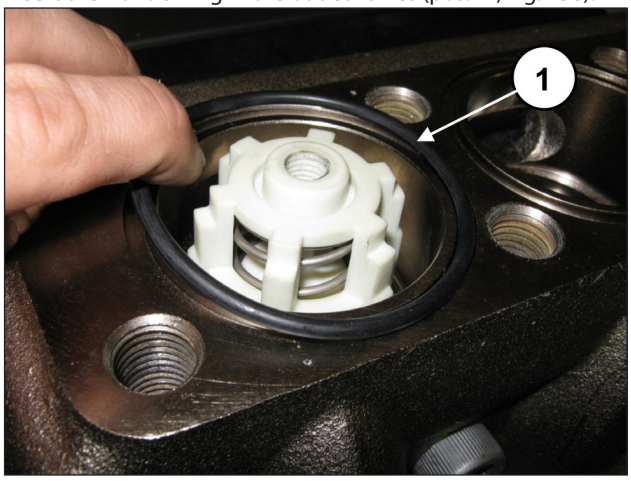



Fig. 158

After having completed assembly of the outlet valve units, apply the outlet valve cover (pos. ①, Fig. 159) and screw in the 8 M16x45 screws (pos. ①, Fig. 160).

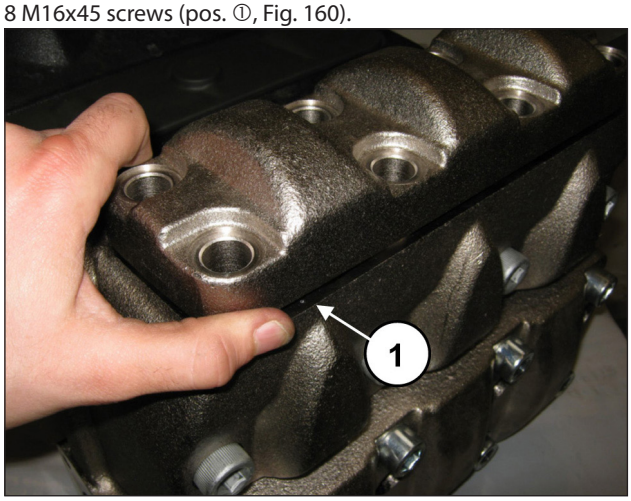



Fig. 159

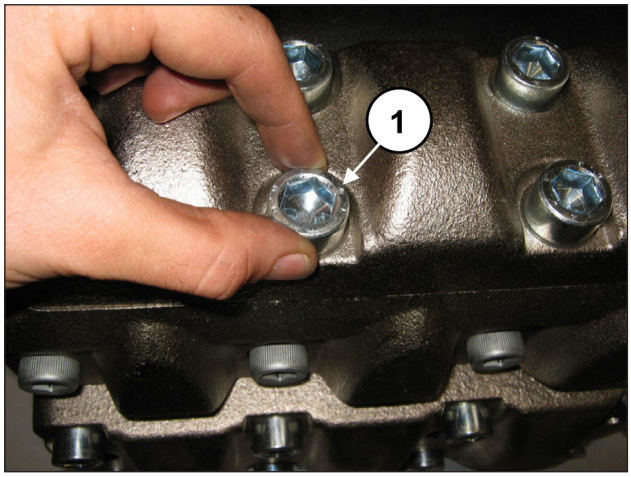



Fig. 160

Apply 6 front O-rings on the pump casing (pos. ①, Fig. 161).

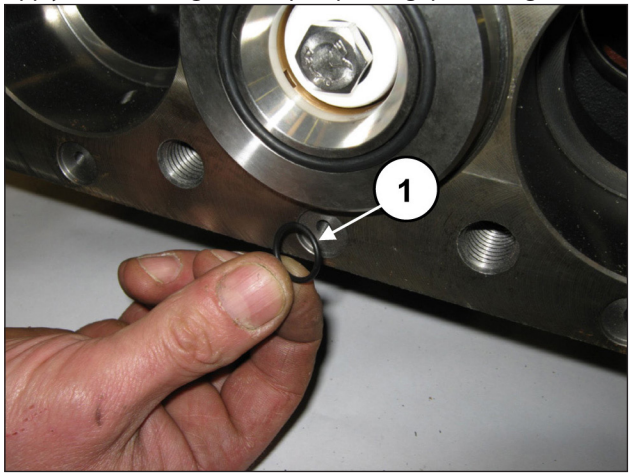



Fig. 161

Assemble the pump casing head (pos. ①, Fig. 162) taking care not to hit the pistons and screw in the 8 M16x150 screws (pos. ①, Fig. 163).

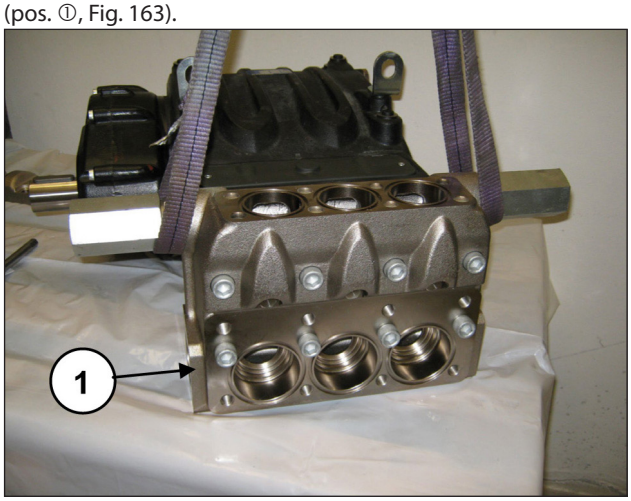



Fig. 162

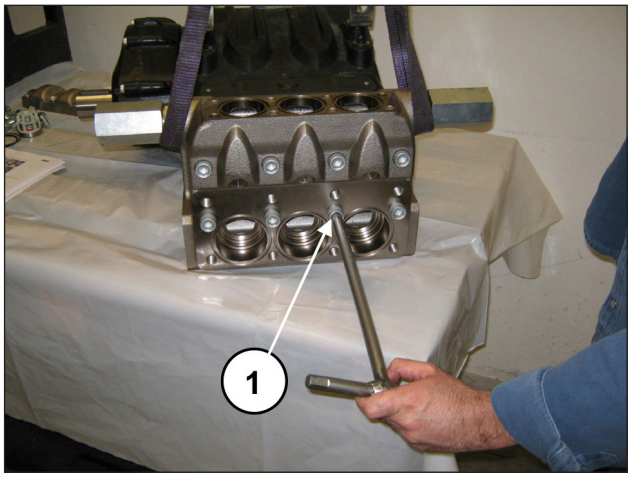



Fig. 163

Proceed with calibration of the M16x150 screws with a torque wrench as indicated in chapter 3.

**Tighten the 8 M16x150 screws starting crosswise from the 4 inner screws, to then continue with the 4 outer screws, always tightening crosswise.**

Calibrate the M16x45 suction and outlet cover screws with a torque wrench as indicated in chapter 3 SCREW TIGHTENING CALIBRATION.

Apply the valve opening devices (pos. ①, Fig. 164) and screw them in with the use of a 30 mm spanner (pos. ①, Fig. 165).

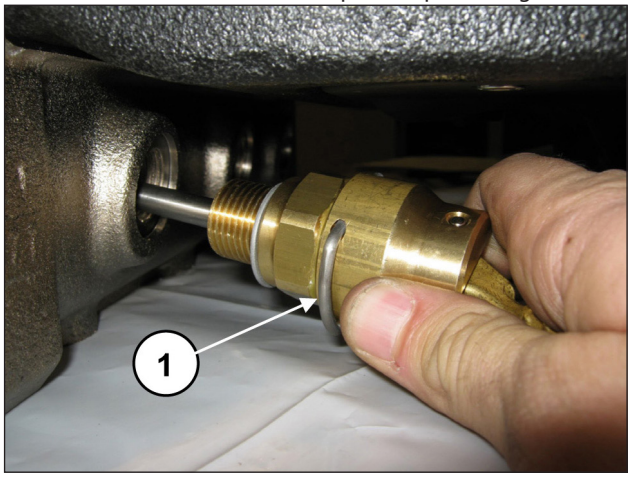



Fig. 164

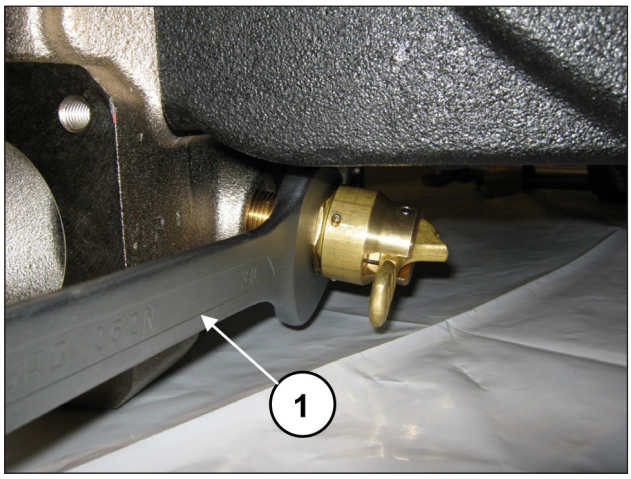



Fig. 165

Apply the G1/2" plugs on the lower part of the head with relative washers.
Proceed with calibration of the G1/2" plugs with a torque wrench as indicated in chapter 3.
Apply the G1/4" plugs on the front of the head with relative O-rings.
Proceed with calibration of the G1/4" plugs with a torque wrench as indicated in chapter 3.

### 2.2.5 Disassembly of the piston unit – supports – seals

The piston unit requires preventive checks as indicated in the preventive maintenance table in the ***Use and maintenance manual***.
Maintenance is limited to visual inspection of any drainage from the hole present on the lower inspection cover. If abnormalities / variations on the outlet pressure gauge or dripping from the drainage hole circuit are detected, the seal pack will have to be checked and replaced.
Proceed as follows to remove the piston units:
To access the piston unit, unscrew the M16x180 screws (for MW32-MW36-MW40) or M16x150 screws (for MW45-MW50-MW55) and remove the head.

**Remove the head taking care to avoid hitting the pistons.**

Disassemble pistons unscrewing the fixing screws (pos. ①, Fig. 166).
Remove the piston from the seal support and check that its surfaces do not present any scratches, signs of wear or cavitation

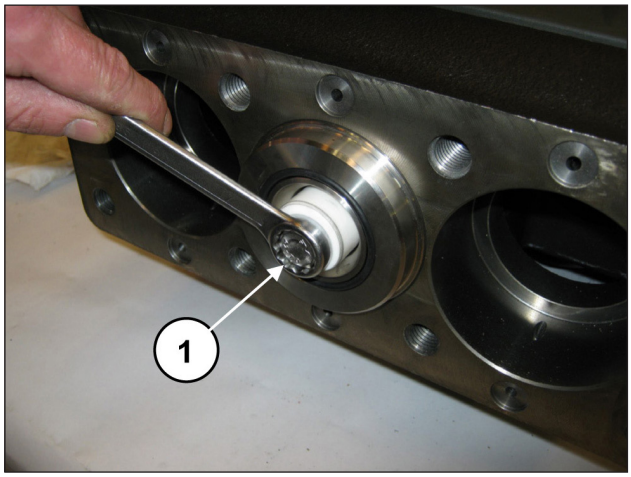



Fig. 166

Remove the upper inspection cover, unscrewing the 2 fixing screws (pos. ①, Fig. 167).


Fig. 167

Manually turn the shaft in such a way to bring the 3 pistons to the top dead centre position.
Insert the buffering tool code 27632500 between the piston guide and the piston (pos. ①, Fig. 168).

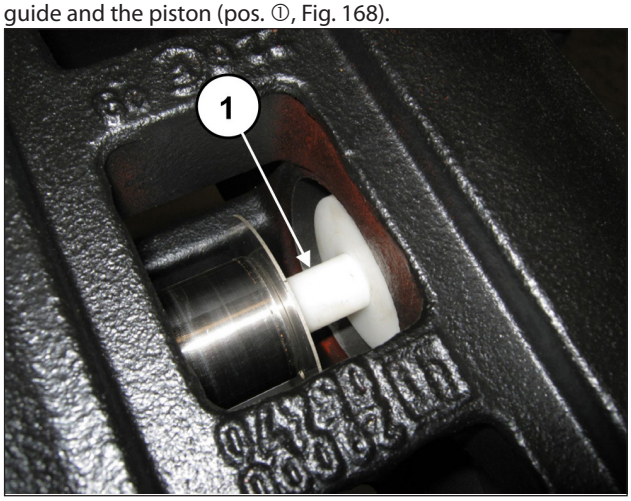



Fig. 168

Turning the shaft, have the piston guide move forward so that the buffer, moving ahead, can expel the seal support and the entire piston unit (pos. ①, Fig. 169).

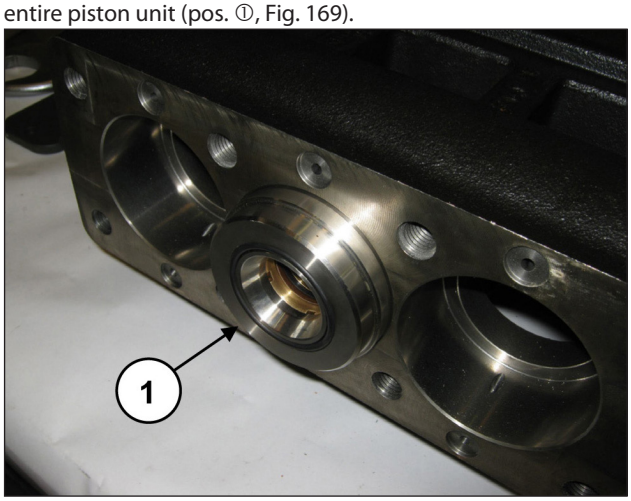



Fig. 169

Extract the seal support unit and the buffering tool.

Remove the seal support bottom O-ring should it remain inside the pump casing (pos. ①, Fig. 170).

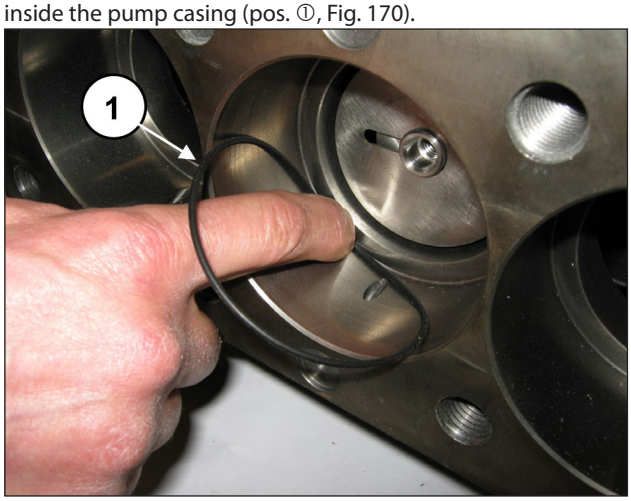



Fig. 170

Remove the spray rings from the piston guides (pos. ①, Fig. 171).

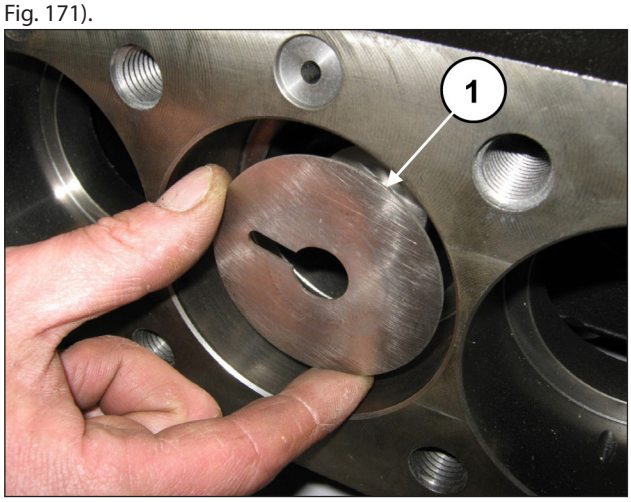



Fig. 171

Separate the seal support from the liner (pos. ①, Fig. 172) to access the pressure seals (pos. ①, Fig. 173).

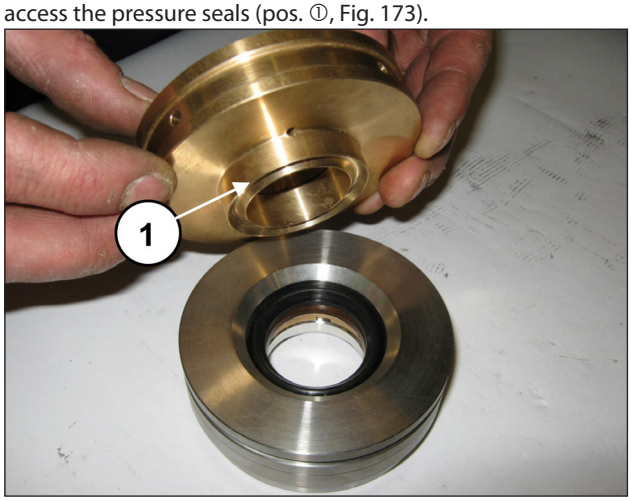



Fig. 172

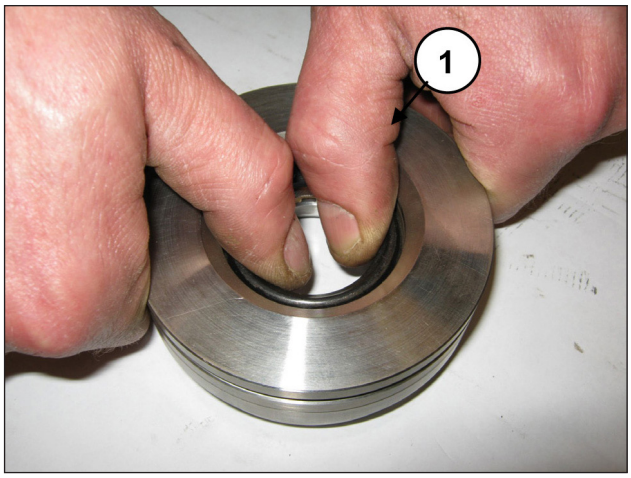



Fig. 173

To remove the low pressure seal, use a thickness gauge or another tool which will not damage the seal support housing (pos. ①, Fig. 174).

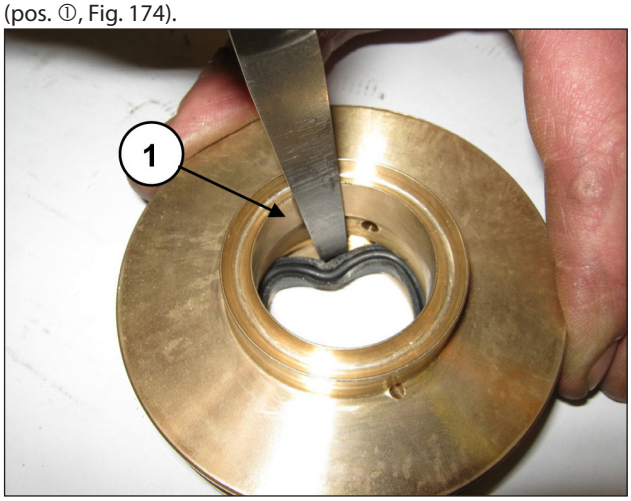



Fig. 174

### 2.2.6 Assembling the piston unit – supports – seals

Proceed with reassembly following the reverse order indicated in par. 2.2.5.

**Replace the pressure seals moistening the lips with silicone grease (without spreading it), taking extra care not to damage them during liner insertion.**

**The O-rings and the pressure seals must be replaced at each disassembly.**

Insert the low pressure seal in the seal support (pos. ①, Fig. 175) paying attention to the mounting direction which requires that the sealing lip be set forward (towards the head).

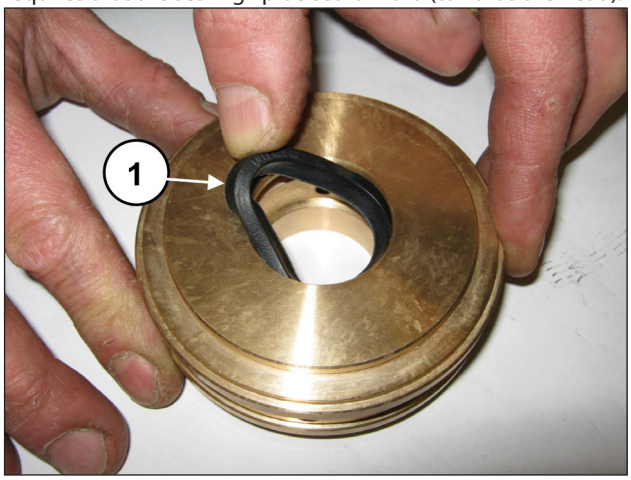



Fig. 175

Install the head ring (pos. ①, Fig. 176), the high pressure seal (pos. ①, Fig. 177) and the restop ring (pos. ①, Fig. 178).

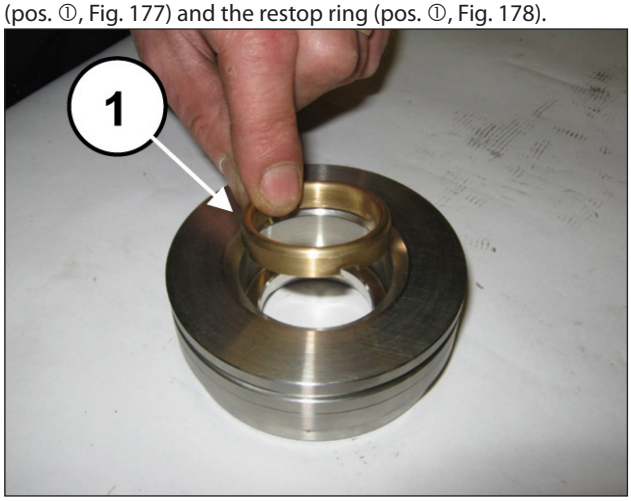



Fig. 176

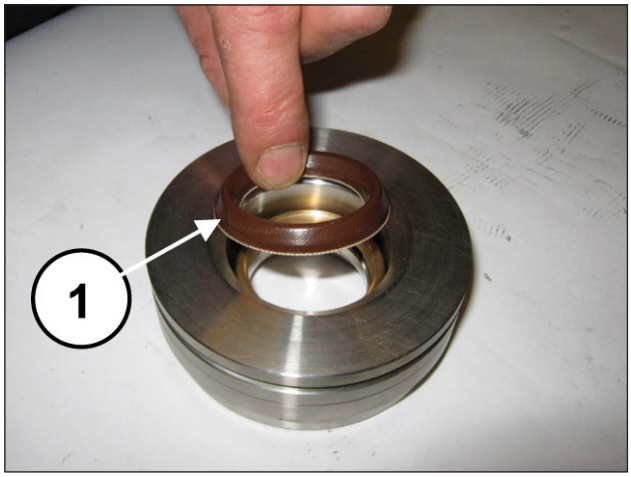



Fig. 177

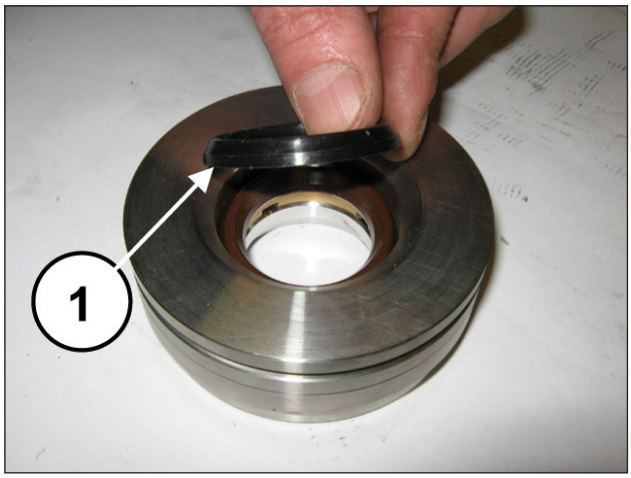



Fig. 178

Join the seals support to the liner (pos. ①, Fig. 179).

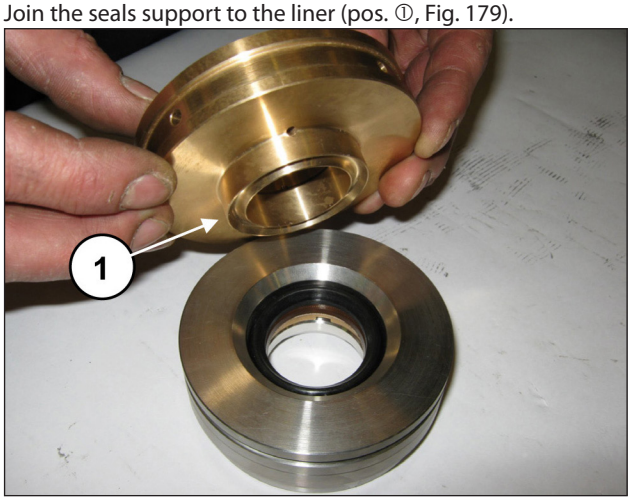



Fig. 179

Position the spray hood in the piston guide housing (pos. ①, Fig. 180).

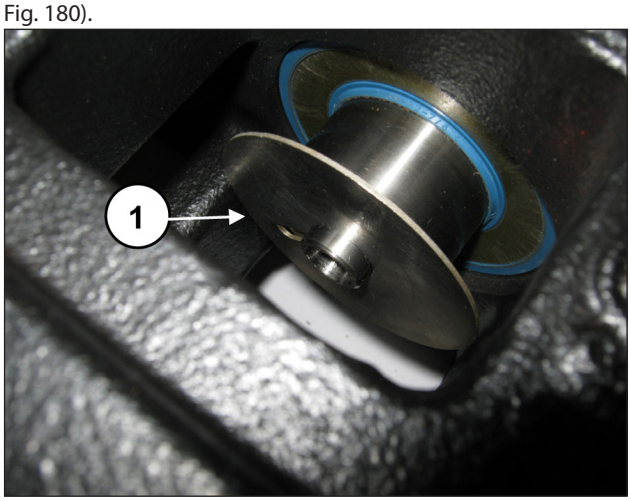



Fig. 180

Insert the Ø10x18x0.9 washer in the piston fixing screw (pos. ①, Fig. 181).

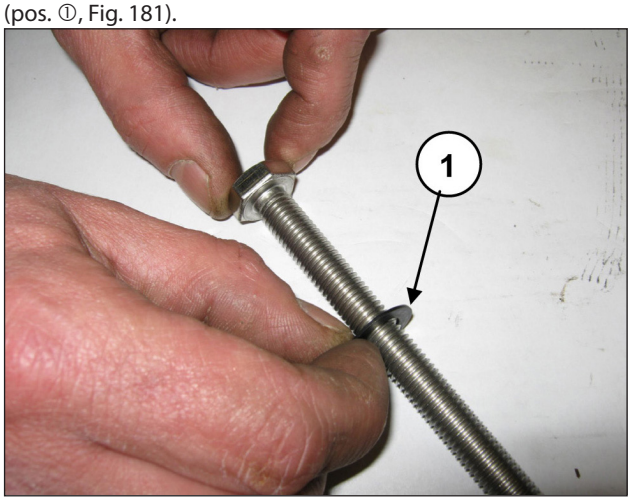



Fig. 181

Install the pistons on their respective guides (pos. ①, Fig. 182) and fasten them as per pos. ①, Fig. 183.

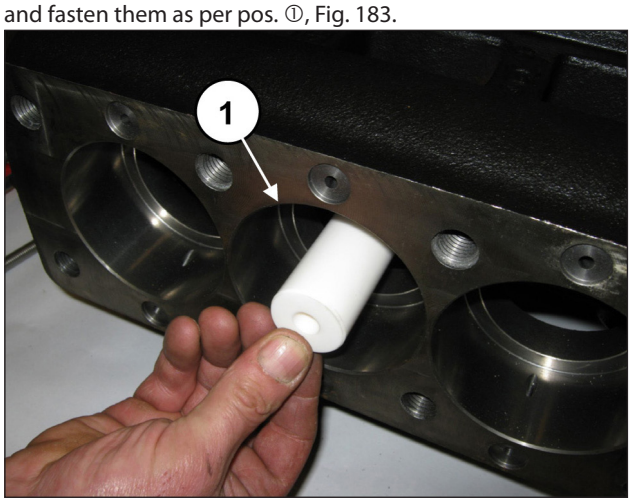



Fig. 182

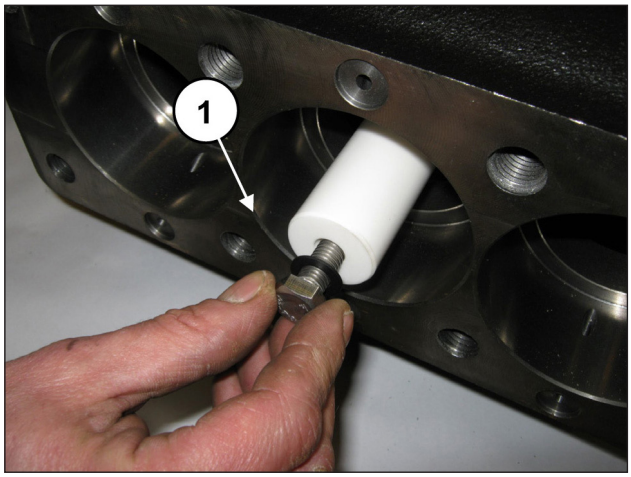



Fig. 183

Calibrate the screws with a torque wrench as indicated in chapter 3.
Insert the O-ring inside the pump casing (pos. ①, Fig. 184) and then the previously-assembled liner-seal support block (complete with the same O-ring) to end stroke (pos. ①, Fig. 185).

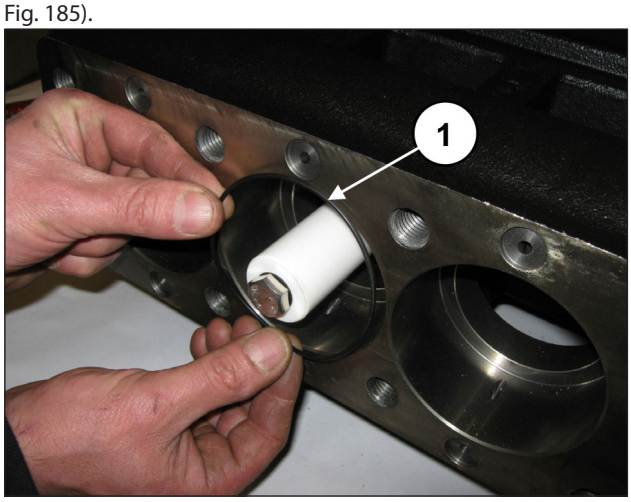



Fig. 184

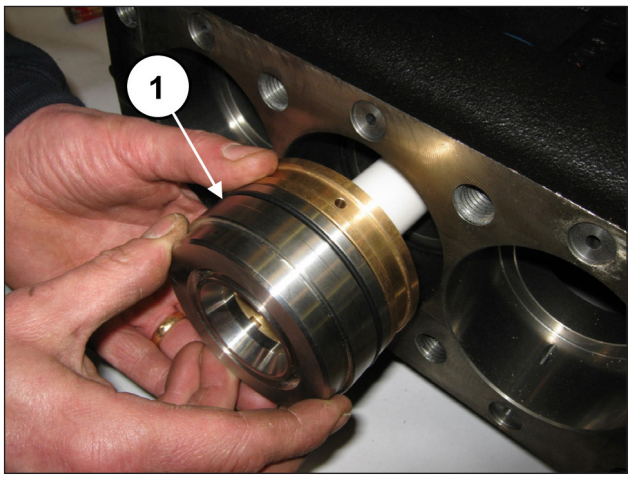



Fig. 185

Ensure that the liner-support block is positioned correctly down to the bottom of the housing (pos. ①, Fig. 186).

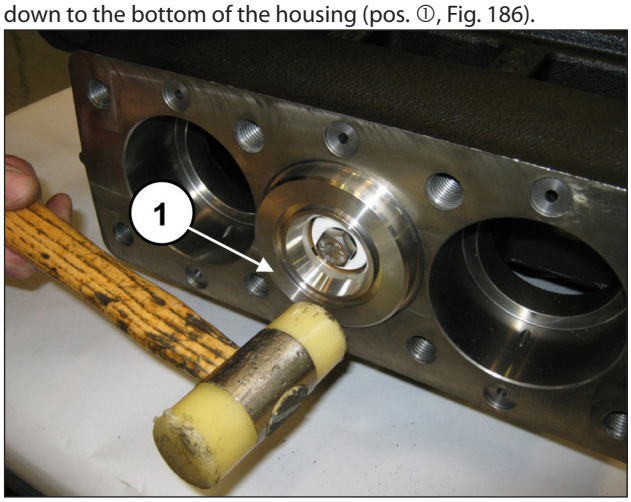



Fig. 186

Install the front O-ring in the liner (pos. ①, Fig. 187) and the recirculation hole O-ring (pos. ①, Fig. 188).

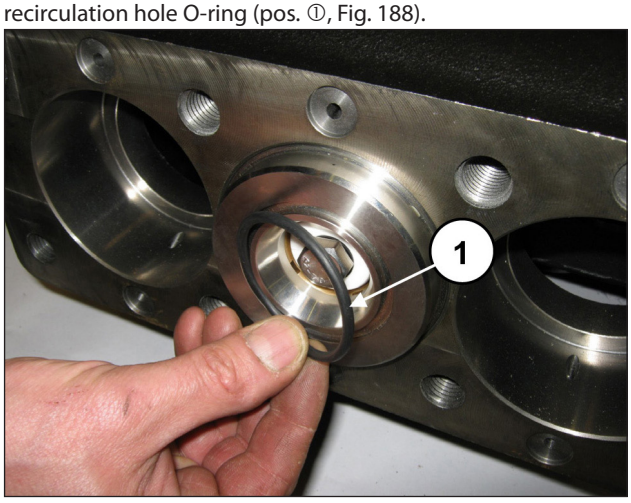



Fig. 187

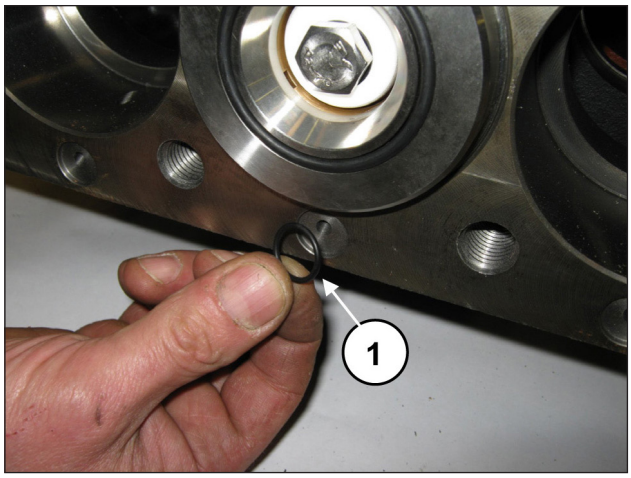



Fig. 188

Insert the O-ring on the inspection covers (pos. ①, Fig. 189) and assemble the covers with the use of 2+2 M6x14 screws (pos. ①, Fig. 190).

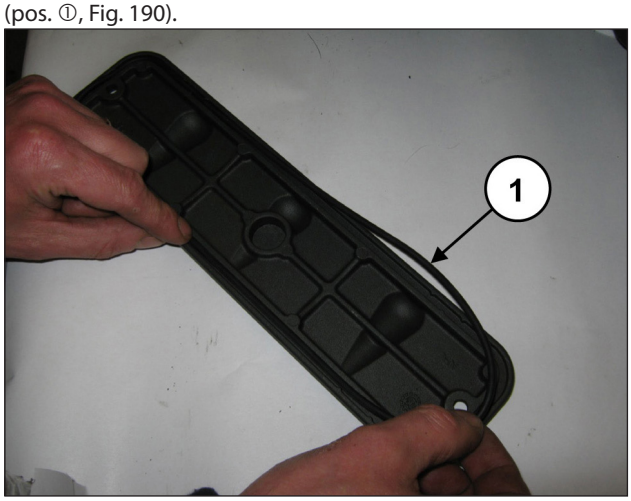



Fig. 189

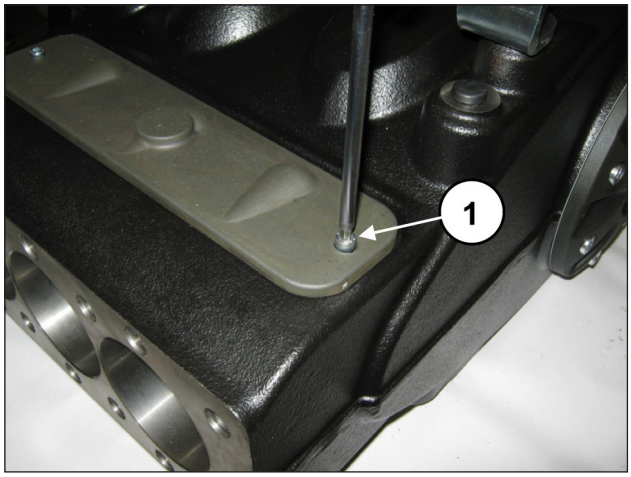



Fig. 190

Calibrate the screws with a torque wrench as indicated in chapter 3.

## 3 SCREW TIGHTENING CALIBRATION

Screw tightening must only be performed with a torque wrench.

| Description | Exploded Drawing Position | Tightening Torque Nm |
|---|---|---|
| Casing cover M10x30 screw | 89 H.P. - 91 L.P. | 45 |
| G1/2x13 casing plug | 91 H.P. - 93 L.P. | 40 |
| Lifting bracket M16x30 screw | 51 H.P. - 53 L.P. | 200 |
| Reduction gear cover M10x40 screw | 81 H.P. - 83 L.P. | 45 |
| Ring gear stop M10x25 screw | 76 H.P. - 78 L.P. | 45 |
| Reduction gear box M10x40 screw | 81 H.P. - 83 L.P. | 45 |
| Upper and lower cover M6x14 screw | 60 H.P. - 62 L.P. | 10 |
| Bearing cover M10x30 screw | 89 H.P. - 91 L.P. | 45 |
| Con-rod fixing M10x1.5x80 screw | 53 H.P. - 55 L.P. | 65* |
| Piston guide M6x20 screw | 47 H.P. - 49 L.P. | 10 |
| Piston fixing M10x140 screw | 28 H.P. - 18 L.P. | 40 |
| HP Valve cover M16x55 screw | 24 | 333 |
| LP Valve cover M16x45 screw | 19 | 333 |
| LP head G1/2" plug | 4 | 40 |
| G1/4"x13 head plug | 100 H.P. - 21 L.P. | 40 |
| HP head M16x180 screw | 26 | 333** |
| HP head M16x150 screw | 43 | 333** |
| Valve opening device | 2 | 40 |

* Achieve coupling torque tightening screws at the same time

** Tighten the screws starting crosswise from the 4 inner screws, to then continue with the 4 outer screws, always tightening crosswise.

## 4 REPAIR TOOLS

Pump maintenance can be carried out with simple component disassembly and reassembly tools. The following tools are available:

**For assembly:**

| | |
|---|---|
| Shaft (con-rod interlocking) | code 27566200 |
| Bearing on bend shaft | code 27604700 |
| Pinion bearing on reduction gear box | code 27604900 |
| Bend shaft bearing on the reduction gear box | code 27605000 |
| Bend shaft bearing on the bearing cover | code 27605000 |
| Piston guide oil seal | code 27605300 |
| Bearing on pinion | code 27604800 |
| Pinion oil seal | code 27605200 |
| Outlet valve housing O-ring MW32-MW36-MW40 | code 27516000 |

**For disassembly:**

| | |
|---|---|
| Piston guide oil seal | code 27918500 |
| Shaft (con-rod interlocking) | code 27566200 |
| Suction and outlet valve unit | code 27516400 |
| Suction valve housing MW32-MW36-MW40 | code 27516200 |
| Liner block + seals support | code 27632500 |

# 5 SPECIAL VERSIONS

The instructions for repairing special versions are given below. Unless specified otherwise, refer to the information above for the standard MW pump.

- MWN – MWF pumps: for repair, follow the instructions for the standard MW pump.
- MWR – MWNR pumps: for repair, follow the instructions for the standard MW pump with the exception of the pressure seals, for which it is necessary to follow the dedicated paragraph.

## 5.1 MWR – MWNR PUMP

### 5.1.1 Disassembling the support - seal unit

Separate the seal support from the liner, remove the spring ring and scraper ring (pos. ①②, Fig. 191) to access the pressure seals (pos. ①, Fig. 192).

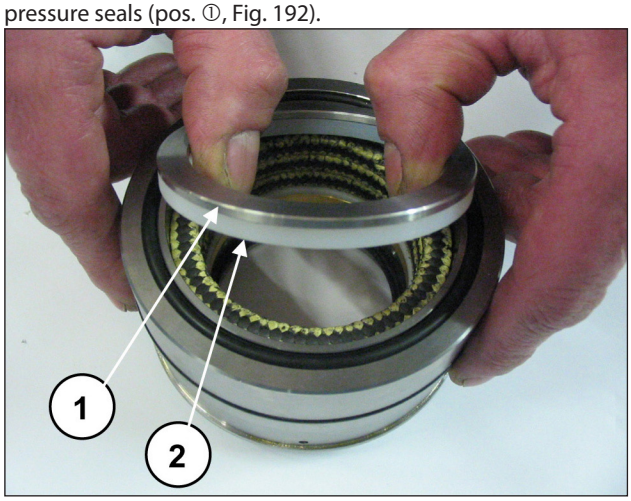



Fig. 191

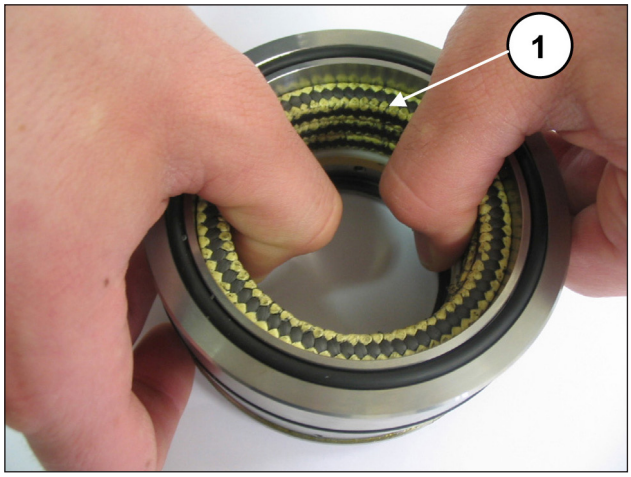



Fig. 192

To remove the low pressure seal, use a thickness gauge or another tool which will not damage the seal support housing (pos. ①, Fig. 193).

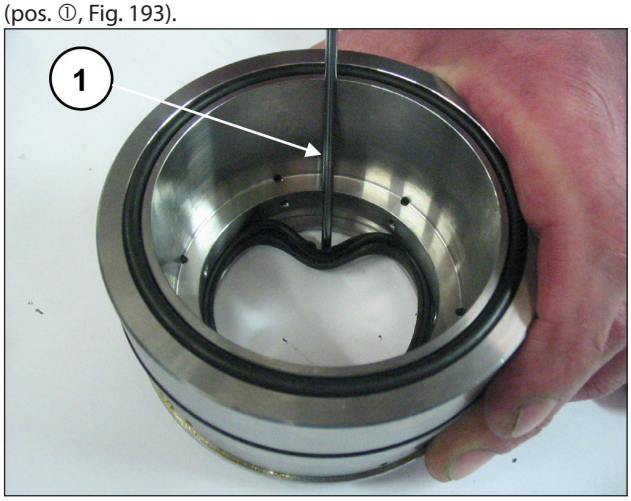



Fig. 193

### 5.1.2 Assembling the support - seal unit

Proceed with reassembly following the reverse order indicated in par. 2.2.3.

**Replace the pressure seals moistening the lips with silicone grease (without spreading it), taking extra care not to damage them during liner insertion.**

**The O-rings and the pressure seals must be replaced at each disassembly.**

Insert the low pressure seal in the packing support (pos. ①, Fig. 194) taking care to choose the direction of assembly where the seal lip is facing forwards (towards the head) and the O-ring (pos. ②, Fig. 122).

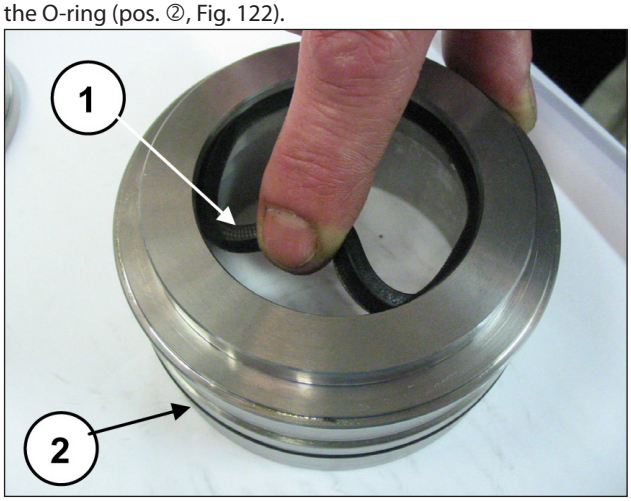



Fig. 194

Assemble the support ting and the anti-extrusion ring (pos. ①②, Fig. 195), the three packings making sure the notches are at 120° from each other (pos. ①, Fig. 196), the packing scraper ring and the spring ring (pos. ①②, Fig. 197).

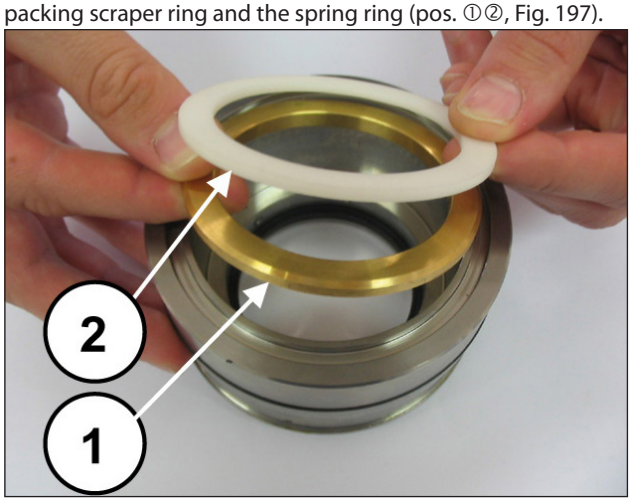



Fig. 195

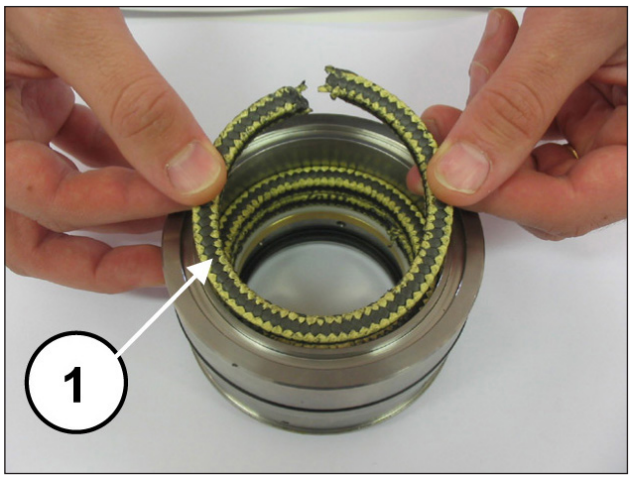



Fig. 196

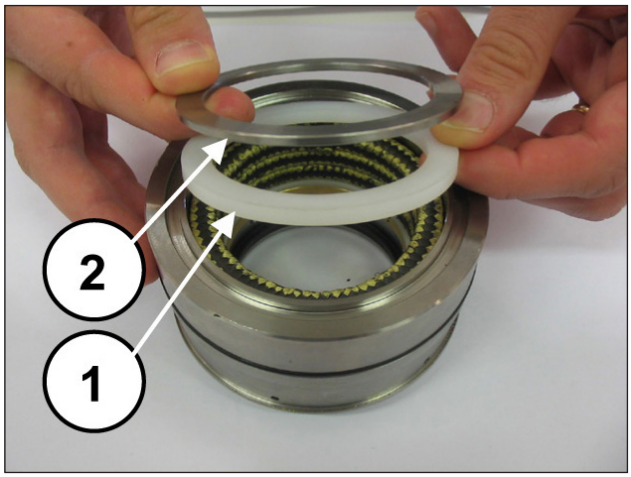



Fig. 197

Now assemble the O-ring (pos. ①, Fig. 198) on the packing head ring and position it in the seat on the head.

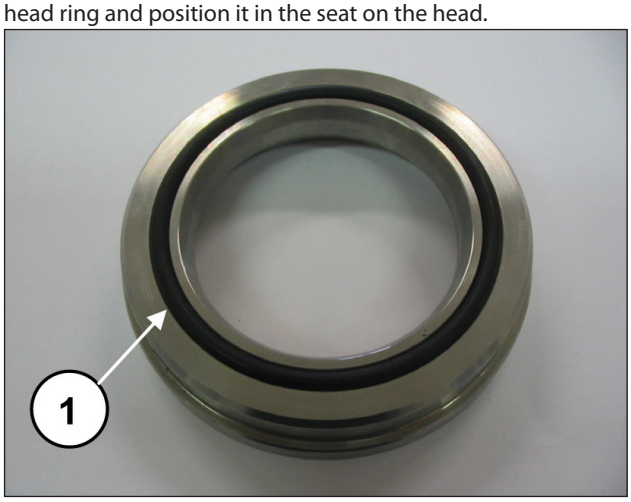



Fig. 198

## 6 RECOVERING THE PUMP HEAD

If the insides of the piston chambers on the head show clear signs of cavitation, due to incorrect pump feeding, it is possible to recover the damaged head and avoid the need to replace it.
In order to recover the head, perform the operations indicated in Fig. 199 for the MW 32-36-40 and MWF-MWR versions and in Fig. 200 for the MW 45-50-55 and MWF-MWR versions:

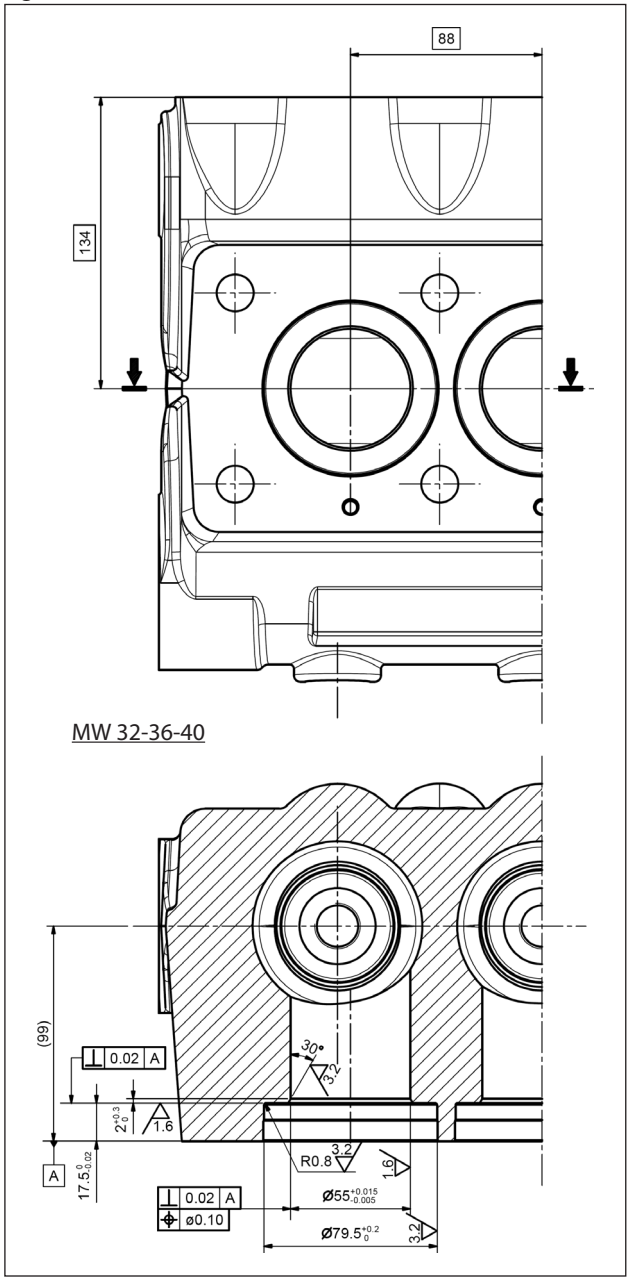



Fig. 199

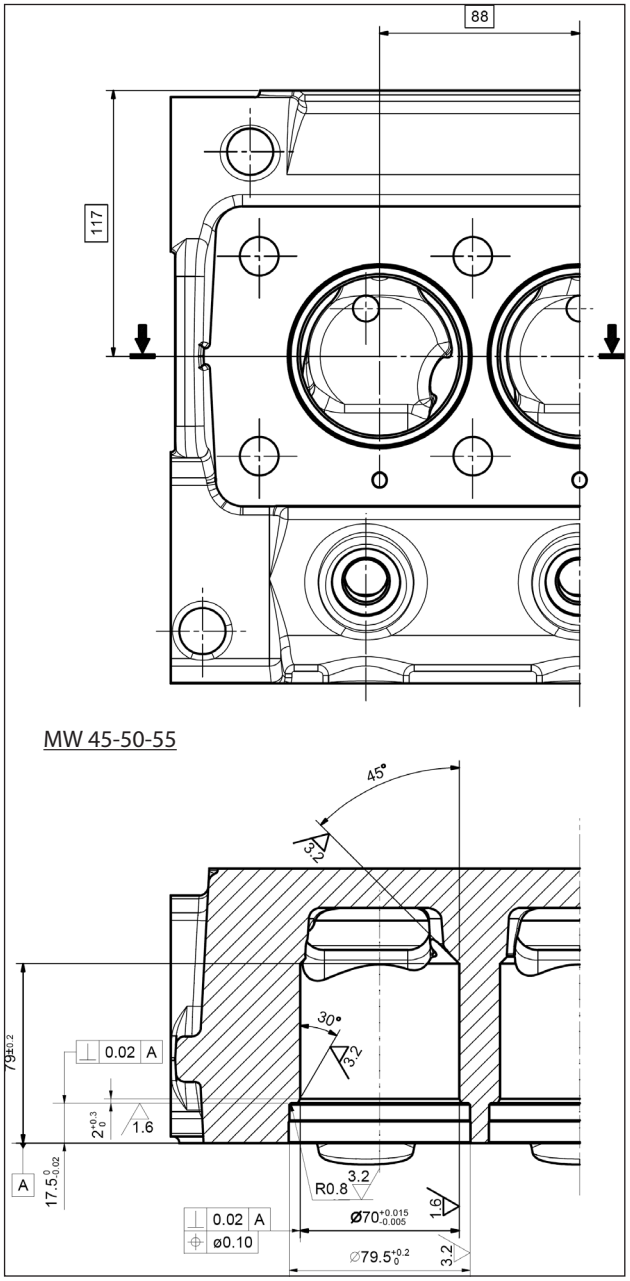



Fig. 200

**MW 32-36-40 and MWF-MWR versions (Fig. 201)**

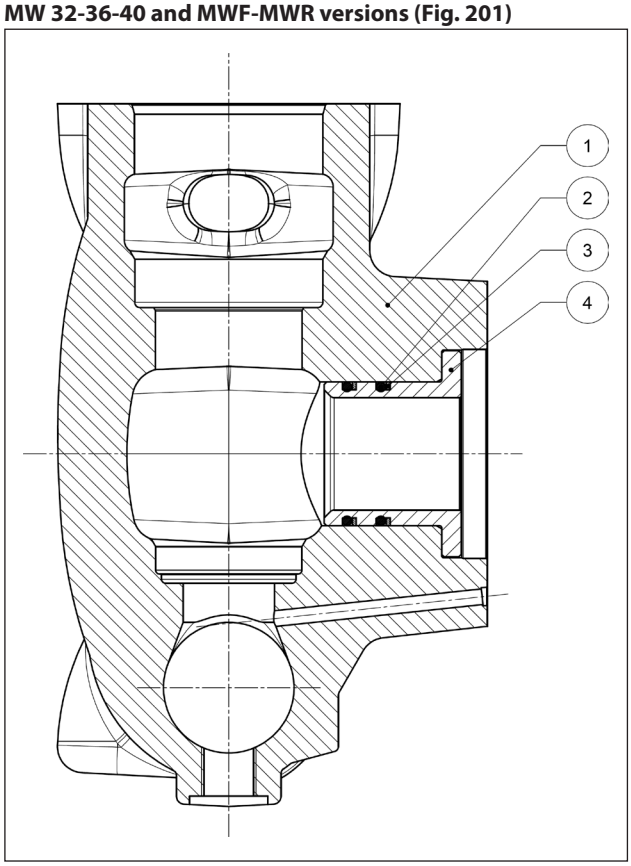



Fig. 201

① MW HP head – code 73120015 - qty 1
② O-ring – code 90408000 - qty 6
③ Anti-extruder ring – code 90523800 - qty 6
④ MW HP bushing – code 73215956 - qty 3

**MW 45-50-55 and MWF-MWR versions (Fig. 202)**

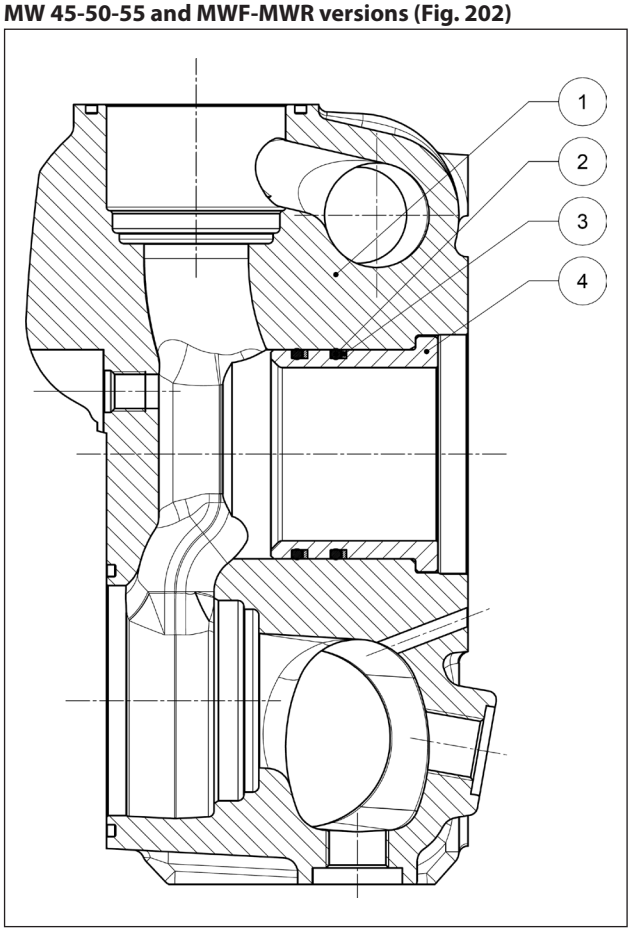



Fig. 202

① MW LP head – code 73120115 - qty 1
② O-ring – code 90411500 - qty 6
③ Anti-extruder ring – code 90527400 - qty 6
④ MW LP bushing – code 73216056 - qty 3

## 7 REPLACING THE CON-ROD FOOT BUSH

Perform cold-driving of the bushing and the subsequent work bearing in mind the dimensions and tolerances shown in Fig. 203 below.

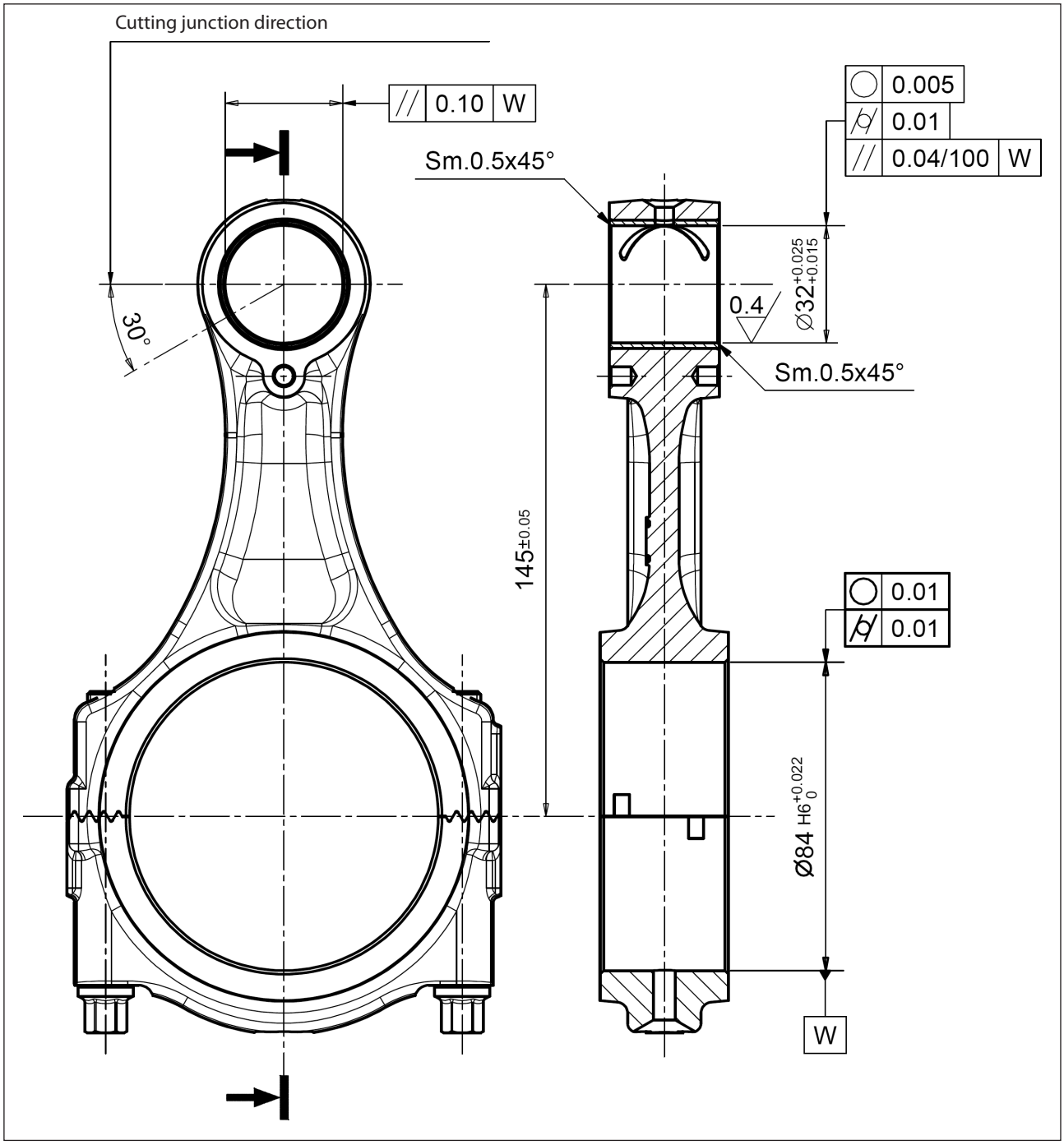



Fig. 203

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# 1 INTRODUCTION

Ce manuel décrit les instructions pour la réparation des pompes de la série MW et doit être attentivement lu et compris avant d'effectuer et de réaliser toute intervention sur la pompe.
Le bon fonctionnement et la durée de la pompe dépendent de l'usage correct et de l'entretien approprié effectué sur celle-ci.
Interpump Group décline toute responsabilité concernant les dommages causés par négligence et inobservation des consignes décrites dans ce manuel.

## 1.1 DESCRIPTION DES SYMBOLES

Lire attentivement ce qui est indiqué dans ce manuel avant de commencer toute opération.

**Signal de Mise en garde**

Lire attentivement ce qui est indiqué dans ce manuel avant de commencer toute opération.

**Signal de Danger**
S'équiper de lunettes de protection.

**Signal de Danger**
S'équiper de gants de protection avant chaque opération.

# 2 CONSIGNES DE RÉPARATION

## 2.1 RÉPARATION DE LA PARTIE MÉCANIQUE

Les opérations de réparation de la partie mécanique doivent être effectuées après avoir éliminé l'huile du carter.
Pour vidanger l'huile, retirer le bouchon de remplissage rep. ①, Fig. 1 puis le bouchon de vidange rep. ②, Fig. 1.

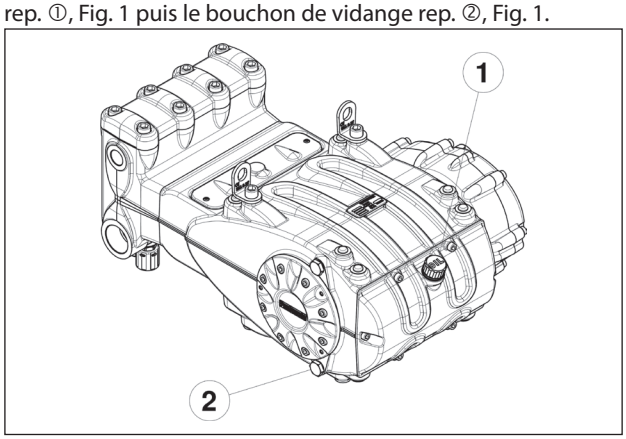



Fig. 1

**Verser l'huile usagée dans un récipient spécial et l'éliminer auprès des centres autorisés.**
**Elle ne doit en aucun cas être déversée dans l'environnement.**

### 2.1.1 Démontage de la partie mécanique

La séquence correcte est la suivante :
Vidanger l'huile de la pompe puis démonter le couvercle du carter (avec ses joints toriques) en dévissant les 6 vis M10 (rep. ①, Fig. 2).

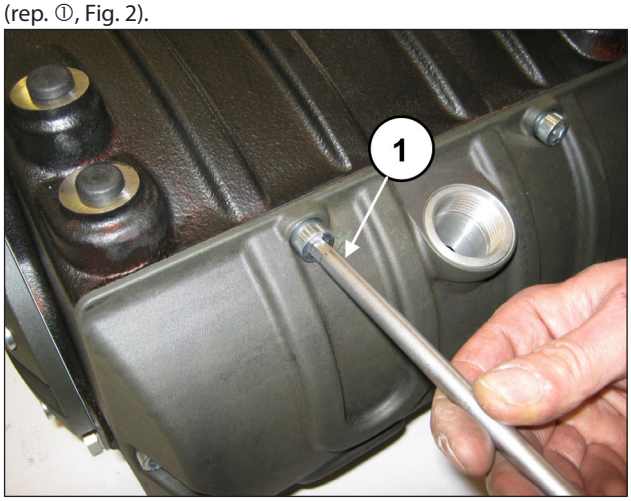



Fig. 2

Déposer la languette de l'arbre PTO (rep. ①, Fig. 3).

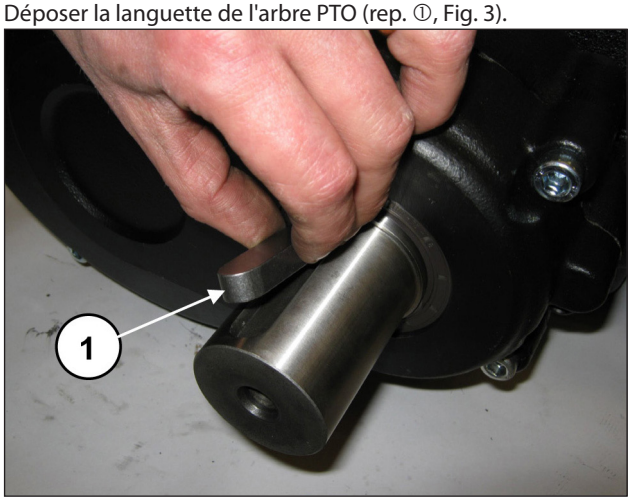



Fig. 3

Dévisser les vis de fixation du couvercle du réducteur (rep. ①, Fig. 4).

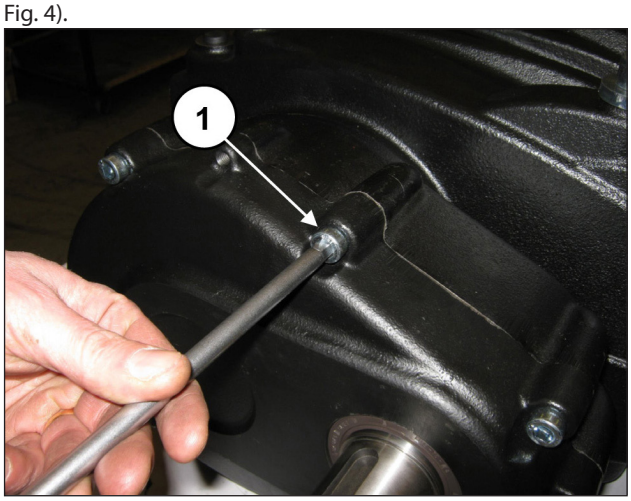



Fig. 4

Placer 3 goujons ou vis filetées M8 (rep. ①, Fig. 5) faisant office d'extracteurs, dans les orifices prévus à cet effet et deux vis M10 suffisamment longues servant à soutenir le couvercle (rep. ②, Fig. 5).

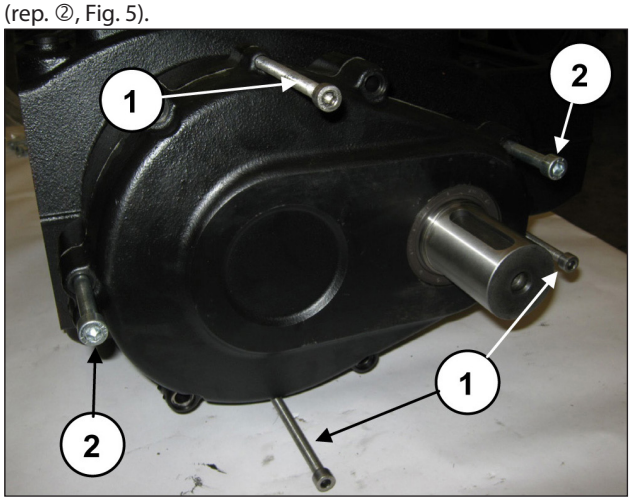



Fig. 5

Visser progressivement les 3 vis M8 (rep. ①, Fig. 6) faisant office d'extracteurs jusqu'à ce que le groupe complet couvercle/pignon soit détaché

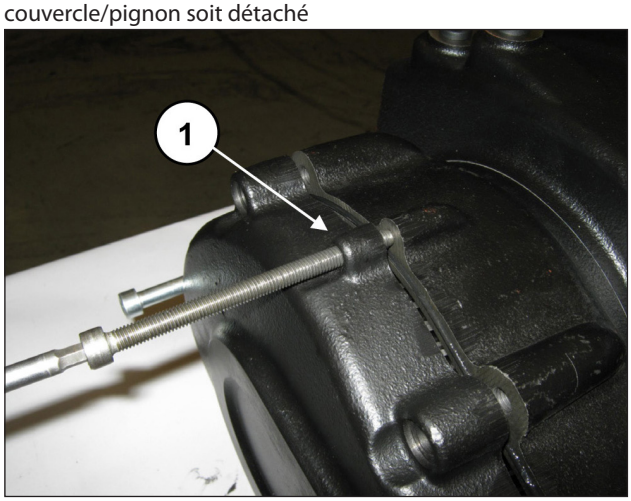



Fig. 6

Il est possible de démonter complètement le couvercle du réducteur du pignon en procédant de la façon suivante :
Déposer l'anneau Seeger Ø120 (rep. ①, Fig. 7).

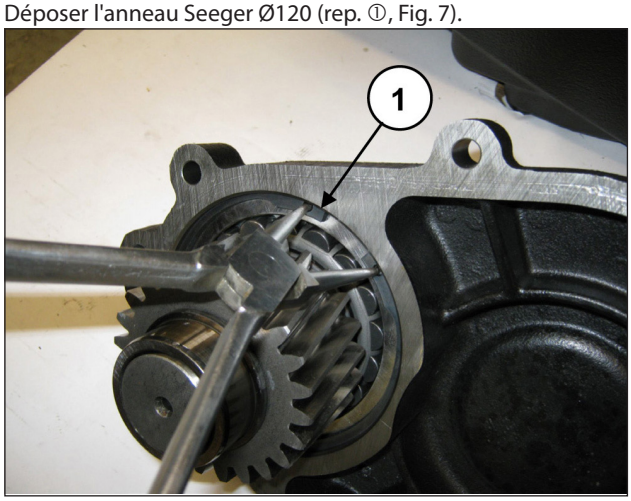



Fig. 7

Désassembler le pignon du couvercle en frappant le pignon à l'aide d'un outil à inertie (rep. ①, Fig. 8).

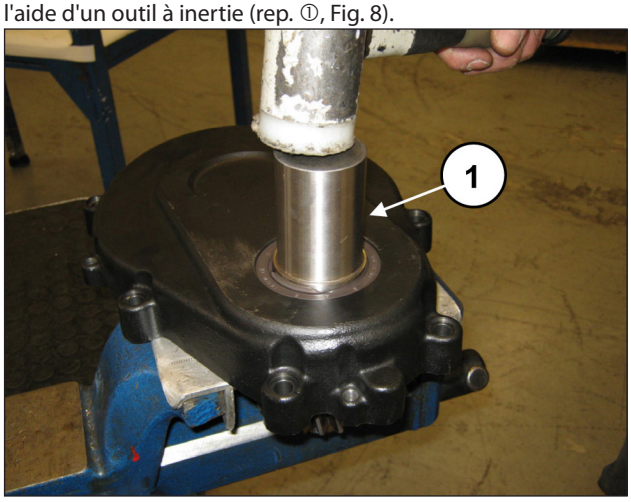



Fig. 8

Déposer l'anneau Seeger Ø55 (rep. ①, Fig. 9) et l'anneau d'appui du coussinet (rep. ①, Fig. 10) du pignon

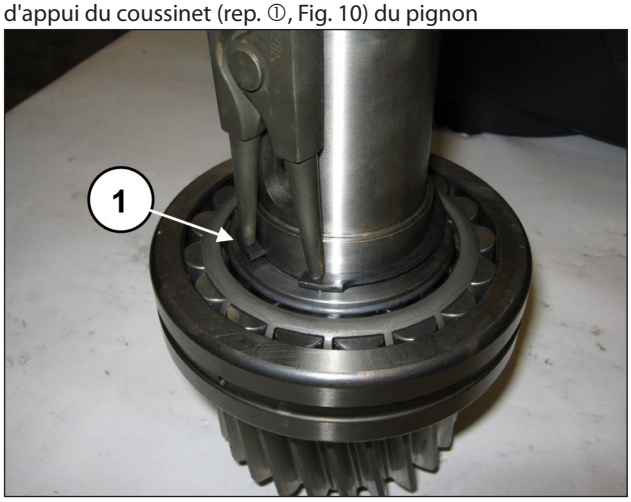



Fig. 9

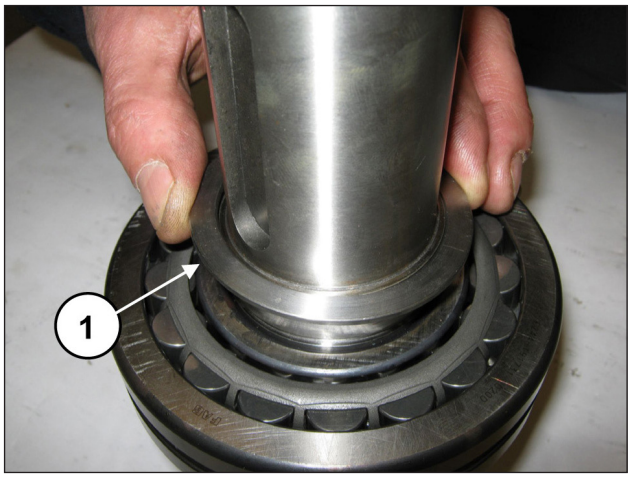



Fig. 10

Dégager le joint d'huile du couvercle du réducteur en passant par l'intérieur du couvercle (rep. ①, Fig. 11).

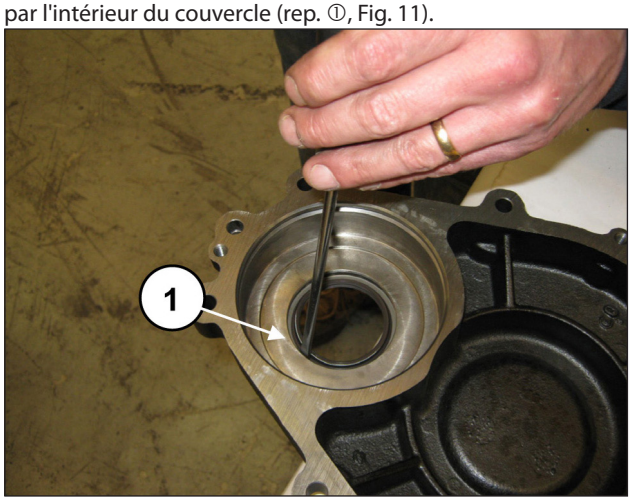



Fig. 11

Dévisser les vis de fixation du dispositif de retenue de la couronne (rep. ①, Fig. 12) et le déposer (rep. ①, Fig. 13).

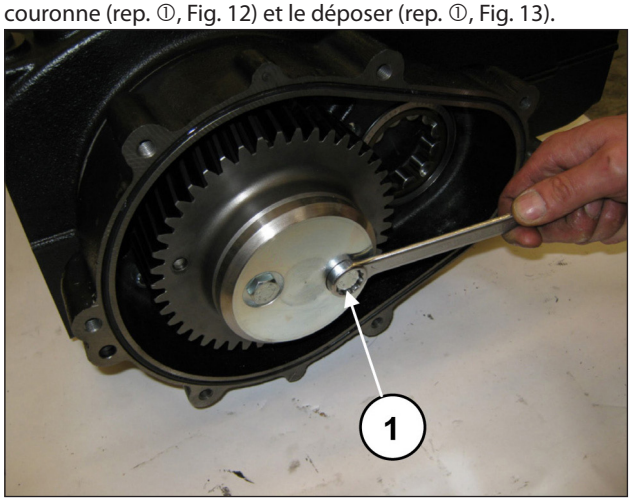



Fig. 12

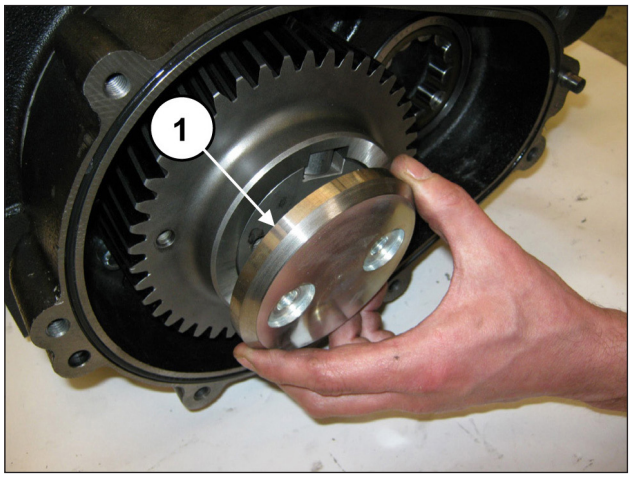



Fig. 13

Dégager la couronne (rep. ①, Fig. 14). Si nécessaire, il est possible d'utiliser un chassoir à inertie à appliquer aux 2 orifices M8 (rep. ②, Fig. 14).

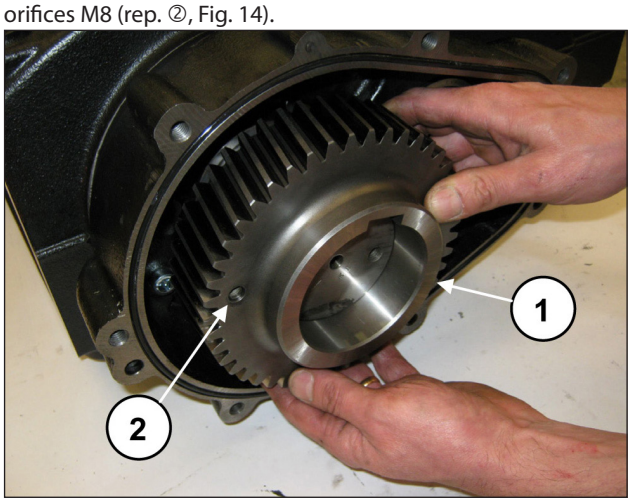



Fig. 14

Déposer la languette de l'arbre (rep. ①, Fig. 15).

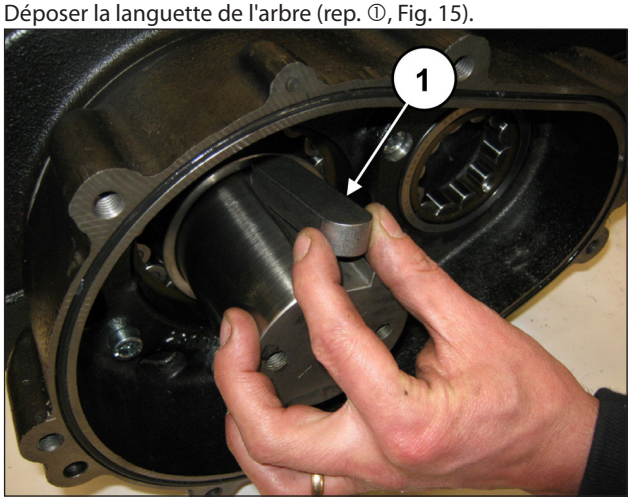



Fig. 15

Dégager la bague d'appui de la couronne (rep. ①, Fig. 16).

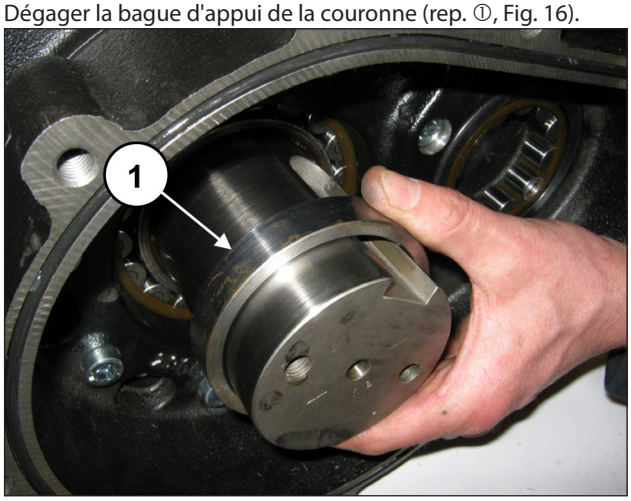



Fig. 16

Dévisser les vis de la bielle (rep. ①, Fig. 17).

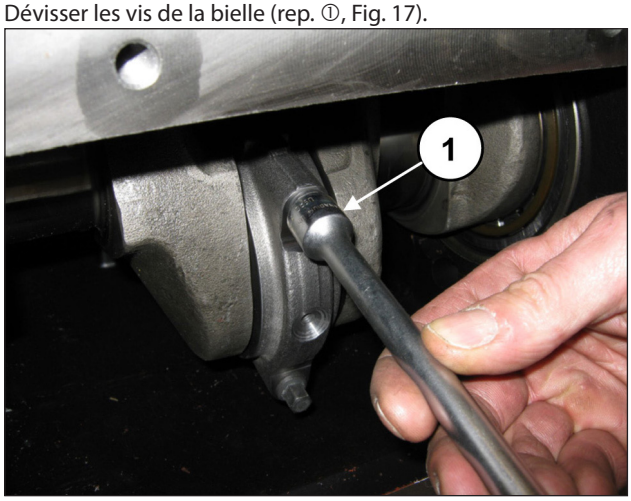



Fig. 17

Démonter les chapeaux de bielle avec les demi-coussinets inférieurs en prenant note de l'ordre de démontage.

**Remonter et accoupler les chapeaux de bielle et leurs demi-bielles dans l'ordre selon lequel ils ont été démontés.**

Pour éviter toute erreur possible, les chapeaux et les demi-bielles ont été numérotés sur un côté (rep. ①, Fig. 18).

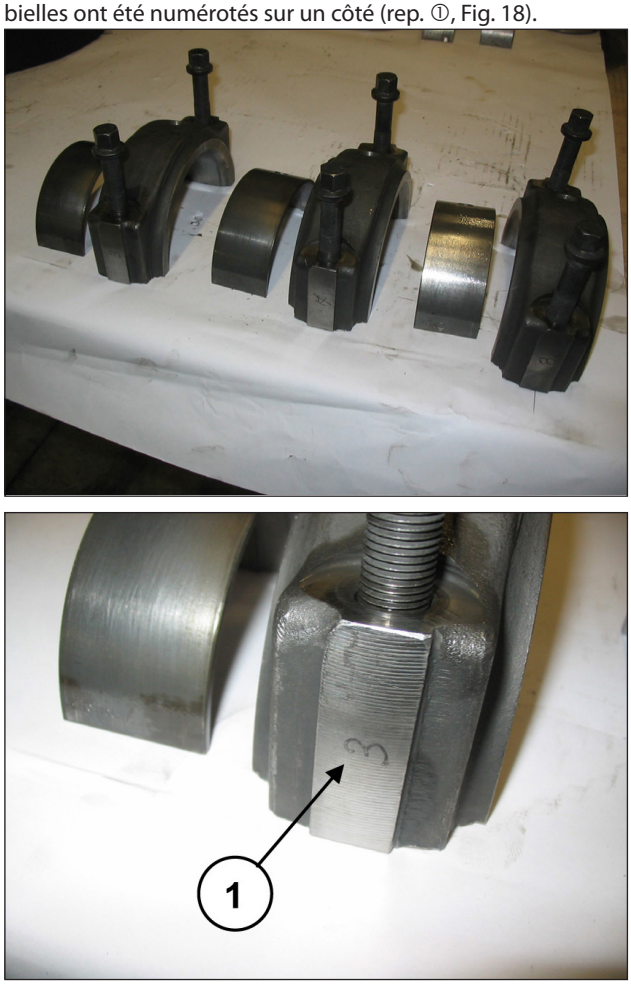



Fig. 18

Pousser à fond les demi-bielles dans la direction de la partie hydraulique pour faire ressortir le vilebrequin. Pour faciliter l'opération, utiliser l'outil (réf. 27566200 (rep. ①, Fig. 19).

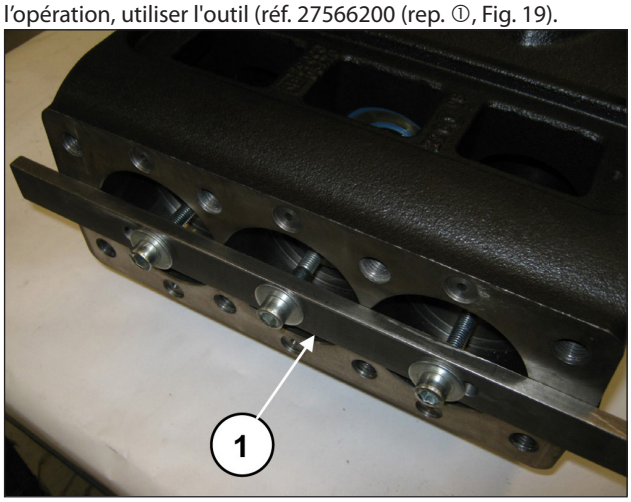



Fig. 19

Dégager les trois demi-coussinets supérieurs des demi-bielles (rep. ①, Fig. 20).

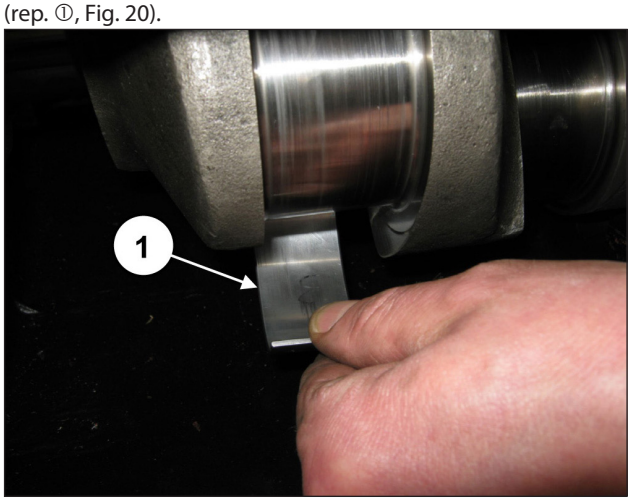



Fig. 20

Dévisser les vis de fixation du boîtier du réducteur (rep. ①, Fig. 21 et Fig. 22).

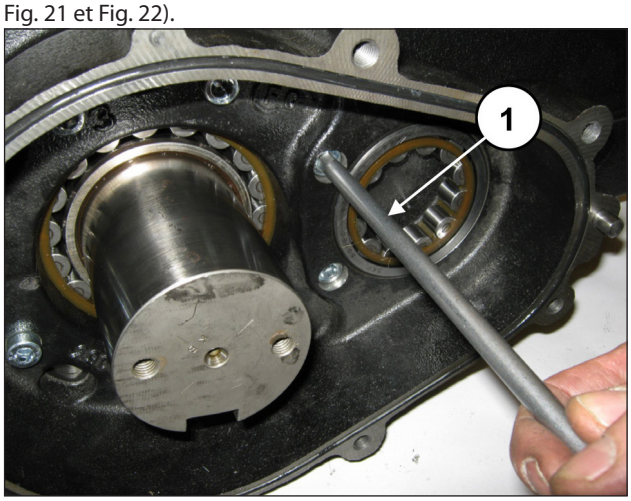



Fig. 21

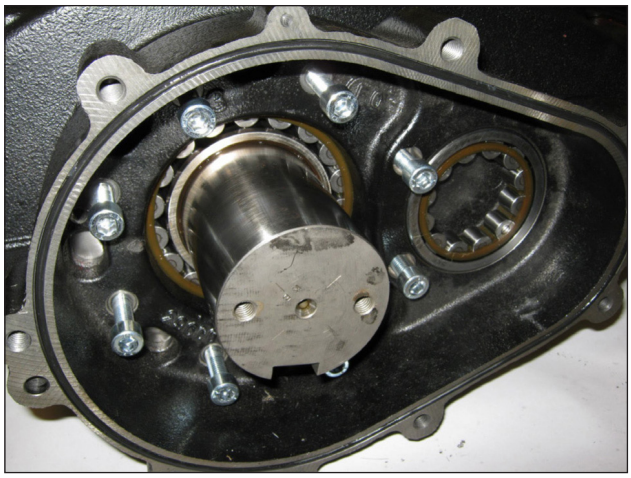


Fig. 22

Placer 3 goujons ou vis filetées M8 (rep. ①, Fig. 23) faisant office d'extracteurs, dans les orifices prévus à cet effet et deux vis M10 suffisamment longues servant à soutenir le boîtier du réducteur (rep. ②, Fig. 23).

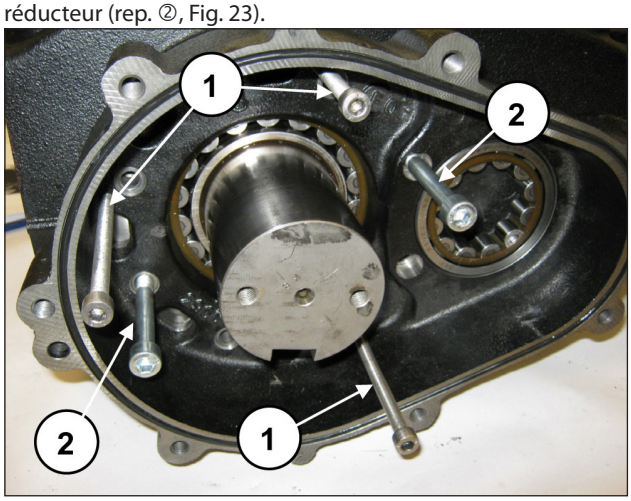



Fig. 23

Visser progressivement les 3 vis M8 (rep. ①, Fig. 24) pour éviter que le boîtier ne s'incline trop et ne se bloque dans son logement.
Déposer le boîtier en soutenant l'arbre pour éviter tout dommage (rep. ①, Fig. 25).

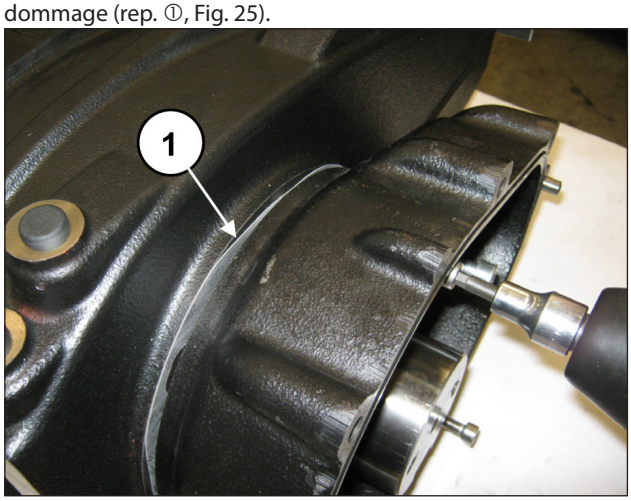



Fig. 24

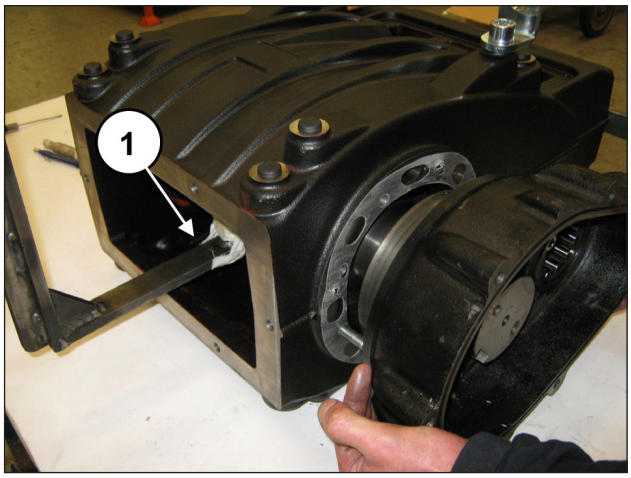



Fig. 25

De l'autre côté, dévisser les vis de fixation du couvercle du coussinet (rep. ①, Fig. 26 et Fig. 27).

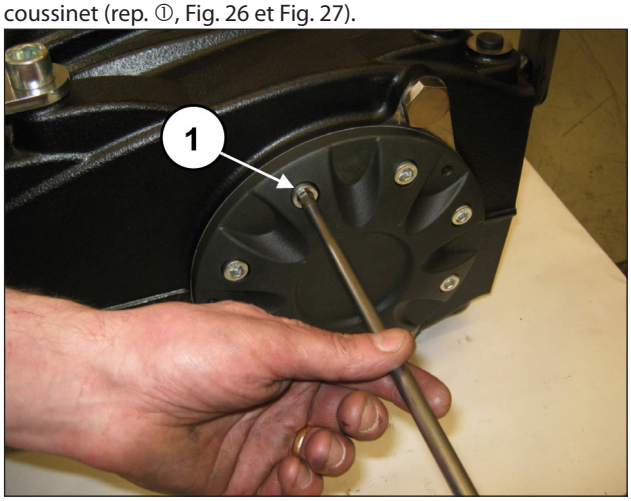



Fig. 26

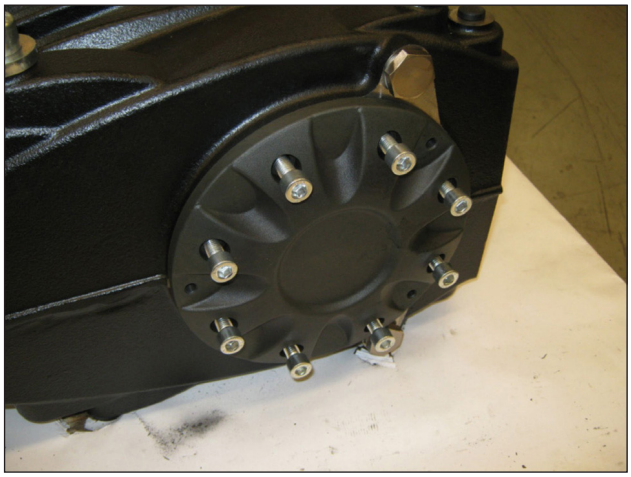


Fig. 27

Placer 3 goujons ou vis filetées M8 (rep. ①, Fig. 28) faisant office d'extracteurs, dans les orifices prévus à cet effet

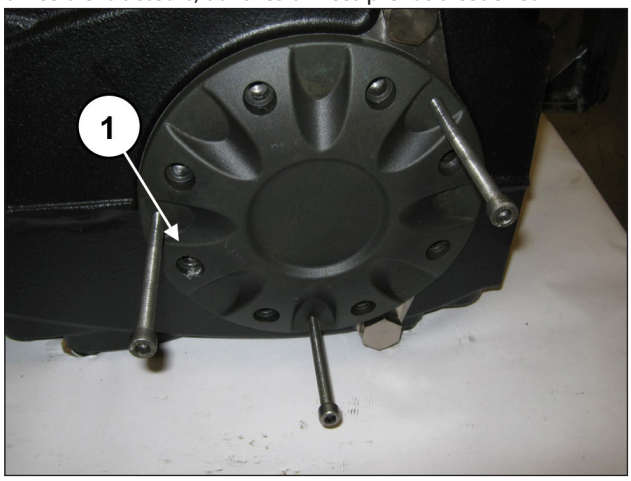



Fig. 28

Visser progressivement les 3 vis M8 (rep. ①, Fig. 29) pour éviter que le couvercle ne s'incline trop et ne se bloque dans son logement.
Déposer le couvercle du coussinet en soutenant l'arbre pour éviter tout dommage (rep. ①, Fig. 30).

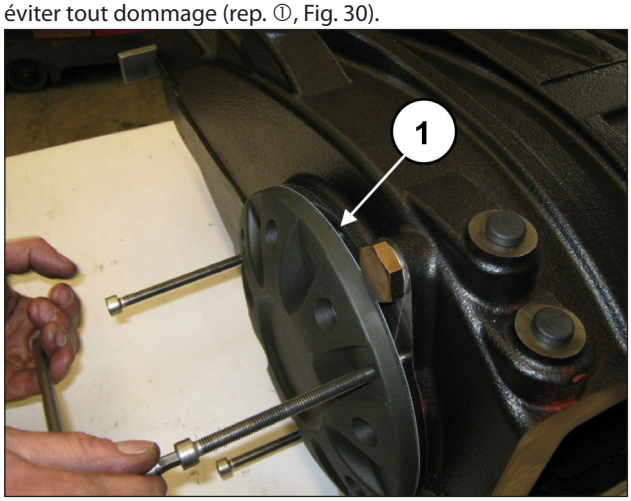



Fig. 29

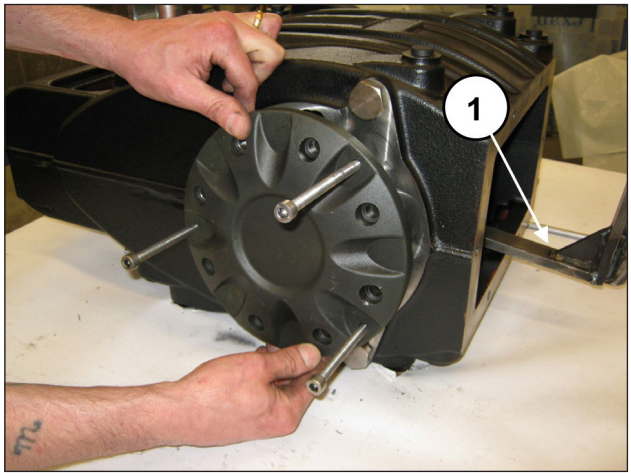



Fig. 30

Dégager le vilebrequin du carter, côté PTO (rep. ①, Fig. 31).

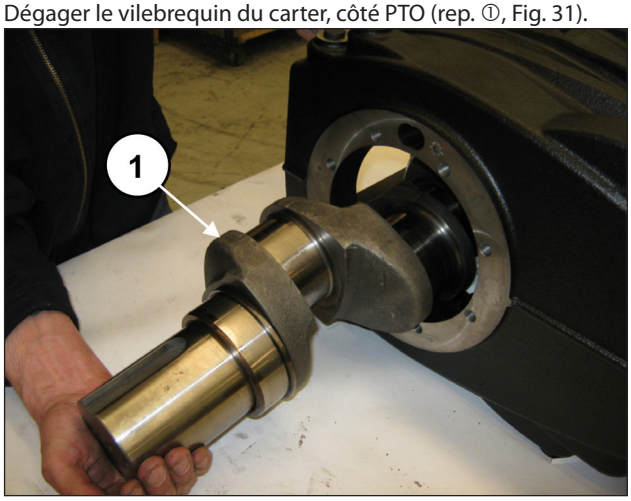



Fig. 31

S'il s'avère nécessaire de remplacer une ou plusieurs bielles ou guides de piston, procéder de la façon suivante :
Dévisser les vis de l'outil réf. 27566200 pour débloquer les bielles (rep. ①, Fig. 32) puis dégager les ensembles bielle-guide de piston par l'ouverture arrière du carter (rep. ①, Fig. 33).

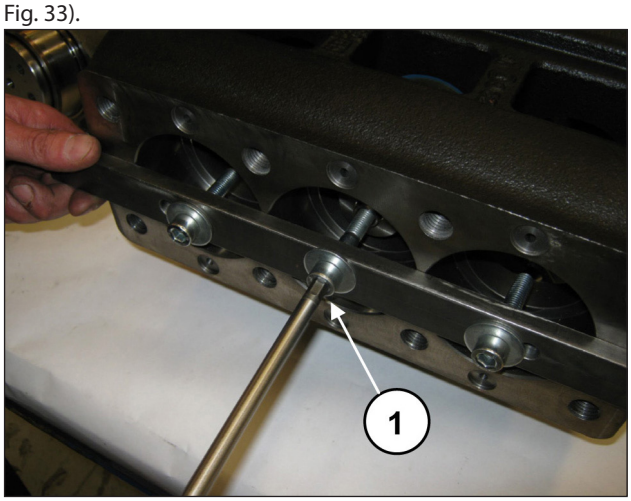



Fig. 32

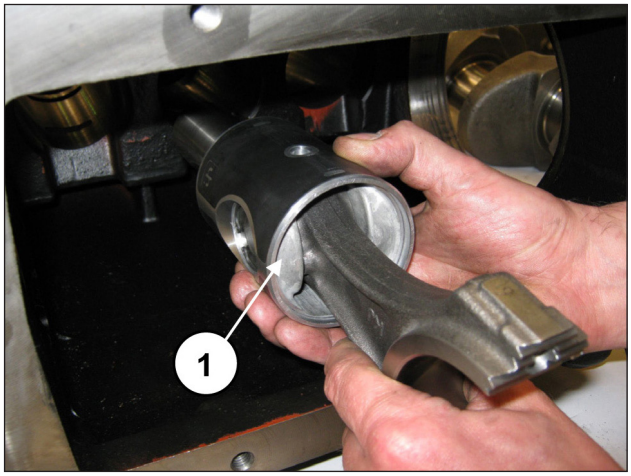



Fig. 33

Il est désormais possible de démonter les joints d'huile du guide de piston en ayant soin de ne pas endommager la tige de coulissement du guide de piston.

**S'il s'avère nécessaire de remplacer les joints d'huile du guide de piston sans devoir démonter toute la partie mécanique, il est possible de les dégager à l'aide de l'outil réf. 27918500 en procédant de la façon suivante :**

Insérer l'outil entre la tige et la lèvre du joint d'huile (rep. ①, Fig. 34) et enfoncer la partie conique dans le joint d'huile à l'aide d'un outil à inertie (rep. ①, Fig. 35).

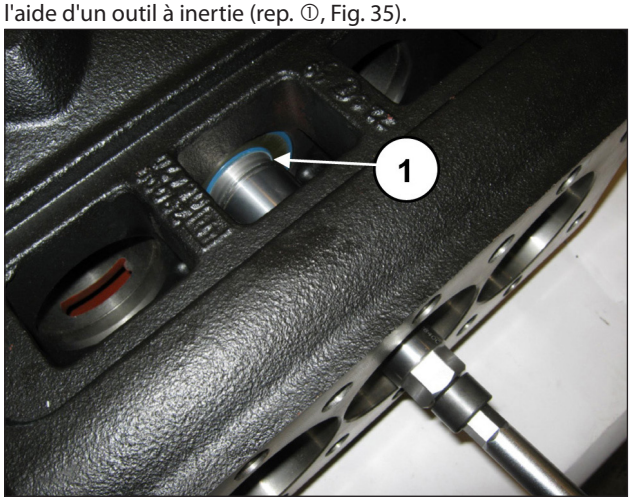



Fig. 34

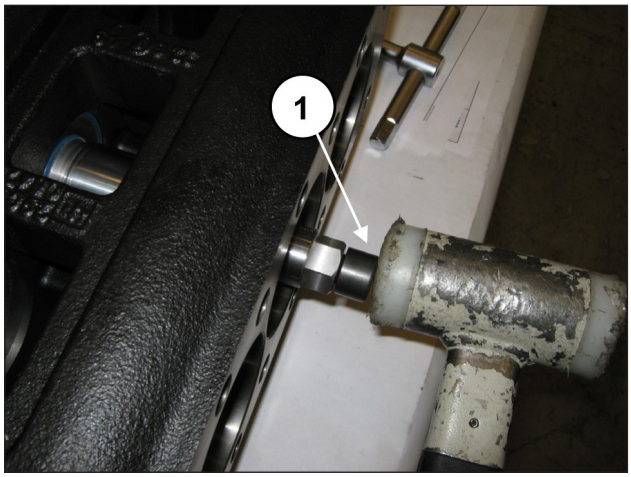



Fig. 35

Dégager le joint d'huile à l'aide de l'outil à inertie (rep. ①, Fig. 36).

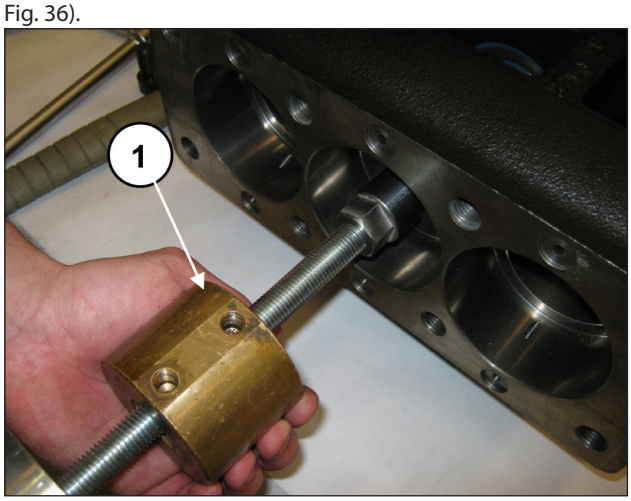



Fig. 36

Déposer les deux anneaux Seeger de retenue de la goupille (rep. ①, Fig. 37).

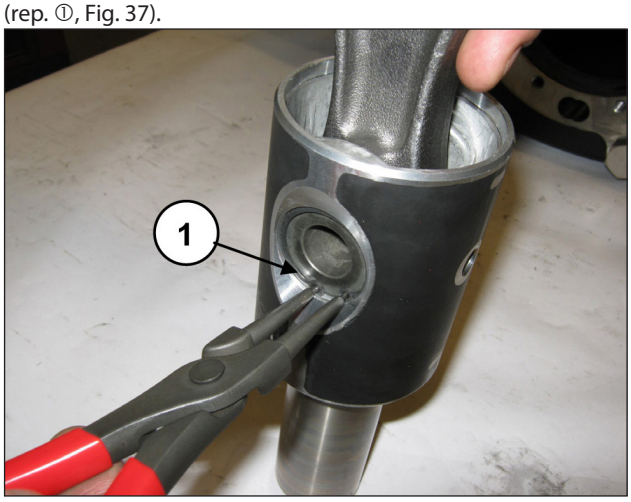



Fig. 37

Dégager la goupille (rep. ①, Fig. 38) et extraire la bielle (rep. ①, Fig. 39).

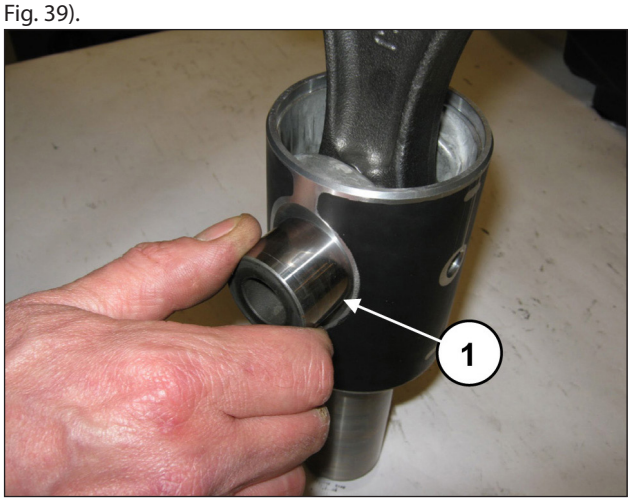



Fig. 38

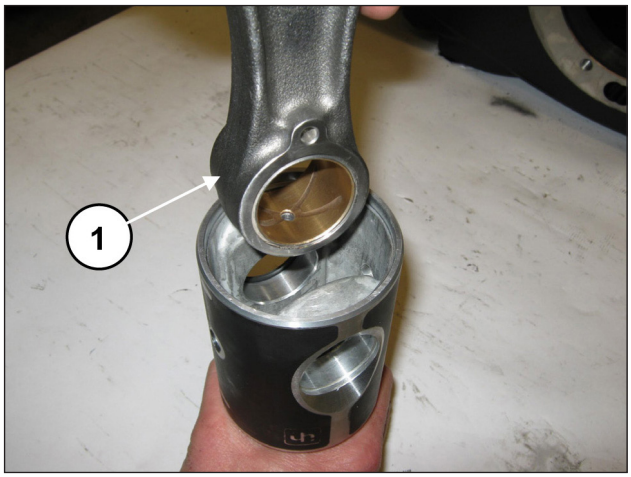
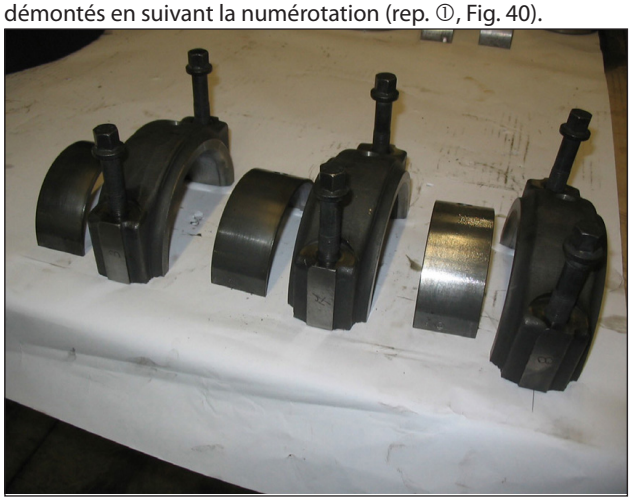



Fig. 39

Accoupler les demi-bielles avec les chapeaux préalablement démontés en suivant la numérotation (rep. ①, Fig. 40).



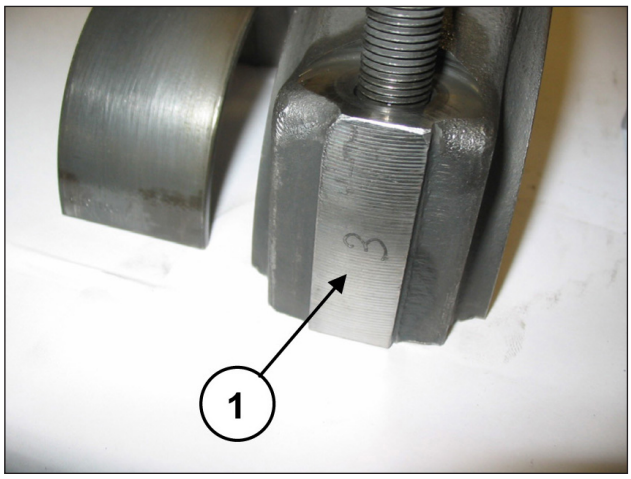



Fig. 40

Pour désassembler la tige du guide de piston, dévisser les vis à tête cylindrique M6 à l'aide d'une clé spéciale (rep. ①, Fig. 41).

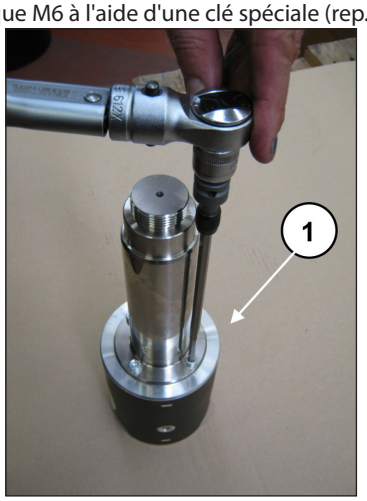



Fig. 41

### 2.1.2 Montage de la partie mécanique

Procéder au montage en inversant les opérations du parag. 2.1.1.
La séquence correcte est la suivante :
Assembler la tige au guide de piston.
Insérer la tige du guide de piston dans le logement prévu à cet effet sur le guide de piston (rep. ①, Fig. 42) et le fixer sur ce dernier à l'aide des 4 vis à tête cylindrique M6x20 (rep. ①, Fig. 43).


Fig. 42


Fig. 43

Bloquer le guide de piston dans un étau à l'aide d'un outil spécial et serrer les vis à l'aide d'une clé dynamométrique (rep. ①, Fig. 44) selon les explications figurant au chapitre 3.

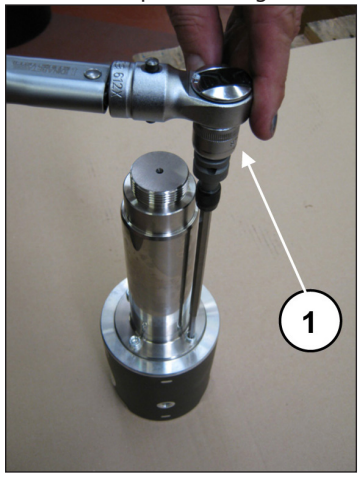



Fig. 44

Insérer la bielle dans le guide de piston (rep. ①, Fig. 39) puis insérer la goupille (rep. ①, Fig. 38). Appliquer les deux Seeger d'appui (rep. ①, Fig. 37).

**Le montage est correct lorsque le pied de bielle, le guide de piston et la goupille tournent sans problèmes.**

Désassembler les chapeaux des demi-bielles ; pour les accoupler correctement, suivre la numérotation présente sur un côté (rep. ①, Fig. 40).
Après s'être assuré que le carter est propre, insérer l'ensemble demi-bielle/guide de piston dans les tiges du carter (rep. ①, Fig. 33).

**Insérer l'ensemble demi-bielle/guide de piston dans le carter en tournant les demi-bielles de sorte que la numérotation soit visible sur le dessus.**

Bloquer les trois groupes à l'aide de l'outil réf. 27566200 (rep. ①, Fig. 32).
Prémonter l'anneau interne des coussinets du vilebrequin (à fond, des deux côtés de l'arbre) à l'aide de l'outil réf. 27604700 (rep. ①, Fig. 45) (rep. ①, Fig. 46).

**Remonter les bagues internes et externes des coussinets en les accouplant comme ils l'étaient au démontage.**


Fig. 45


Fig. 46

Insérer l'arbre côté PTO en ayant soin de ne pas heurter les corps de bielles préalablement montés (rep. ①, Fig. 47) et (rep. ①, Fig. 48).

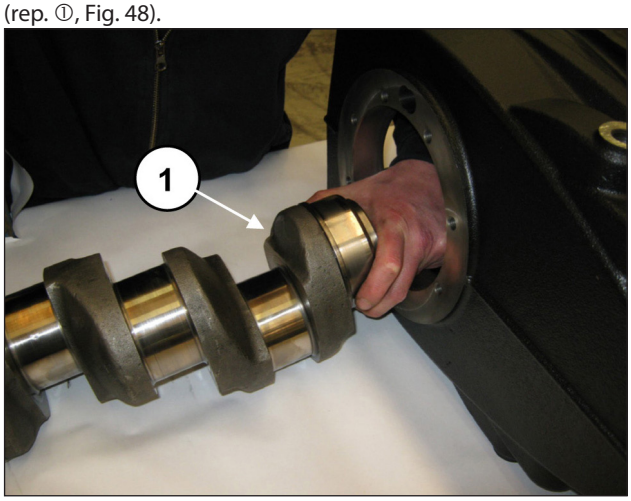



Fig. 47

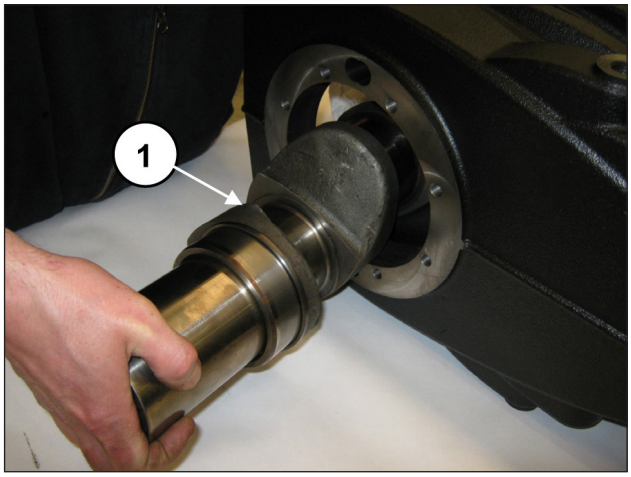



Fig. 48

**Monter impérativement le vilebrequin avec le côté PTO à l'opposé des orifices G1/2" pour les bouchons d'évacuation de l'huile du carter de pompe (rep. ②, Fig. 50).**

S'assurer que l'arbre est enfoncé dans le carter (rep. ①, Fig. 49 et Fig. 50).

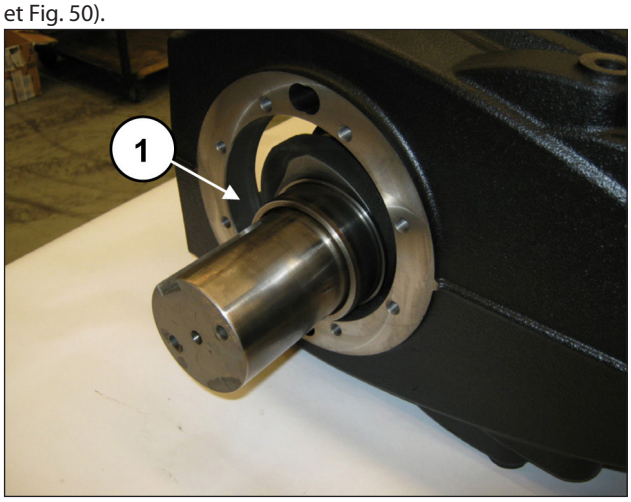



Fig. 49

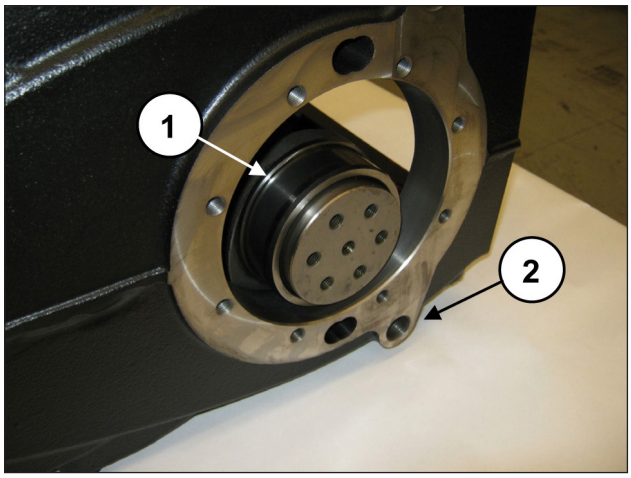



Fig. 50

Prémonter la bague externe du coussinet du pignon sur le boîtier du réducteur à l'aide de l'outil réf. 27604900 (rep. ①, Fig. 51) et le pousser à fond (rep. ①, Fig. 52).

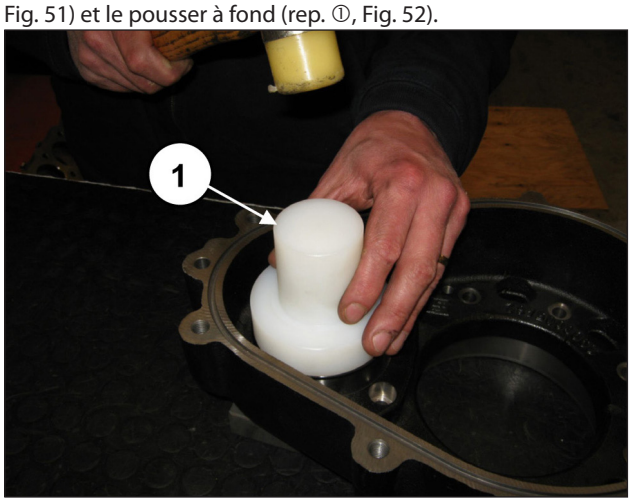



Fig. 51

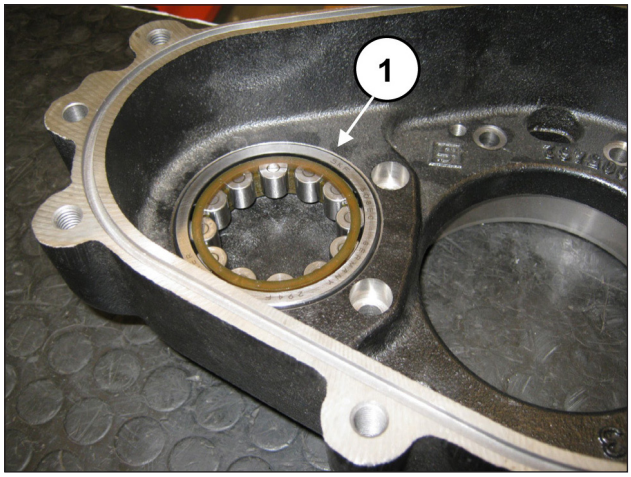



Fig. 52

Prémonter la bague externe du coussinet du vilebrequin de l'autre côté du boîtier du réducteur à l'aide de l'outil réf. 27605000 (rep. ①, Fig. 53) et le pousser à fond (rep. ①, Fig. 54).

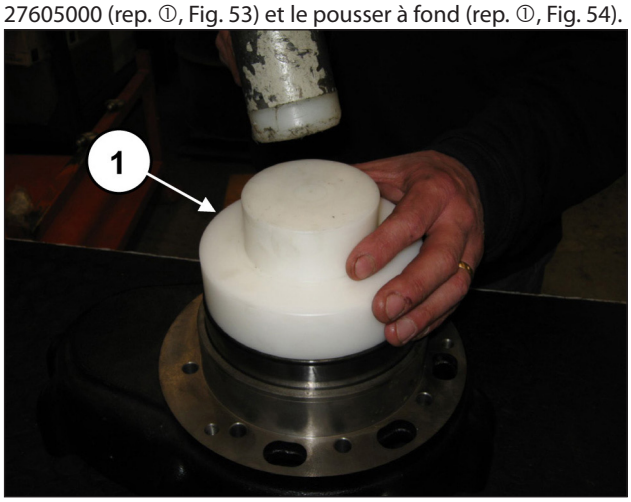



Fig. 53

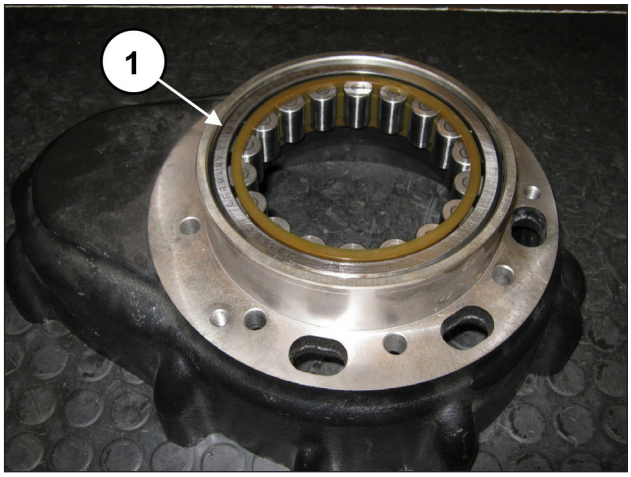



Fig. 54

Répéter l'opération sur le couvercle du coussinet en prémontant la bague externe du coussinet du vilebrequin à l'aide de l'outil réf. 27605000 (rep. ①, Fig. 55) et le pousser à fond (rep. ①, Fig. 56).

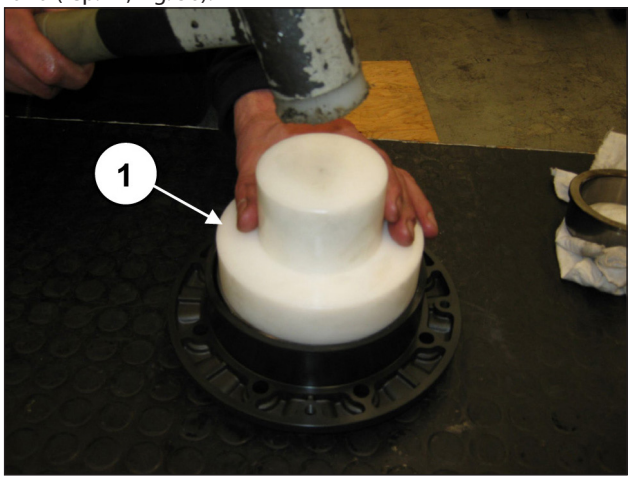



Fig. 55

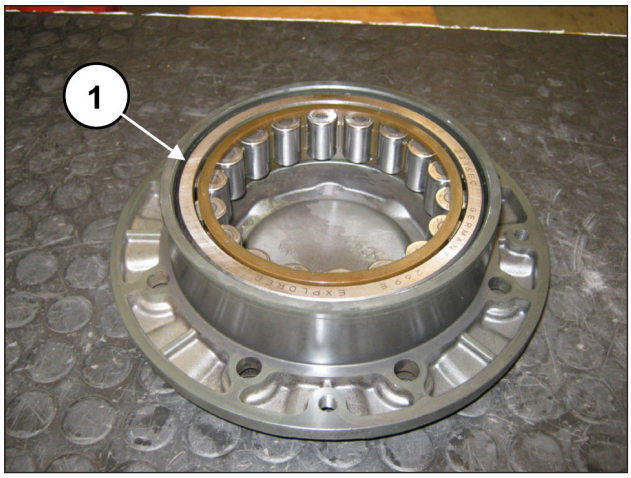



Fig. 56

Insérer le joint latéral sur le couvercle du coussinet (rep. ①, Fig. 57) et soulever le vilebrequin pour faciliter le passage du couvercle (rep. ①, Fig. 58).

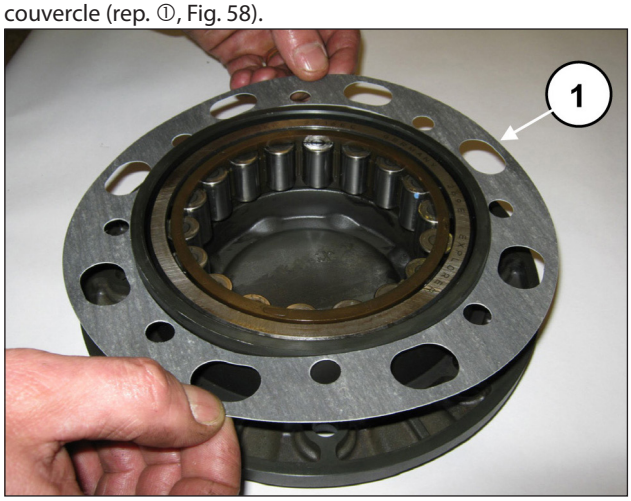



Fig. 57

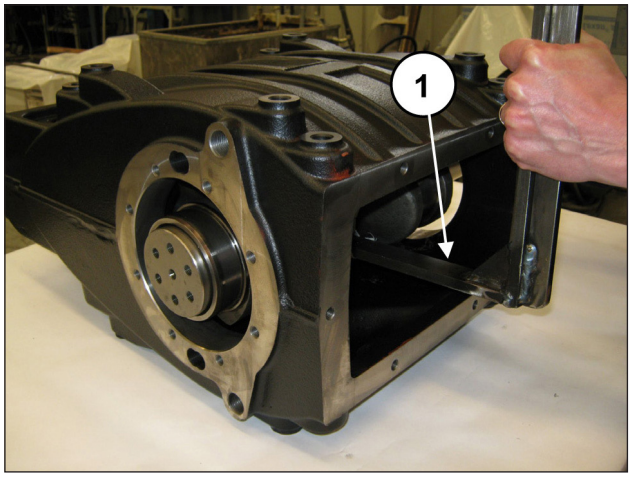



Fig. 58

Monter le couvercle du coussinet (et son joint) à l'aide d'un outil à inertie (rep. ①, Fig. 59).

**Tourner le couvercle du coussinet de sorte que le logo « Pratissoli » soit parfaitement horizontal.**

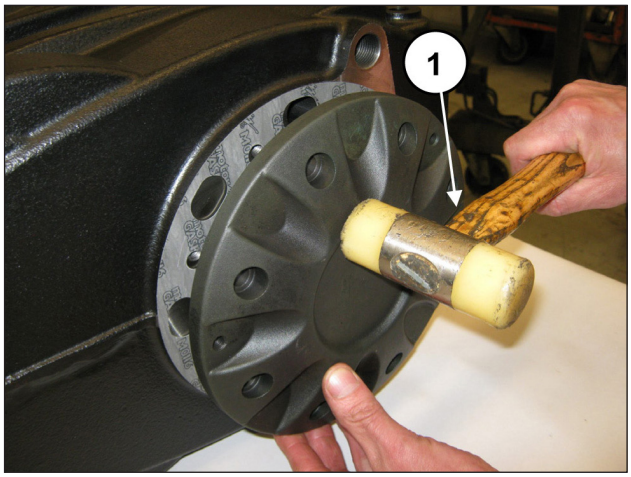



Fig. 59

Serrer les 8 vis M10x30 (rep. ①, Fig. 60).
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

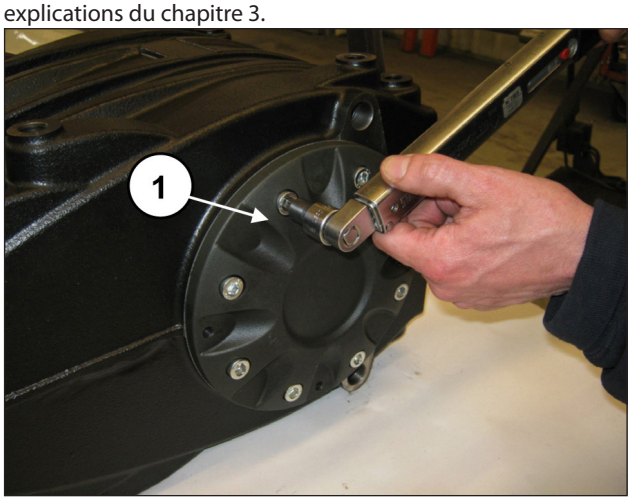



Fig. 60

De l'autre côté, insérer le joint latéral sur le boîtier du réducteur (rep. ①, Fig. 61) et soulever le vilebrequin pour faciliter le passage du couvercle (rep. ①, Fig. 62).

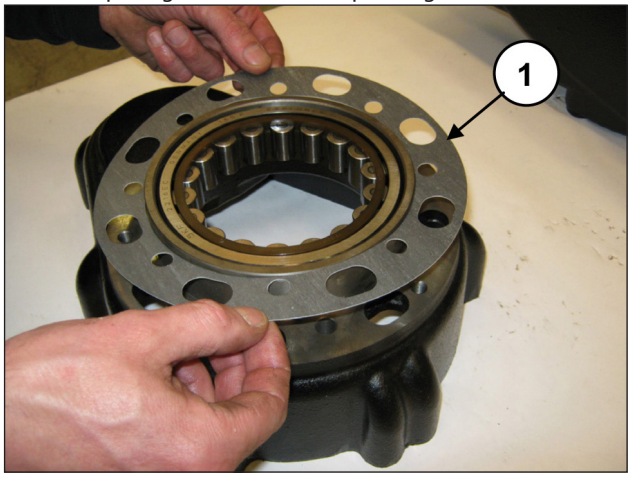



Fig. 61

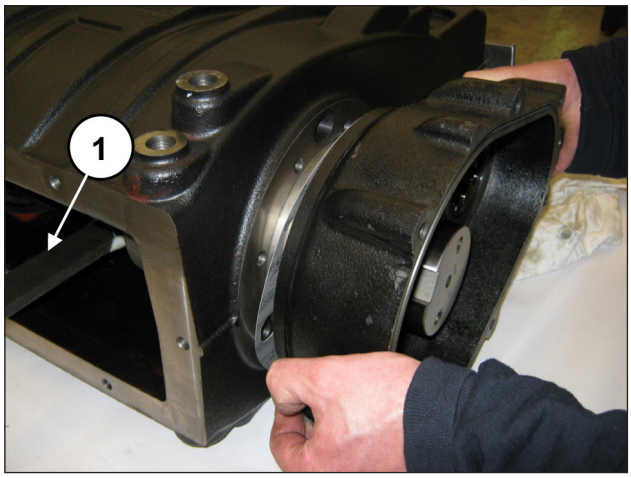



Fig. 62

Monter le boîtier du réducteur (et son joint) à l'aide d'un outil à inertie (rep. ①, Fig. 63).

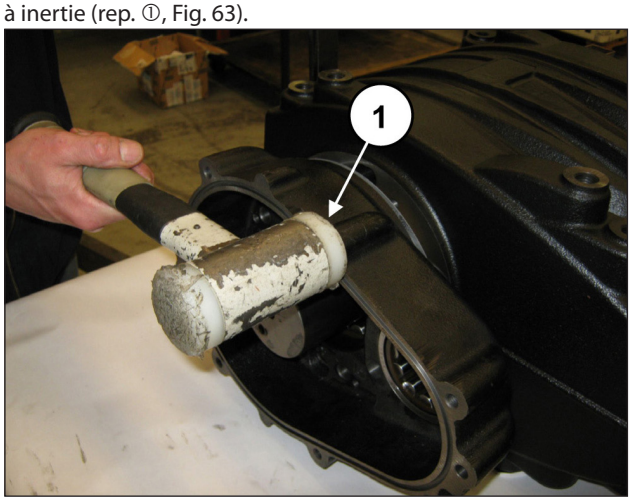



Fig. 63

Serrer les 8 vis M10x40 (rep. ①, Fig. 64).
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS.

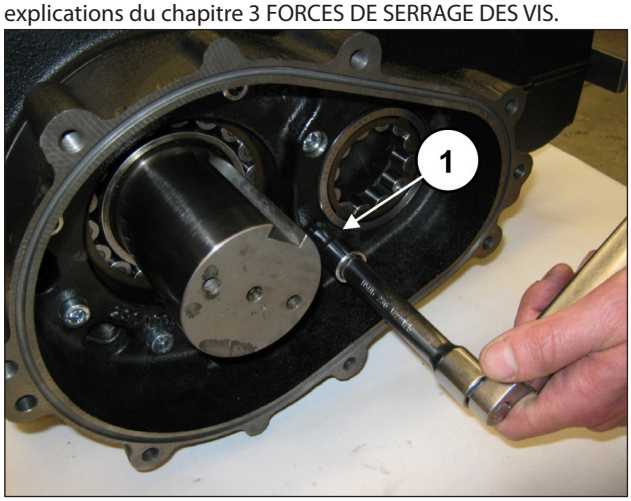



Fig. 64

Déposer l'outil de blocage des bielles réf. 27566200 (rep. ①, Fig. 32).

Insérer les demi-coussinets supérieurs entre les bielles et l'arbre (rep. ①, Fig. 65).

**Pour monter correctement les demi-coussinets, s'assurer que la languette de repère des demi-coussinets se trouve dans son logement sur la demi-bielle (rep. ①, Fig. 66).**

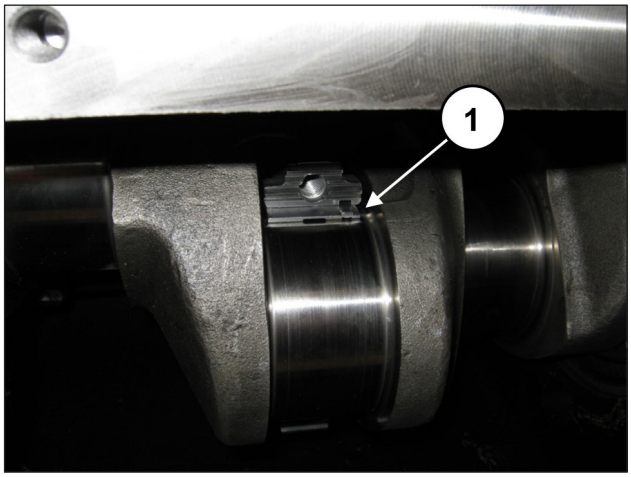



Fig. 65

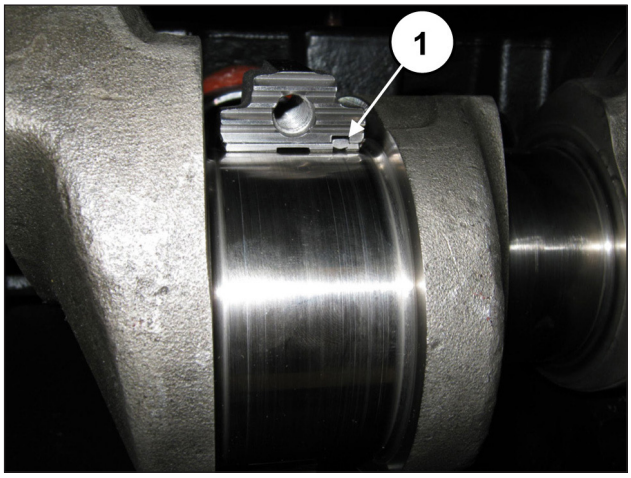



Fig. 66

Assembler les demi-coussinets inférieurs aux chapeaux (rep. ①, Fig. 67) en s'assurant que la languette de repère des demi-coussinets se trouve dans son logement sur le chapeau (rep. ②, Fig. 67).
Fixer les chapeaux sur les demi-bielles à l'aide des vis M10x1,5x80 (rep. ①, Fig. 68).

**Faire attention au sens de montage des chapeaux. La numérotation doit être tournée vers le haut.**

Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS et en serrant les vis au couple préconisé simultanément.

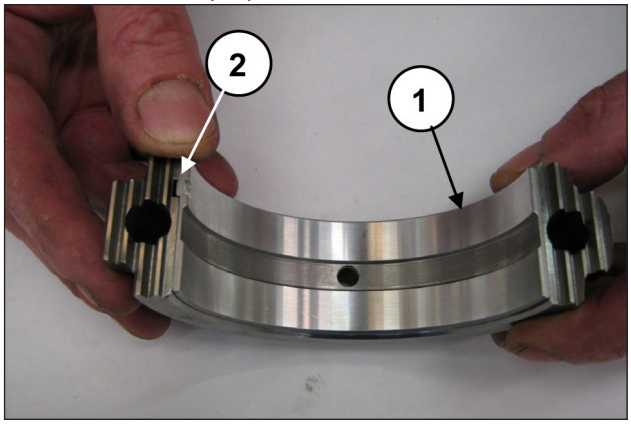



Fig. 67

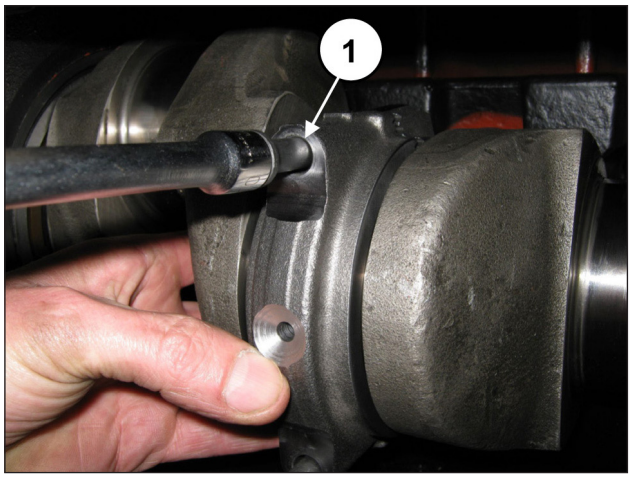



Fig. 68

**Une fois l'opération terminée, s'assurer que les bielles présentent un jeu axial dans les deux directions.**

Insérer les joints d'huile du guide de piston dans le logement sur le carter à l'aide de l'outil réf. 27605300 (rep. ① et ②, Fig. 69/a et Fig. 69/b).

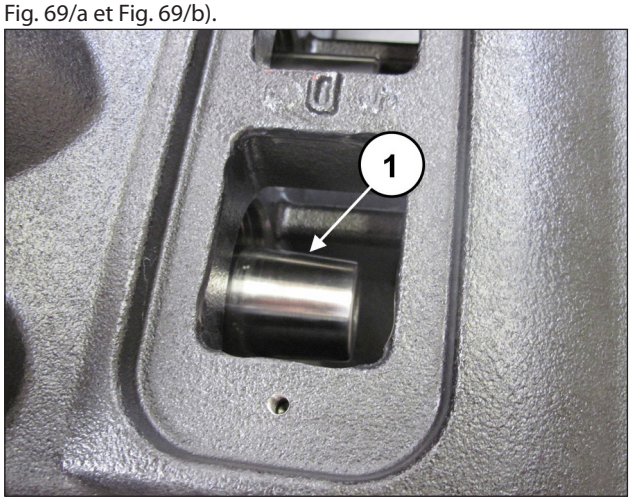



Fig. 69/a

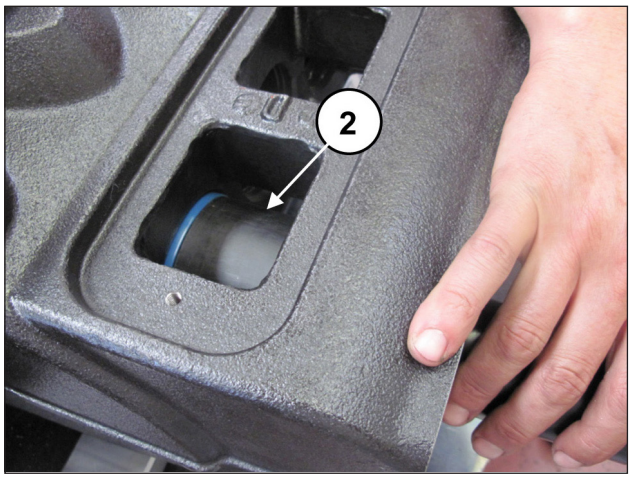



Fig. 69/b

Insérer le joint torique dans le couvercle arrière (rep. ①, Fig. 70) et monter le couvercle sur le carter à l'aide de 6 vis M10x30 (rep. ①, Fig. 71).

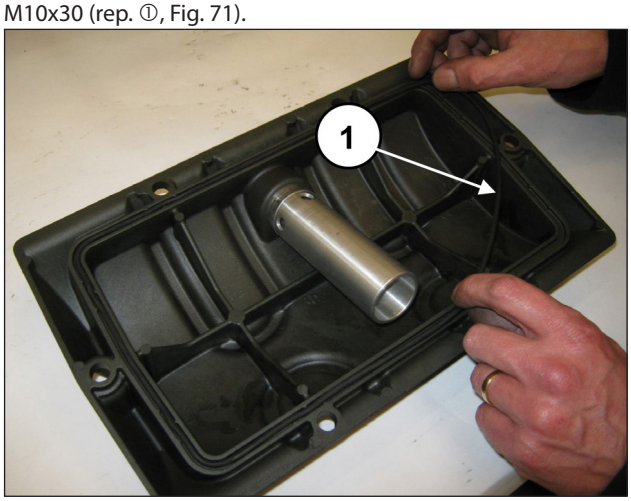



Fig. 70

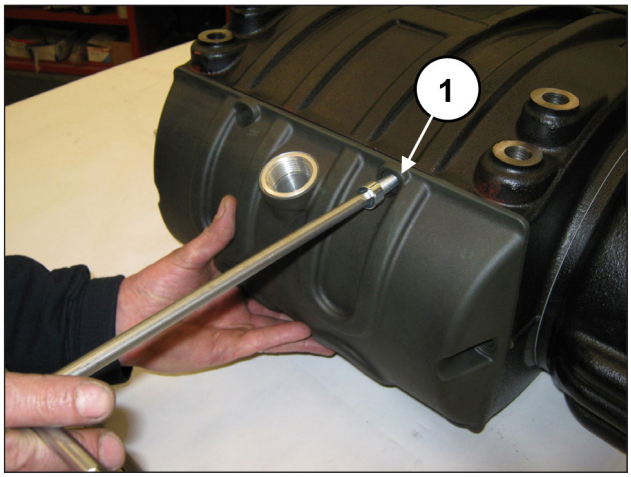



Fig. 71

**S'assurer que le joint torique est entré correctement et à fond dans son logement sur le couvercle pour éviter qu'il ne soit endommagé durant le serrage des vis.**

Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS.
Insérer la bague d'appui de la couronne dans la queue du vilebrequin (rep. ①, Fig. 72) et la pousser à fond (rep. ①, Fig. 73).

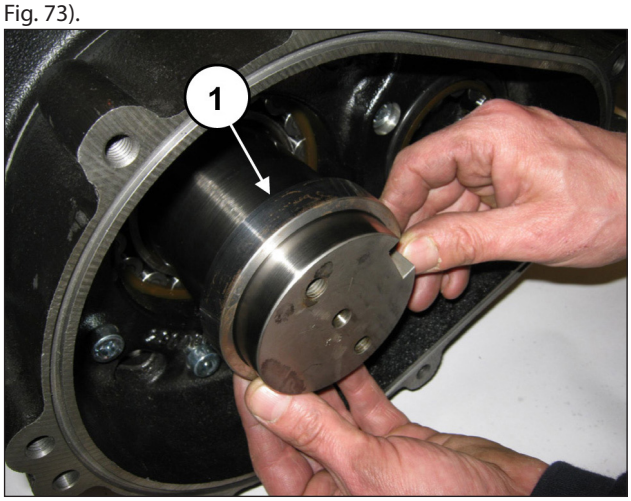



Fig. 72

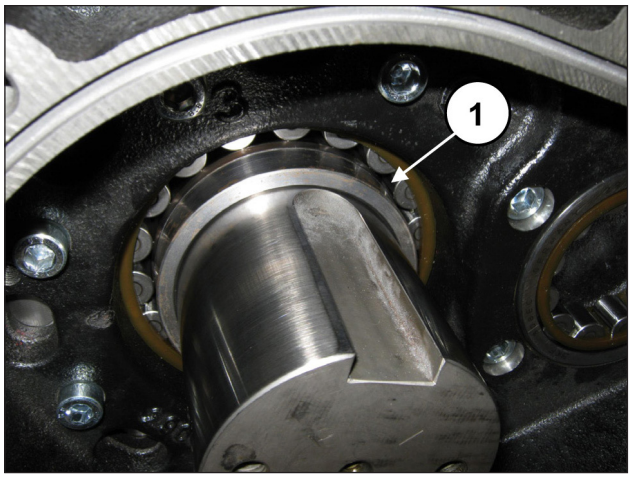



Fig. 73

Appliquer la languette 22x14x80 dans le logement de l'arbre (rep. ①, Fig. 74) et insérer la couronne sur l'arbre (rep. ①, Fig. 75).

**Monter la couronne en s'assurant que les deux orifices M8 (à utiliser pour l'extraction) sont tournés vers l'extérieur de la pompe (rep. ②, Fig. 75).**

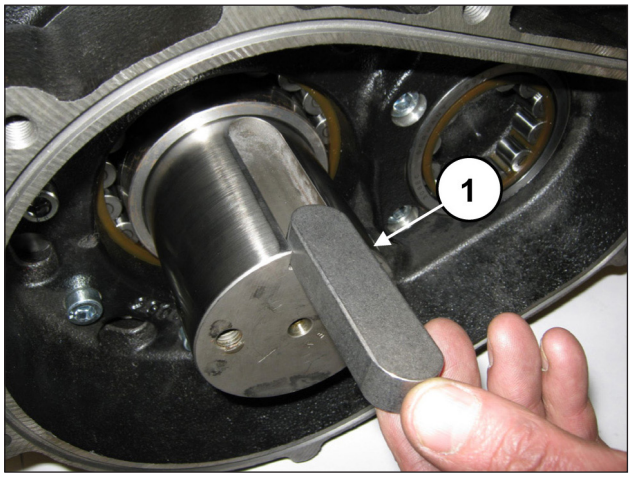



Fig. 74

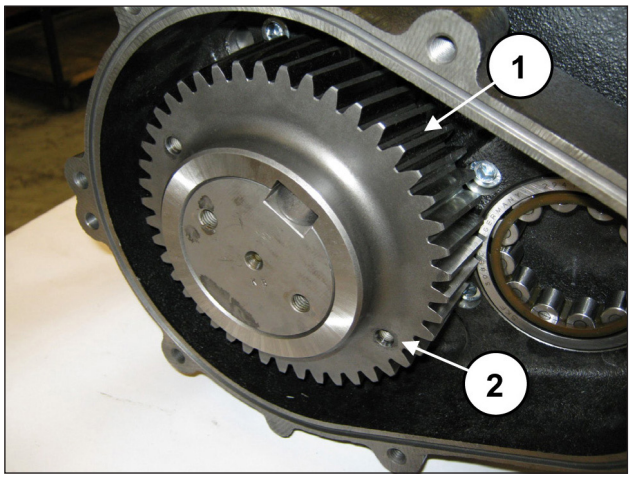



Fig. 75

Fixer le dispositif d'arrêt de la couronne (rep. ①, Fig. 76) à l'aide de 2 vis M10x25.
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 (rep. ①, Fig. 77).

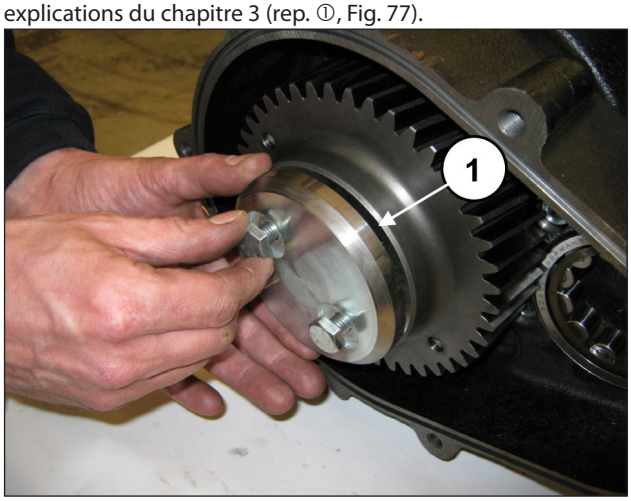



Fig. 76

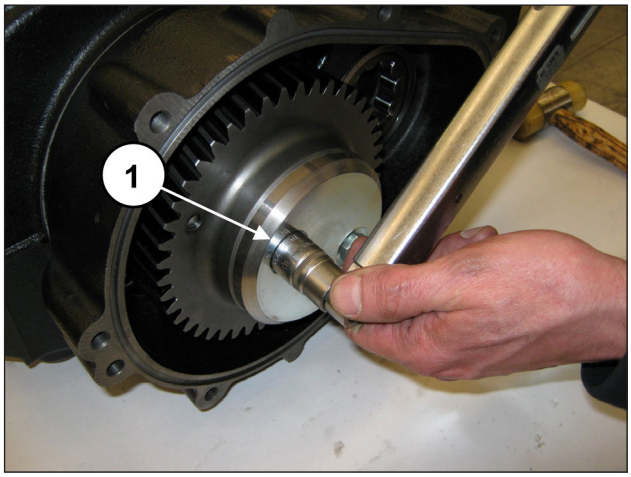



Fig. 77

Appliquer les 2 goupilles Ø10x24 au boîtier du réducteur (rep. ①, Fig. 78) et insérer le joint torique (rep. ①, Fig. 79).

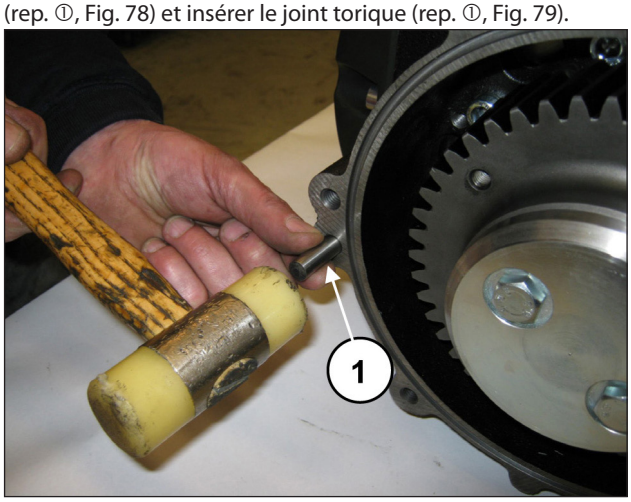



Fig. 78

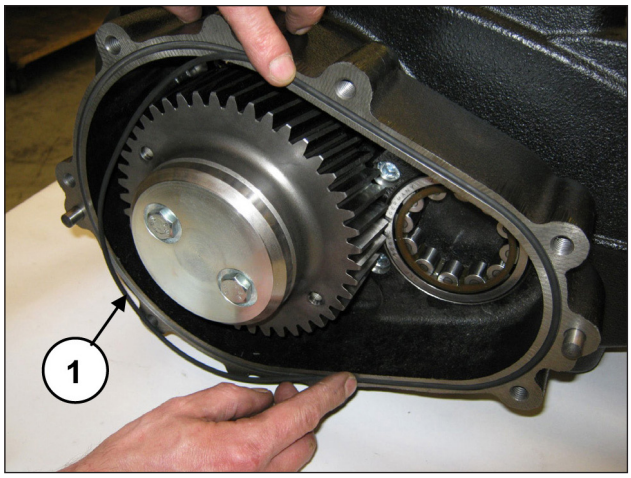



Fig. 79

Assembler le pignon sur le couvercle du réducteur en procédant de la façon suivante :
Prémonter la bague interne du coussinet 40x90x23 sur le pignon (rep. ①, Fig. 80) et la pousser à fond.

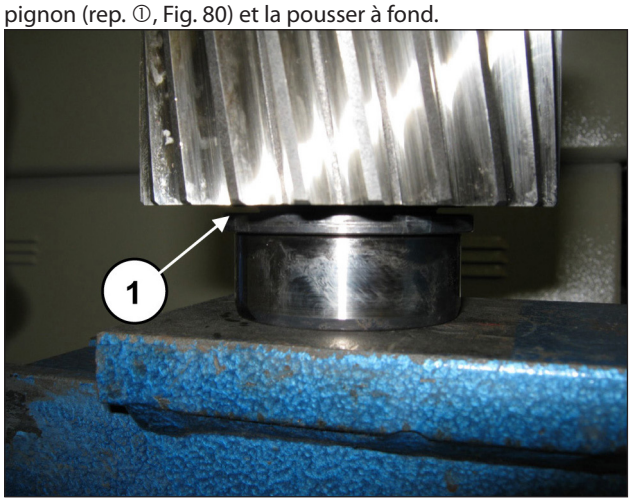



Fig. 80

De l'autre côté du pignon, prémonter le coussinet 55x120x29 (rep. ①, Fig. 81) et le pousser à fond à l'aide de l'outil réf. 27604800 (rep. ①, Fig. 82).

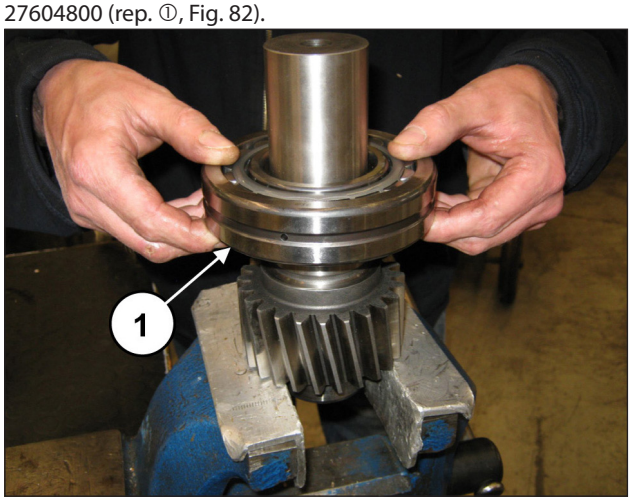



Fig. 81

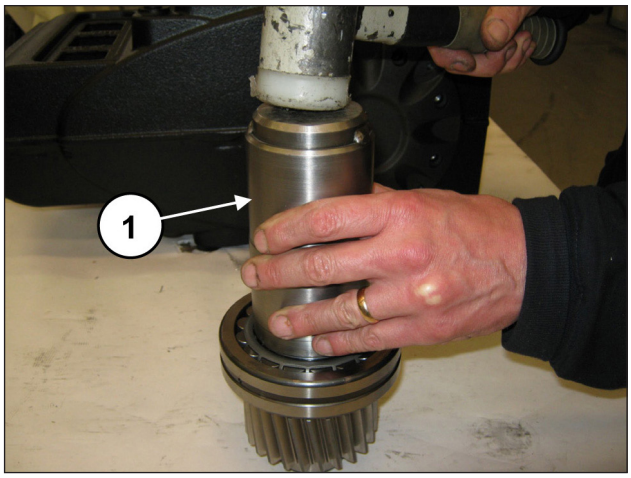



Fig. 82

Insérer l'anneau d'appui du coussinet (rep. ①, Fig. 83) et installer l'anneau Seeger Ø55 (rep. ①, Fig. 84).

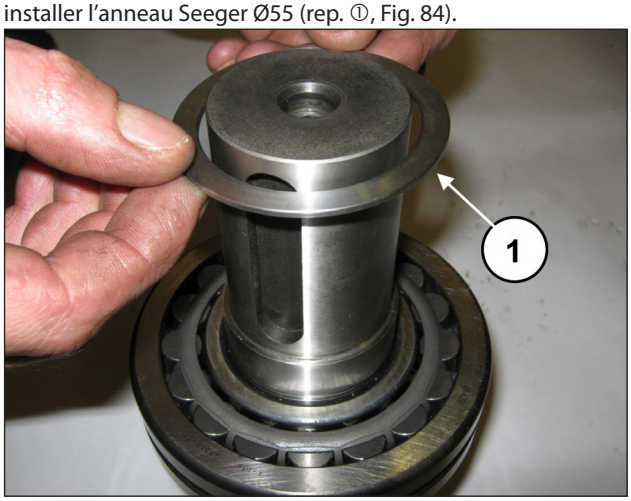



Fig. 83

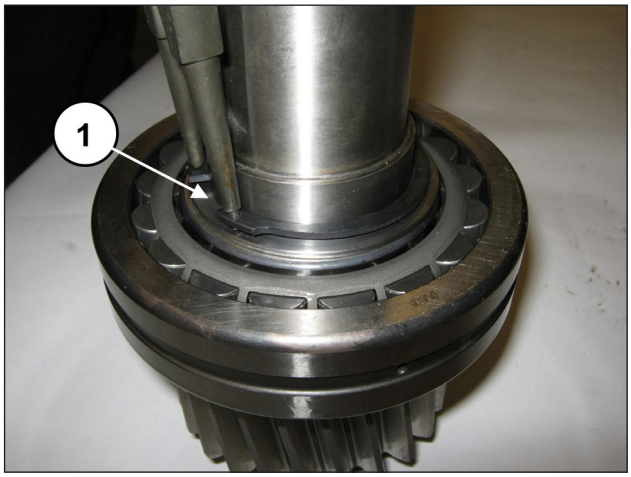



Fig. 84

Insérer le pignon prémonté dans son logement sur le couvercle du réducteur à l'aide d'un outil à inertie (rep. ①, Fig. 85).

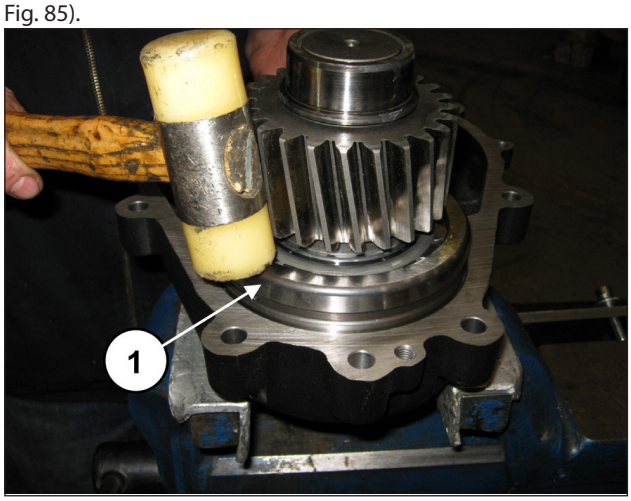



Fig. 85

Insérer dans le logement l'anneau Seeger Ø120 (rep. ①, Fig. 86).

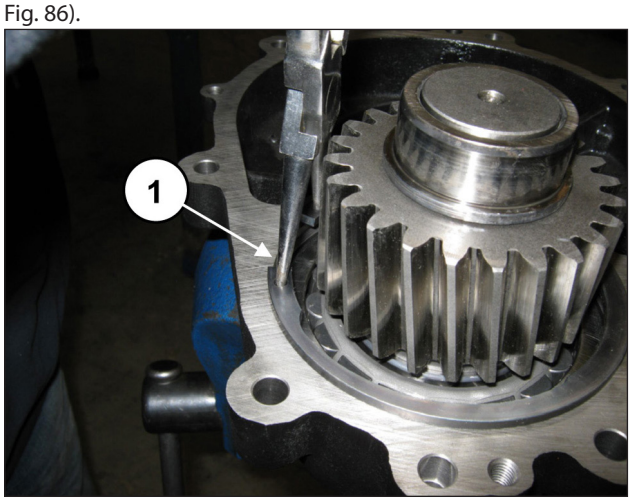



Fig. 86

Monter le couvercle du réducteur à l'aide d'un outil à inertie (rep. ①, Fig. 87) et le fixer à l'aide de 7 vis M10x40 (rep. ①, Fig. 88).
S'assurer d'accouplement correctement les deux éléments du coussinet 40x90x23.
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

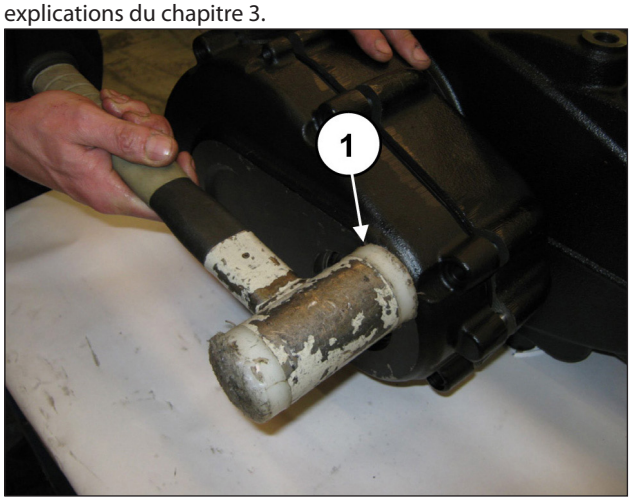



Fig. 87

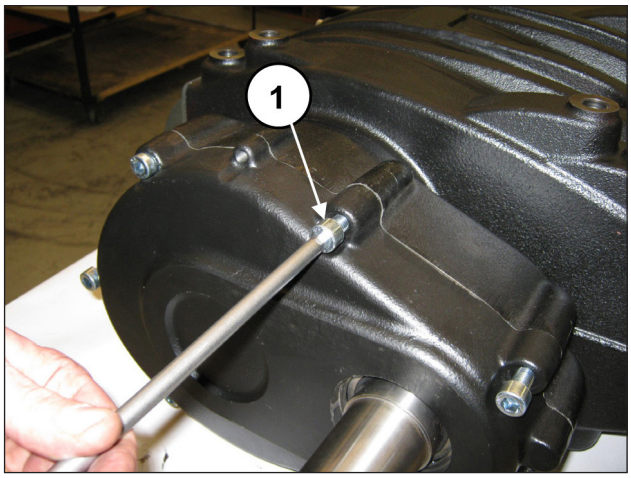



Fig. 88

Insérer le joint d'huile dans le couvercle du réducteur à l'aide de l'outil réf. 27605200 (rep. ①, Fig. 89).
Avant de procéder au montage du joint d'huile, vérifier les conditions de la lèvre d'étanchéité. S'il s'avère nécessaire de remplacer le joint, placer le nouveau joint sur le fond de la gorge comme le montre la Fig. 90

**Si l'arbre présente une usure diamétrale correspondant à la lèvre d'étanchéité, pour éviter la rectification, placer le joint en deuxième position, comme le montre la Fig. 90.**

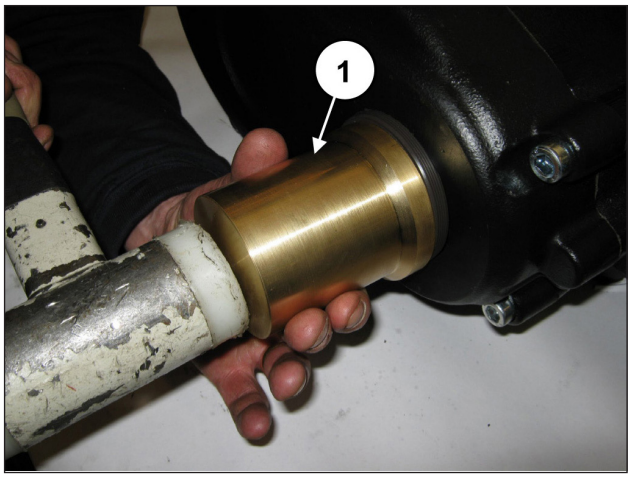



Fig. 89

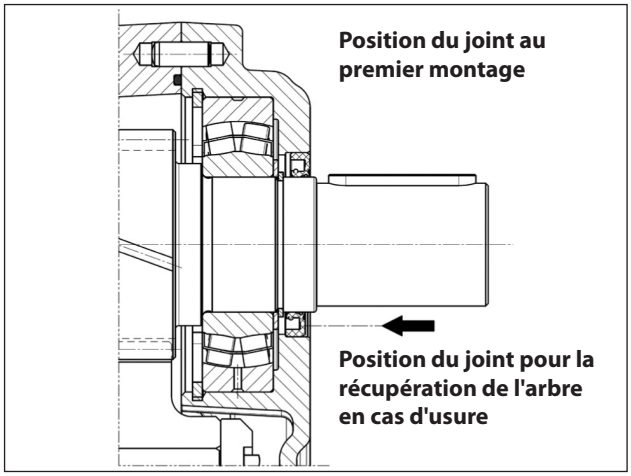



Fig. 90

**Pour éviter d'endommager le joint d'huile, l'introduire délicatement sur le pignon.**

Appliquer les couvercles d'inspection avec les joints toriques (rep. ①, Fig. 91) et serrer à l'aide de 2+2 vis M6x14 (rep. ①, Fig. 92).
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS.

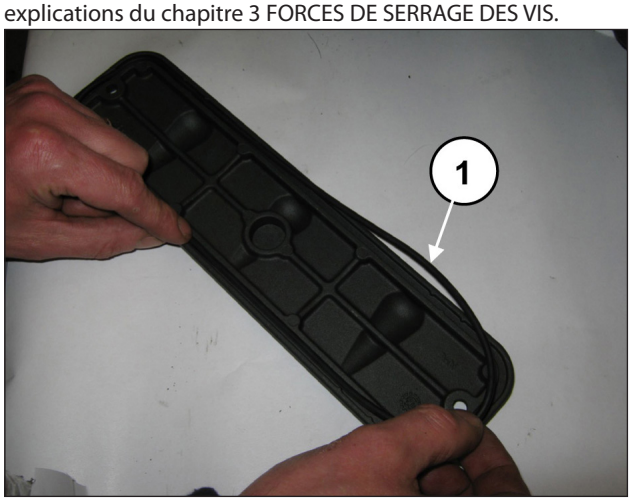



Fig. 91

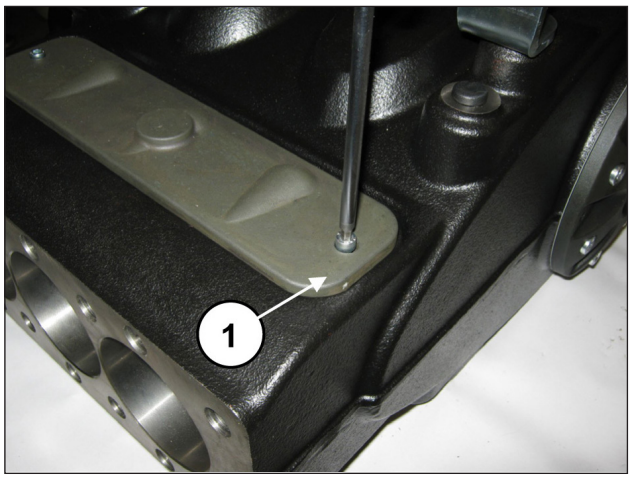



Fig. 92

Insérer la languette 14x9x60 dans le pignon.

Appliquer les bouchons et les étriers de levage à l'aide des vis M16x30 (rep. ①, Fig. 93).
Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS.


Fig. 93

Verser l'huile dans le carter en suivant les explications dans le ***Manuel d'utilisation et d'entretien***, parag. 7.4.

### 2.1.3 Classes de majorations et de minorations prévues

| TABLEAU DE MINORATIONS POUR VILEBREQUIN ET DEMI-COUSSINETS DE BIELLE | | | |
|---|---|---|---|
| **Classes de rattrapage (mm)** | **Code Demi-coussinet Supérieur** | **Code Demi-coussinet Inférieur** | **Rectification sur le diamètre du goujon de l'arbre (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| TABLEAU DES MAJORATIONS POUR CARTER DE POMPE ET GUIDE DE PISTON | | |
|---|---|---|
| **Classes de rattrapage (mm)** | **Référence Guide de piston** | **Rectification sur le siège du carter de pompe (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 RÉPARATION DE LA PARTIE HYDRAULIQUE

### 2.2.1 Démontage de la tête MW32 MW36 MW40 - groupes soupapes

La tête nécessite un entretien préventif, selon les indications du ***Manuel d'utilisation et d'entretien***.
Les interventions se limitent à l'inspection ou au remplacement des soupapes, en cas de besoin.
Pour l'extraction des groupes de la soupape, procéder de la façon suivante :
Dévisser les 8 vis M16x55 du couvercle des soupapes (rep. ①, Fig. 94) et déposer le couvercle (rep. ①, Fig. 95).

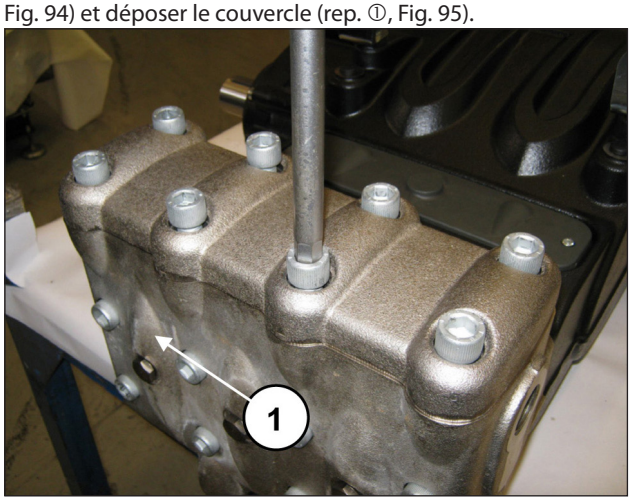



Fig. 94

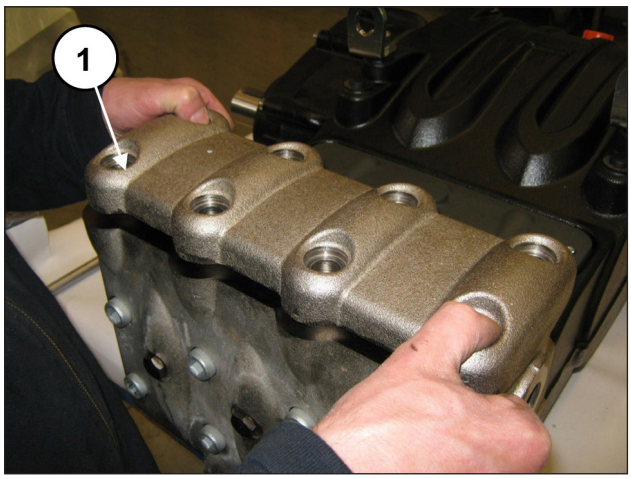



Fig. 95

Extraire le bouchon de soupape en appliquant un chassoir à inertie sur l'orifice M10 du bouchon (rep. ①, Fig. 96).

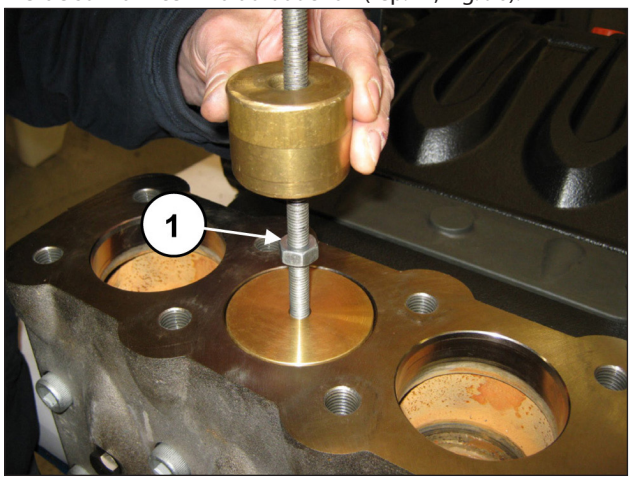



Fig. 96

Dégager le ressort (rep. ①, Fig. 97).

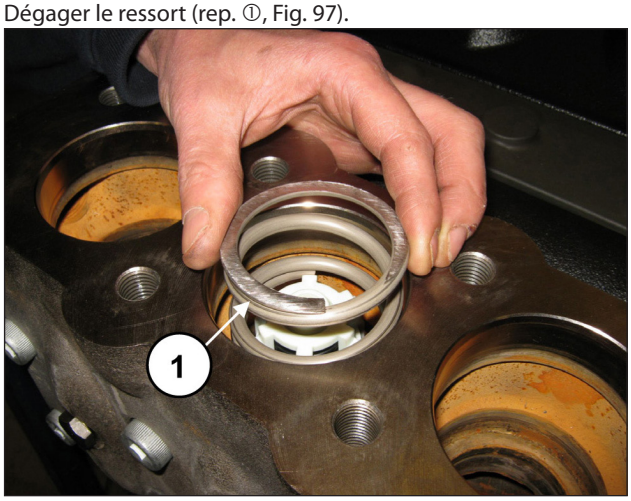



Fig. 97

Extraire le groupe de la soupape de refoulement en utilisant un outil à inertie (réf. 27516400) appliqué à l'orifice M10 du guide de soupape (rep. ①, Fig. 98).

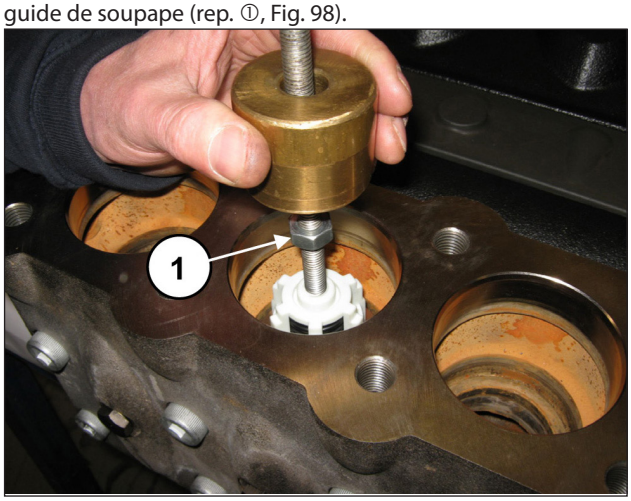



Fig. 98

Extraire l'entretoise du logement de la soupape (rep. ①, Fig. 99).

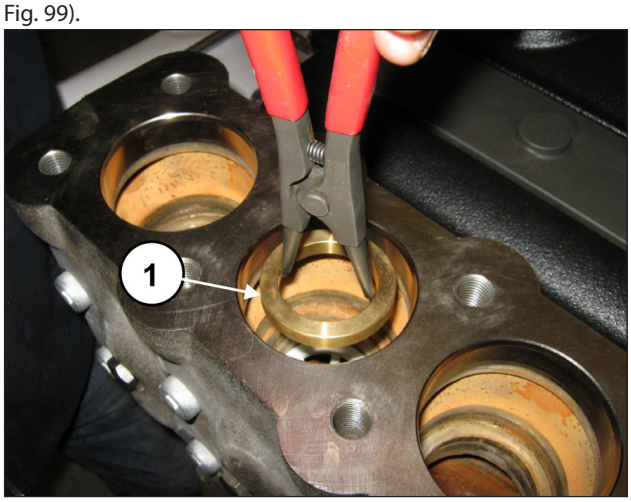



Fig. 99

Extraire l'entretoise du guide de soupape en insérant une clé hexagonale de 8 mm dans le logement prévu à cet effet et en soulevant pour faciliter la dépose (rep. ①, Fig. 100).

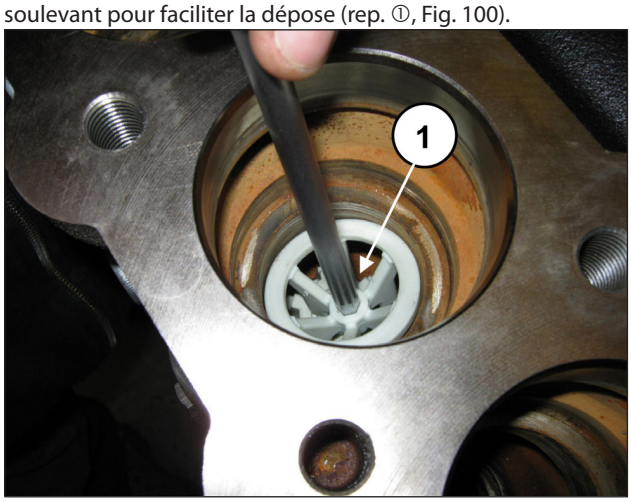



Fig. 100

Extraire le groupe de la soupape d'aspiration en utilisant un outil à inertie (réf. 27516400) appliqué à l'orifice M10 du guide de soupape (rep. ①, Fig. 101).

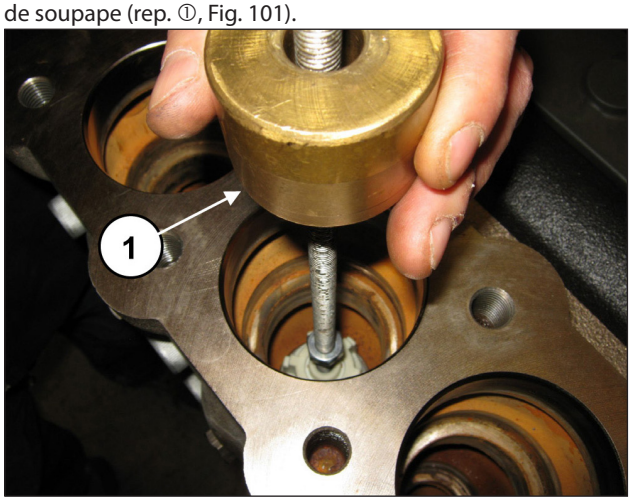



Fig. 101

**S'il s'avère difficile d'extraire le groupe de la soupape d'aspiration (par exemple, à cause de la présence d'incrustations dues à un arrêt prolongé de la pompe), utiliser l'extracteur réf. 27516200 (rep. ①, Fig. 102) et agir selon les indications.**

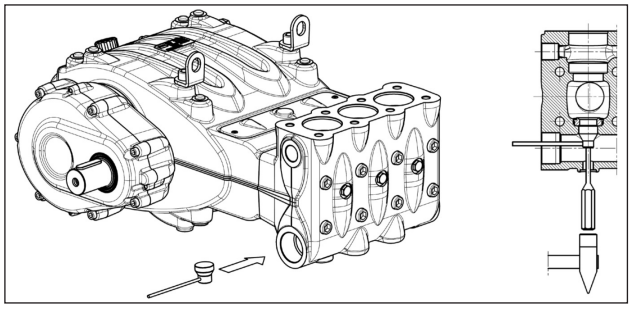


Fig. 102

Desserrer le dispositif d'ouverture des soupapes à l'aide d'une clé de 30 mm (rep. ①, Fig. 103).

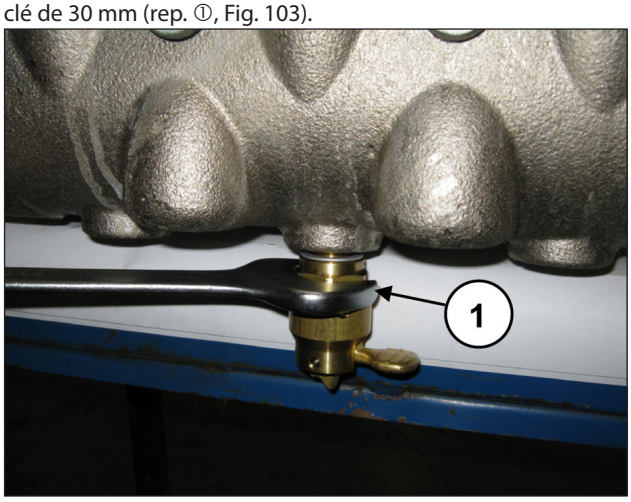



Fig. 103

Démonter les groupes de la soupape d'aspiration et de refoulement en vissant une vis M10 de sorte à appuyer sur le guide interne pour l'extraire du siège de la soupape (rep. ①, Fig. 104).

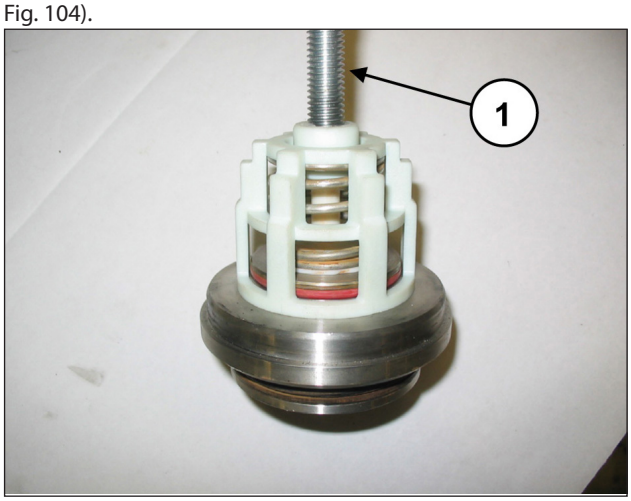



Fig. 104

Compléter le démontage en ôtant les bouchons G1/4" à l'avant de la tête.
Il est désormais possible de déposer la tête du carter de pompe en dévissant les 8 vis M16x180 (rep. ①, Fig. 105).
Durant le démontage de la tête, s'assurer de ne pas heurter les pistons (rep. ①, Fig. 106).

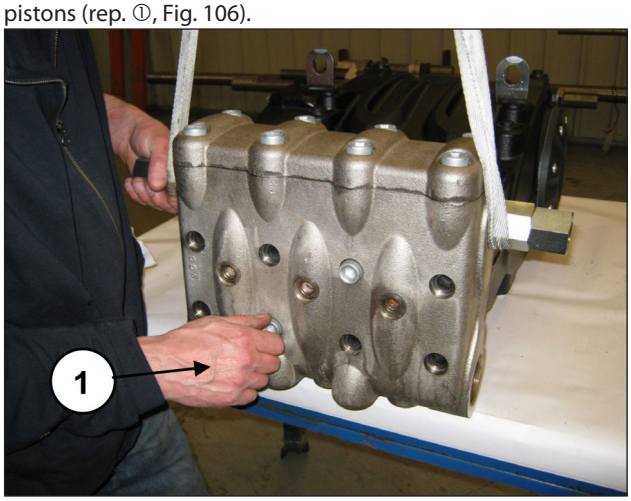



Fig. 105

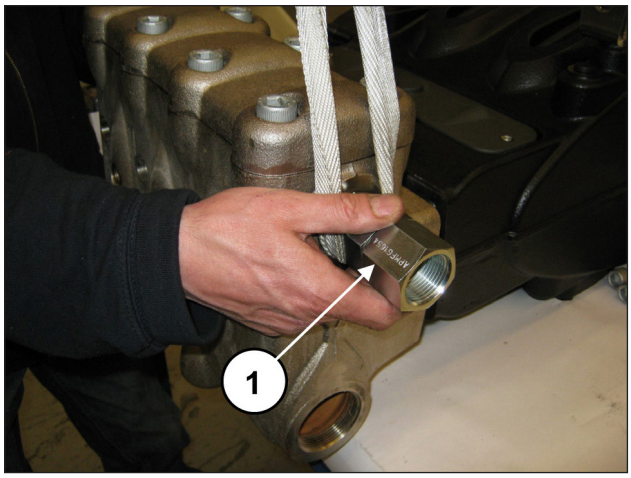



Fig. 106

### 2.2.2 Montage de la tête MW32 MW36 MW40 - groupes soupapes

**Vérifier l'état d'usure des différents composants et les remplacer si nécessaire.**
**À chaque contrôle des soupapes, remplacer tous les joints toriques aussi bien des groupes que des bouchons de la soupape.**

**Avant de replacer les groupes de la soupape, nettoyer et essuyer à fond les logements correspondants situés dans la tête et indiqués par les flèches (rep. ①, Fig. 107).**

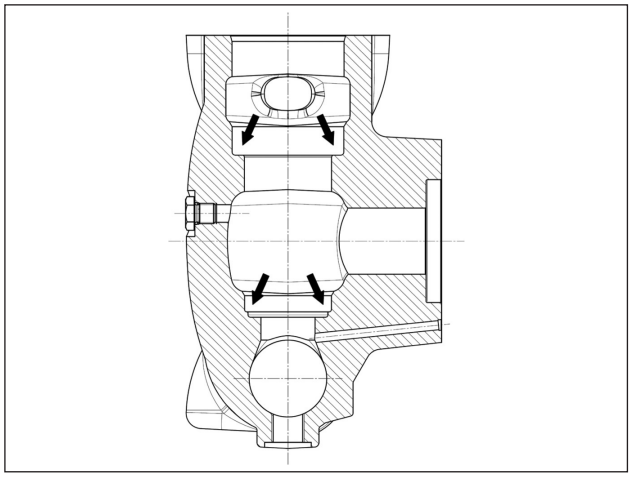


Fig. 107

Procéder au remontage en inversant les opérations de démontage du parag. 2.2.1.

Assembler les groupes de la soupape d'aspiration et de refoulement (Fig. 108 et Fig. 109) en ayant soin de ne pas inverser les ressorts préalablement démontés.
Pour monter plus facilement le guide de soupape dans le siège, il est possible d'utiliser un tuyau posé sur les plans horizontaux du guide (Fig. 110) et un outil à inertie pour agir sur toute la circonférence.

Fig. 108

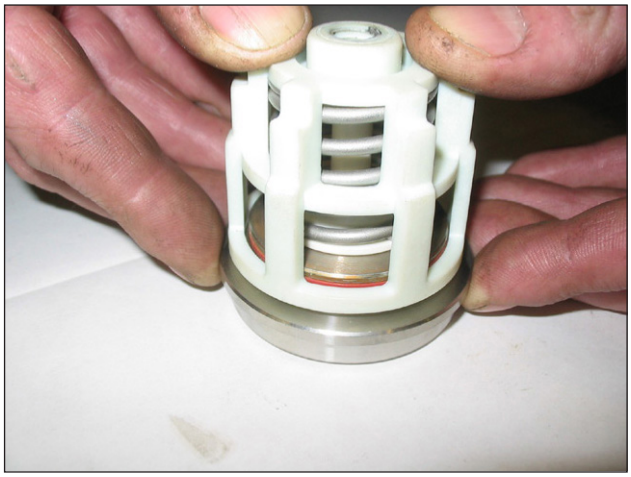


Fig. 109

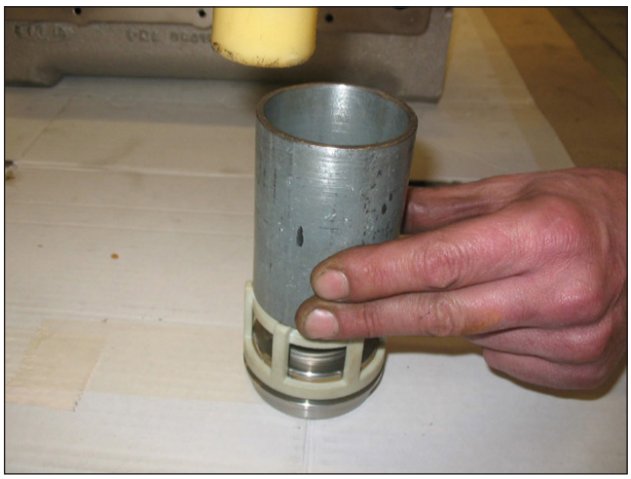


Fig. 110

**Insérer les groupes de la soupape (aspiration et refoulement) dans la tête en respectant la séquence de pose des joints toriques et des bagues anti-extrusion.**

La séquence correcte de montage des groupes soupape dans la tête est la suivante :
Insérer la bague anti-extrusion, rep. vue éclatée 5 (rep. ①, Fig. 111).

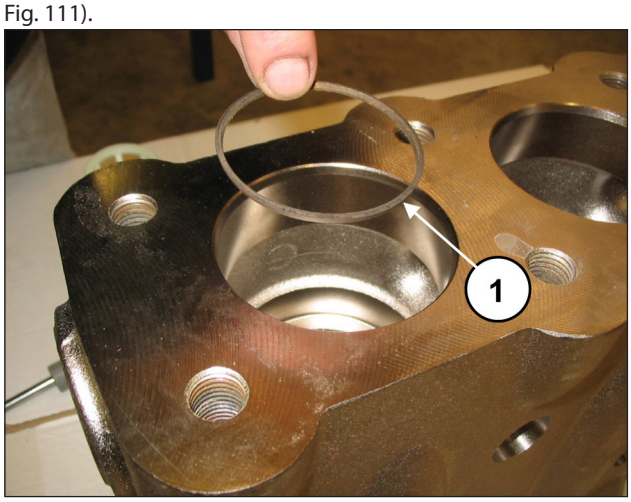



Fig. 111

Insérer le joint torique, rep. vue éclatée 6 (rep. ①, Fig. 112).

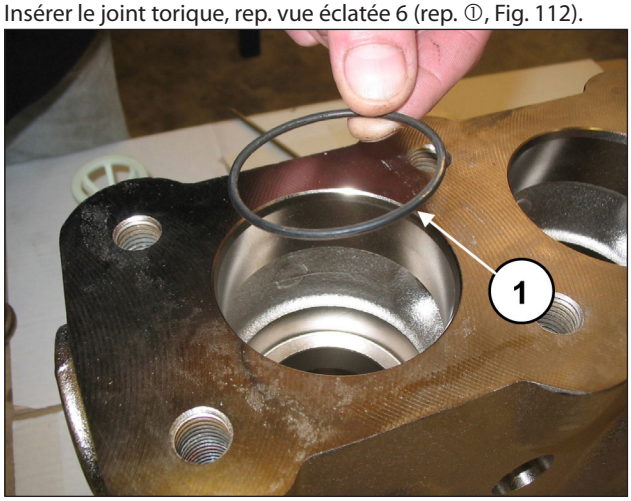



Fig. 112

S'assurer que le joint torique et la bague anti-extrusion sont entrés dans leur logement.
Insérer le groupe soupape d'aspiration (rep. ①, Fig. 113) puis l'entretoise (rep. ①, Fig. 114).
Pousser à fond le groupe soupape qui devra se présenter comme suit, rep. ①, Fig. 114.

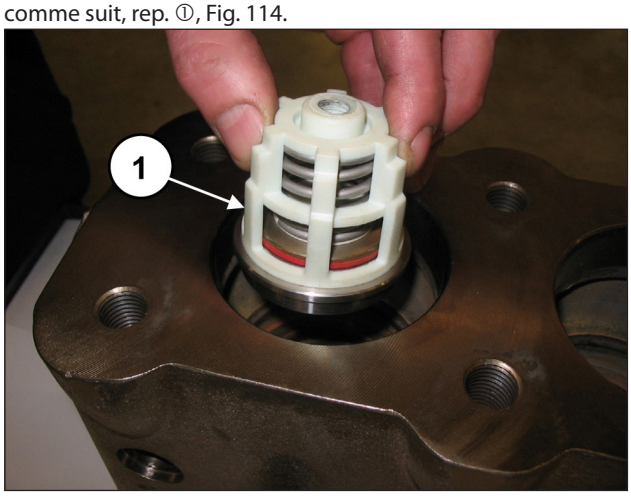



Fig. 113

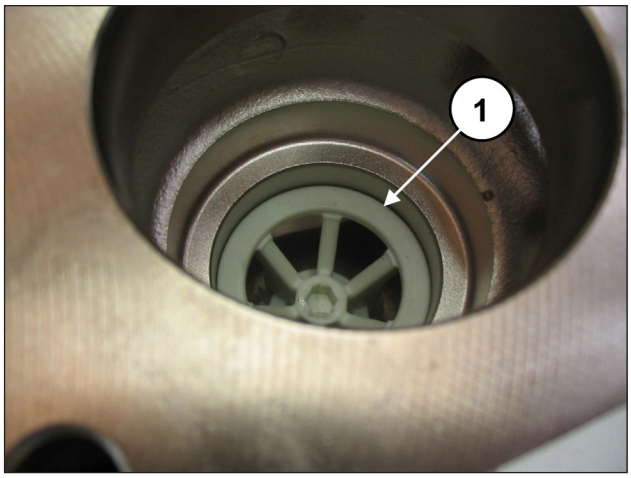



Fig. 114

Insérer la bague de l'entretoise du logement de la soupape (rep. ①, Fig. 115) en le posant sur l'entretoise (rep. ①, Fig. 116).

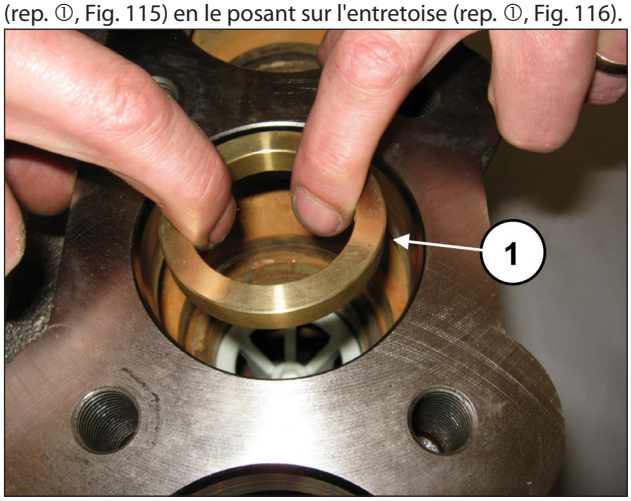



Fig. 115

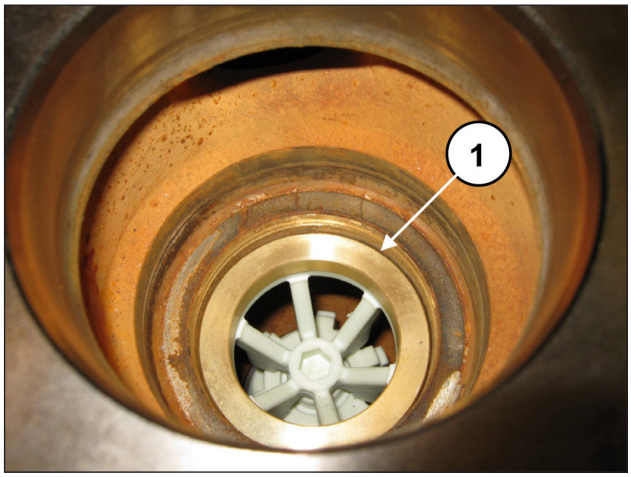



Fig. 116

Monter le joint torique, rep. vue éclatée 6 (rep. ①, Fig. 117) et la bague anti-extrusion, rep. vue éclatée 16 (rep. ②, Fig. 117) sur le siège de la soupape de refoulement.

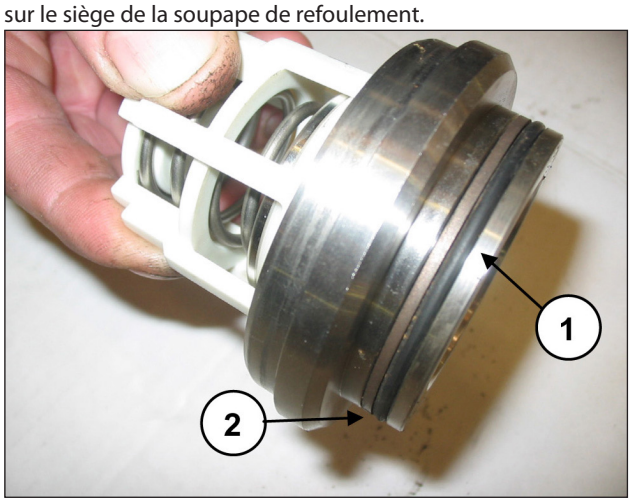



Fig. 117

Insérer le groupe soupape de refoulement (rep. ①, Fig. 118). Pousser à fond le groupe soupape qui devra se présenter comme suit, rep. ①, Fig. 119.

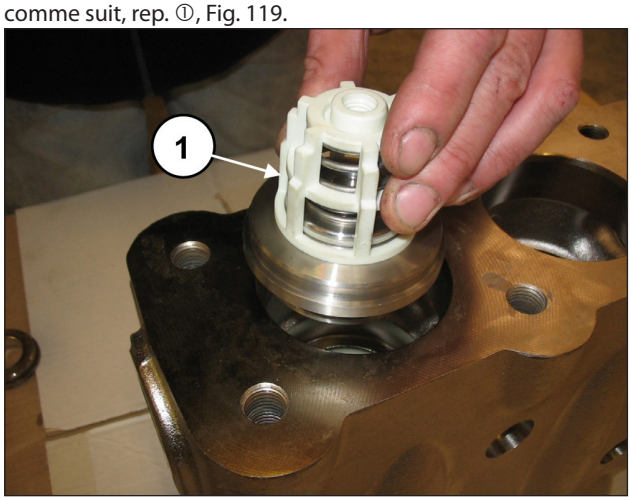



Fig. 118

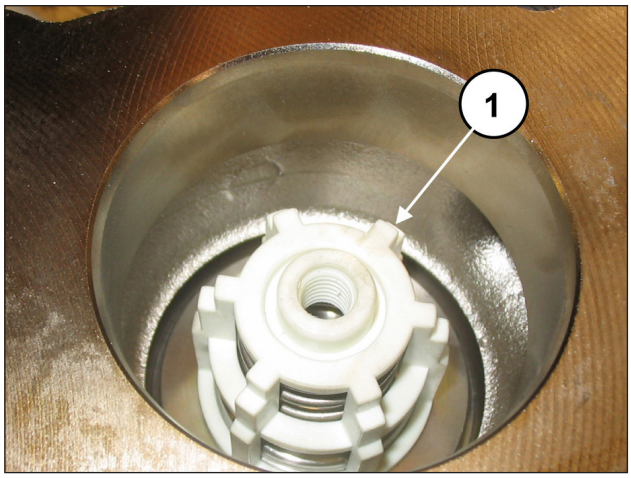



Fig. 119

Insérer la bague anti-extrusion, rep. vue éclatée 18 (rep. ①, Fig. 120).

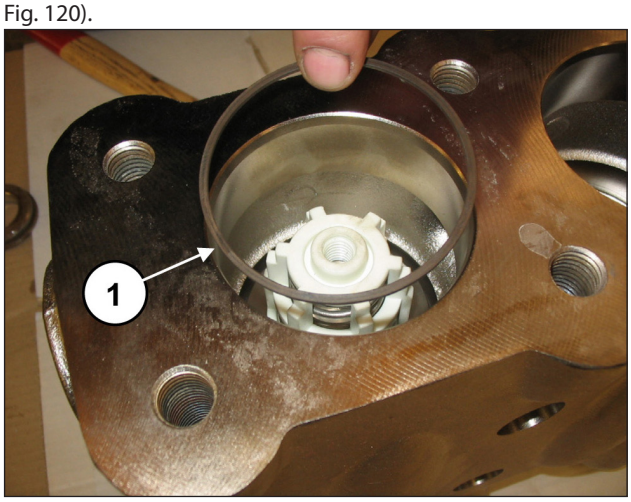



Fig. 120

Insérer le joint torique, rep. vue éclatée 19 (rep. ①, Fig. 121).

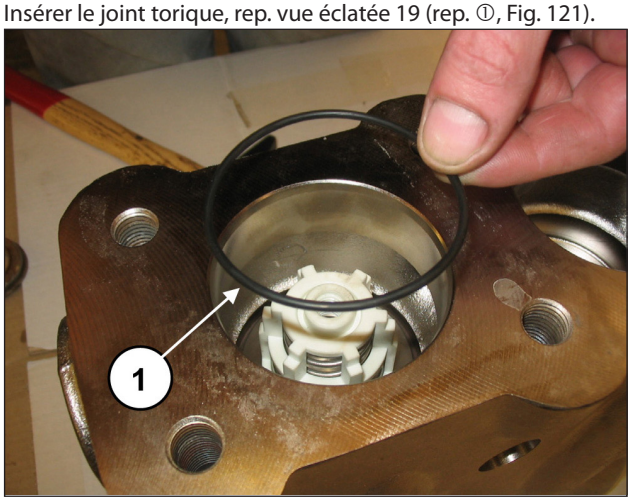



Fig. 121

**Installer le joint torique rep. ①, Fig. 122 avec précaution.**
**Il est conseillé d'utiliser l'outil réf. 27516000 pour éviter de couper le joint torique en phase d'installation.**

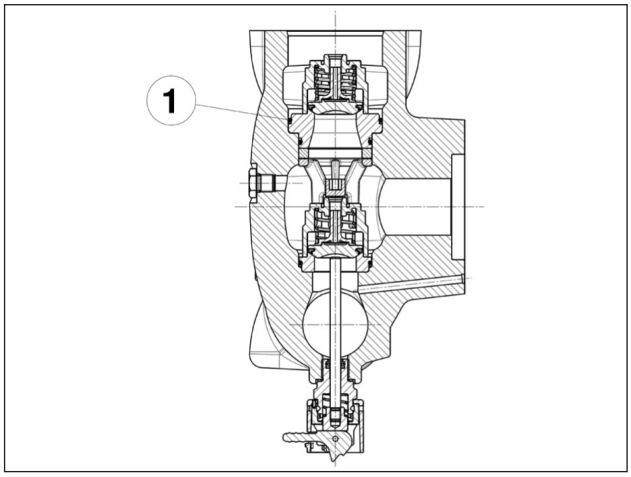



Fig. 122

Insérer la bague du logement de la soupape (rep. ①, Fig. 123) et le ressort (rep. ①, Fig. 124).

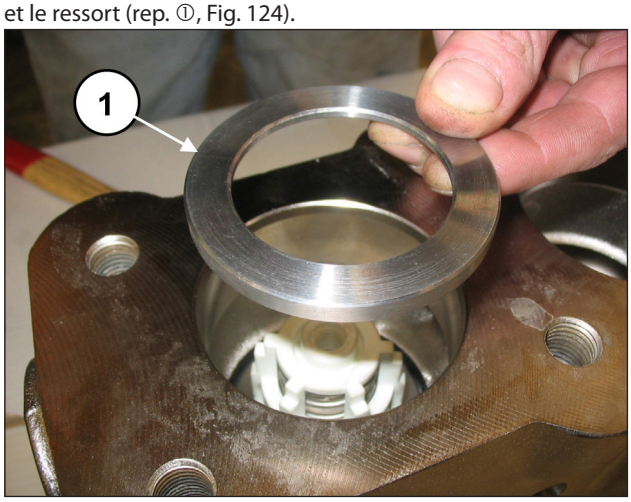



Fig. 123

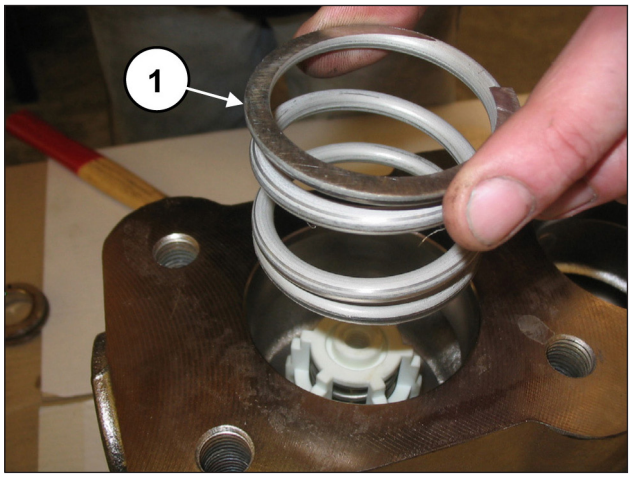



Fig. 124

Monter le joint torique, rep. vue éclatée 19 (rep. ①, Fig. 125) et la bague anti-extrusion, rep. vue éclatée 23 (rep. ②, Fig. 125) sur le bouchon de la soupape de refoulement.

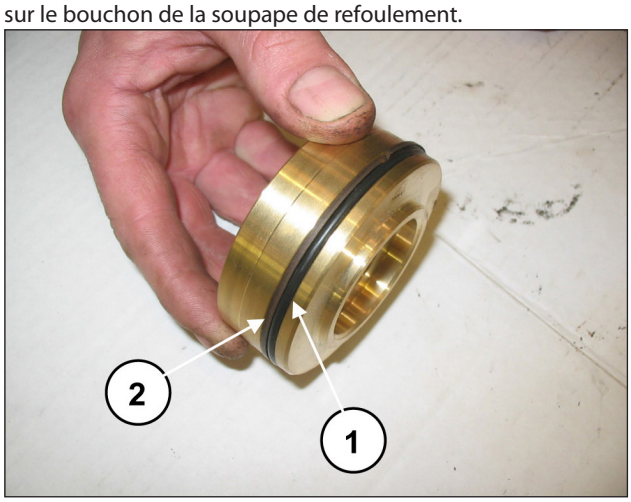



Fig. 125

Insérer le bouchon de la soupape avec le joint torique et la bague anti-extrusion.

Après avoir monté les groupes soupape et le bouchon de la soupape, poser le couvercle des soupapes (rep. ①, Fig. 126) et serrer les 8 vis M16x55 (rep. ①, Fig. 127).

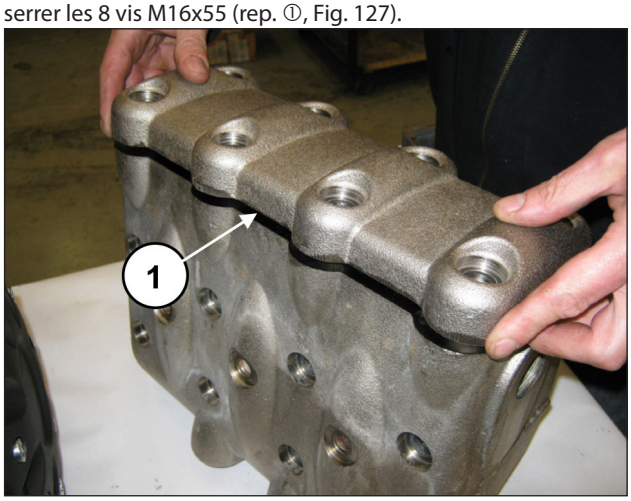



Fig. 126

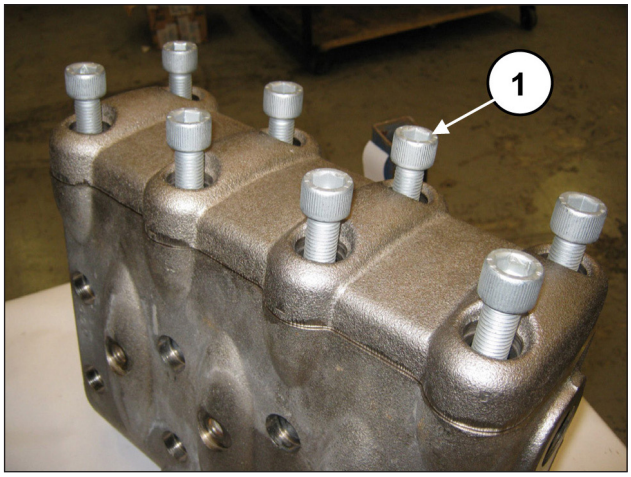



Fig. 127

Poser les 6 joints toriques à l'avant du carter de pompe (rep. ①, Fig. 128).

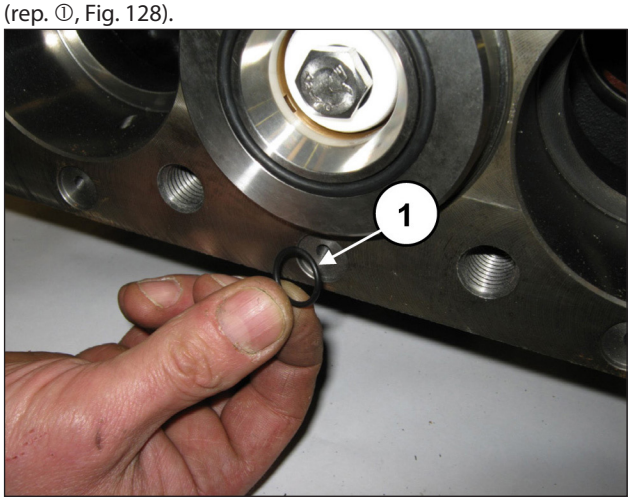



Fig. 128

Monter la tête sur le carter de pompe (rep. ①, Fig. 129) en ayant soin de ne pas heurter les pistons puis visser les 8 vis M16x180 (rep. ①, Fig. 130).

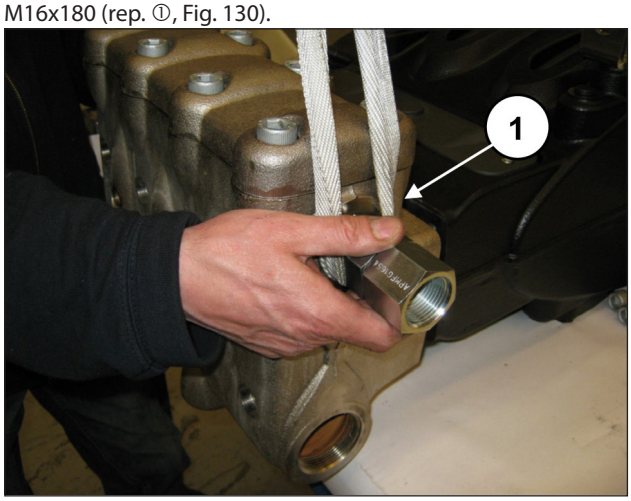



Fig. 129

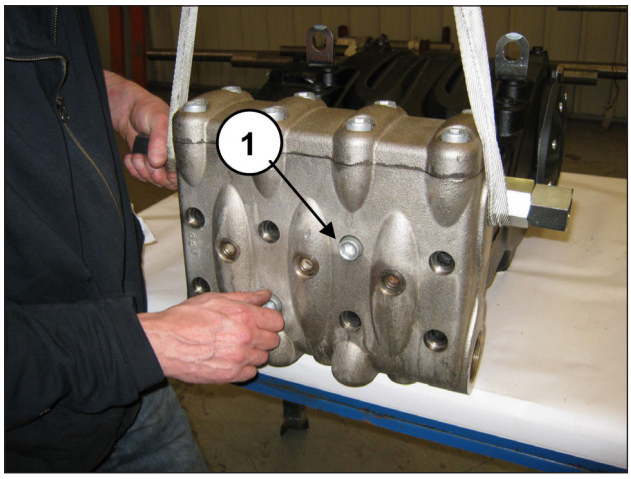



Fig. 130

Serrer les vis M16x180 à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

**Serrer les 8 vis M16x180 en partant des 4 vis internes et en les croisant puis passer aux 4 vis externes, toujours en croix.**

Serrer les vis M16x55 du couvercle à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.
Appliquer les dispositifs d'ouverture des soupapes (rep. ①, Fig. 131) et les serrer à l'aide d'une clé de 30 mm (rep. ①, Fig. 132).

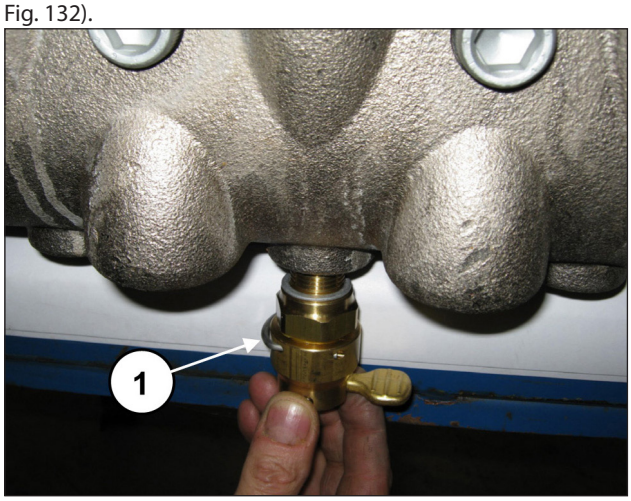



Fig. 131

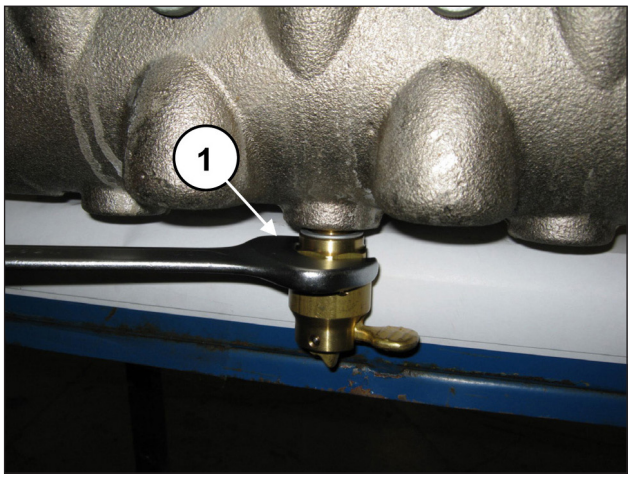



Fig. 132

Appliquer les bouchons G1/4" à l'avant de la tête, avec leur joint torique.
Serrer les bouchons G1/4" à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

### 2.2.3 Démontage de la tête MW45 MW50 MW55 - groupes soupapes

La tête nécessite un entretien préventif, selon les indications du ***Manuel d'utilisation et d'entretien***.
Les interventions se limitent à l'inspection ou au remplacement des soupapes, en cas de besoin.
Pour l'extraction des groupes de la soupape, procéder de la façon suivante :
Dévisser les 8 vis M16x45 du couvercle des soupapes de refoulement (rep. ①, Fig. 133) et déposer le couvercle (rep. ①, Fig. 134).

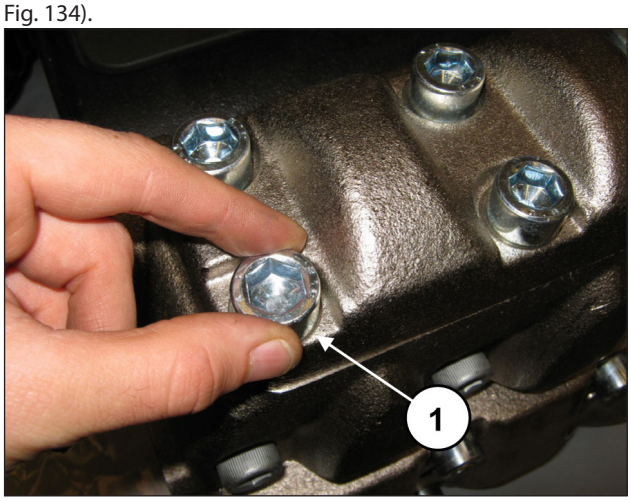



Fig. 133

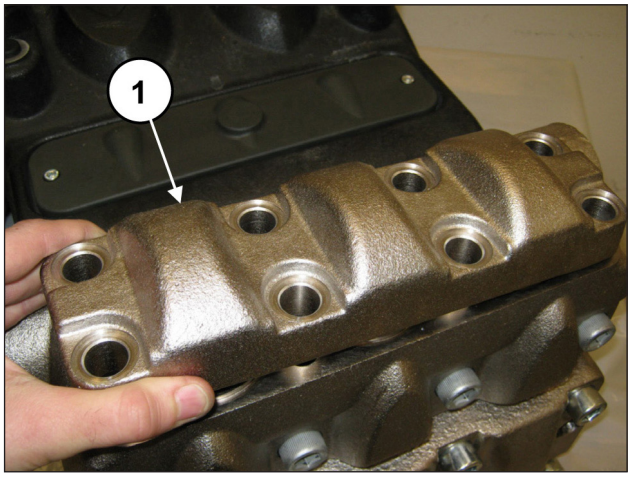



Fig. 134

Extraire le groupe de la soupape de refoulement en utilisant un outil à inertie (réf. 27516400) appliqué à l'orifice M10 du guide de soupape (rep. ①, Fig. 135).

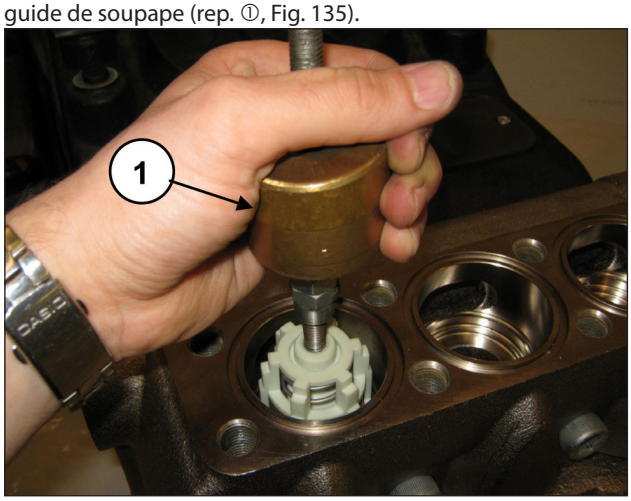



Fig. 135

Dévisser les 8 vis M16x45 du couvercle des soupapes d'aspiration (rep. ①, Fig. 136) et déposer le couvercle (rep. ①, Fig. 137).

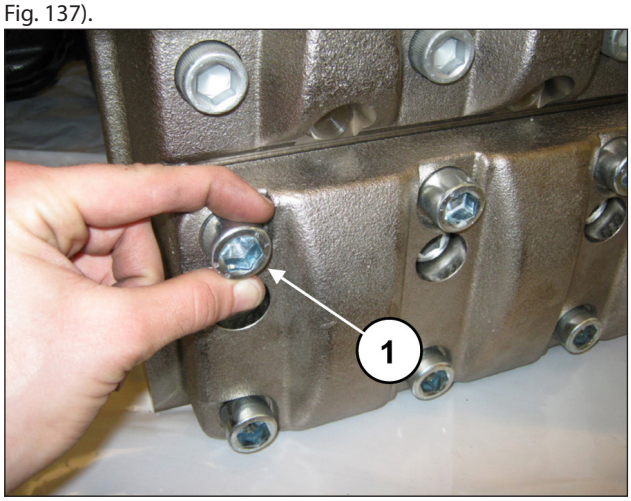



Fig. 136

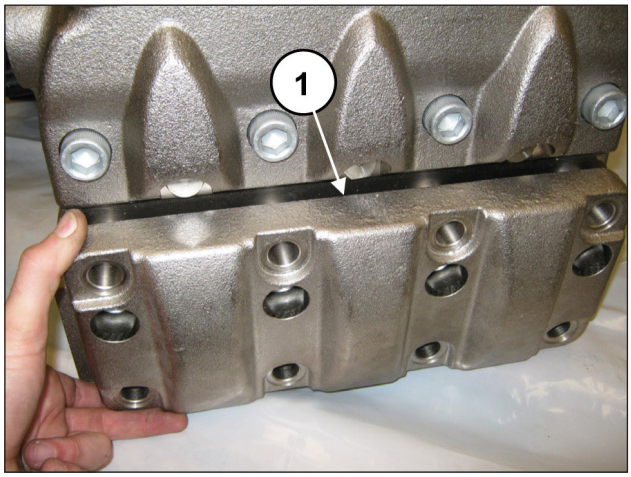



Fig. 137

Extraire le groupe de la soupape d'aspiration en utilisant un outil à inertie (réf. 27516400) appliqué à l'orifice M10 du guide de soupape (rep. ①, Fig. 138).

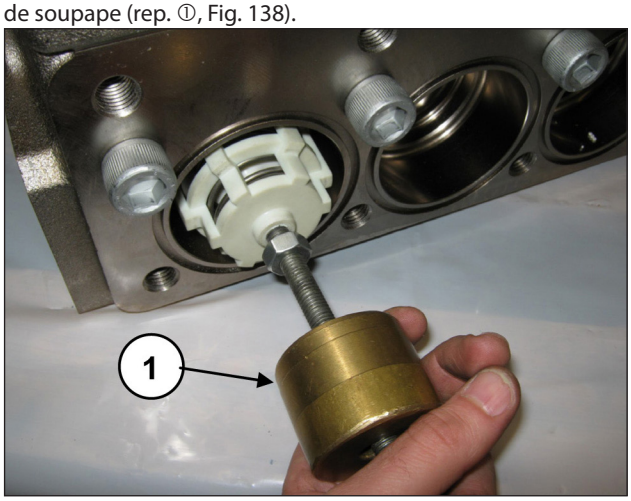



Fig. 138

Desserrer le dispositif d'ouverture des soupapes à l'aide d'une clé de 30 mm (rep. ①, Fig. 139).

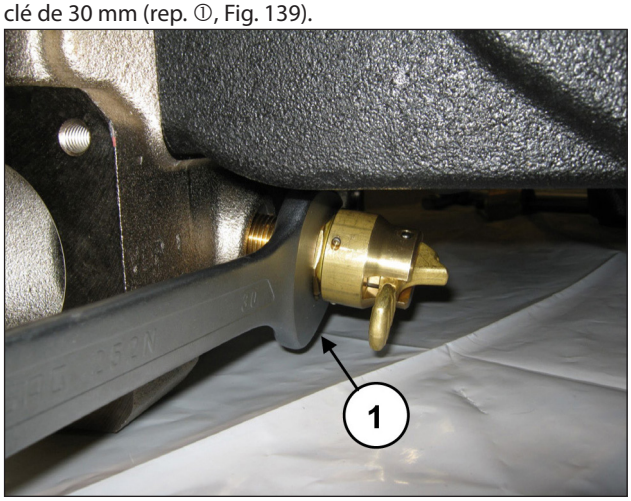



Fig. 139

Démonter les groupes de la soupape d'aspiration et de refoulement en vissant une vis M10 de sorte à appuyer sur le guide interne pour l'extraire du siège de la soupape (rep. ①, Fig. 140).

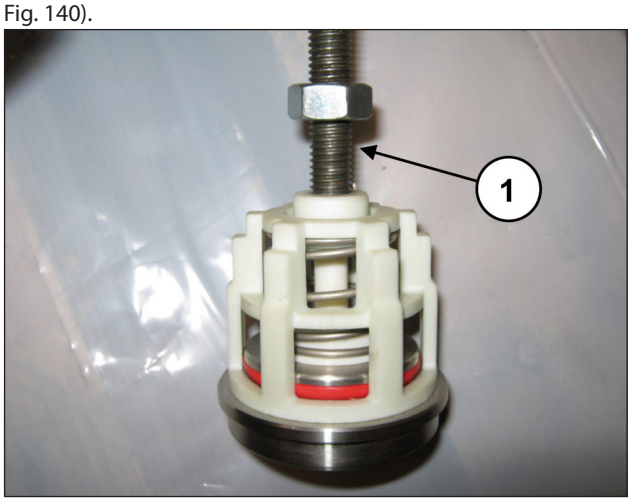



Fig. 140

Compléter le démontage en ôtant les bouchons G1/4" à l'avant et les bouchons G1/2" dans la partie inférieure de la tête.
Il est désormais possible de déposer la tête du carter de pompe en dévissant les 8 vis M16x150 (rep. ①, Fig. 141).
Durant le démontage de la tête, s'assurer de ne pas heurter les pistons (Fig. 142).

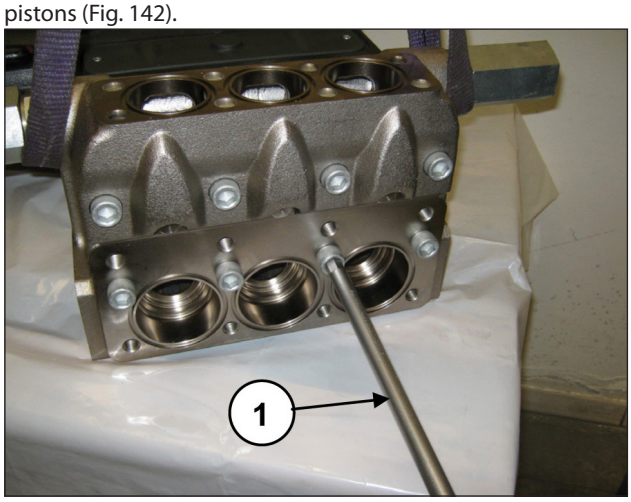



Fig. 141

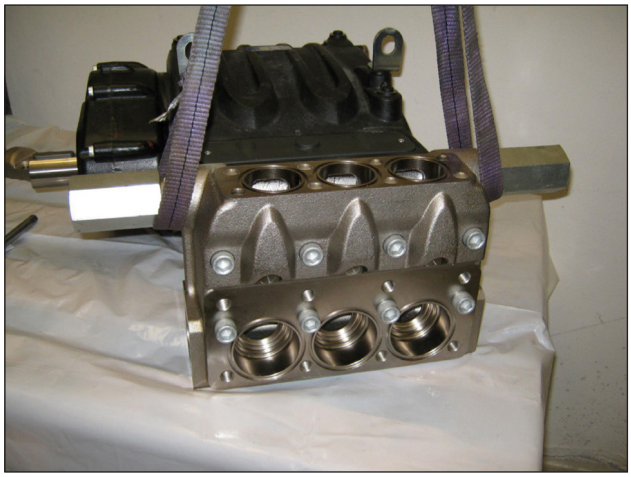


Fig. 142

### 2.2.4 Montage de la tête MW45 MW50 MW55 - groupes soupapes

**Vérifier l'état d'usure des différents composants et les remplacer si nécessaire.**
**À chaque contrôle des soupapes, remplacer tous les joints toriques aussi bien des groupes que des bouchons de la soupape.**

**Avant de replacer les groupes de la soupape, nettoyer et essuyer à fond les logements correspondants situés dans la tête et indiqués par les flèches (rep. ①, Fig. 143).**

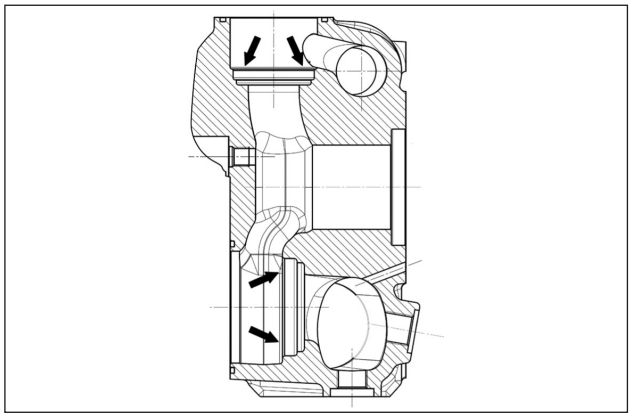


Fig. 143

Procéder au remontage en inversant les opérations de démontage du parag. 2.2.3.
Assembler les groupes de la soupape d'aspiration et de refoulement (Fig. 144 et Fig. 145).
Pour monter plus facilement le guide de soupape dans le siège, il est possible d'utiliser un tuyau posé sur les plans horizontaux du guide (Fig. 146) et un outil à inertie pour agir sur toute la circonférence.

Fig. 144

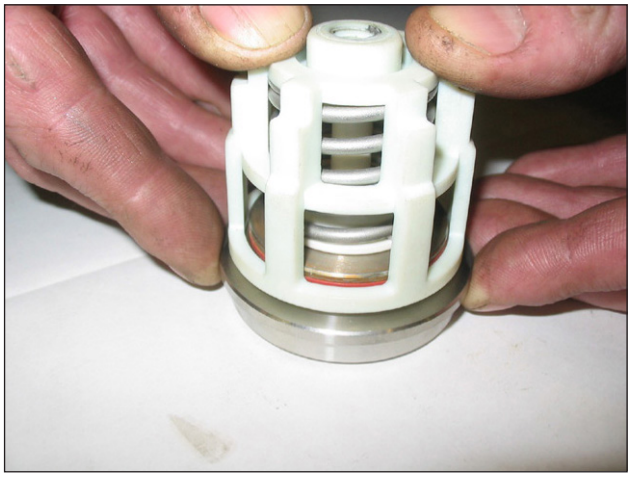


Fig. 145

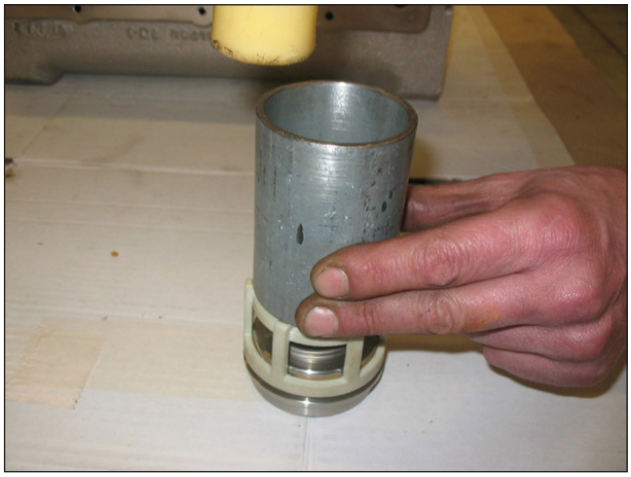


Fig. 146

**Insérer les groupes de la soupape (aspiration et refoulement) dans la tête en respectant la séquence de pose des joints toriques et des bagues anti-extrusion.**

La séquence correcte de montage des groupes soupape dans la tête est la suivante :
En aspiration, insérer la bague anti-extrusion, rep. vue éclatée 6 (rep. ①, Fig. 147).

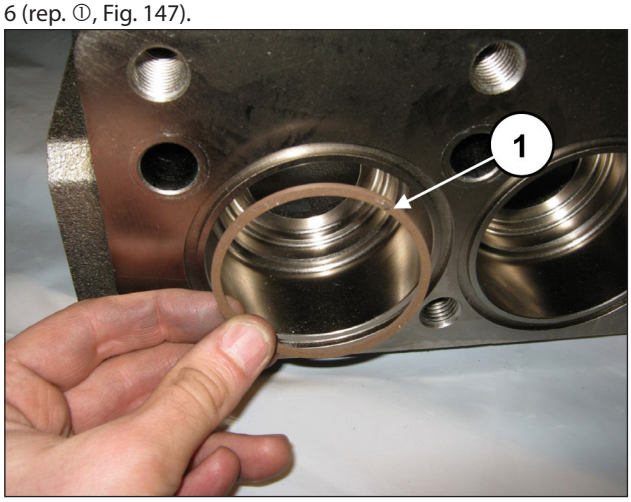



Fig. 147

Insérer le joint torique, rep. vue éclatée 7 (rep. ①, Fig. 148).

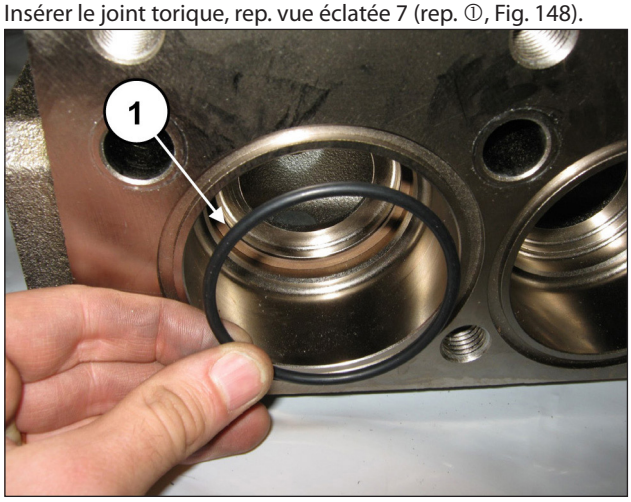



Fig. 148

S'assurer que le joint torique et la bague anti-extrusion sont entrés dans leur logement.
Insérer le groupe soupape d'aspiration (rep. ①, Fig. 149).
Pousser à fond le groupe soupape qui devra se présenter comme suit, rep. ①, Fig. 150.

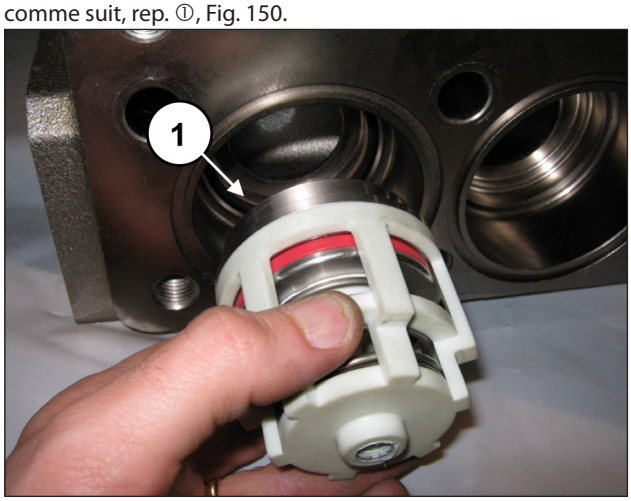



Fig. 149

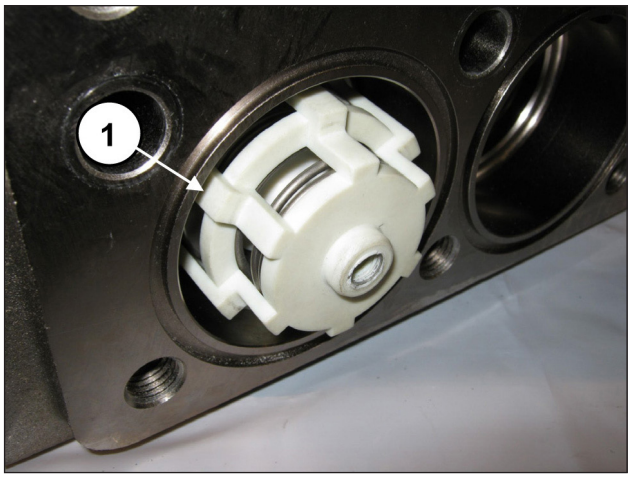



Fig. 150

Appliquer le joint torique à l'avant des soupapes d'aspiration (rep. ①, Fig. 151).

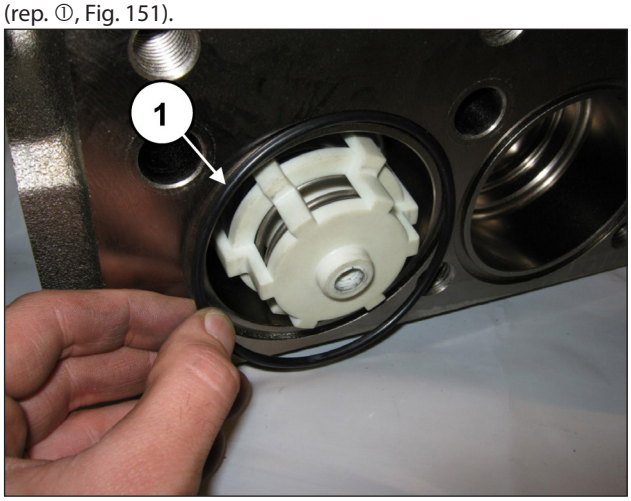



Fig. 151

Après avoir monté les groupes soupape d'aspiration, poser le couvercle des soupapes d'aspiration (rep. ①, Fig. 152) et serrer les 8 vis M16x45 (rep. ①, Fig. 153).

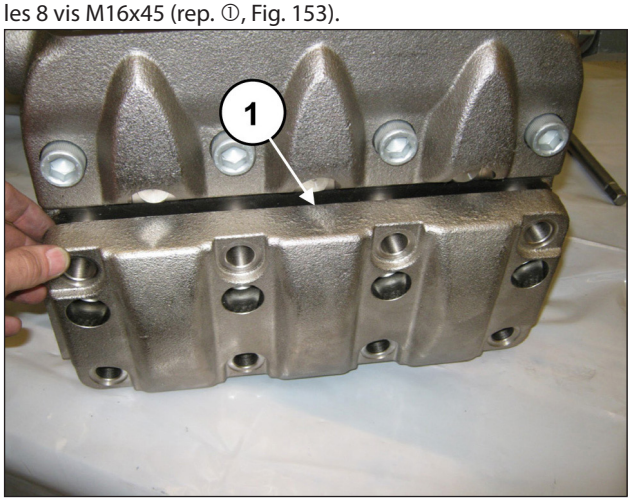



Fig. 152

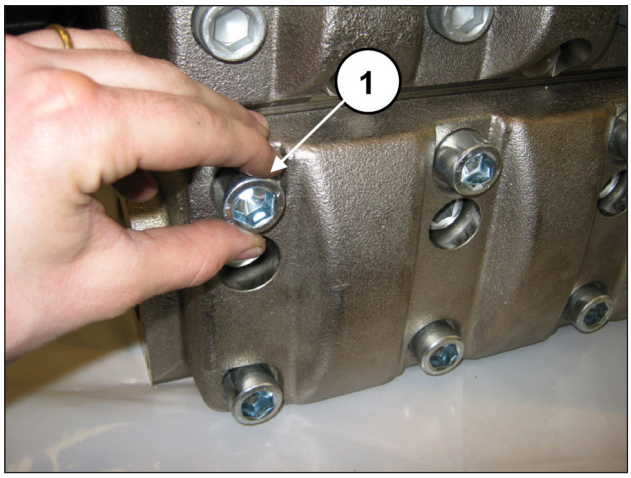



Fig. 153

Passer au montage des groupes soupape de refoulement : Insérer la bague anti-extrusion, rep. vue éclatée 23 (rep. ①, Fig. 154).

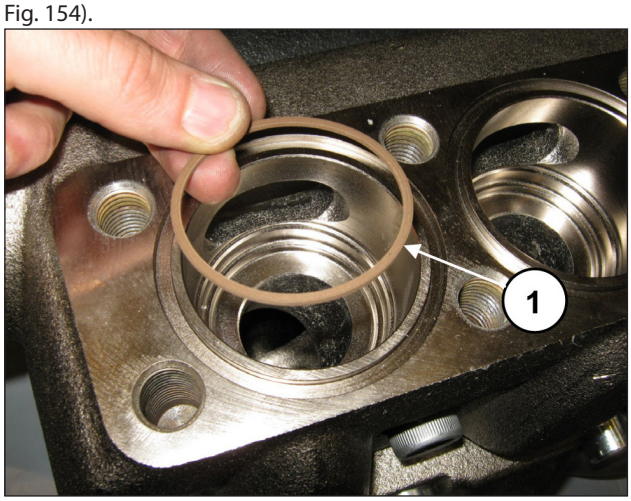



Fig. 154

Insérer le joint torique, rep. vue éclatée 24 (rep. ①, Fig. 155).

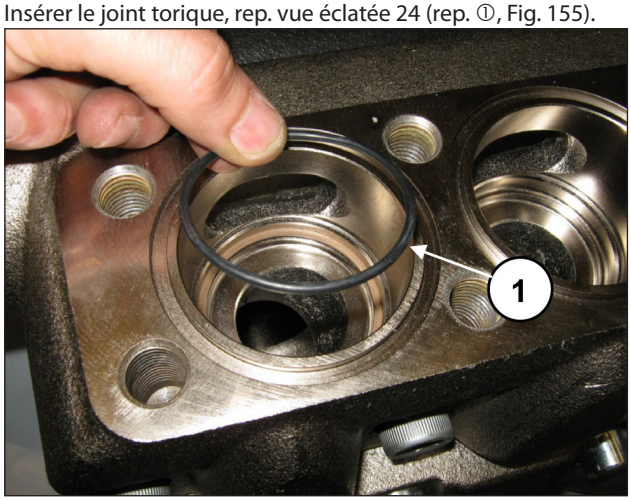



Fig. 155

S'assurer que le joint torique et la bague anti-extrusion sont entrés dans leur logement.
Insérer le groupe soupape de refoulement (rep. ①, Fig. 156).
Pousser à fond le groupe soupape qui devra se présenter comme suit, rep. ①, Fig. 157.

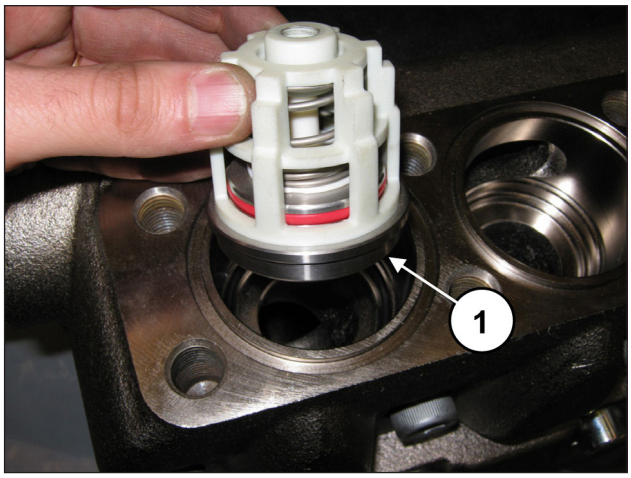



Fig. 156

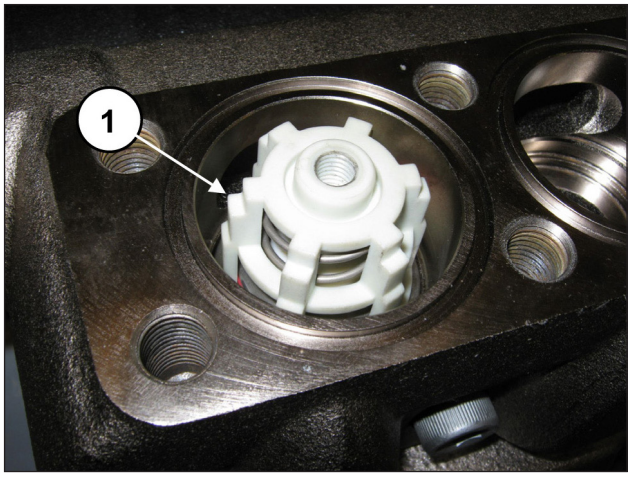



Fig. 157

Appliquer le joint torique à l'avant des soupapes de refoulement (rep. ①, Fig. 158).

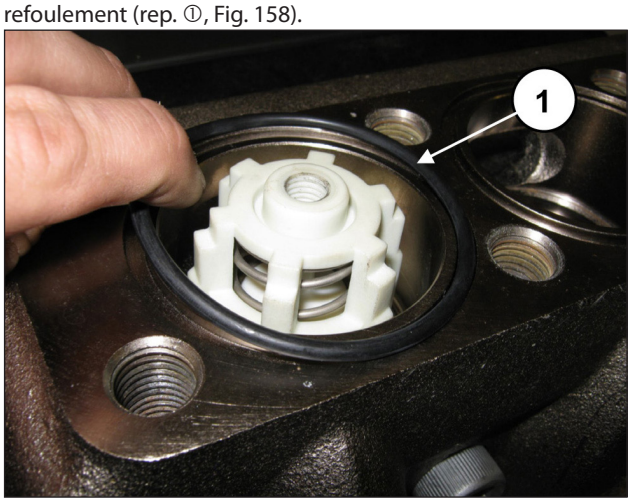



Fig. 158

Après avoir monté les groupes soupape de refoulement, poser le couvercle des soupapes de refoulement (rep. ①, Fig. 159) et serrer les 8 vis M16x45 (rep. ①, Fig. 160).

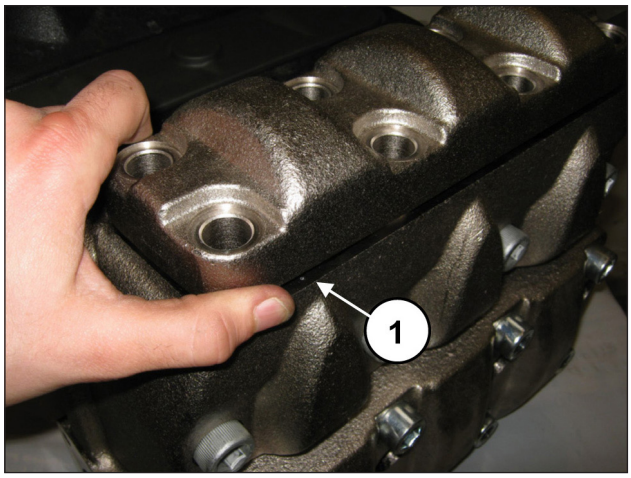



Fig. 159

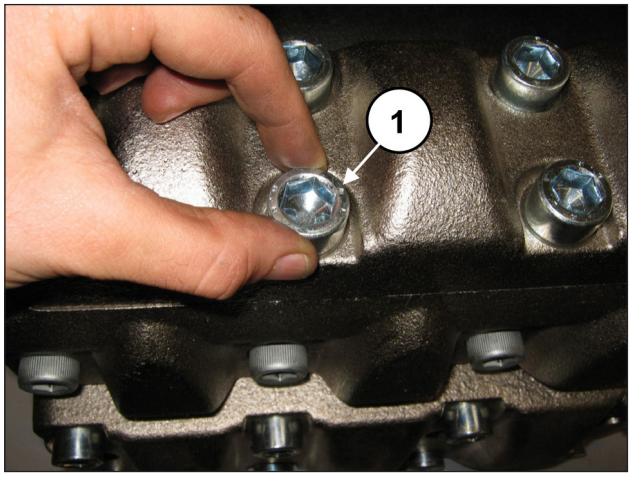



Fig. 160

Poser les 6 joints toriques à l'avant du carter de pompe (rep. ①, Fig. 161).

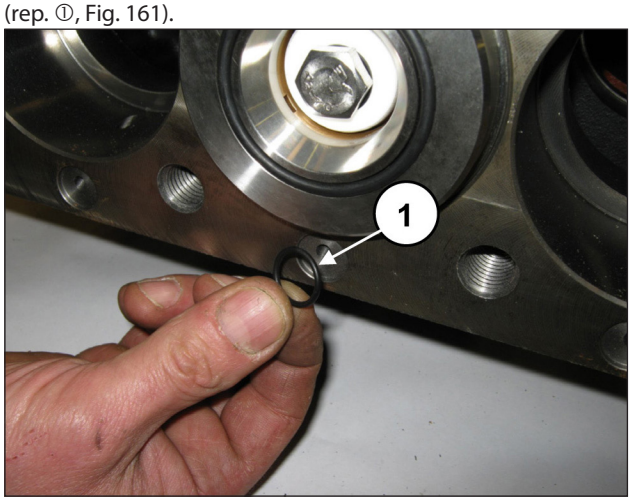



Fig. 161

Monter la tête sur le carter de pompe (rep. ①, Fig. 162) en ayant soin de ne pas heurter les pistons puis visser les 8 vis M16x150 (rep. ①, Fig. 163).

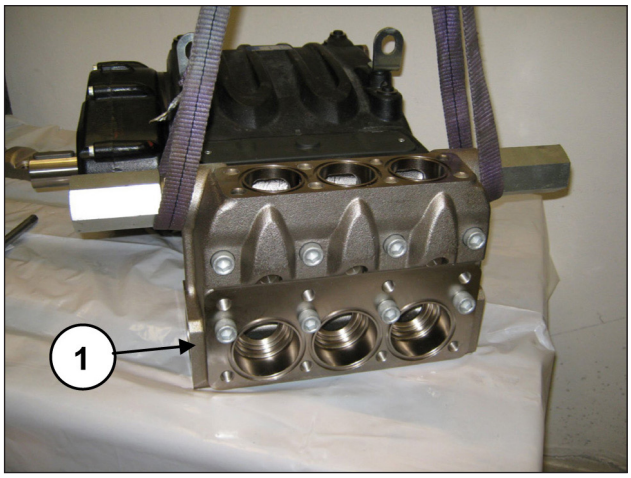



Fig. 162

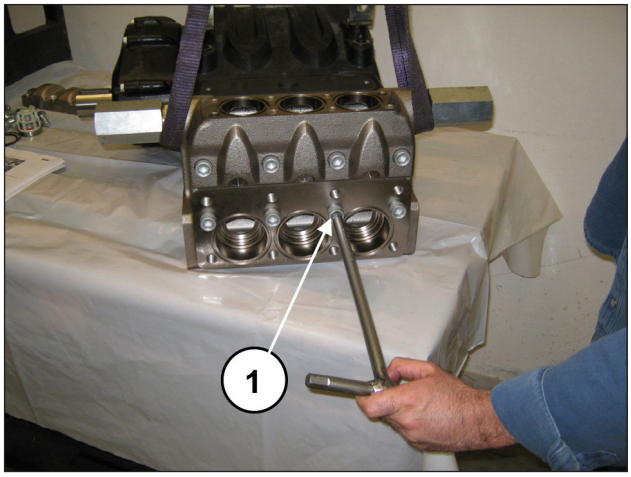



Fig. 163

Serrer les vis M16x150 à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

**Serrer les 8 vis M16x150 en partant des 4 vis internes et en les croisant puis passer aux 4 vis externes, toujours en croix.**

Serrer les vis M16x45 des couvercles d'aspiration et de refoulement à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3 FORCES DE SERRAGE DES VIS. Appliquer les dispositifs d'ouverture des soupapes (rep. ①, Fig. 164) et les serrer à l'aide d'une clé de 30 mm (rep. ①, Fig. 165).

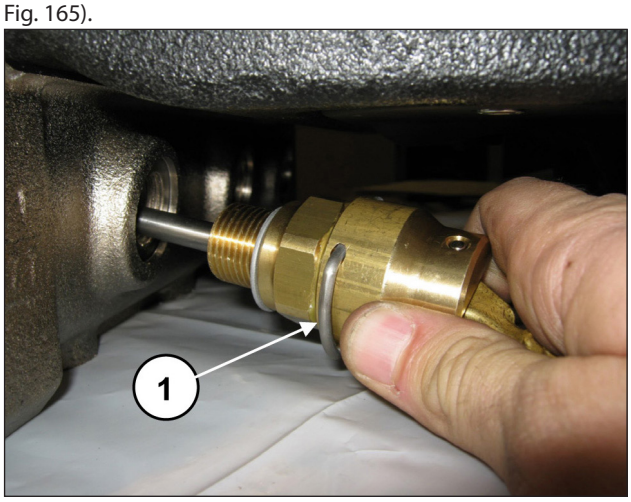



Fig. 164

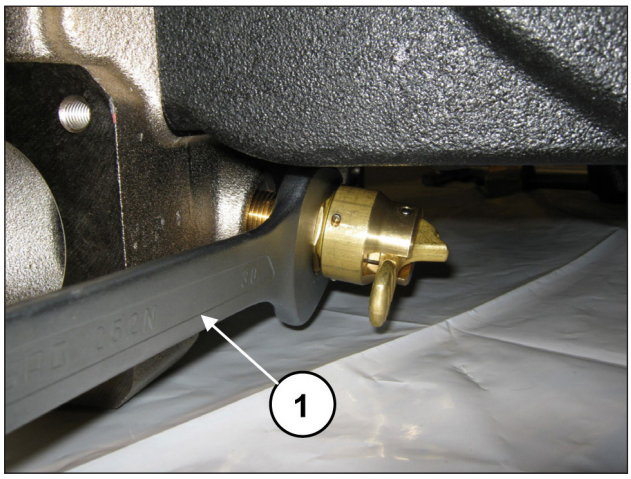



Fig. 165

Appliquer les bouchons G1/2" sur la partie inférieure de la tête, avec leurs rondelles.
Serrer les bouchons G1/2" à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.
Appliquer les bouchons G1/4" à l'avant de la tête, avec leur joint torique.
Serrer les bouchons G1/4" à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

### 2.2.5 Démontage du groupe piston - supports - joints d'étanchéité

Le groupe piston nécessite un contrôle périodique comme l'indique le tableau d'entretien préventif du ***Manuel d'utilisation et d'entretien***.
Les interventions se limitent à un contrôle visuel du drainage éventuel à travers l'orifice présent sur le couvercle d'inspection inférieur. En cas d'anomalies / oscillations sur le manomètre de refoulement ou d'égouttement à travers l'orifice de drainage, procéder à un contrôle et remplacer éventuellement le lot de joints.
Pour l'extraction des groupes du piston, procéder de la façon suivante :
Pour accéder au groupe piston, desserrer les vis M16x180 (pour MW32-MW36-MW40) ou les vis M16x150 (pour MW45-MW50-MW55) et démonter la tête.

**Dégager la tête avec précaution pour éviter de heurter les pistons.**

Démonter les pistons en desserrant les vis de fixation (rep. ①, Fig. 166).
Dégager le piston du support des joints et contrôler que la surface du piston ne présente aucune rayure, aucun signe d'usure ou de cavitation.

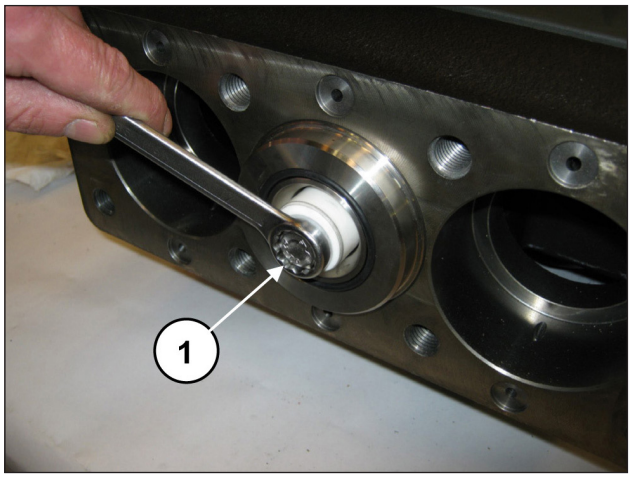



Fig. 166

Déposer le couvercle d'inspection supérieur en desserrant les 2 vis de fixation (rep. ①, Fig. 167).

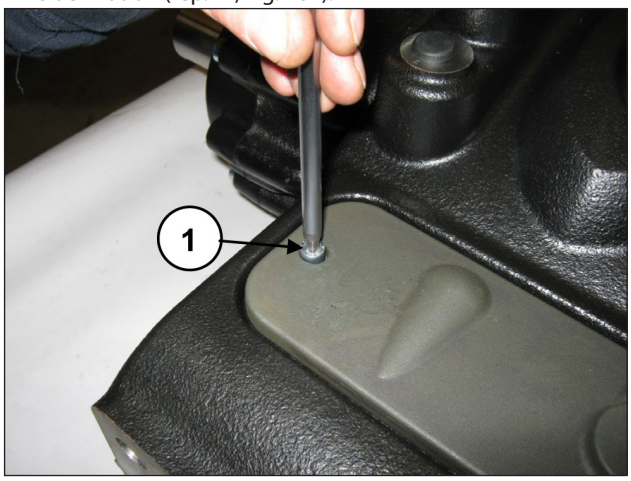



Fig. 167

Tourner manuellement l'arbre de sorte que les 3 pistons se trouvent en position de point mort supérieur.
Insérer l'outil tampon réf. 27632500 entre le guide du piston et le piston (rep. ①, Fig. 168).

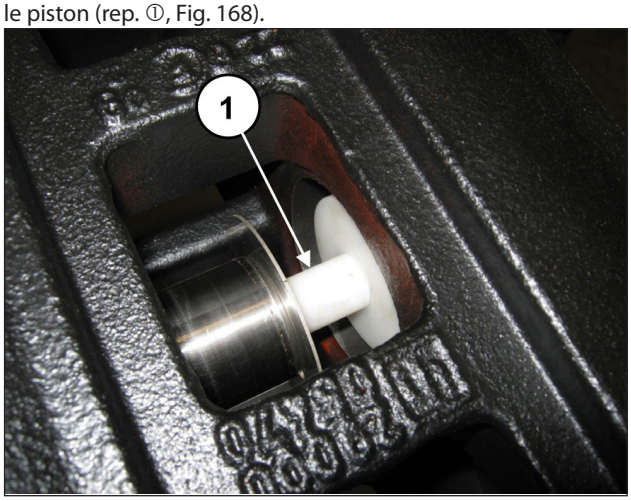



Fig. 168

Tourner l'arbre pour faire avancer le guide du piston de sorte que le tampon, en avançant à son tour, puisse chasser le support des joints et le groupe piston complet (rep. ①, Fig. 169).

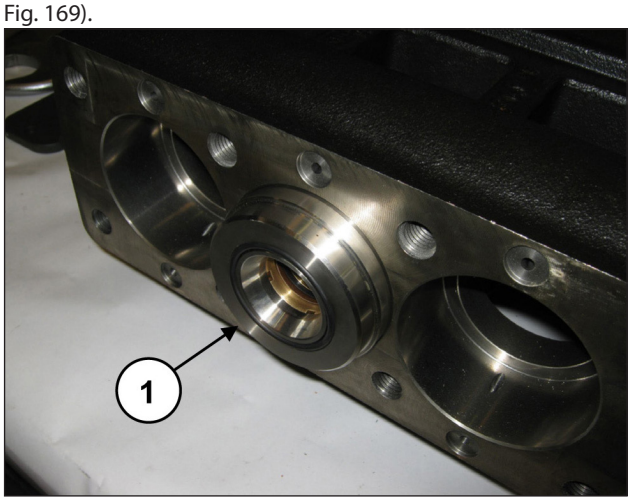



Fig. 169

Dégager le groupe support des joints et l'outil tampon.

Déposer le joint torique du fond du support des joints au cas où il serait resté à l'intérieur du carter de pompe (rep. ①, Fig. 170).

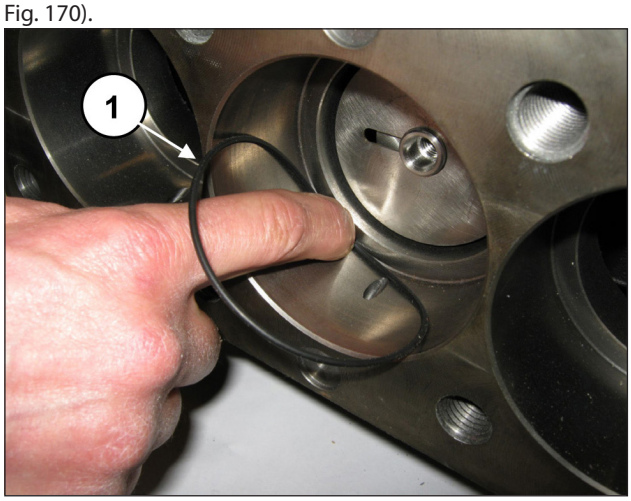



Fig. 170

Dégager les anneaux de protection contre les éclaboussures des guides des pistons (rep. ①, Fig. 171).

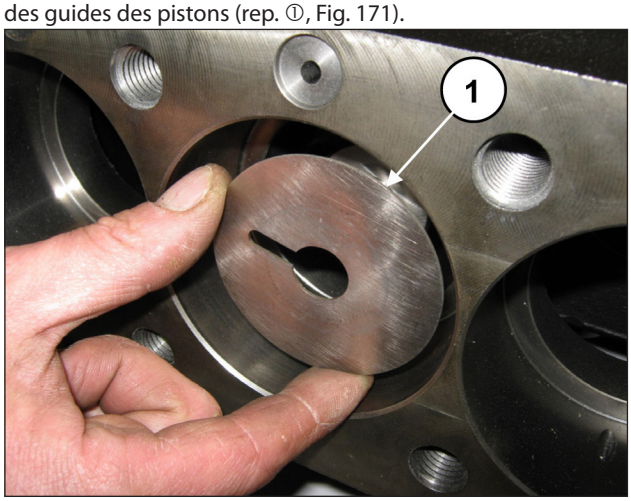



Fig. 171

Désassembler le support des joints de la chemise (rep. ①, Fig. 172) pour accéder aux joints de pression (rep. ①, Fig. 173).

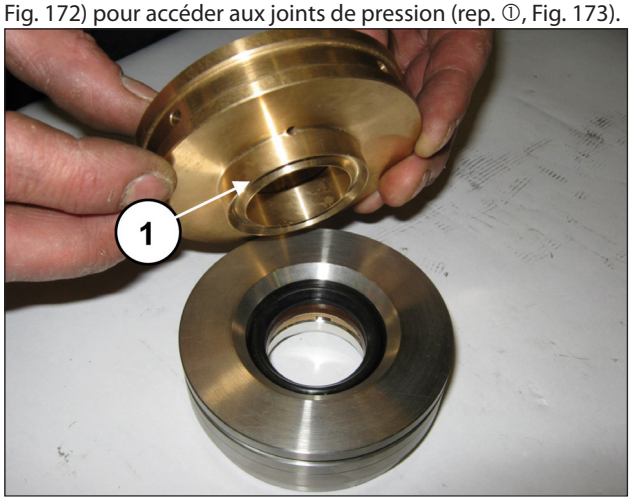



Fig. 172

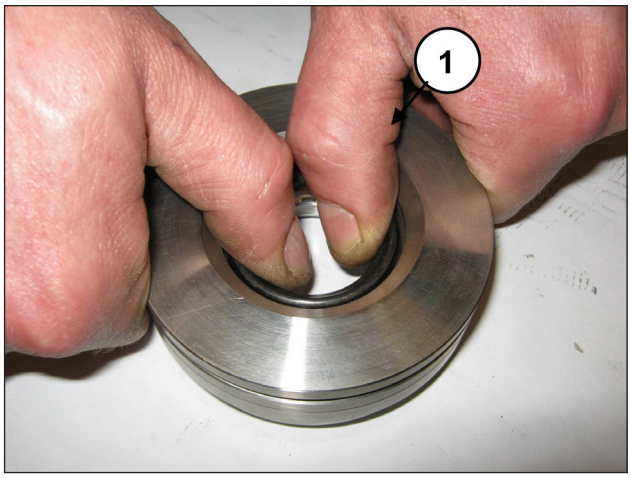



Fig. 173

Pour ôter le joint de basse pression, utiliser une jauge d'épaisseur ou un outil qui n'endommage pas le siège du support du joint (rep. ①, Fig. 174).

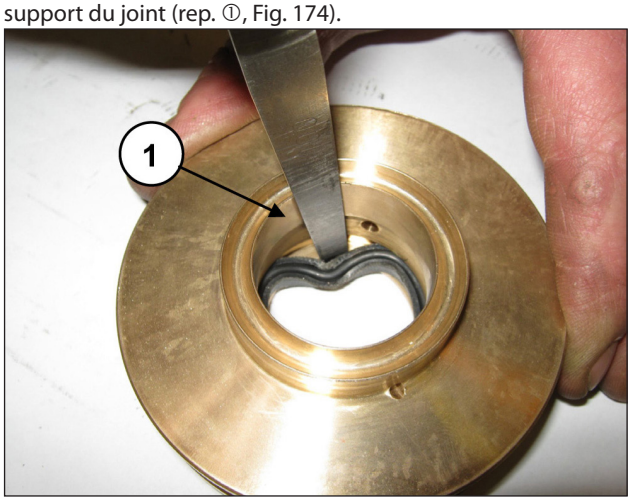



Fig. 174

### 2.2.6 Montage du groupe piston - supports - joints d'étanchéité

Procéder au remontage en inversant les opérations de démontage du parag. 2.2.5.

**Remplacer les joints de pression en humectant les lèvres de graisse à base de silicone (ne pas les enduire) et en ayant soin de ne pas les endommager en les insérant dans la chemise.**

**Remplacer les joints de pression et les joints toriques à chaque opération de démontage.**

Insérer le joint de basse pression dans le support du joint (rep. ①, Fig. 175) en contrôlant le sens de montage qui prévoit que la lèvre d'étanchéité soit tournée en avant (vers la tête).


Fig. 175

Monter l'anneau de tête (rep. ①, Fig. 176), le joint de haute pression (rep. ①, Fig. 177) et l'anneau restop (rep. ①, Fig. 178).

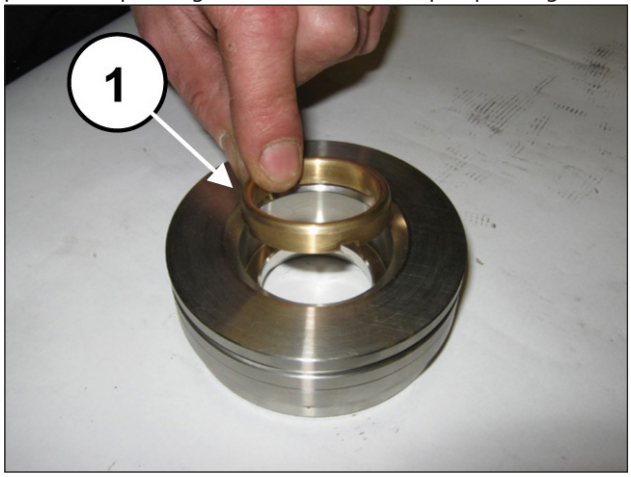



Fig. 176

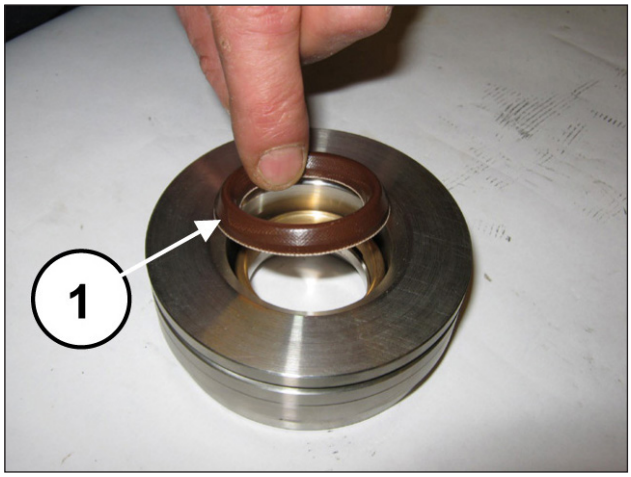



Fig. 177

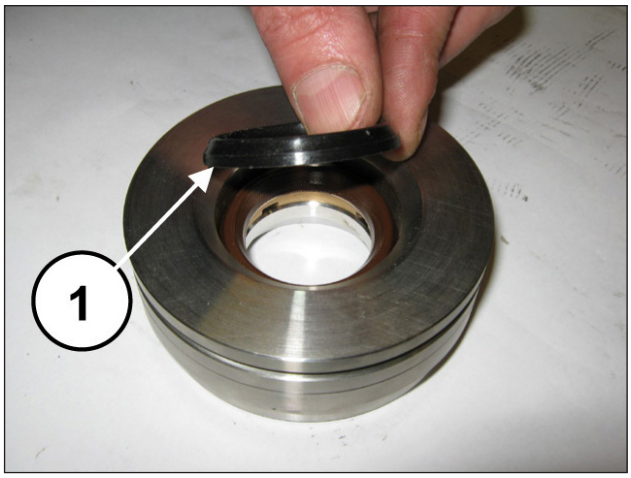



Fig. 178

Assembler le support des joints à la chemise (rep. ①, Fig. 179).

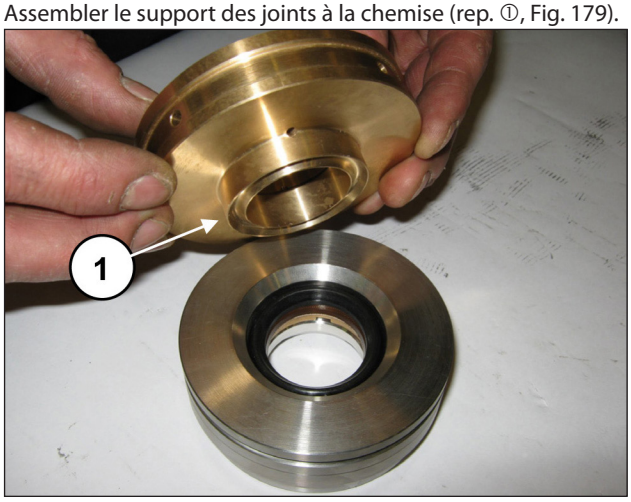



Fig. 179

Placer les bavettes dans le logement sur le guide du piston (rep. ①, Fig. 180).

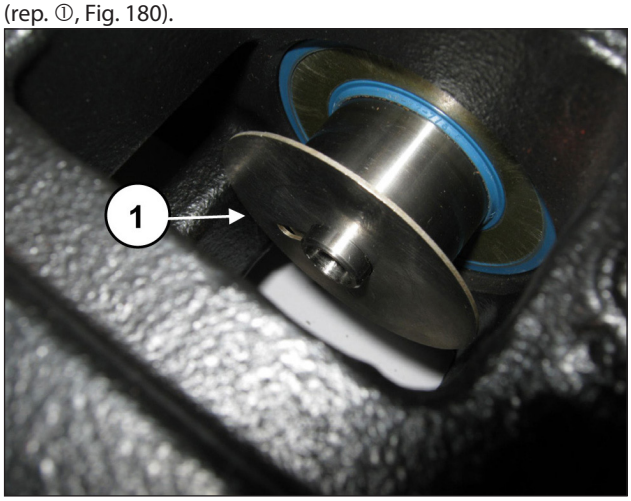



Fig. 180

Insérer la rondelle Ø10x18x0,9 dans la vis de fixation du piston (rep. ①, Fig. 181).

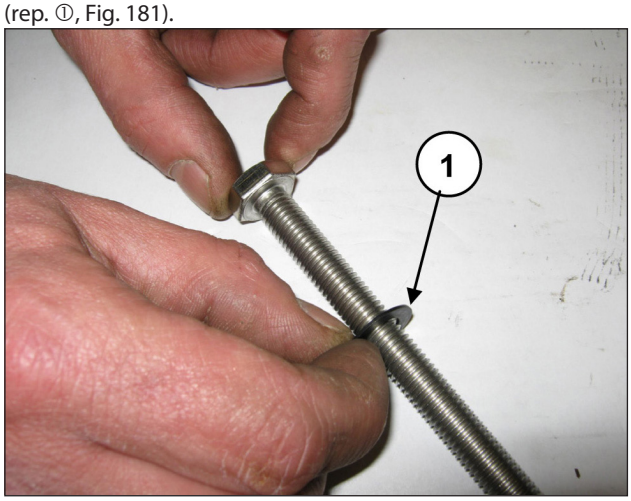



Fig. 181

Monter les pistons sur les guides correspondants (rep. ①, Fig. 182) et les fixer comme le montre le rep. ①, Fig. 183.

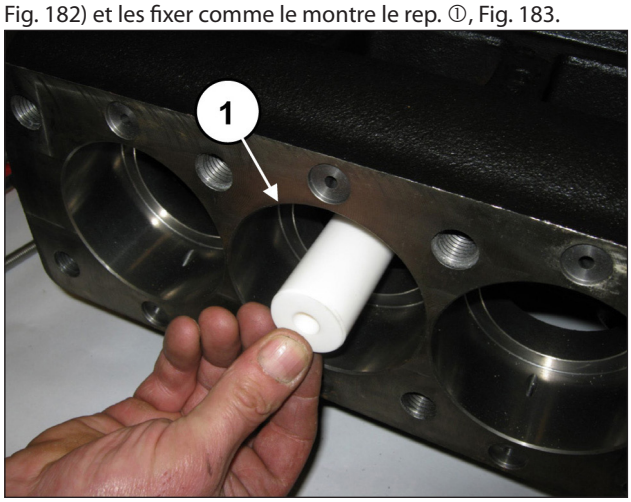



Fig. 182

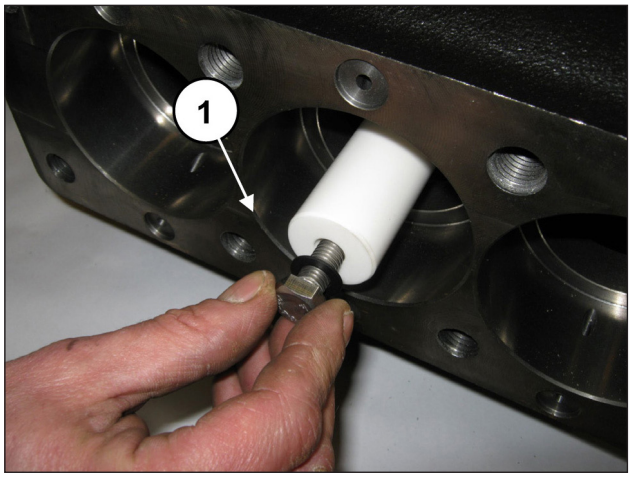



Fig. 183

Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

Placer le joint torique dans le carter de pompe (rep. ①, Fig. 184) puis le dispositif de blocage chemise-support de joint (avec le même joint torique) préalablement assemblé et les pousser à fond (rep. ①, Fig. 185).

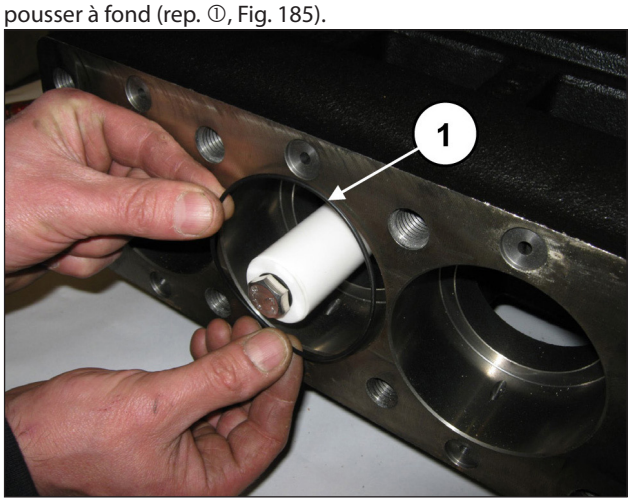



Fig. 184

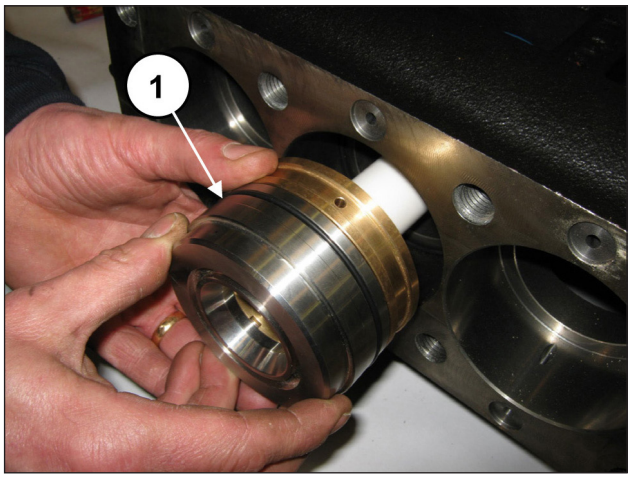



Fig. 185

S'assurer que le dispositif de blocage chemise-support se positionne correctement au fond du logement (rep. ①, Fig. 186).

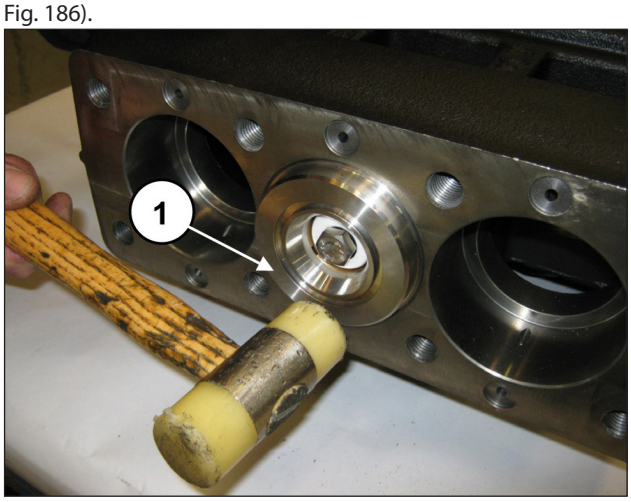



Fig. 186

Monter le joint torique à l'avant de la chemise (rep. ①, Fig. 187) et le joint torique de l'orifice de recirculation (rep. ①, Fig. 188).

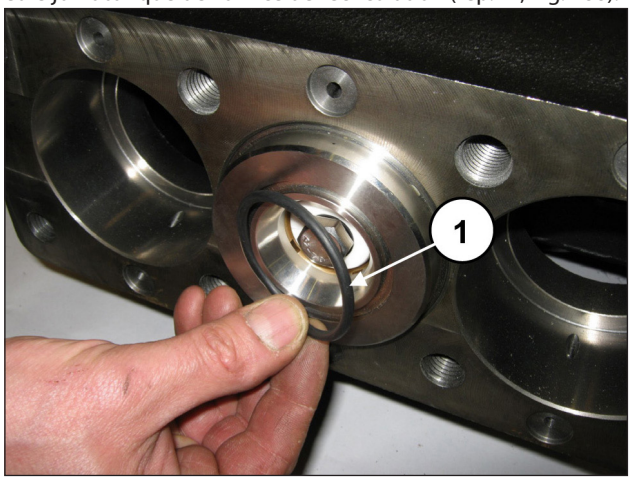



Fig. 187

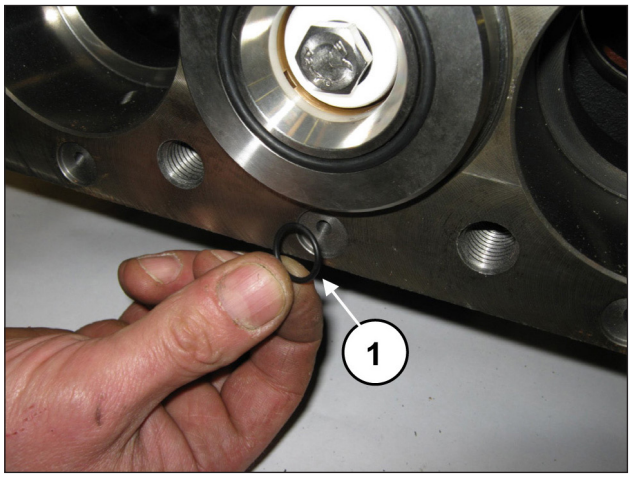



Fig. 188

Insérer le joint torique (rep. ①, Fig. 189) sur les couvercles d'inspection et monter les couvercles à l'aide de 2+2 vis M6x14 (rep. ①, Fig. 190).

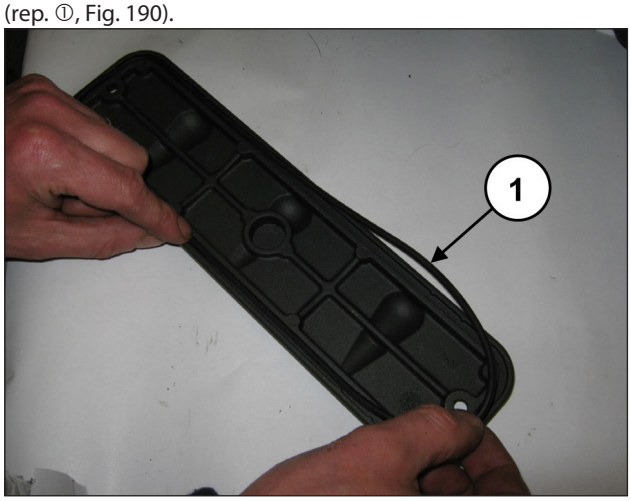



Fig. 189

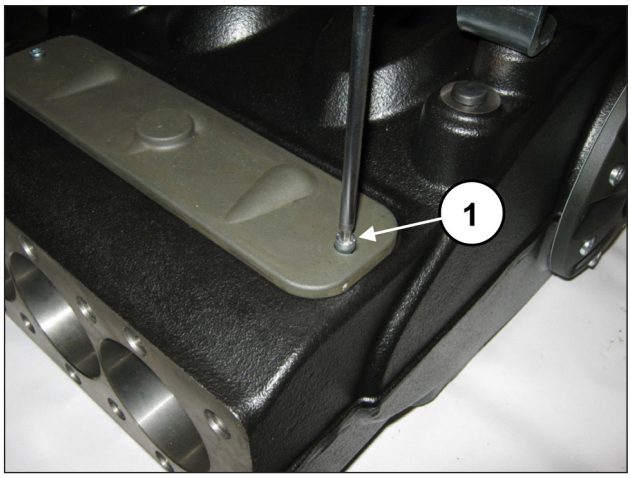



Fig. 190

Serrer les vis à l'aide d'une clé dynamométrique, en suivant les explications du chapitre 3.

## 3 FORCES DE SERRAGE DES VIS

Pour serrer les vis, utiliser exclusivement une clé dynamométrique.

| Description | Repère vue éclatée | Couple de serrage Nm |
|---|---|---|
| Vis M10x30 couvercle carter | 89 H.P. - 91 L.P. | 45 |
| Bouchon G1/2x13 carter | 91 H.P. - 93 L.P. | 40 |
| Vis M16x30 étrier de levage | 51 H.P. - 53 L.P. | 200 |
| Vis M10x40 couvercle réducteur | 81 H.P. - 83 L.P. | 45 |
| Vis M10x25 arrêt couronne | 76 H.P. - 78 L.P. | 45 |
| Vis M10x40 boîtier réducteur | 81 H.P. - 83 L.P. | 45 |
| Vis M6x14 couvercles sup. et inf. | 60 H.P. - 62 L.P. | 10 |
| Vis M10x30 couvercle coussinet | 89 H.P. - 91 L.P. | 45 |
| Vis M10x1,5x80 serrage bielle | 53 H.P. - 55 L.P. | 65* |
| Vis M6x20 guide piston | 47 H.P. - 49 L.P. | 10 |
| Vis M10x140 fixation piston | 28 H.P. - 18 L.P. | 40 |
| Vis M16x55 couvercle soupapes HP | 24 | 333 |
| Vis M16x45 couvercle soupapes LP | 19 | 333 |
| Bouchon G1/2" tête LP | 4 | 40 |
| Bouchon G1/4"x13 tête | 100 H.P. - 21 L.P. | 40 |
| Vis M16x180 tête HP | 26 | 333** |
| Vis M16x150 tête LP | 43 | 333** |
| Dispositif ouverture soupapes | 2 | 40 |

* Obtenir le couple de serrage en serrant les vis simultanément

** Serrer les vis en partant des 4 vis internes et en les croisant puis passer aux 4 vis externes, toujours en croix.

## 4 OUTILS POUR LA RÉPARATION

Pour l'entretien de la pompe, il est possible d'utiliser des outils traditionnels pour le démontage et le remontage des composants.
Les outils suivants sont disponibles :

**Pour le montage :**

| | |
|---|---|
| Arbre (blocage des bielles) | réf. 27566200 |
| Coussinet sur vilebrequin | réf. 27604700 |
| Coussinet pignon sur boîtier de réducteur | réf. 27604900 |
| Coussinet vilebrequin sur boîtier de réducteur | réf. 27605000 |
| Coussinet vilebrequin sur couvercle coussinet | réf. 27605000 |
| Joint d'huile guide du piston | réf. 27605300 |
| Coussinet sur pignon | réf. 27604800 |
| Joint d'huile pignon | réf. 27605200 |
| Joint torique siège de soupape de refoulement MW32-MW36-MW40 | réf. 27516000 |

**Pour le démontage :**

| | |
|---|---|
| Joint d'huile guide piston | réf. 27918500 |
| Arbre (blocage des bielles) | réf. 27566200 |
| Groupe soupape d'aspiration et de refoulement | réf. 27516400 |
| Siège soupape d'aspiration MW32-MW36-MW40 | réf. 27516200 |
| Bloc chemise + support joints | réf. 27632500 |

# 5 VERSIONS SPÉCIALES

Suivent les indications concernant la réparation des versions spéciales. Sauf indications contraires, respecter les instructions concernant la pompe MW version standard.

- Pompes MWN - MWF : pour la réparation, suivre les indications valables pour la pompe MW standard.
- Pompes MWR - MWNR : pour la réparation, suivre les indications valables pour la pompe MW standard, à l'exception des joints de pression auxquels est dédié un paragraphe.

## 5.1 POMPE VERSION MWR - MWNR

### 5.1.1 Démontage du groupe - supports - joints d'étanchéité

Désassembler le support des joints de la chemise, ôter l'anneau du ressort et l'anneau racleur (rep. ①②, Fig. 191) pour accéder aux joints de pression (rep. ①, Fig. 192).

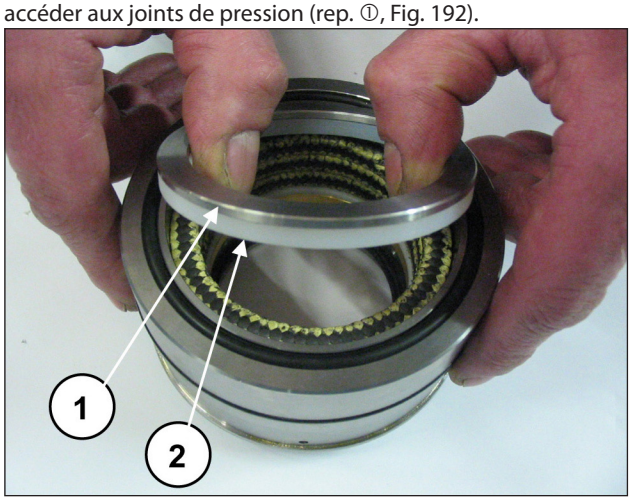



Fig. 191

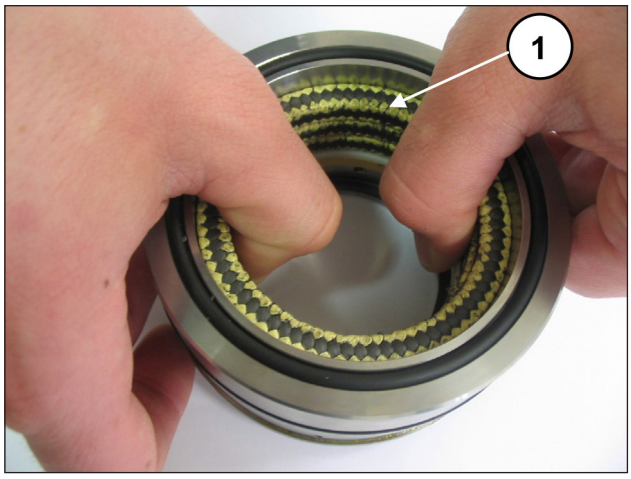



Fig. 192

Pour ôter le joint de basse pression, utiliser une jauge d'épaisseur ou un outil qui n'endommage pas le siège du support du joint (rep. ①, Fig. 193).

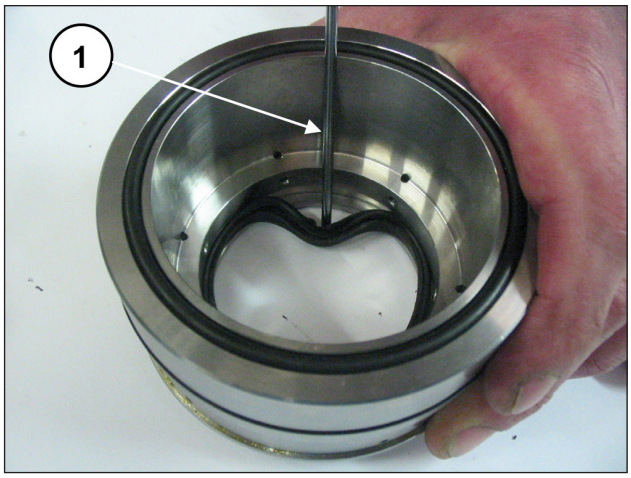



Fig. 193

### 5.1.2 Montage du groupe supports - joints d'étanchéité

Procéder au remontage en inversant les opérations de démontage du parag. 2.2.3.

**Remplacer les joints de pression en humectant les lèvres de graisse à base de silicone (ne pas les enduire) et en ayant soin de ne pas les endommager en les insérant dans la chemise.**

**Remplacer les joints de pression et les joints toriques à chaque opération de démontage.**

Insérer le joint de basse pression dans le support presse-étoupe (rep. ①, Fig. 194) en contrôlant le sens de montage qui prévoit la lèvre d'étanchéité tournée en avant (vers la tête) et le joint torique (rep. ②, Fig. 122).

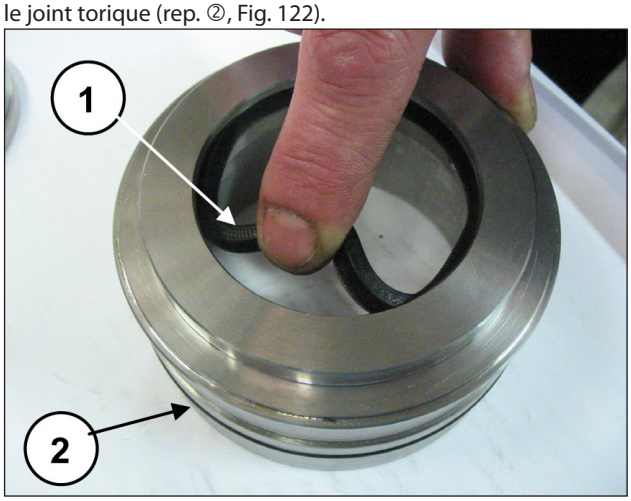



Fig. 194

Monter l'anneau de support et la bague anti-extrusion (rep. ①②, Fig. 195), les trois presse-étoupes, en s'assurant que les entailles se trouvent à 120° l'une par rapport à l'autre (rep. ①, Fig. 196), l'anneau racleur des presse-étoupes et l'anneau du ressort (rep. ①②, Fig. 197).

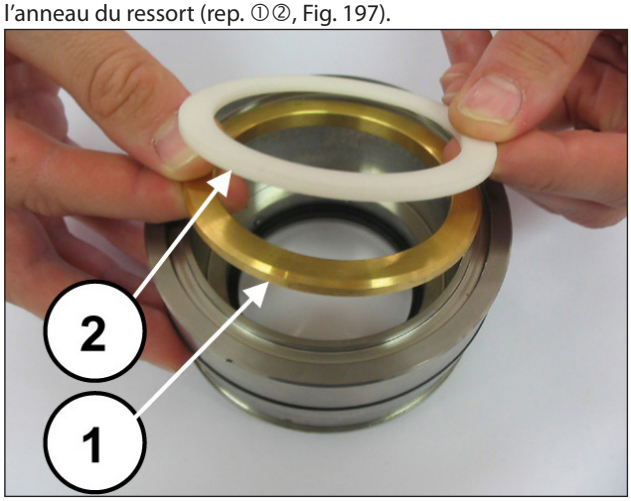



Fig. 195

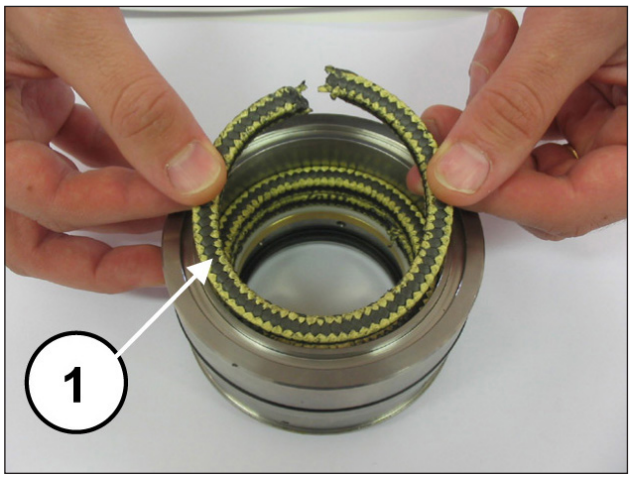



Fig. 196

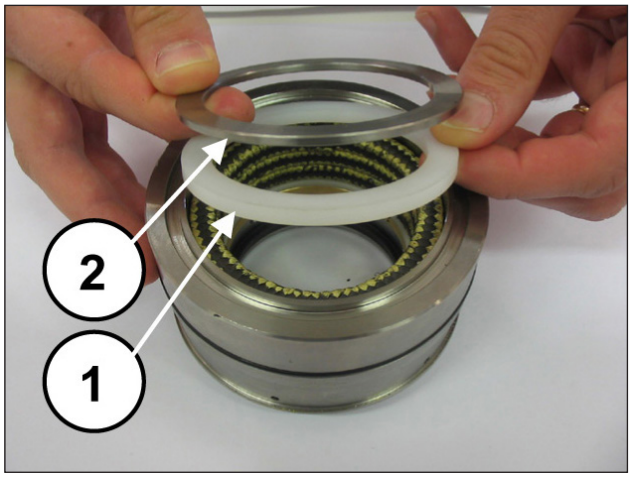



Fig. 197

Monter ensuite le joint torique (rep. ①, Fig. 198) sur l'anneau de tête presse-étoupe et l'installer dans le logement sur la tête.

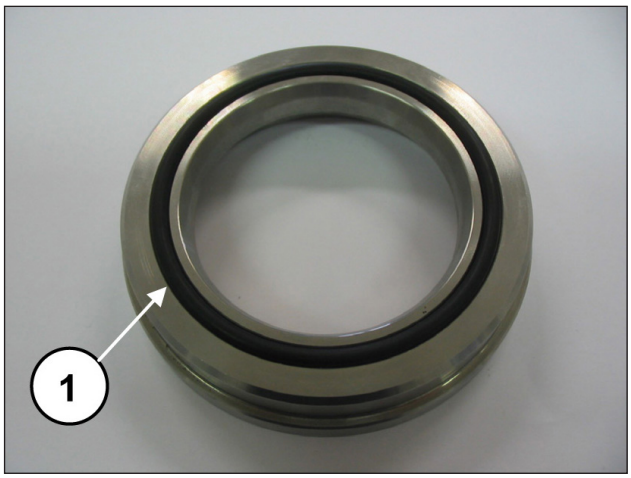



Fig. 198

## 6 RÉCUPÉRATION TÊTE POMPE

Si les chambres des pistons de la tête présentent des signes de cavitation dus à une alimentation incorrecte de la pompe, il est possible de récupérer la tête endommagée pour éviter de la remplacer.
Pour récupérer la tête, procéder aux opérations indiquées Fig. 199 pour MW 32-36-40 et versions MWF-MWR, Fig. 200 pour MW 45-50-55 et versions MWF-MWR :

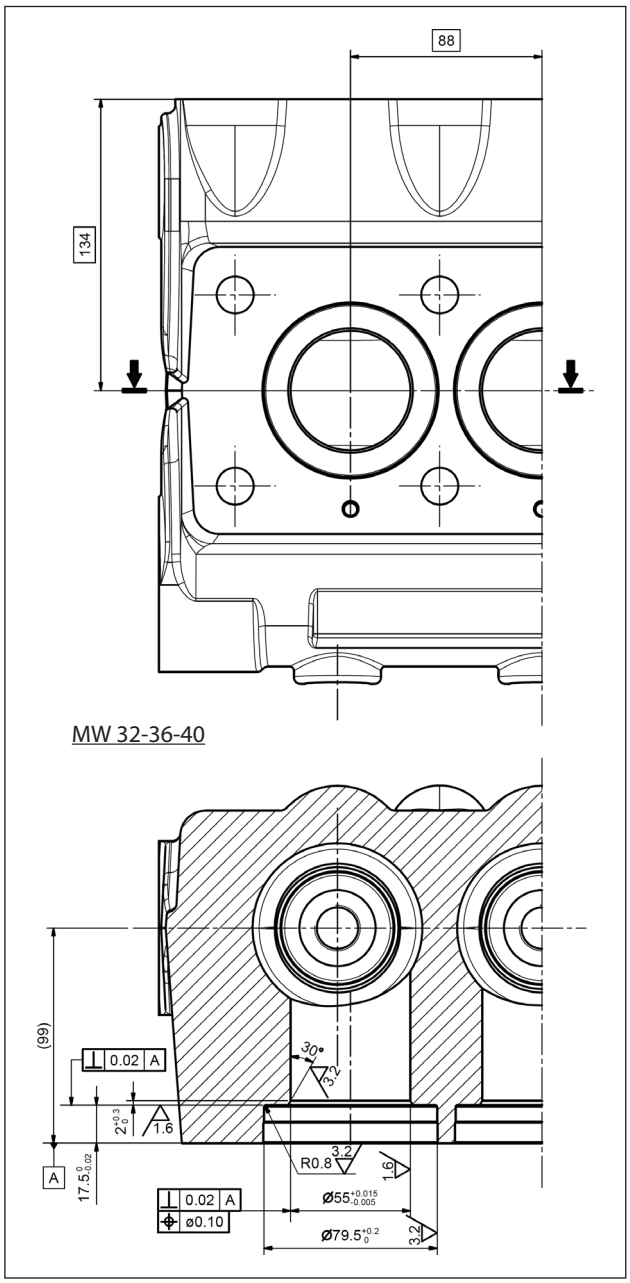



Fig. 199

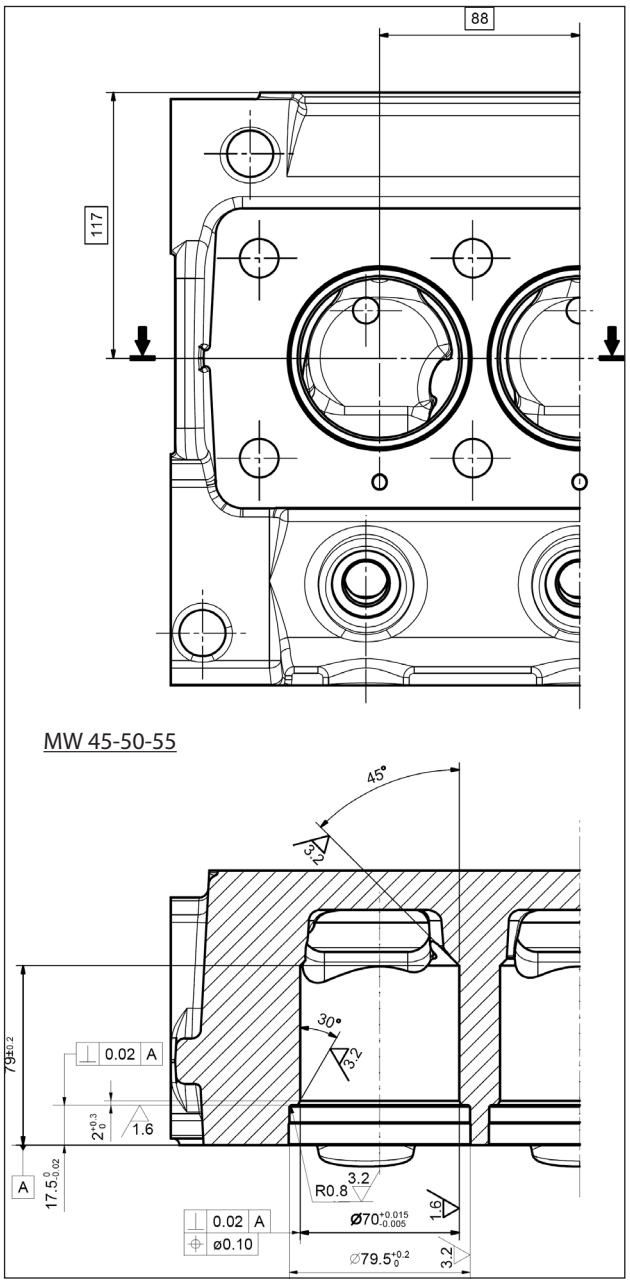



Fig. 200

**MW 32-36-40 et versions MWF-MWR (Fig. 201)**

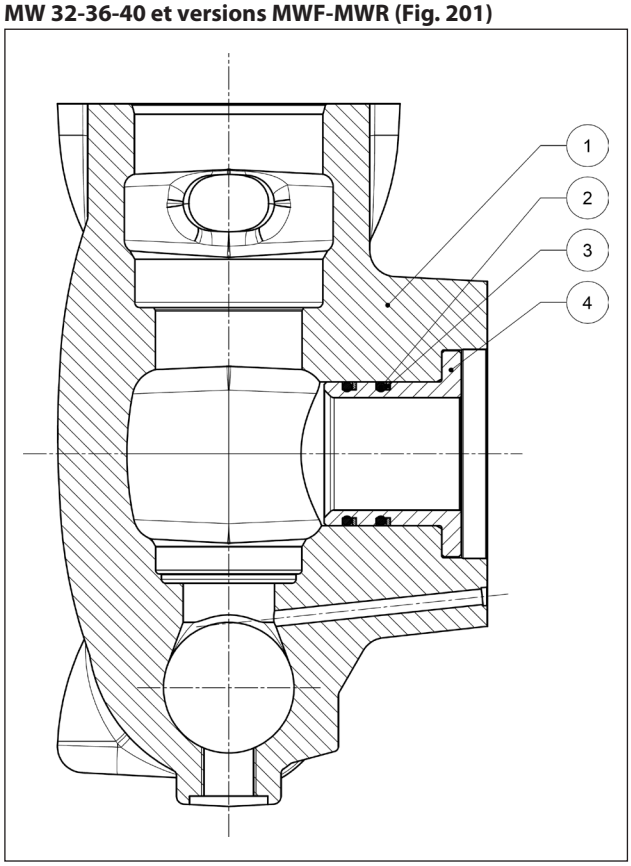



Fig. 201

① Tête MW HP - réf. 73120015 - qté 1
② Joint torique - réf. 90408000 - qté 6
③ Bague anti-extrusion - réf. 90523800 - qté 6
④ Douille MW HP - réf. 73215956 - qté 3

**MW 45-50-55 et versions MWF-MWR (Fig. 202)**

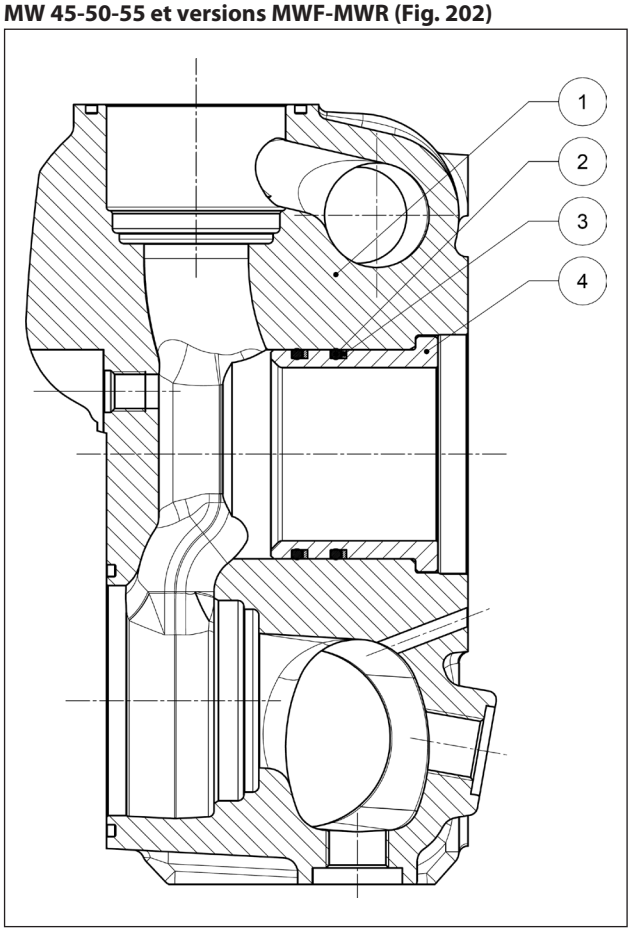



Fig. 202

① Tête MW LP - réf. 73120115 - qté 1
② Joint torique - réf. 90411500 - qté 6
③ Bague anti-extrusion - réf. 90527400 - qté 6
④ Douille MW LP - réf. 73216056 - qté 3

## 7 REMPLACEMENT DE LA DOUILLE PIED DE LA BIELLE

Procéder au calage du coussinet à froid et aux usinages suivants en respectant les dimensions et les tolérances de la Fig. 203 ci-dessous.

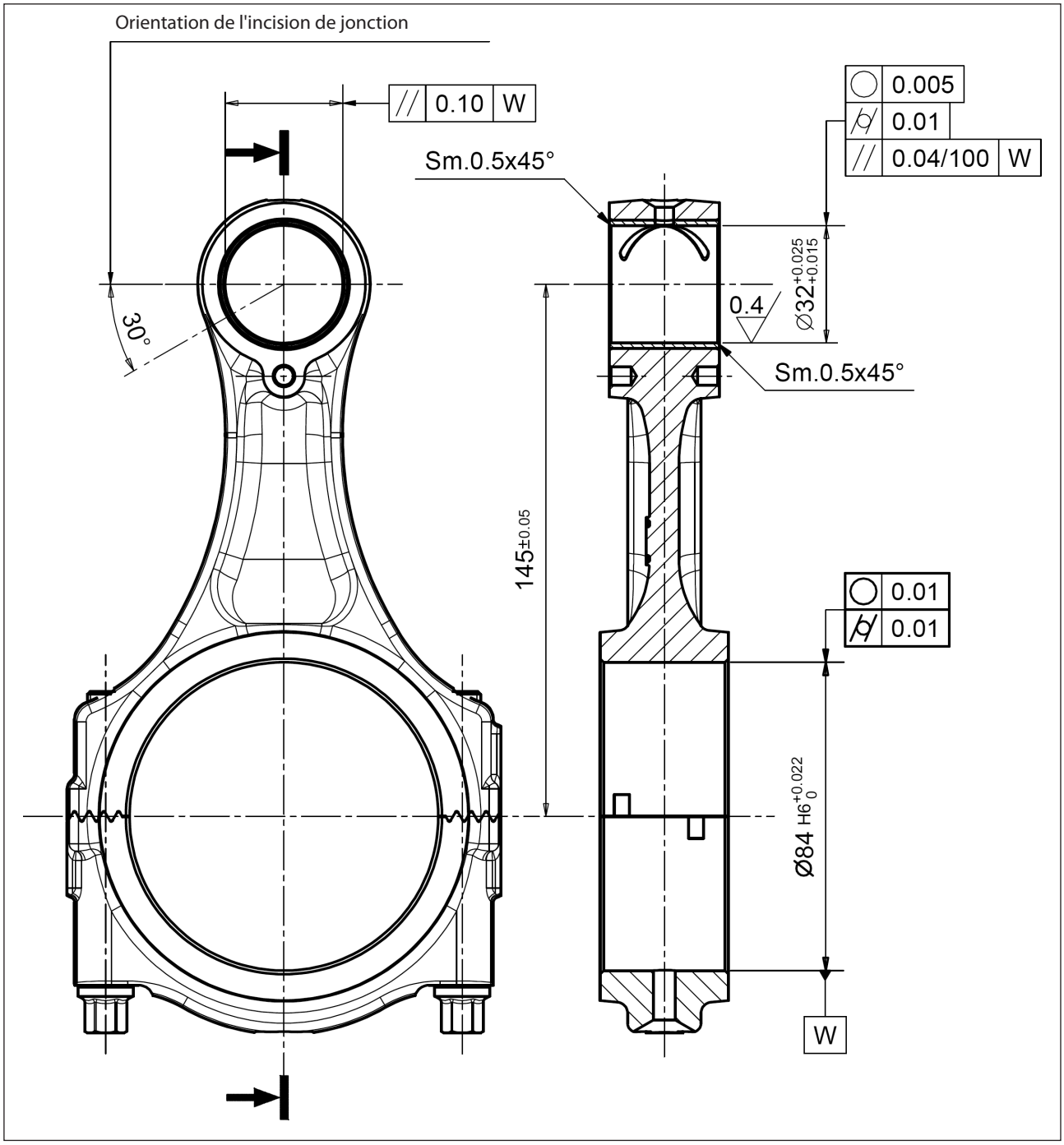



Fig. 203

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# 1 EINLEITUNG

Diese Anleitung enthält die Anweisungen für die Reparatur der Pumpen der Baureihe MW und muss vor jeglichen Arbeiten an der Pumpe sorgfältig gelesen und verstanden werden.
Der einwandfreie Betrieb und die lange Lebensdauer der Pumpe sind von der korrekten Verwendung und angemessenen Wartung abhängig.
Interpump Group haftet nicht für Schäden durch Nachlässigkeit oder Nichtbeachtung der in dieser Anleitung beschriebenen Vorschriften.

## 1.1 BESCHREIBUNG DER SYMBOLE

Lesen Sie vor jeder Arbeit stets aufmerksam die Anweisungen in dieser Anleitung.

**Warnzeichen**

Lesen Sie vor jeder Arbeit stets aufmerksam die Anweisungen in dieser Anleitung.

**Gefahrenzeichen**
Schutzbrille tragen.

**Gefahrenzeichen**
Vor jeder Arbeit Schutzhandschuhe anziehen.

# 2 REPARATURVORSCHRIFTEN

## 2.1 REPARATUR DER MECHANIK

Vor den Reparaturarbeiten an der Mechanik muss zunächst das Öl aus dem Kurbelgehäuse abgelassen werden.
Zum Ablassen des Öls den Öleinfüllverschluss Pos. ①, Abb. 1 und anschließend den Ölablassverschluss abnehmen, Pos. ②, Abb. 1.

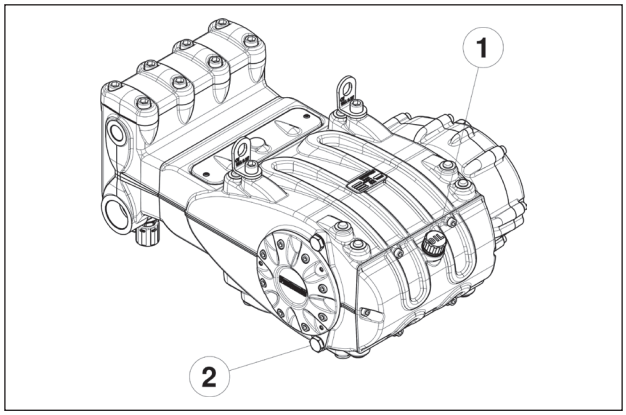


Abb. 1

**Altöl muss in einem geeigneten Behälter gesammelt und den entsprechenden Wertstoffstellen zugeführt werden.**
**Es darf auf keinen Fall in die Umwelt abgeleitet werden.**

### 2.1.1 Ausbau der Mechanik

Die vorgeschriebene Arbeitsabfolge lautet.
Lassen Sie die Ölfüllung der Pumpe vollständig ab und demontieren Sie dann den Gehäusedeckel (samt O-Ring) durch Abdrehen der 6 Schrauben IM10 (Pos. ①, Abb. 2).

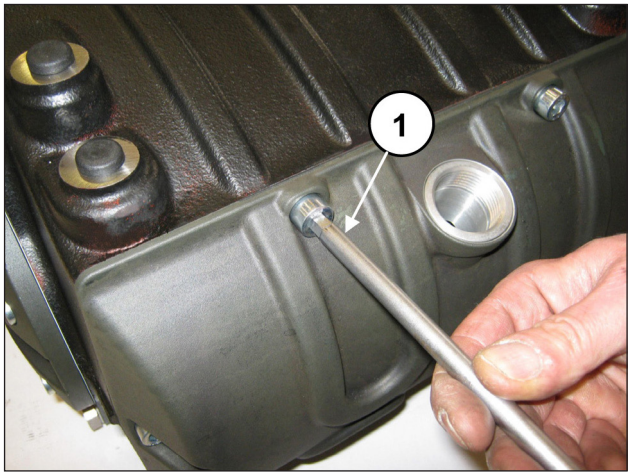


Abb. 2

Nehmen Sie die Passfeder von der Zapfwelle ab (Pos. ①, Abb. 3).

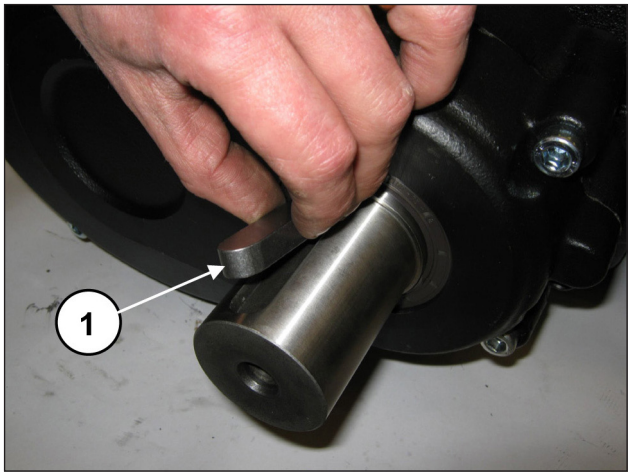


Abb. 3

Lösen Sie die Befestigungsschrauben des Getriebedeckels (Pos. ①, Abb. 4).

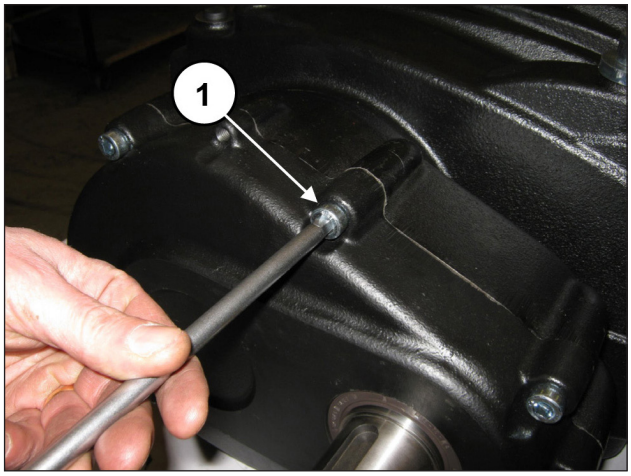


Abb. 4

Drehen Sie 3 Stiftschrauben oder Gewindeschrauben M8 (Pos. ①, Abb. 5) als Abzieher in die entsprechenden Bohrungen ein und zwei ausreichend lange Schrauben M10 für die Halterung des Deckels ein (Pos. ②, Abb. 5).

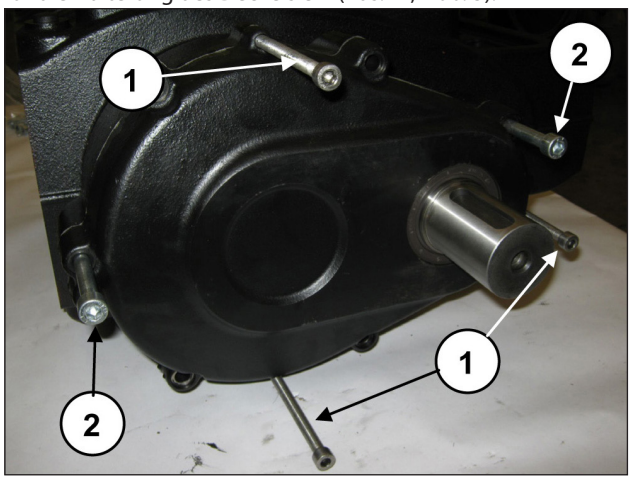


Abb. 5

Drehen Sie schrittweise die 3 Schrauben M8 (Pos. ①, Abb. 6) als Abzieher soweit ein, bis die Gruppe Deckel-Ritzel komplett abgezogen werden kann

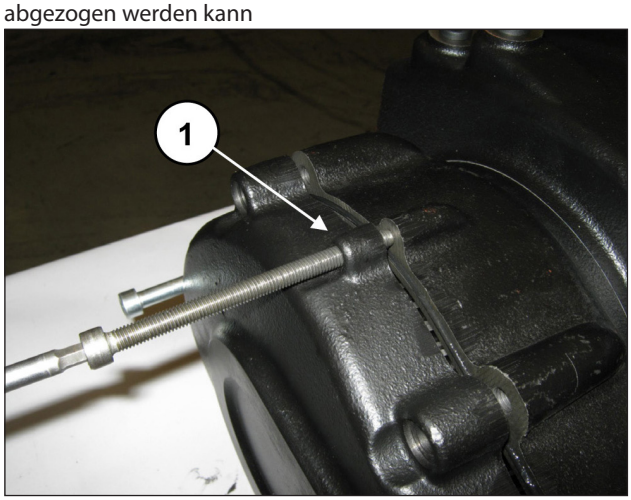


Abb. 6

Zur Demontage des Getriebedeckels vom Ritzel gehen Sie folgendermaßen vor:
Entfernen Sie den Seegerring Ø120 (Pos. ①, Abb. 7).

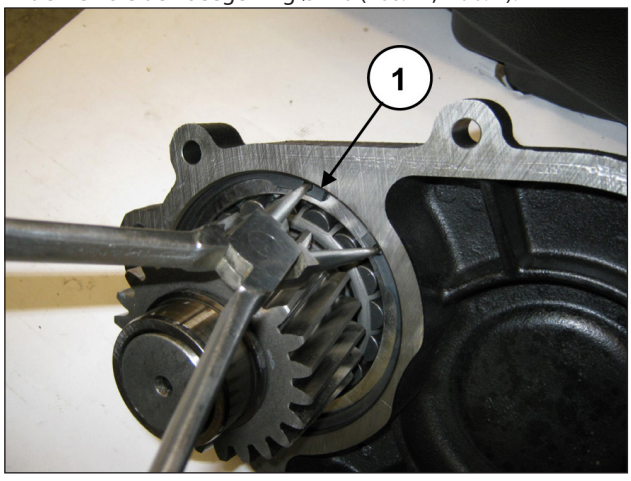


Abb. 7

Trennen Sie das Ritzel vom Deckel mit einem am Ritzel angesetzten Schlagwerk (Pos. ①, Abb. 8).

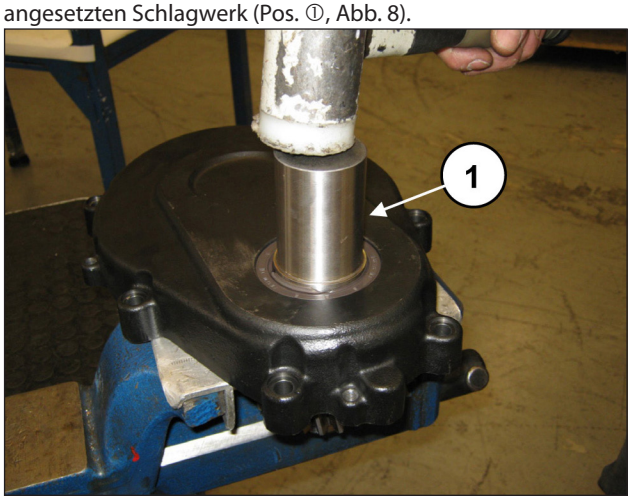


Abb. 8

Entfernen Sie den Seegerring Ø55 (Pos. ①, Abb. 9) und den Stützring des Lagers (Pos. ①, Abb. 10) vom Ritzel

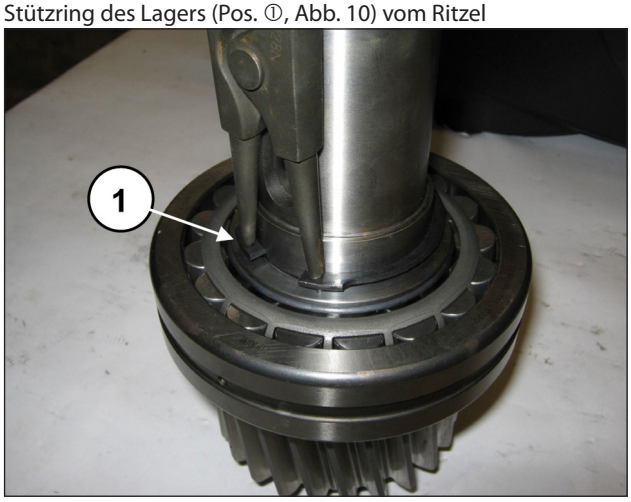


Abb. 9

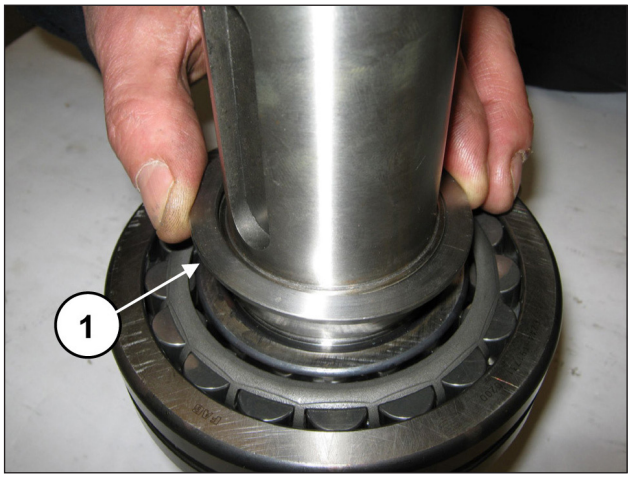


Abb. 10

Ziehen Sie den Ölabstreifring von der Innenseite des Deckels aus dem Getriebedeckel heraus (Pos. ①, Abb. 11).

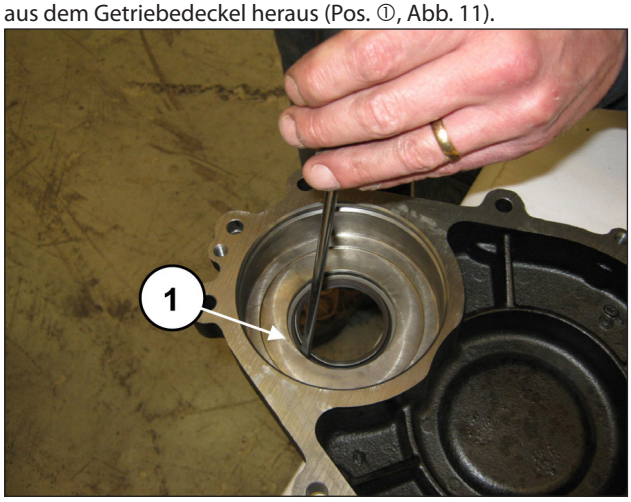


Abb. 11

Lösen Sie die Befestigungsschrauben des Zahnkranzhalters (Pos. ①, Abb. 12) und entfernen Sie den Halter (Pos. ①, Abb. 13).

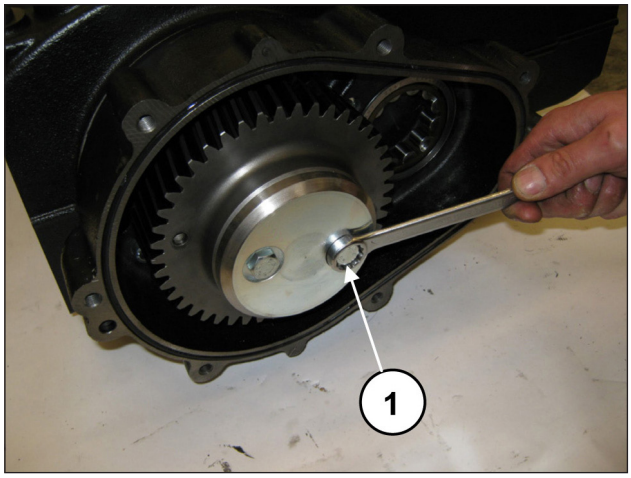


Abb. 12

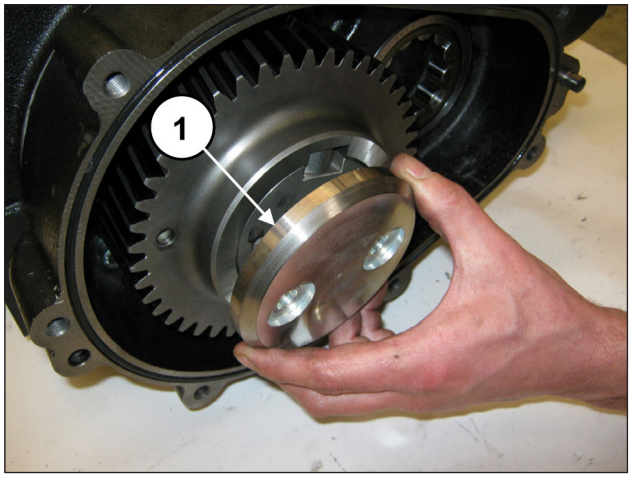


Abb. 13

Entfernen Sie den Zahnkranz (Pos. ①, Abb. 14). Bei Bedarf können Sie einen Abzieher mit Schlagwerk an den 2 Bohrungen M8 ansetzen (Pos. ②, Abb. 14).

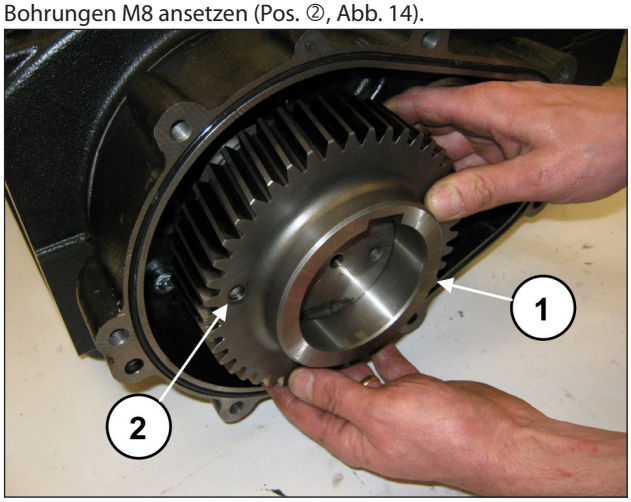


Abb. 14

Nehmen Sie die Passfeder von der Welle ab (Pos. ①, Abb. 15).


Abb. 15

Entfernen Sie den Stützring des Zahnkranzes (Pos. ①, Abb. 16).


Abb. 16

Lösen Sie die Schrauben der Pleuelstange (Pos. ①, Abb. 17).

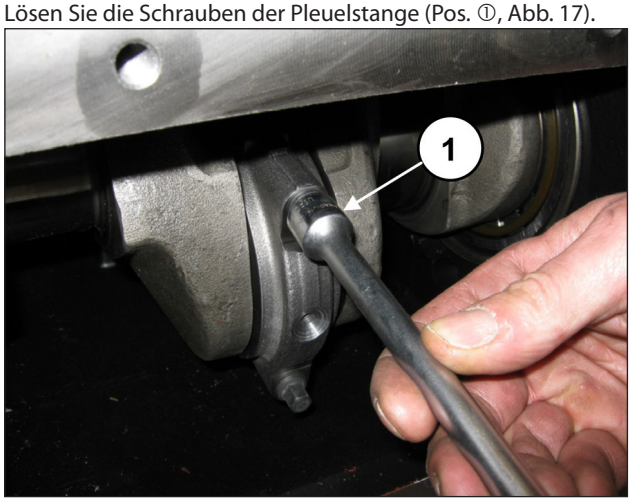


Abb. 17

Demontieren Sie die Pleueldeckel samt unteren Lagerschalen und achten Sie dabei genau auf die Ausbaureihenfolge.

**Pleueldeckel und Pleuelhälften müssen in der gleichen Paarungs- und Ausbaureihenfolge wieder eingebaut werden.**

Um Fehler zu vermeiden, sind Pleueldeckel und Pleuelhälften auf einer Seite nummeriert (Pos. ①, Abb. 18).

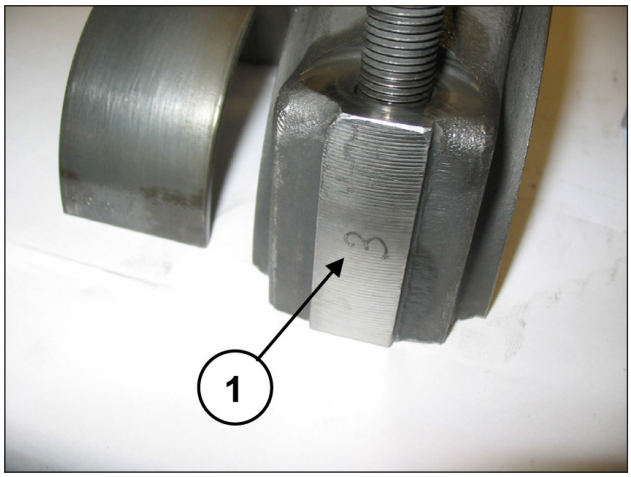


Abb. 18

Schieben Sie die Pleuelhälften in Richtung Hydraulik ganz vor, damit die Kurbelwelle heraustritt. Verwenden Sie als Arbeitshilfe das entsprechende Werkzeug (Art. 27566200), (Pos. ①, Abb. 19).

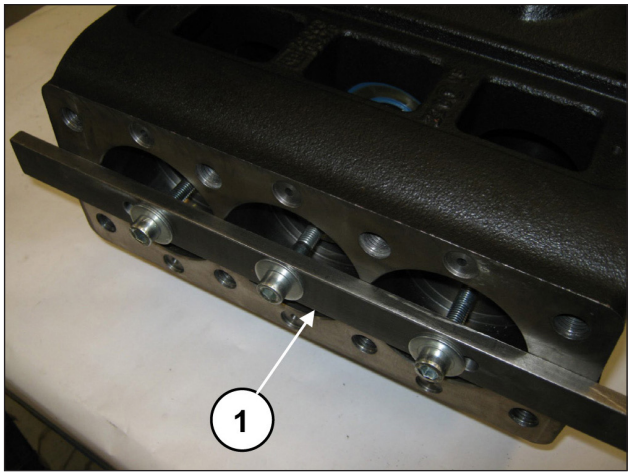


Abb. 19

Ziehen Sie die drei Lagerschalen der Pleuelhälften ab (Pos. ①, Abb. 20).

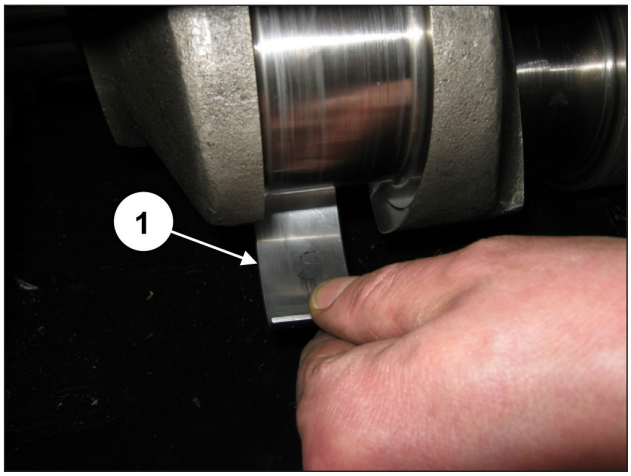


Abb. 20

Lösen Sie die Befestigungsschrauben des Getriebegehäuses (Pos. ①, Abb. 21 und Abb. 22).

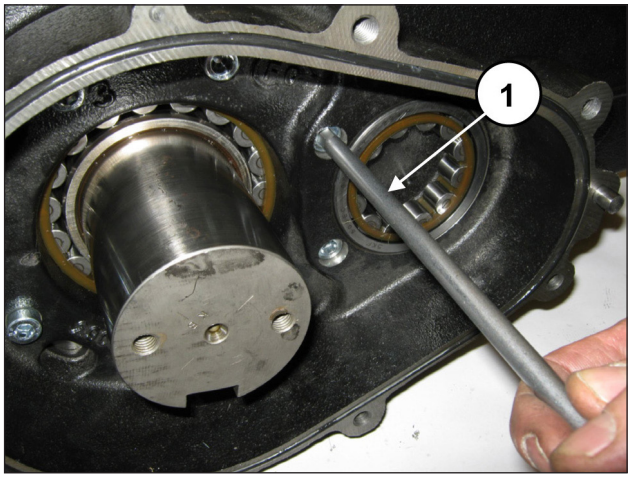


Abb. 21

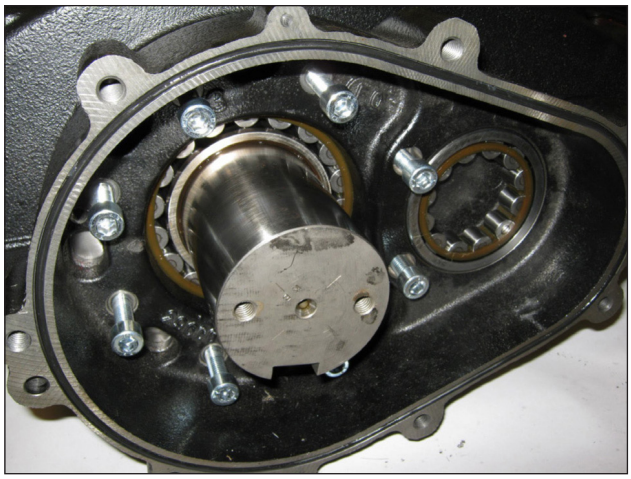

Abb. 22

Drehen Sie 3 Stiftschrauben oder Gewindeschrauben M8 (Pos. ①, Abb. 23) als Abzieher in die entsprechenden Bohrungen ein und zwei ausreichend lange Schrauben M10 für die Halterung des Getriebegehäuses ein (Pos. ②, Abb. 23).

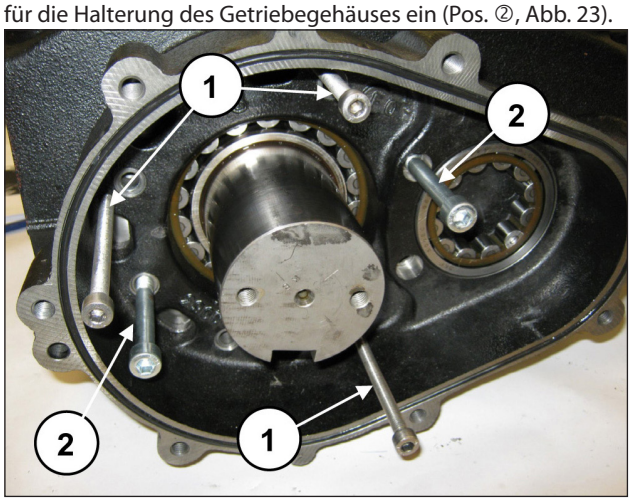


Abb. 23

Drehen Sie schrittweise die 3 Schrauben M8 fest (Pos. ①, Abb. 24) um ein übermäßiges Anwinkeln und das Festsitzen des Gehäuses zu vermeiden.
Entfernen Sie das Gehäuse und stützten Sie dabei die Welle ab (Pos. ①, Abb. 25).

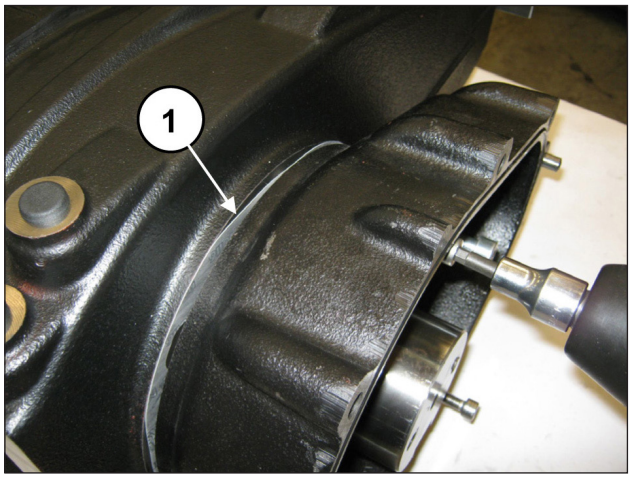


Abb. 24

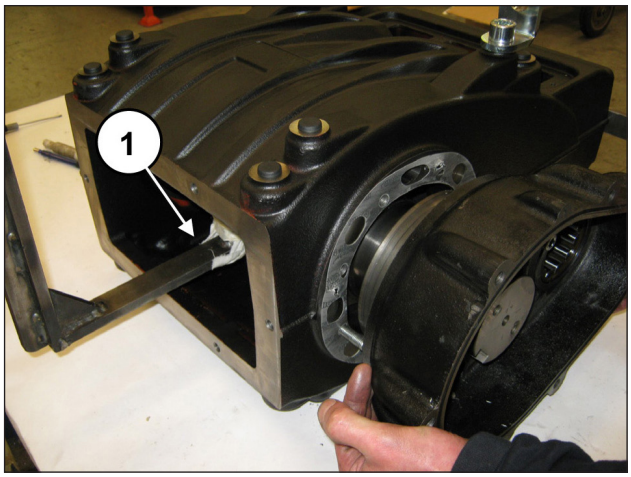


Abb. 25

Lösen Sie auf der gegenüberliegenden Seite die Befestigungsschrauben des Lagerdeckels (Pos. ①, Abb. 26 und Abb. 27).

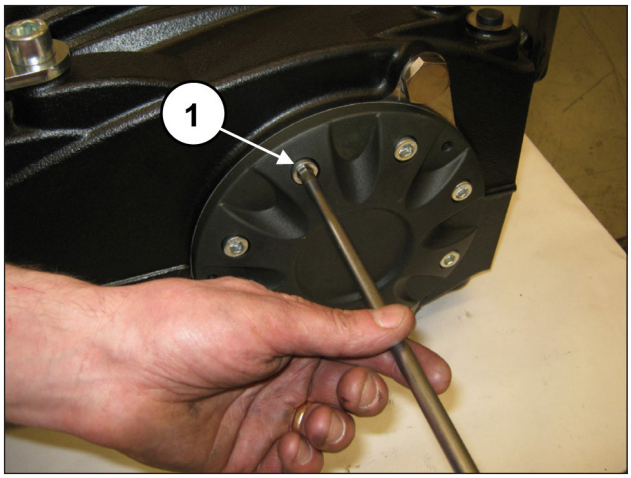


Abb. 26

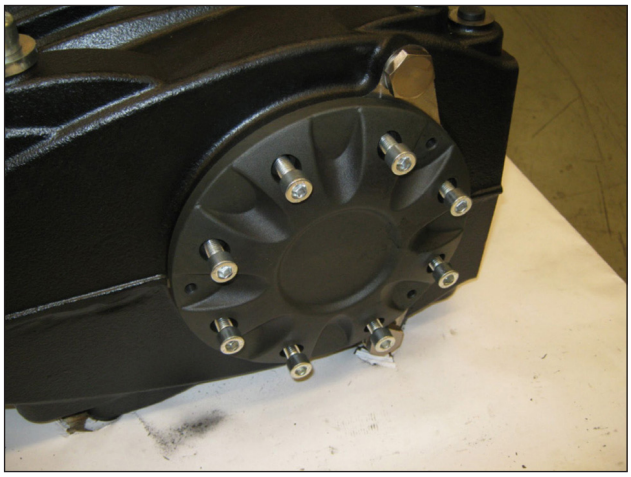

Abb. 27

Drehen Sie 3 Stiftschrauben oder Gewindeschrauben M8 (Pos. ①, Abb. 28) als Abzieher in die entsprechenden Bohrungen ein

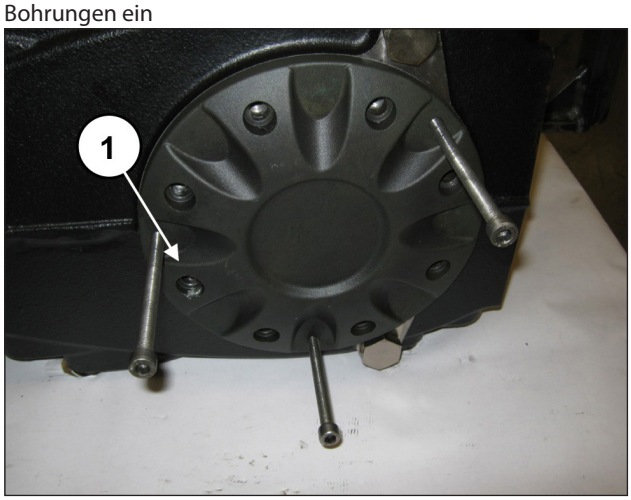


Abb. 28

Drehen Sie schrittweise die 3 Schrauben M8 fest (Pos. ①, Abb. 29) um ein übermäßiges Anwinkeln und das Festsitzen des Deckels zu vermeiden.
Entfernen Sie den Lagerdeckel und stützten Sie dabei die Welle ab (Pos. ①, Abb. 30).

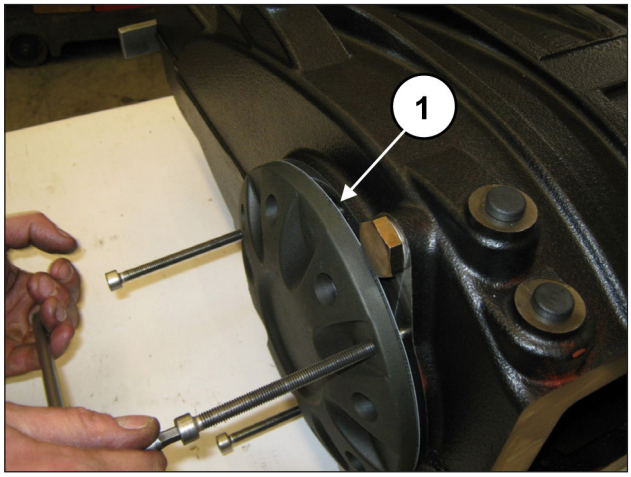


Abb. 29

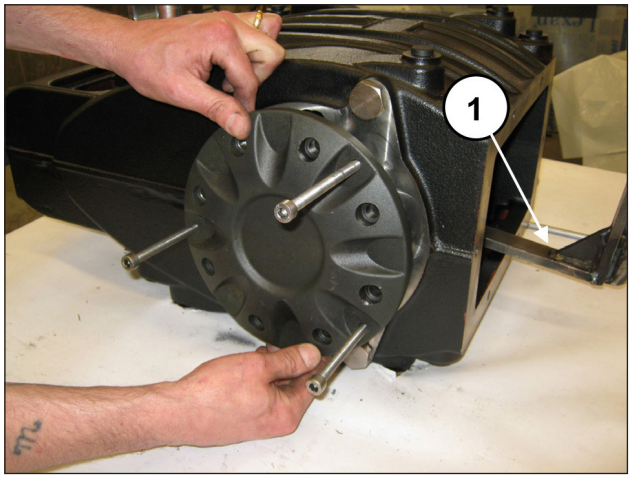


Abb. 30

Ziehen Sie von Zapfwellenseite die Kurbelwelle aus dem Gehäuse (Pos. ①, Abb. 31).

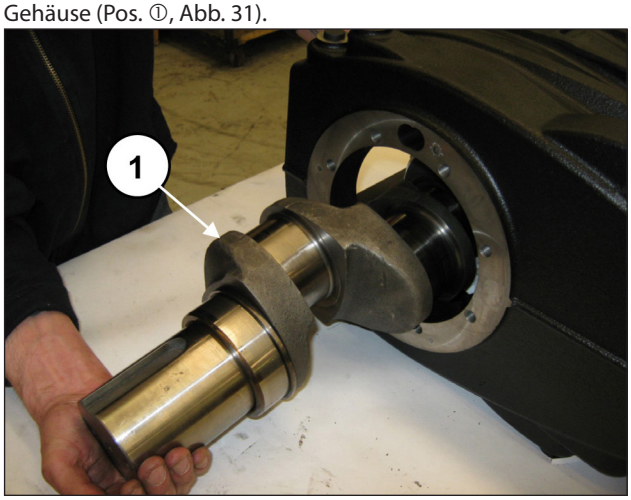


Abb. 31

Gehen Sie für den etwaigen Austausch einer oder mehrerer Pleuelstangen oder Kolbenführungen folgendermaßen vor: Drehen Sie die Schrauben des Werkzeugs Art. 27566200 zum Lösen der Pleuelstangen ab (Pos. ①, Abb. 32) und ziehen Sie anschließend die Baugruppe Pleuelstange-Kolbenführung von der hinteren Gehäuseöffnung heraus (Pos. ①, Abb. 33).

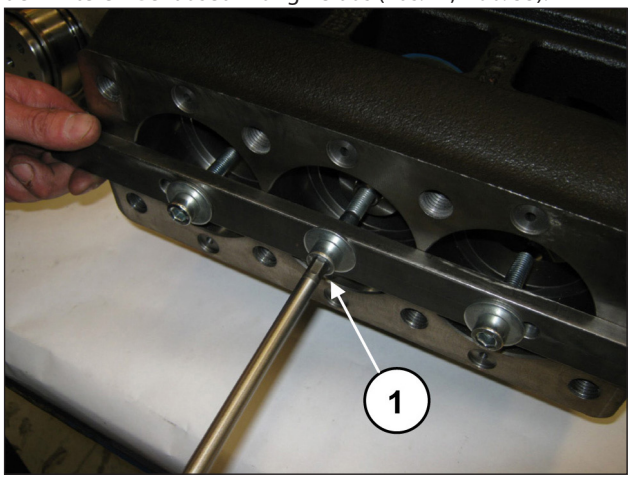


Abb. 32

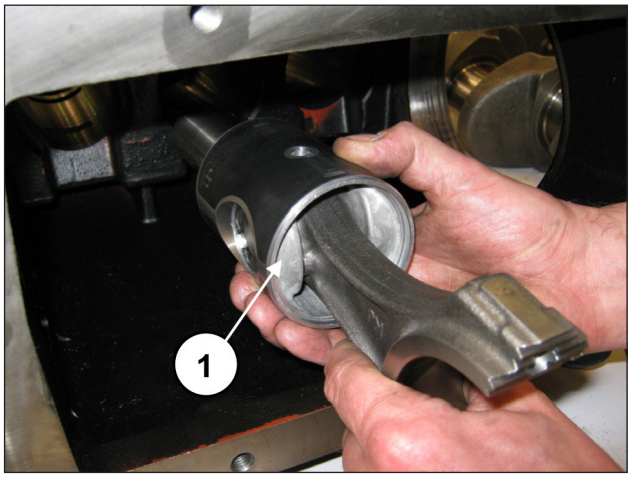


Abb. 33

Sie können nun die Ölabstreifringe der Kolbenführung ausbauen. Achten Sie darauf, die Laufbuchse der Kolbenführung nicht zu beschädigen.

**Sollte der Austausch der Ölabstreifringe der Kolbenführung ohne Ausbau der Mechanik erforderlich sein, können Sie die Ölabstreifringe mithilfe des Werkzeugs Art. 27918500 folgendermaßen herausziehen:**

Setzen Sie das Werkzeug zwischen Schaft und Lippe des Ölabstreifrings ein (Pos. ①, Abb. 34) und treiben Sie mit dem Schlagwerk den konischen Teil in den Ölabstreifring (Pos. ①, Abb. 35).

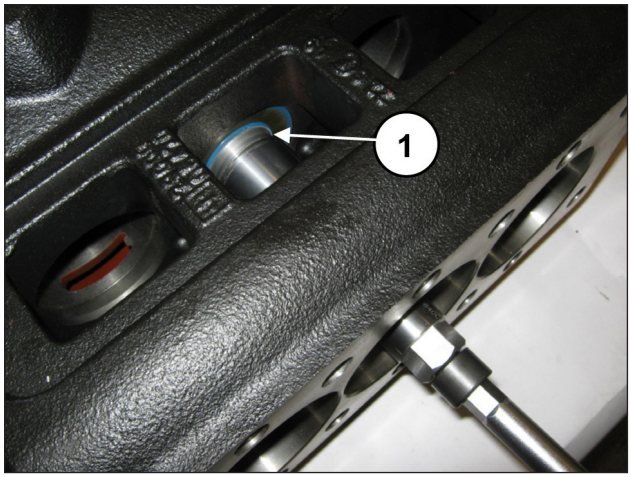


Abb. 34

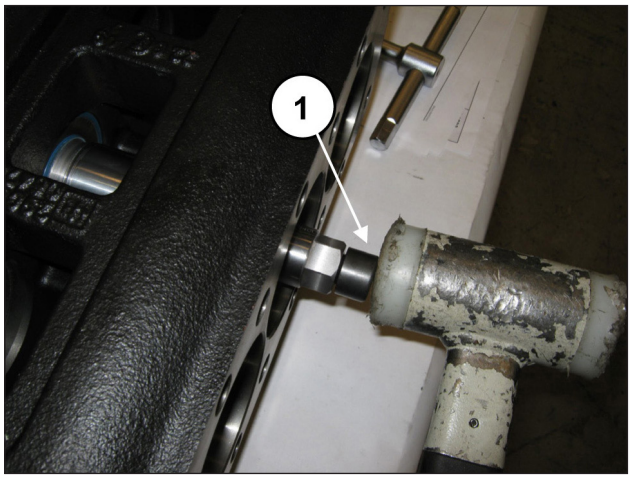


Abb. 35

Ziehen Sie den Ölabstreifring mit dem Schlagwerk des Werkzeugs ab (Pos. ①, Abb. 36).

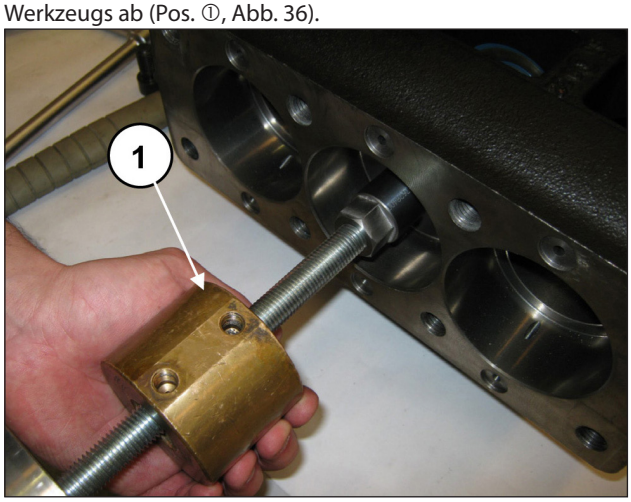


Abb. 36

Entfernen Sie die zwei Seegerringe zur Sicherung des Bolzens (Pos. ①, Abb. 37).

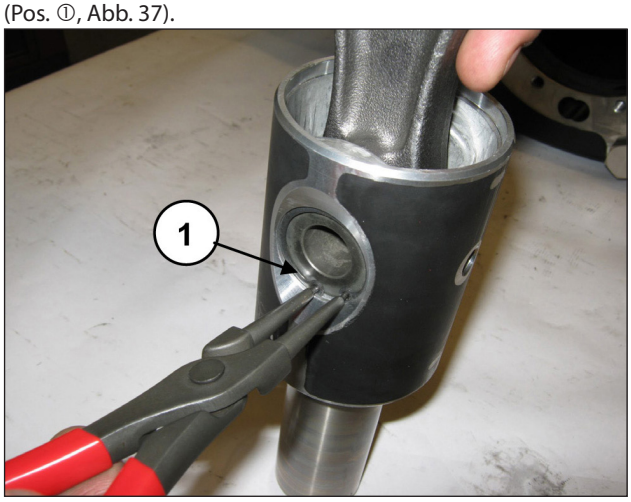


Abb. 37

Streifen Sie den Bolzen ab (Pos. ①, Abb. 38) und ziehen Sie die Pleuelstange heraus (Pos. ①, Abb. 39).

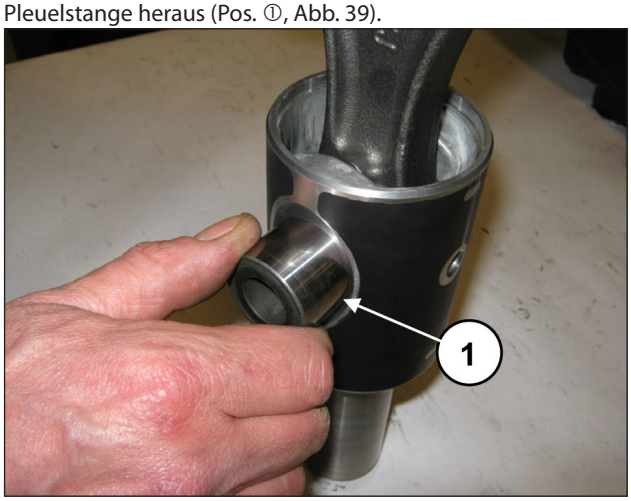


Abb. 38

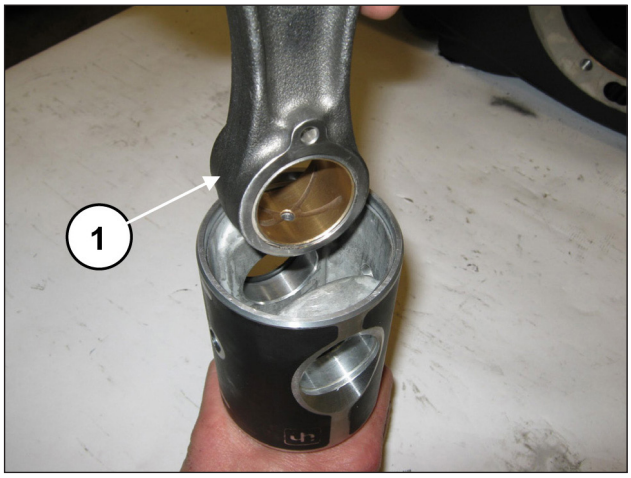


Abb. 39

Paaren Sie die Pleuelhälften mit dem vorab ausgebauten Pleueldeckeln unter Berücksichtigung der Nummerierung (Pos. ①, Abb. 40).

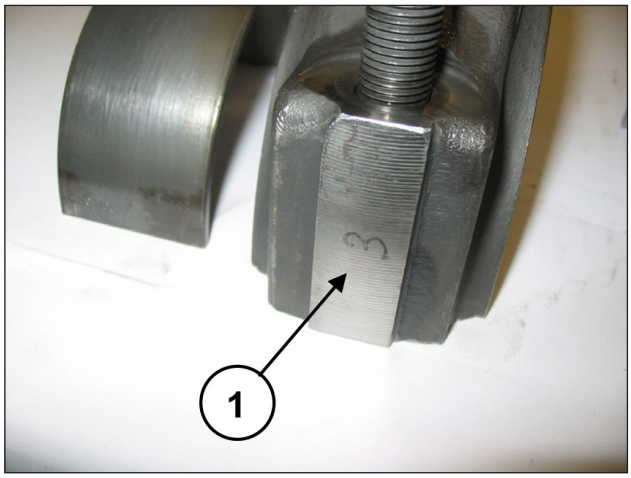


Abb. 40

Drehen Sie zum Trennen der Stange von der Kolbenführung die Zylinderkopfschrauben M6 mit dem entsprechenden Schlüssel ab (Pos. ①, Abb. 41).

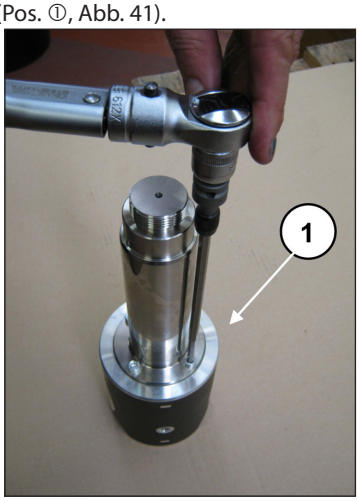


Abb. 41

### 2.1.2 Einbau der Mechanik

Verfahren Sie für den Einbau in umgekehrter Reihenfolge zu den Angaben in Abschn. 2.1.1.
Die vorgeschriebene Arbeitsabfolge lautet:
Montieren Sie die Stange an die Kolbenführung.
Setzen Sie die Kolbenführungsstange in die entsprechende Aufnahme an der Kolbenführung ein (Pos. ①, Abb. 42) und befestigen Sie die Stange mit den 4 Zylinderkopfschrauben M6x20 (Pos. ①, Abb. 43).


Abb. 42


Abb. 43

Spannen Sie die Kolbenführung mithilfe des speziellen Werkzeugs in einen Schraubstock und eichen Sie die Schrauben mit einem Drehmomentschlüssel (Pos. ①, Abb. 44) gemäß Angaben in Kapitel 3.

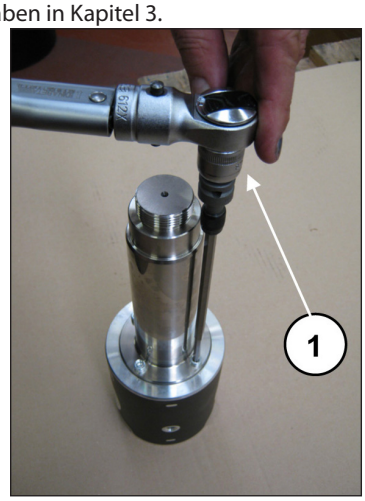


Abb. 44

Setzen Sie die Pleuelstange in die Kolbenführung ein (Pos. ①, Abb. 39) und anschließend den Bolzen (Pos. ①, Abb. 38). Montieren Sie die zwei Seegerringe zur Sicherung (Pos. ①, Abb. 37).

**Der Einbau ist korrekt, wenn Pleuelauge, Kolbenführung und Bolzen freigängig drehen.**

Trennen Sie Pleueldeckel und Pleuelhälften; die vorschriftsmäßige Paarung wird durch die seitliche Nummerierung garantiert (Pos. ①, Abb. 40).
Nachdem Sie das Gehäuse auf perfekte Sauberkeit überprüft haben, setzen Sie die Baugruppe Pleuelhälfte-Kolbenführung in die Buchsen des Gehäuses ein (Pos. ①, Abb. 33).

**Beim Einsetzen der Baugruppe Pleuelhälfte-Kolbenführung in das Gehäuse müssen die Pleuelhälften mit nach oben sichtbarer Nummerierung ausgerichtet werden.**

Arretieren Sie die drei Baugruppen mit dem entsprechenden Werkzeug Art. 27566200 (Pos. ①, Abb. 32).
Montieren Sie vorläufig den Innenring der Kurbelwellenlager (bis auf Anschlag an beiden Seiten der Welle) mithilfe des geeigneten Werkzeugs Art. 27604700 (Pos. ①, Abb. 45) (Pos. ①, Abb. 46).

**Die Innen- und Außenringe der Lager müssen unter Beibehaltung der Ausbaupaarung wieder eingebaut werden.**


Abb. 45


Abb. 46

Achten Sie beim Einführen der Welle auf Zapfwellenseite darauf, nicht gegen die Schäfte der vorab eingebauten Pleuelstangen zu stoßen (Pos. ①, Abb. 47) und (Pos. ①, Abb. 48).

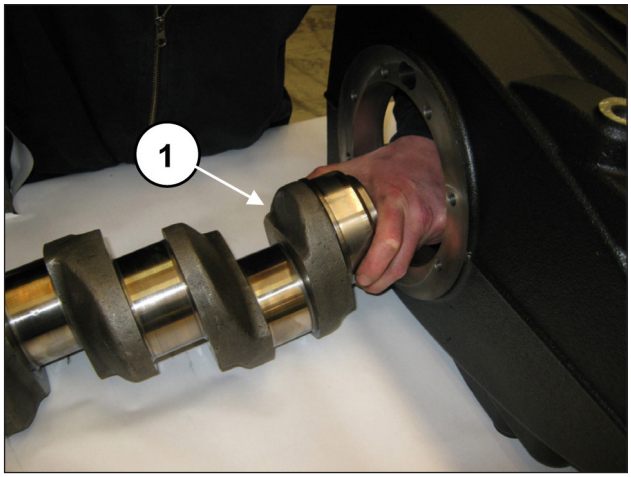


Abb. 47

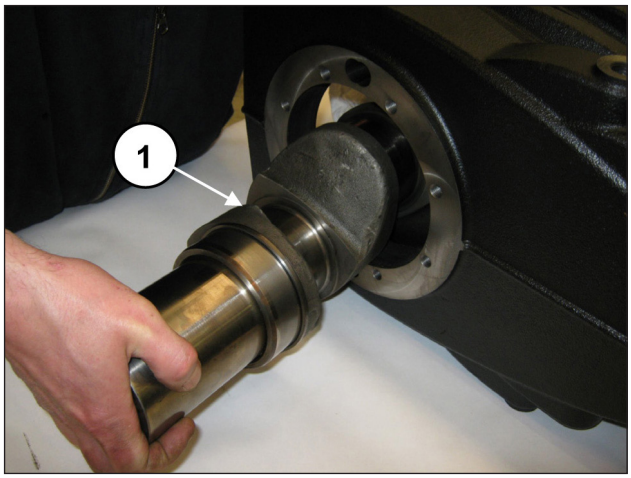


Abb. 48

**Bauen Sie die Kurbelwelle unbedingt mit der Zapfwellenseite entgegengesetzt zu den Bohrungen G1/2" für die Ölablassverschlüsse des Pumpengehäuses ein (Pos. ②, Abb. 50).**

Führen Sie die Welle vollständig in das Gehäuse ein (Pos. ①, Abb. 49 und Abb. 50).

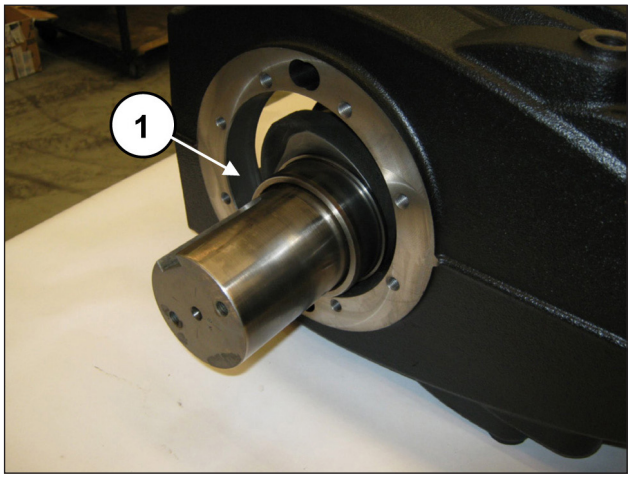


Abb. 49

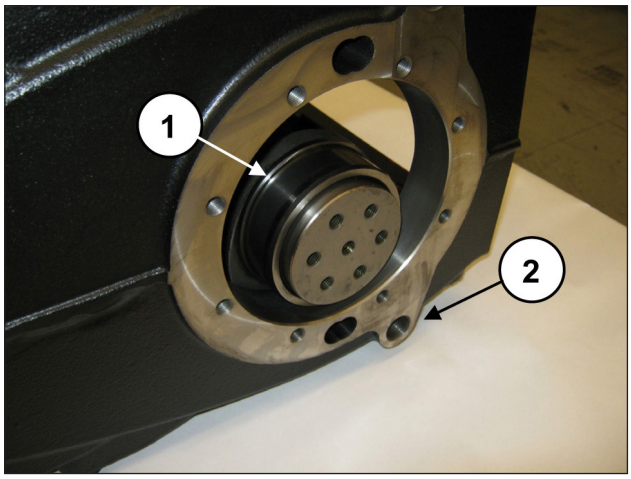


Abb. 50

Montieren Sie vorläufig am Getriebegehäuse den Außenring des Ritzellagers mithilfe des Werkzeugs Art. 27604900 (Pos. ①, Abb. 51) bis auf Anschlag (Pos. ①, Abb. 52).

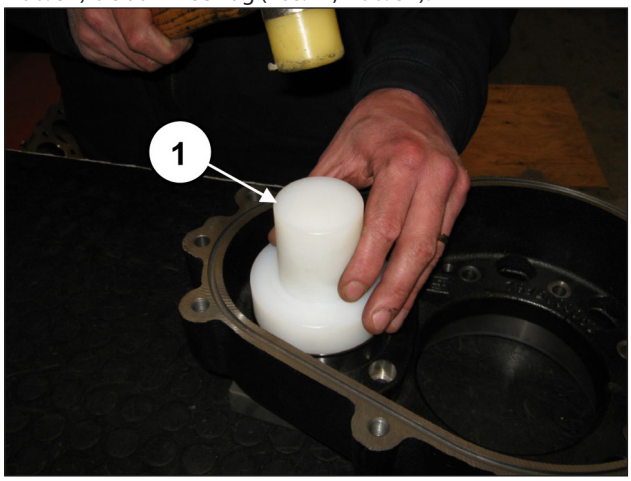


Abb. 51

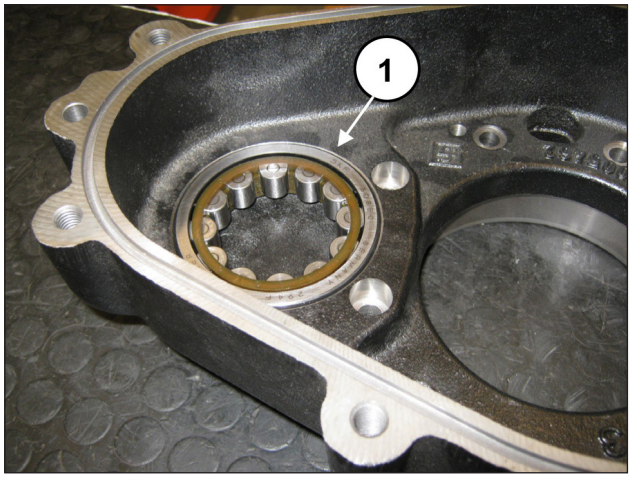


Abb. 52

Montieren Sie vorläufig auf der entgegengesetzten Seite des Getriebegehäuses den Außenring des Kurbelwellenlagers mithilfe des Werkzeugs Art. 27605000 (Pos. ①, Abb. 53) bis auf Anschlag (Pos. ①, Abb. 54).

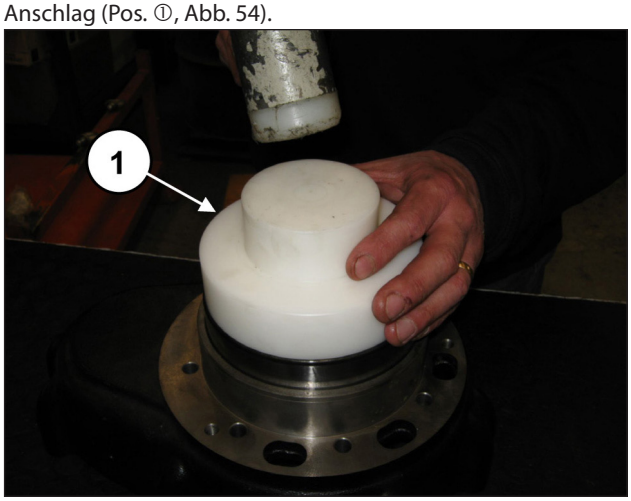


Abb. 53

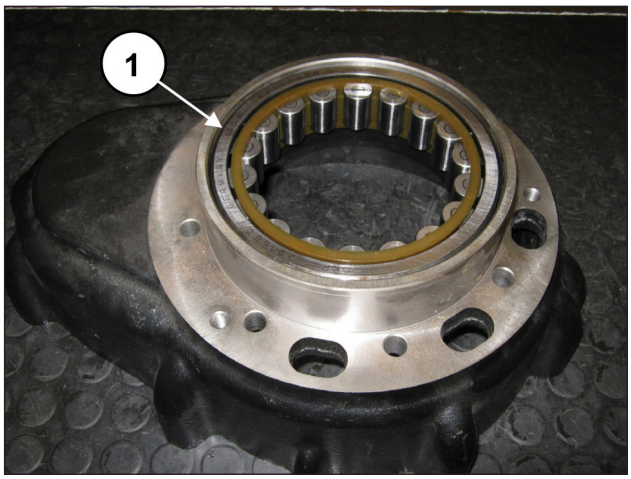


Abb. 54

Wiederholen Sie den Vorgang am Lagerdeckel, und montieren Sie vorläufig den Außenring des Kurbelwellenlagers mithilfe des Werkzeugs Art. 27605000 (Pos. ①, Abb. 55) bis auf Anschlag (Pos. ①, Abb. 56).

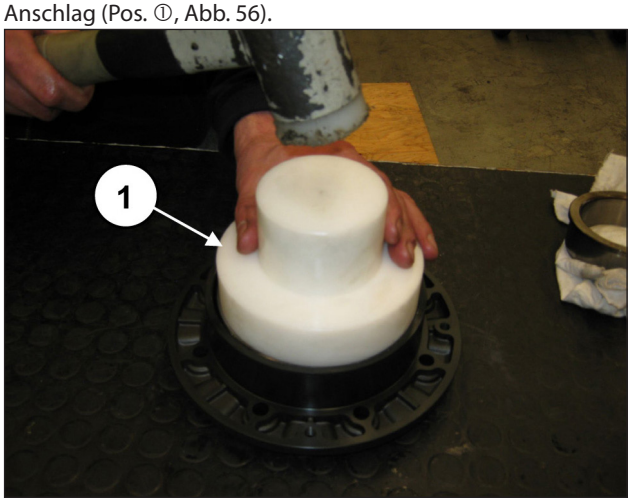


Abb. 55

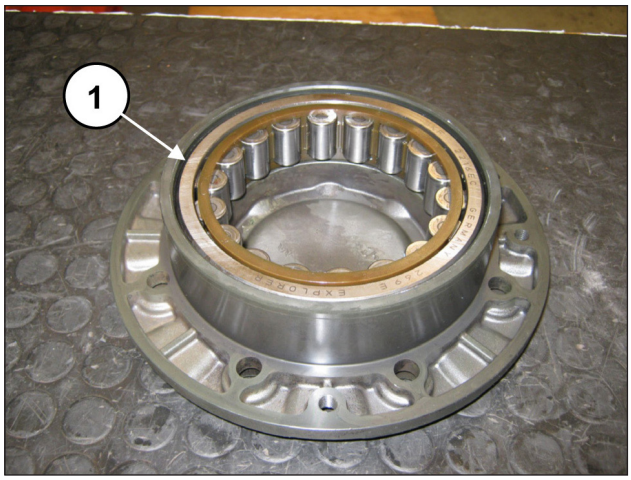


Abb. 56

Setzen Sie die seitliche Dichtung am Lagerdeckel ein (Pos. ①, Abb. 57) und heben Sie die Kurbelwelle zum leichteren Anbringen des Deckels (Pos. ①, Abb. 58).

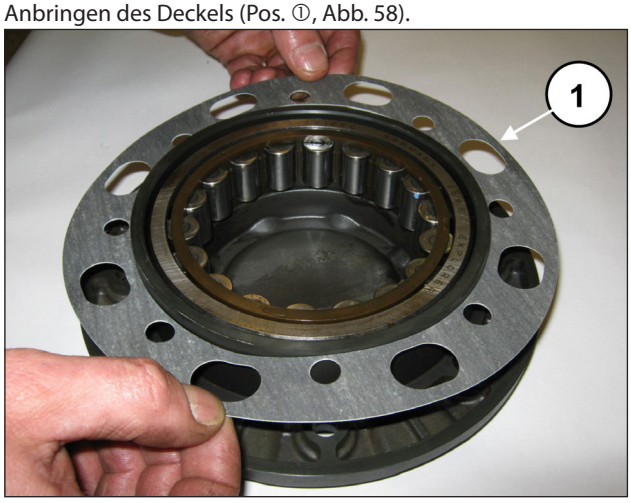


Abb. 57

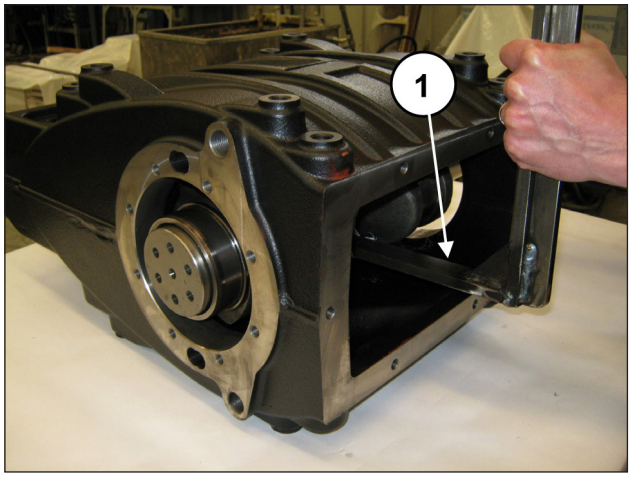


Abb. 58

Montieren Sie den Lagerdeckel (samt Dichtung) mithilfe des Schlagwerks (Pos. ①, Abb. 59)

**Richten Sie den Lagerdeckel so aus, dass das Logo "Pratissoli" horizontal liegt.**

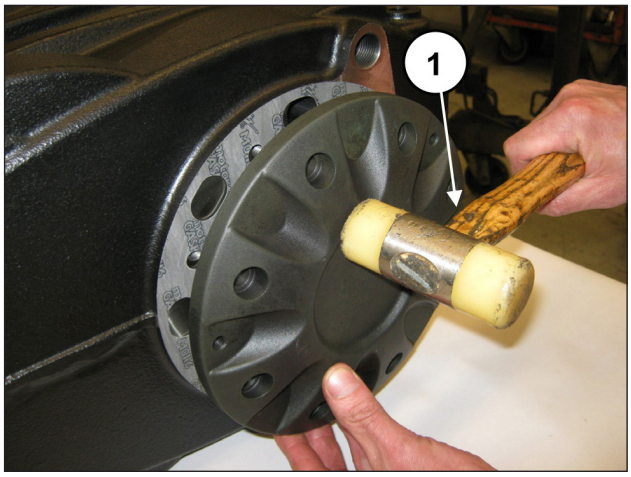


Abb. 59

Drehen Sie die 8 Schrauben M10x30 fest (Pos. ①, Abb. 60). Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

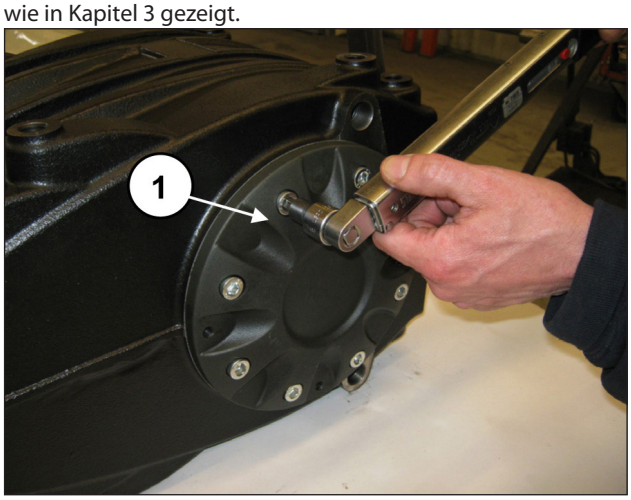


Abb. 60

Setzen Sie auf der gegenüberliegenden Seite die seitliche Dichtung am Getriebegehäuse ein (Pos. ①, Abb. 61) und heben Sie die Kurbelwelle zum leichteren Anbringen des Deckels (Pos. ①, Abb. 62).

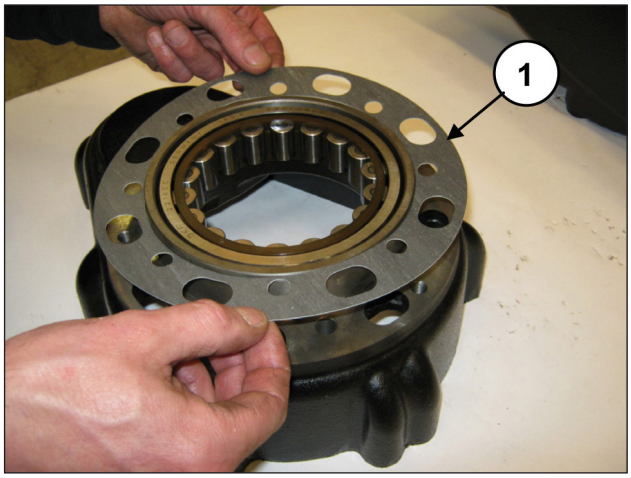


Abb. 61

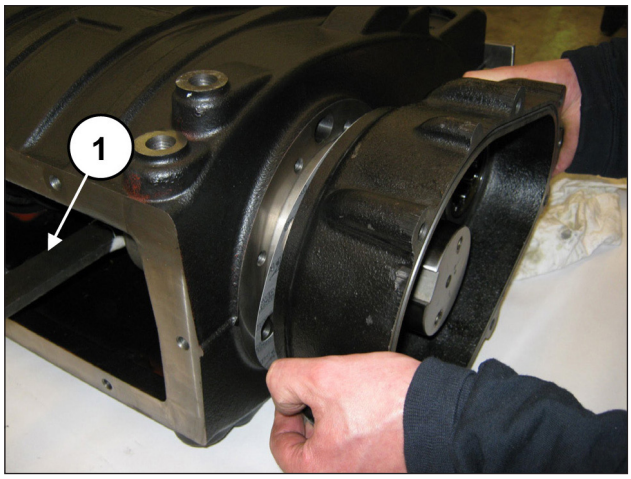


Abb. 62

Montieren Sie das Getriebegehäuse (samt Dichtung) mithilfe des Schlagwerks (Pos. ①, Abb. 63).

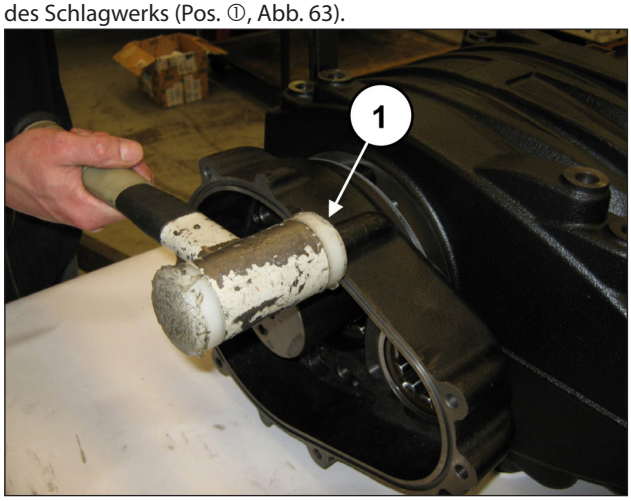


Abb. 63

Drehen Sie die 8 Schrauben M10x40 fest (Pos. ①, Abb. 64). Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt.

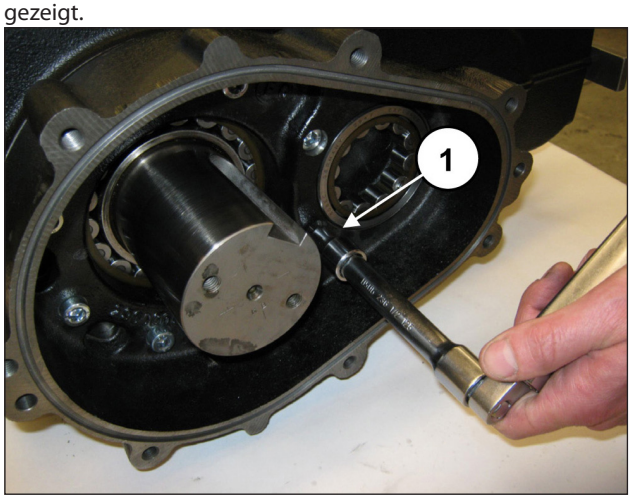


Abb. 64

Entfernen Sie das Werkzeug zur Sicherung der Pleuelstangen Art. 27566200 (Pos. ①, Abb. 32).

Setzen Sie die oberen Lagerschalen zwischen Pleuelstange und Welle ein (Pos. ①, Abb. 65).

**Stellen Sie für einen vorschriftsmäßigen Einbau der Lagerschalen sicher, dass die Bezugsmarkierung der Lagerschalen in der entsprechenden Aufnahme an der Pleuelhälfte zu liegen kommt (Pos. ①, Abb. 66).**

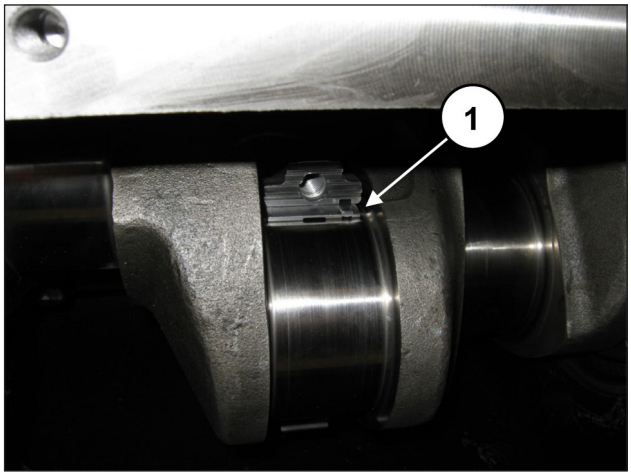


Abb. 65

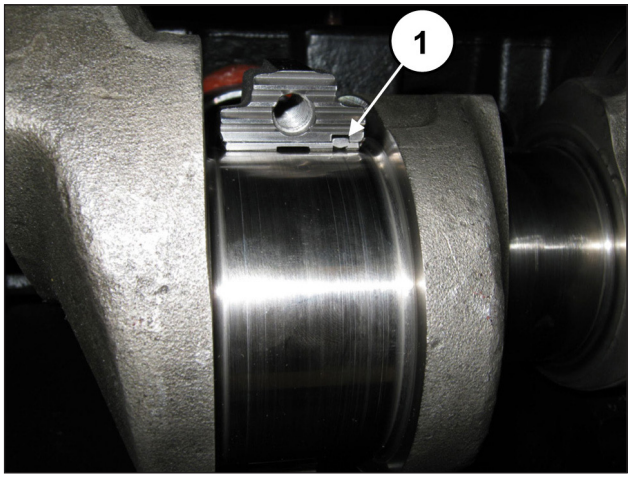


Abb. 66

Montieren Sie die unteren Lagerschalen an die Pleueldeckel (Pos. ①, Abb. 67) und vergewissern Sie sich dabei, dass die Bezugsmarkierung der Lagerschalen in der entsprechenden Aufnahme am Deckel zu liegen kommt (Pos. ②, Abb. 67). Befestigen Sie die Pleueldeckel mit Pleuelhälften anhand der Schrauben M10x1.5x80 (Pos. ①, Abb. 68).

**Achten Sie auf den richtigen Einbausinn der Lagerdeckel. Die Nummerierung muss nach oben gerichtet sein.**

Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt, und ziehen Sie gleichzeitig die Schrauben auf Anzugsmoment fest.

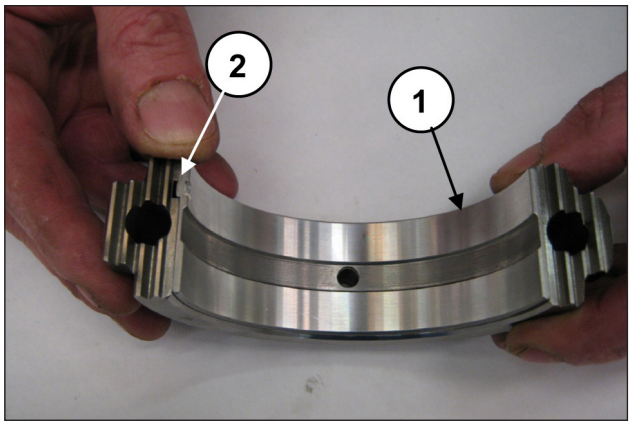


Abb. 67

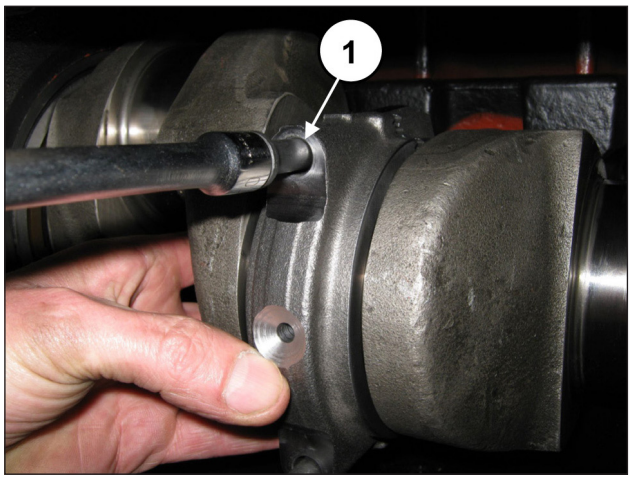


Abb. 68

**Überprüfen Sie nach abgeschlossenem Vorgang, ob die Pleuelstangen in beiden Richtungen Axialspiel aufweisen.**

Montieren Sie die Ölabstreifringe der Kolbenführung in den Gehäusesitz mithilfe des geeigneten Werkzeugs Art. 27605300 (Pos. ① und ②, Abb. 69/a und Abb. 69/b).

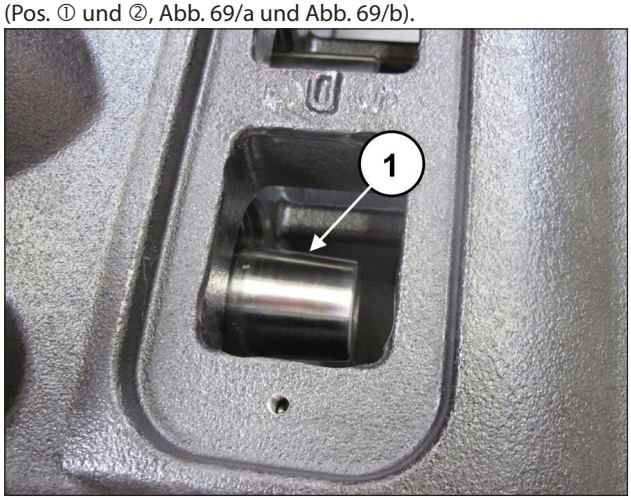


Abb. 69/a

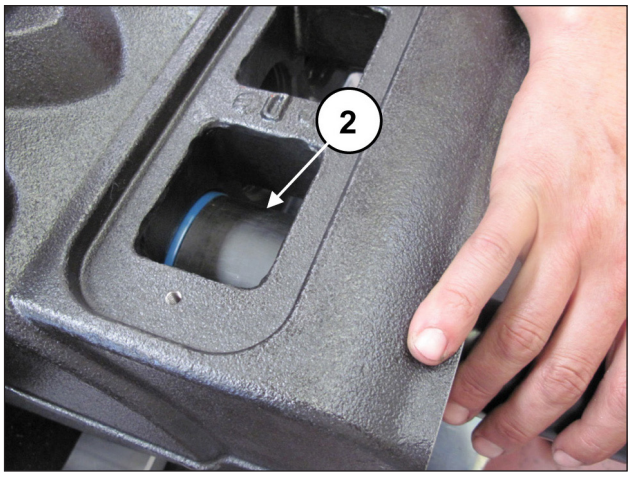


Abb. 69/b

Setzen Sie den O-Ring in den hinteren Deckel ein (Pos. ①, Abb. 70) und montieren Sie den Deckel am Gehäuse mit den 6 Schrauben M10x30 (Pos. ①, Abb. 71).

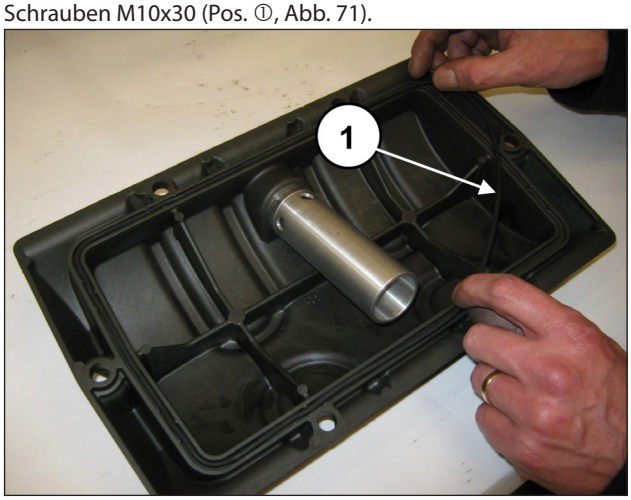


Abb. 70

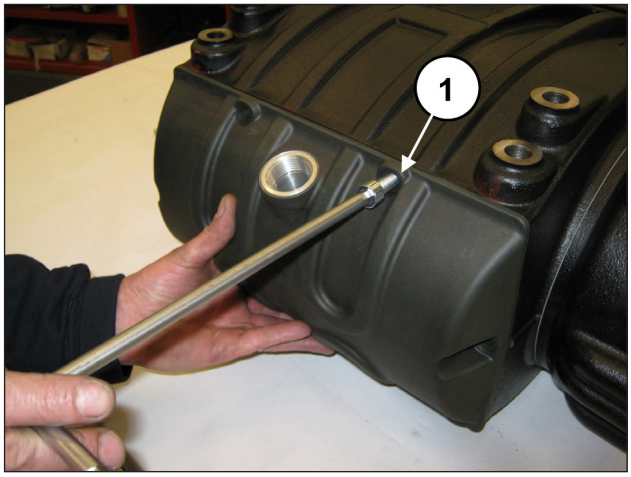


Abb. 71

**Achten Sie dabei, den O-Ring bündig in seinen Sitz am Deckel einzusetzen, damit der während des Schraubenanzugs nicht beschädigt wird.**

Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt.

Setzen Sie den Zahnkranz-Stützring in den Stummel der Kurbelwelle (Pos. ①, Abb. 72) bis auf Anschlag ein (Pos. ①, Abb. 73).

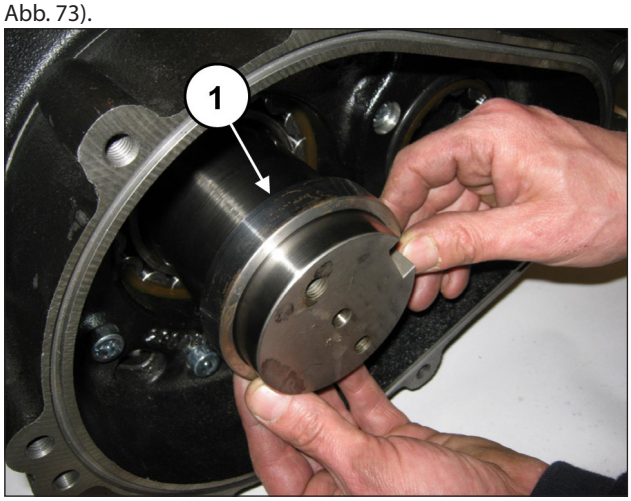


Abb. 72

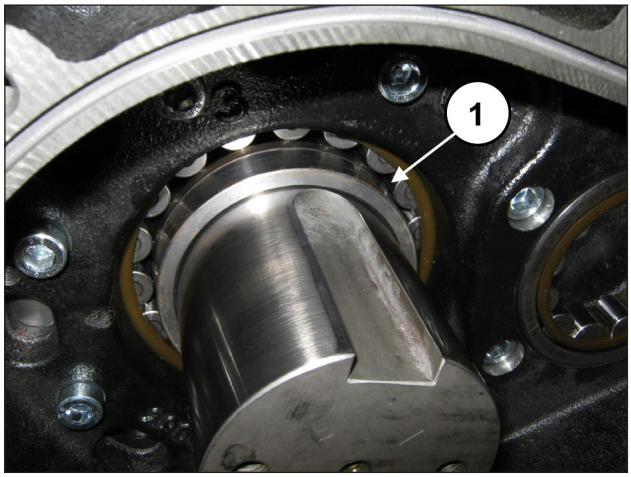


Abb. 73

Montieren Sie die Passfeder 22x14x80 in den Wellensitz (Pos. ①, Abb. 74) und schieben Sie den Zahnkranz auf die Welle (Pos. ①, Abb. 75).

**Stellen Sie beim Einbau des Zahnkranzes sicher, dass die beiden Bohrungen M8 (zum Abziehen verwendet) zur Außenseite der Pumpe gerichtet sind (Pos. ②, Abb. 75).**

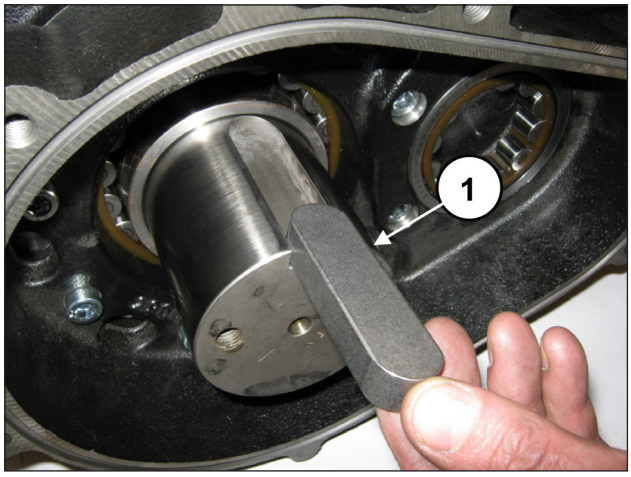


Abb. 74

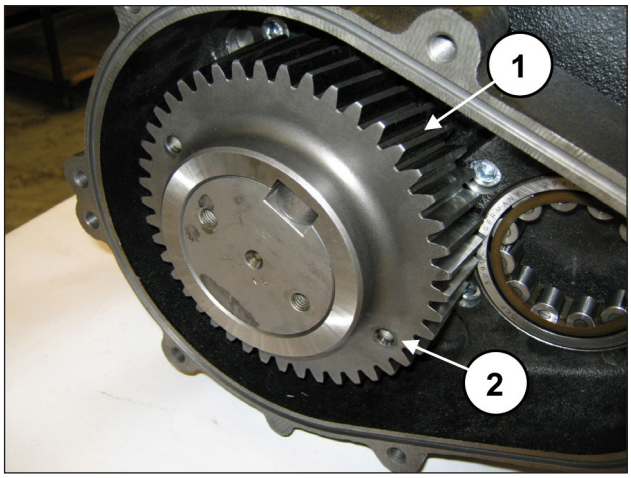


Abb. 75

Befestigen Sie die Zahnkranzarretierung (Pos. ①, Abb. 76) mit den 2 Schrauben M10x25.
Eichen Sie die Schrauben mit einem Drehmomentschlüssel gemäß Angaben in Kapitel 3 (Pos. ①, Abb. 77).

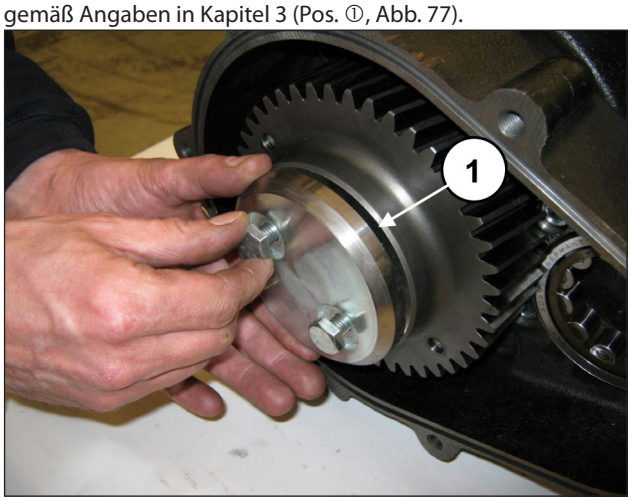


Abb. 76

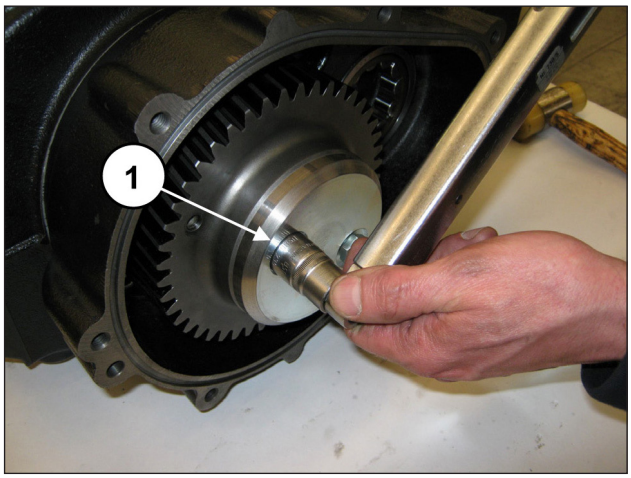


Abb. 77

Bringen Sie die 2 Stifte Ø10x24 am Getriebegehäuse an (Pos. ①, Abb. 78) und setzen Sie den O-Ring ein (Pos. ①, Abb. 79).

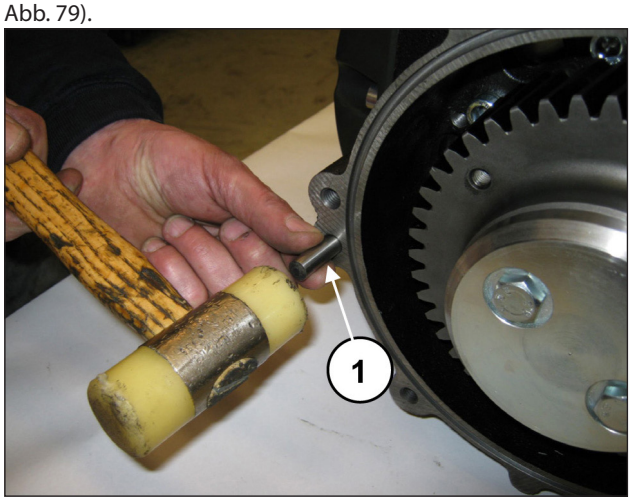


Abb. 78

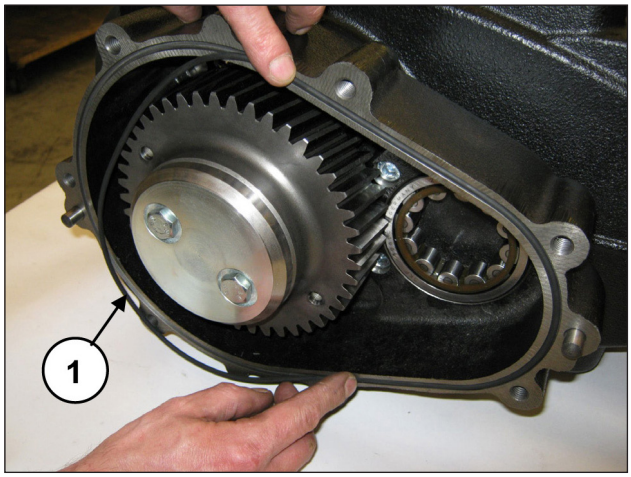


Abb. 79

Bauen Sie nun das Ritzel folgendermaßen auf den Gehäusedeckel ein:
Montieren Sie vorläufig auf das Ritzel den Innenring des Lagers 40x90x23 (Pos. ①, Abb. 80) bis auf Anschlag.

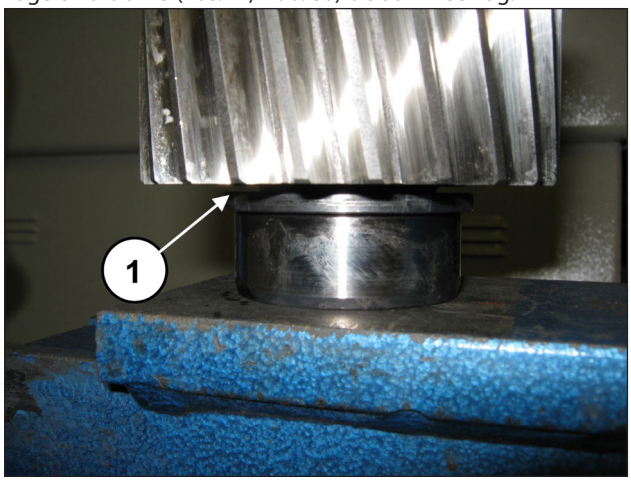


Abb. 80

Montieren Sie auf der anderen Seite vorläufig das Lager 55x120x29 (Pos. ①, Abb. 81) bis auf Anschlag. Verwenden Sie hierzu das Werkzeug Art. 27604800 (Pos. ①, Abb. 82).

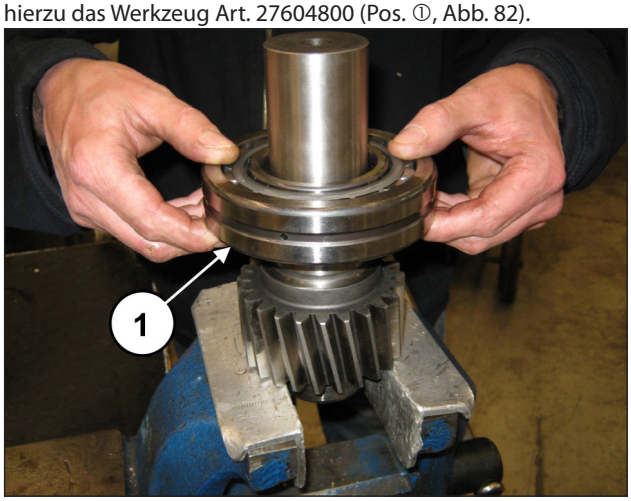


Abb. 81

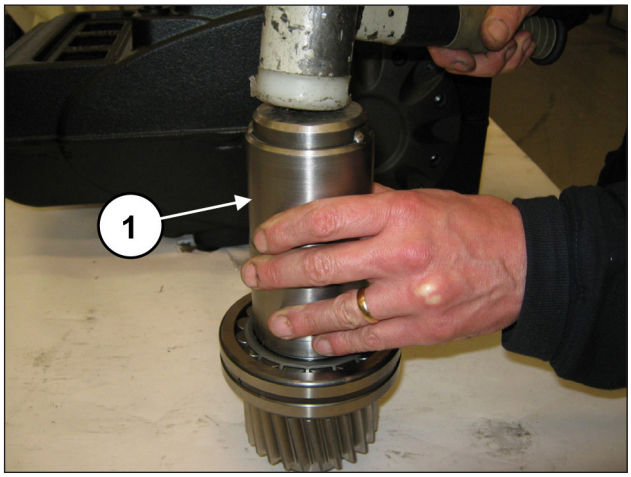


Abb. 82

Setzen Sie den Stützring des Lagers (Pos. ①, Abb. 83) und den Seegerring Ø55 ein (Pos. ①, Abb. 84).

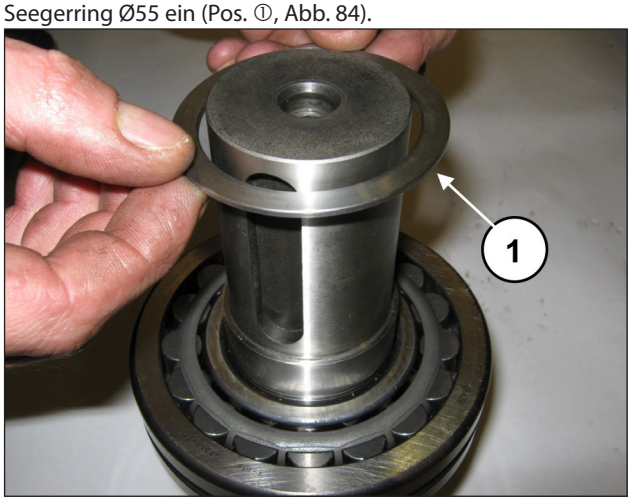


Abb. 83

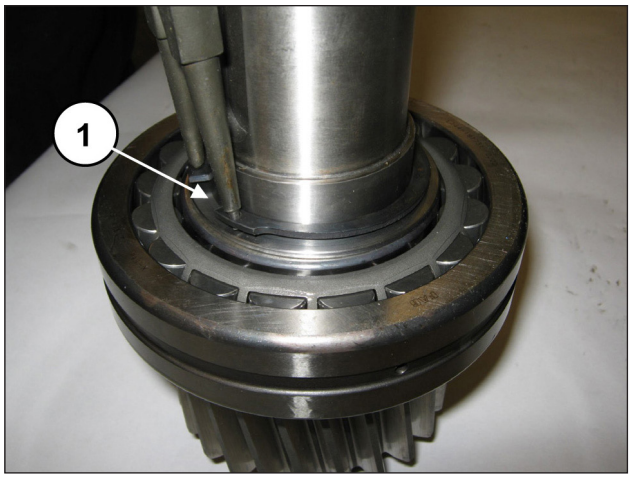


Abb. 84

Treiben Sie das vormontierte Ritzel in den entsprechenden Sitz am Getriebedeckel mithilfe des Schlagwerks ein (Pos. ①, Abb. 85).

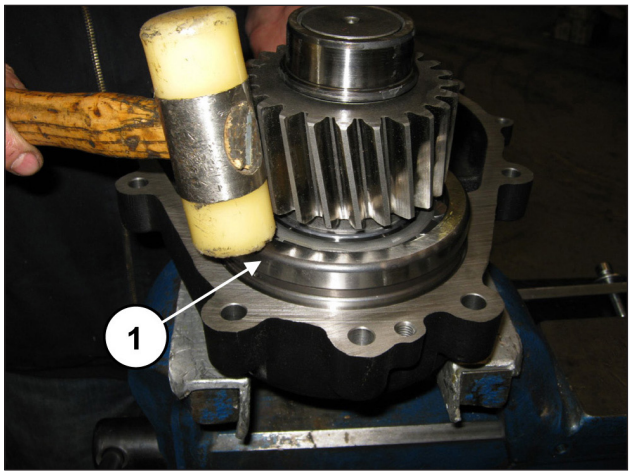


Abb. 85

Setzen Sie den Seegerring Ø120 ein (Pos. ①, Abb. 86).

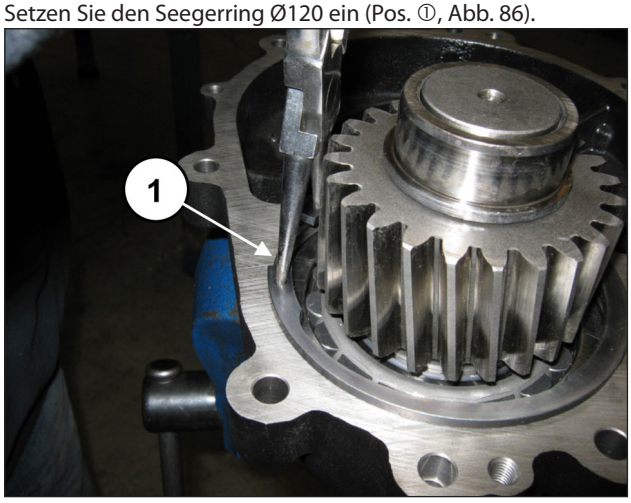


Abb. 86

Montieren Sie den Getriebedeckel mit dem Schlagwerk (Pos. ①, Abb. 87) und befestigen Sie den Deckel anhand von 7 Schrauben M10x40 (Pos. ①, Abb. 88).
Achten Sie hierbei besonders auf die vorschriftsmäßige Paarung der beiden Lagerelemente 40x90x23.
Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

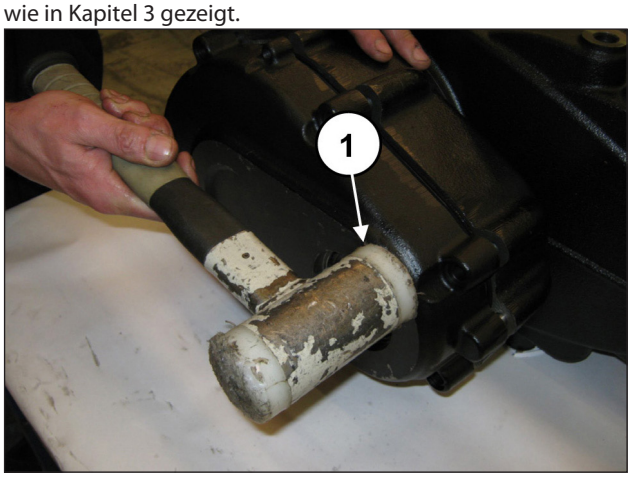


Abb. 87

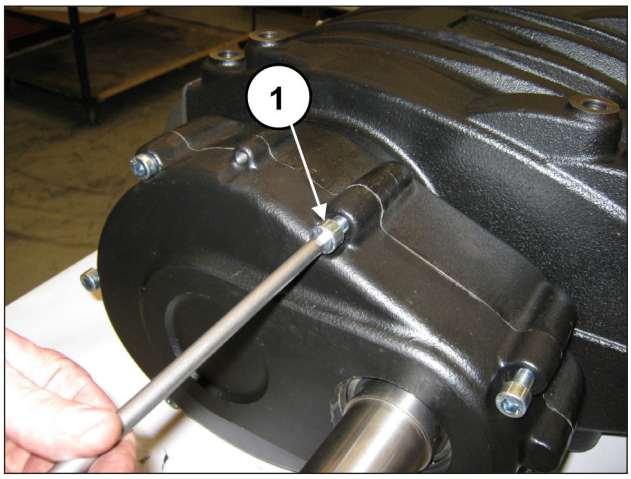


Abb. 88

Setzen Sie den Ölabstreifring in den Getriebedeckel ein. Verwenden Sie hierfür das Werkzeug Art. 27605200 (Pos. ①, Abb. 89). Überprüfen Sie vor Einbau des Ölabstreifrings den Zustand der Dichtlippe. Im Fall eines Austauschs setzen Sie den neuen Ring bündig in die Nut ein, siehe Abb. 90.

**Sollte die Welle im Bereich mit der Dichtlippe einen Verschleiß am Durchmesser aufweisen, können Sie zur Vermeidung der Schleifbearbeitung den Ring auf Anschlag mit dem Deckel neu ausrichten, siehe hierzu Abb. 90.**

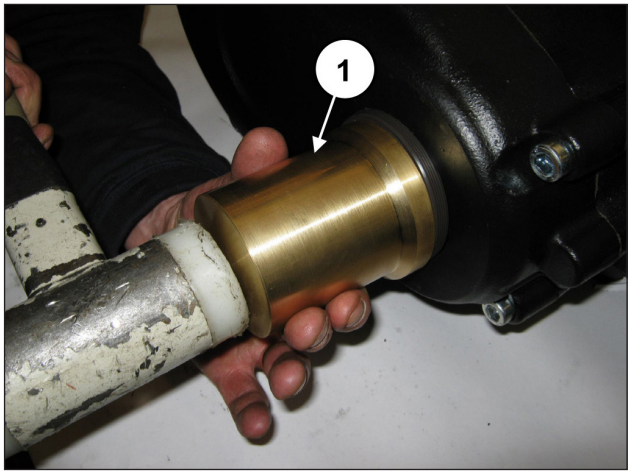


Abb. 89

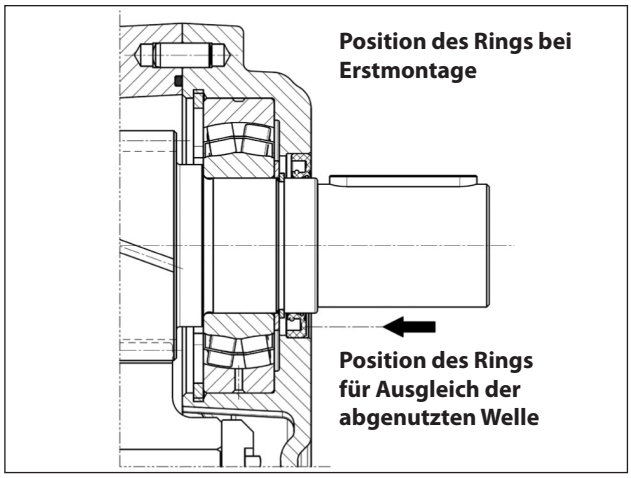


Abb. 90

**Geben Sie besonders beim Einsetzen des Ölabstreifrings auf das Ritzel acht, um den Ring nicht zu beschädigen.**

Montieren Sie Inspektionsdeckel mit dem O-Ring (Pos. ①, Abb. 91) und ziehen Sie die Deckel anhand von 2+2 Schrauben M6x14 fest (Pos. ①, Abb. 92).
Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt.

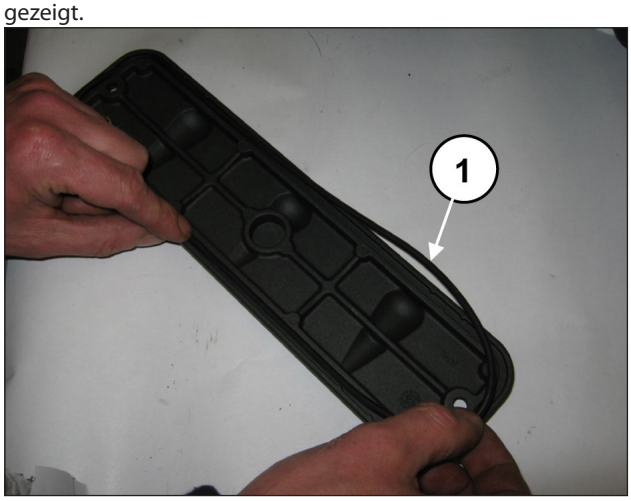


Abb. 91

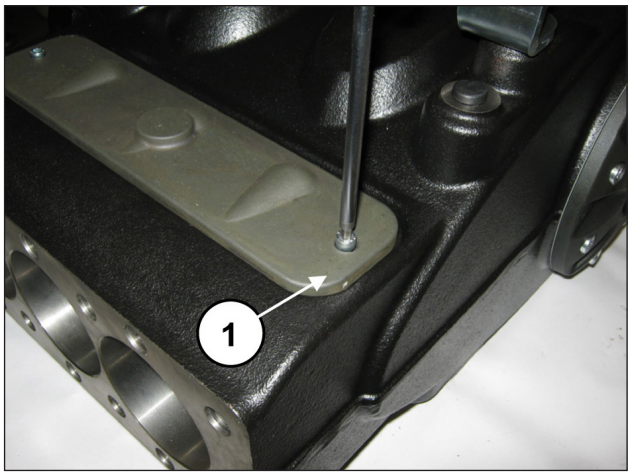


Abb. 92

Setzen Sie die Passfeder 14x9x60 in das Ritzel ein.
Bringen Sie die Verschlüsse und Hebebügel mit den entsprechenden Schrauben M16x30 an (Pos. ①, Abb. 93).
Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt.

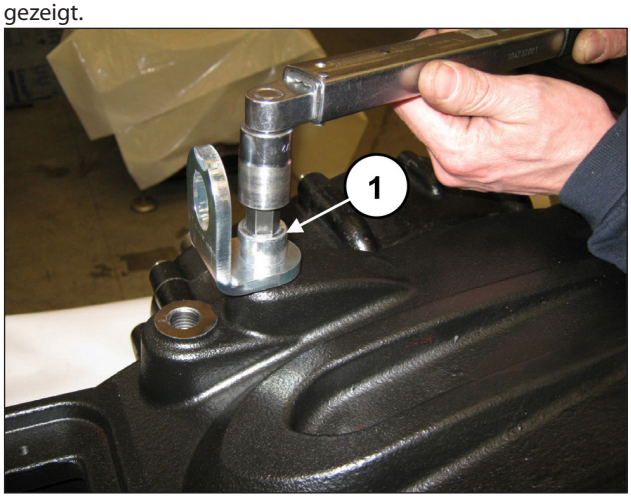


Abb. 93

Füllen Sie Öl in das Gehäuse gemäß Angaben in der ***Betriebs- und Wartungsanleitung***, Abschn. 7.4.

### 2.1.3 Vorgesehene Über- und Untermaßklassen

| UNTERMASSTABELLE FÜR KURBELWELLE UND PLEUEL-LAGERSCHALEN | | | |
|---|---|---|---|
| **Ausgleichklassen (mm)** | **Art. obere Lagerschale** | **Art. untere Lagerschale** | **Schliff am Durchmesser des Wellenzapfens (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| ÜBERMASSTABELLE FÜR PUMPENGEHÄUSE UND KOLBENFÜHRUNG | | |
|---|---|---|
| **Ausgleichklassen (mm)** | **Artikel Kolbenführung** | **Schliff am Sitz des Pumpengehäuses (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 REPARATUR DER HYDRAULIK

### 2.2.1 Ausbau des Kopfs MW32 MW36 MW40 - Ventilgruppen

Der Kopf bedarf einer vorbeugenden Wartung lt. Angaben in der ***Betriebs- und Wartungsanleitung***.
Die Arbeiten beschränken sich auf die Inspektion oder den Austausch der Ventile im Bedarfsfall.
Verfahren Sie zur Abnahme der Ventilgruppen wie folgt:
Lösen Sie die 8 Schrauben M16x55 des Ventildeckels (Pos. ①, Abb. 94) und nehmen Sie den Deckel ab (Pos. ①, Abb. 95).

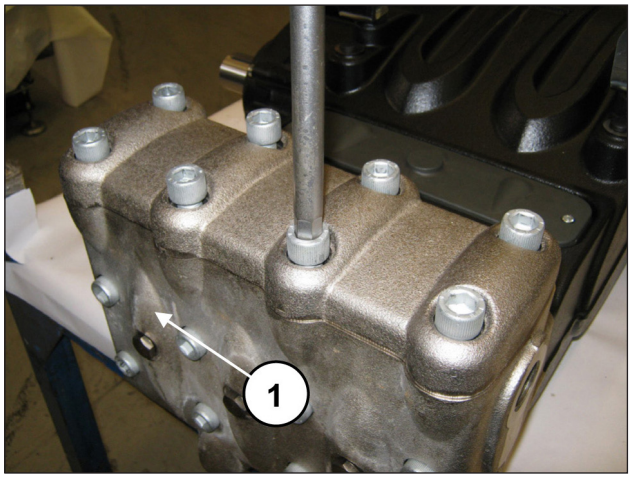


Abb. 94

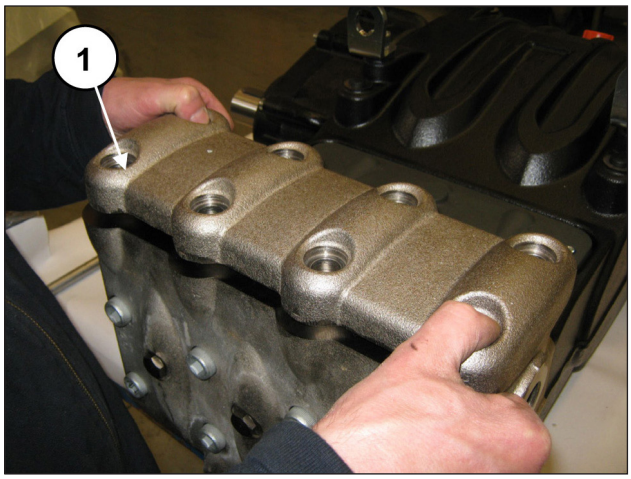


Abb. 95

Entfernen Sie die Ventilkappe mithilfe eines Abziehers mit Schlagwerk an der Bohrung M10 der Ventilkappe (Pos. ①, Abb. 96).

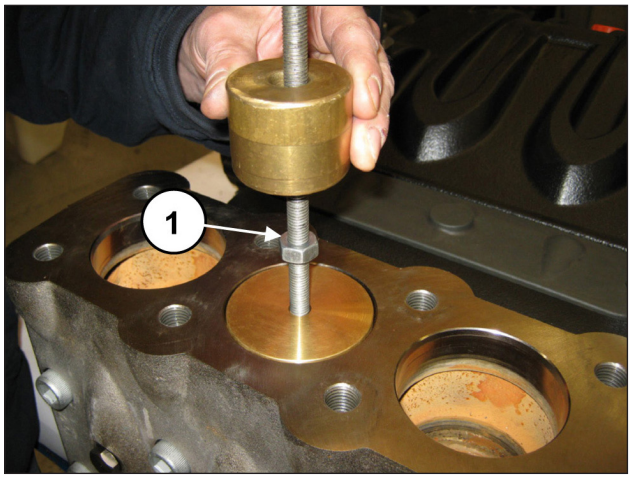


Abb. 96

Entfernen Sie die Feder (Pos. ①, Abb. 97).

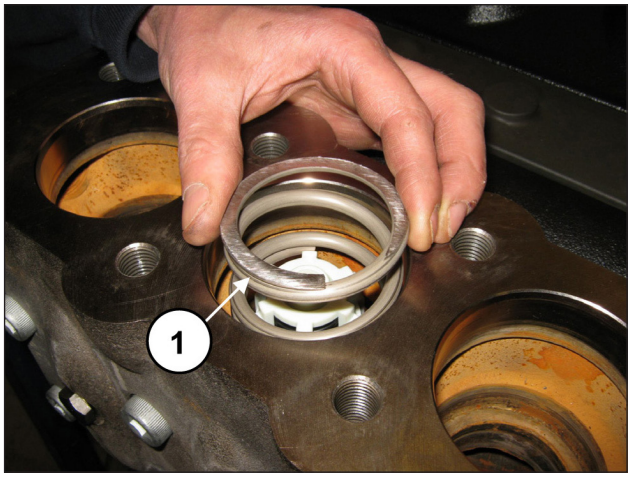


Abb. 97

Entfernen Sie die Druckventilgruppe mithilfe eines Abziehers mit Schlagwerk (Art. 27516400) an der Bohrung M10 der Ventilführung (Pos. ①, Abb. 98).

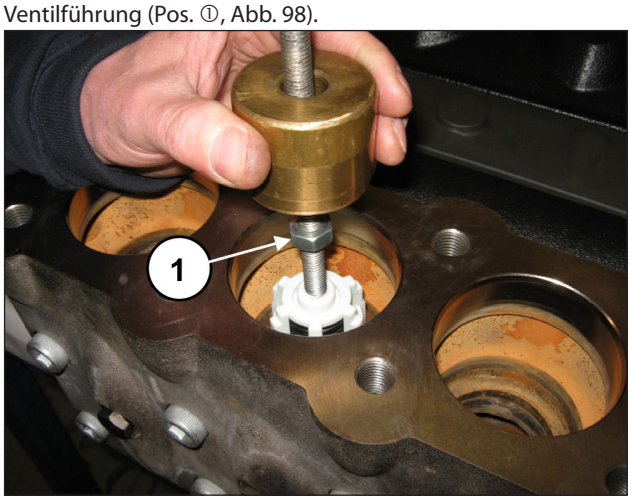


Abb. 98

Entfernen Sie den Distanzring des Ventilsitzes (Pos. ①, Abb. 99).

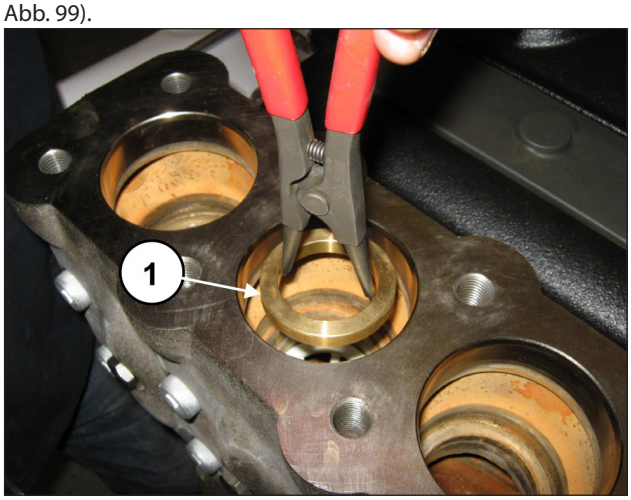


Abb. 99

Ziehen Sie das Distanzstück der Ventilführung durch Einstecken eines 8 mm Sechskantschlüssels in den entsprechenden Sitz und durch Anhebeln heraus (Pos. ①, Abb. 100).

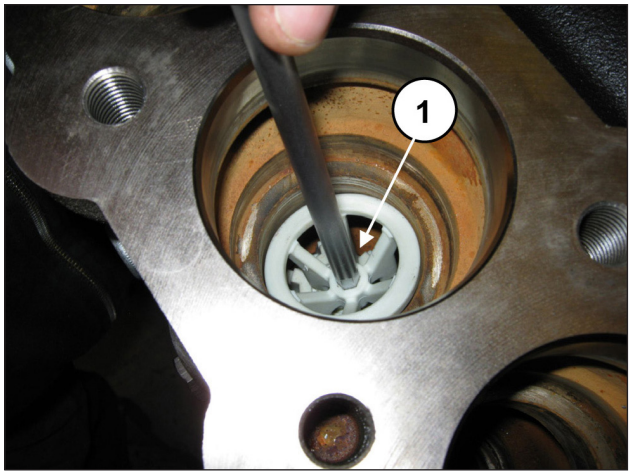


Abb. 100

Entfernen Sie die Saugventilgruppe mithilfe eines Abziehers mit Schlagwerk (Art. 27516400) an der Bohrung M10 der Ventilführung (Pos. ①, Abb. 101).

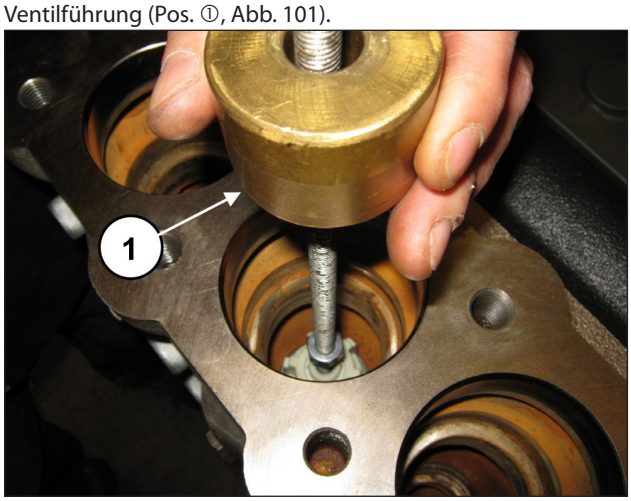


Abb. 101

**Sollte der Ausbau der Saugventilgruppe mit großen Schwierigkeiten verbunden sein (z. B. aufgrund von Verkrustungen nach längerem Stillstand der Pumpe), verwenden Sie den Abzieher Art. 27516200 (Pos. ①, Abb. 102) und gehen Sie lt. Anweisungen vor.**

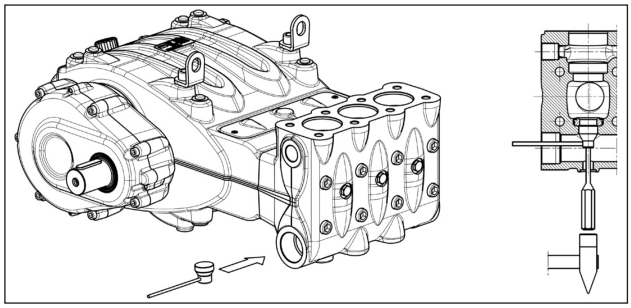

Abb. 102

Drehen Sie den Ventilöffner mit einem 30 mm Schlüssel ab (Pos. ①, Abb. 103).

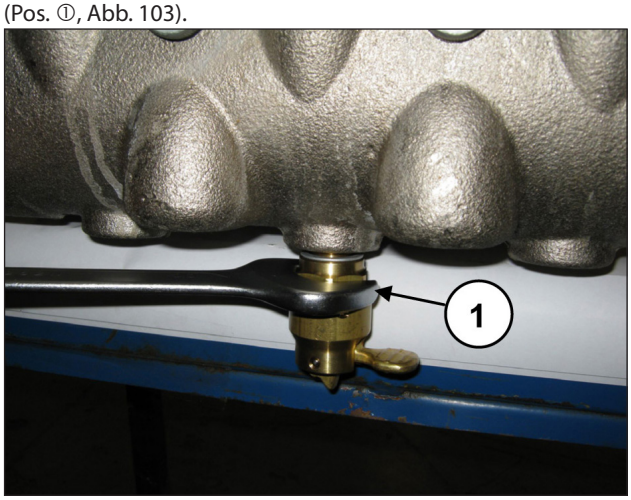


Abb. 103

Bauen Sie die Saug- und Druckventilgruppen durch Anziehen einer Schraube M10 aus, um durch Drücken auf die innere Führung die Ventilführung aus dem Ventilsitz herausziehen zu können (Pos. ①, Abb. 104).

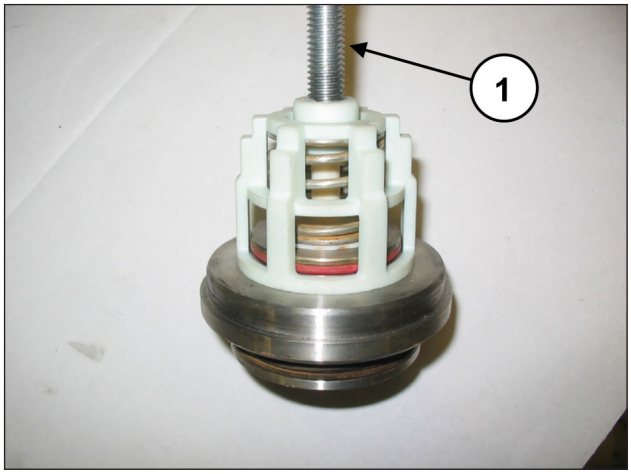


Abb. 104

Beenden Sie den Ausbau, indem Sie die frontseitigen Verschlüsse G1/4" am Kopf abnehmen.
Sie können nun den Kopf vom Pumpengehäuse durch Lösen der 8 Schrauben M16x180 demontieren (Pos. ①, Abb. 105).
Achten Sie beim Ausbau des Kopfs darauf, nicht gegen die Kolben zu stoßen (Pos. ①, Abb. 106).

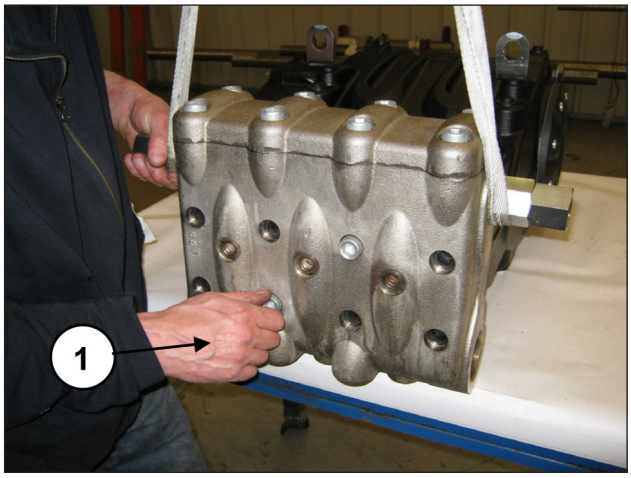


Abb. 105

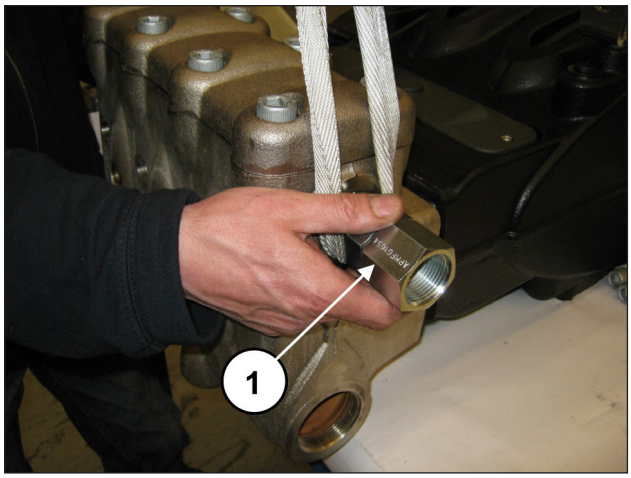


Abb. 106

### 2.2.2 Einbau des Kopfs MW32 MW36 MW40 - Ventilgruppen

**Achten Sie besonders auf den Verschleißzustand der einzelnen Bauteile und tauschen Sie diese bei Bedarf aus.**
**Ersetzen Sie bei jeder Inspektion der Ventile alle O-Ringe sowohl der Ventilgruppen als auch der Ventilkappen.**

**Vor dem Wiedereinbau der Ventilgruppen reinigen und trocknen Sie gründlich ihre Sitze im Kopf, siehe Pfeile (Pos. ①, Abb. 107).**

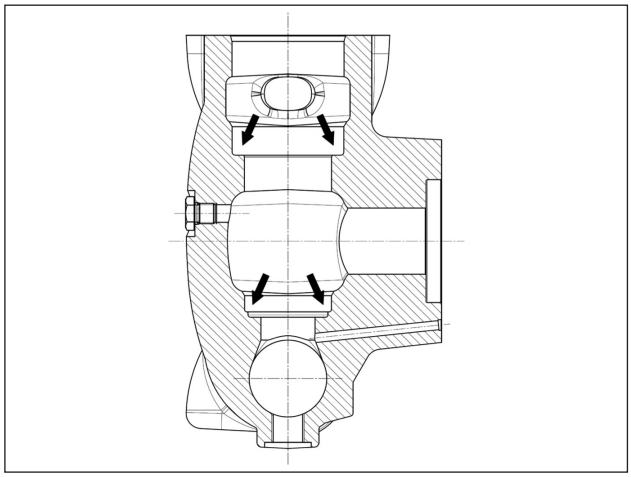

Abb. 107

Verfahren Sie für den Wiedereinbau in umgekehrter Ausbaureihenfolge zu den Angaben in Abschn. 2.2.1.

Achten Sie beim Einbau der Saug- und Druckventilgruppen (Abb. 108 und Abb. 109) darauf, nicht die vorab abgenommenen Federn zu vertauschen.
Um das Einsetzen der Ventilführung in den Sitz zu erleichtern, verwenden Sie ein Rohr, das auf den horizontalen Flächen der Führung aufliegt (Abb. 110) und benutzen Sie ein Schlagwerk am gesamten Umfang.

Abb. 108

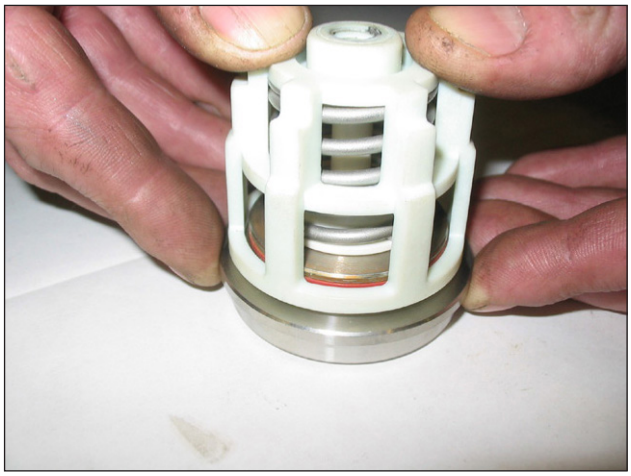

Abb. 109

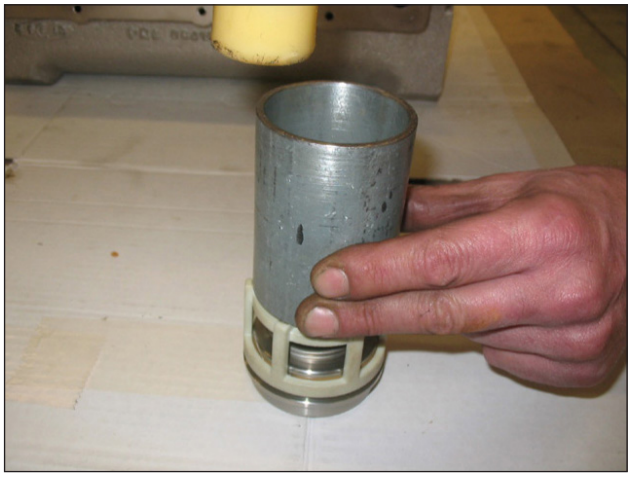

Abb. 110

**Achten Sie beim Einsetzen der Ventilgruppen (Saug- und Druckseite) in den Kopf auf die korrekte Einbaureihenfolge der O-Ringe und der Stützringe.**

Die vorschriftsmäßige Einbaureihenfolge der Ventilgruppen in den Kopf lautet:
Setzen Sie den Stützring ein, Pos. 5 Explosionszeichnung (Pos. ①, Abb. 111).

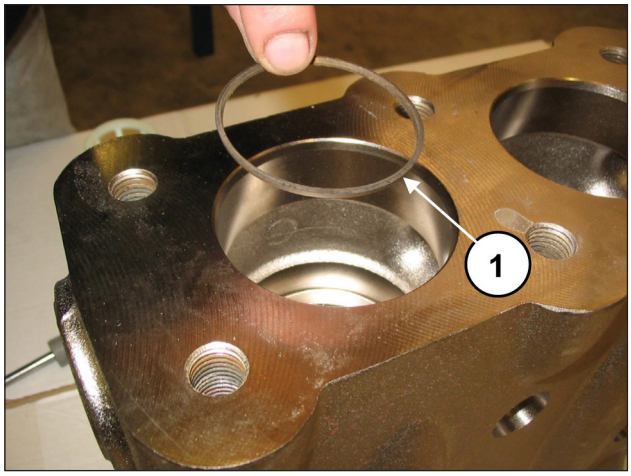


Abb. 111

Setzen Sie den O-Ring ein, Pos. 6 Explosionszeichnung (Pos. ①, Abb. 112).

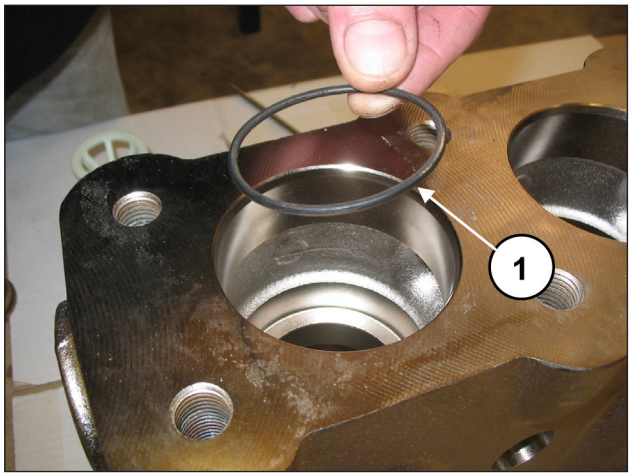


Abb. 112

Vergewissern Sie sich, dass O- und Stützring bündig im Sitz montiert sind.
Setzen Sie die Saugventilgruppe ein (Pos. ①, Abb. 113) und anschließend das Distanzstück (Pos. ①, Abb. 114).
Die komplette Ventilgruppe muss bündig eingesetzt sein und so erscheinen wie in Pos. ①, Abb. 114.

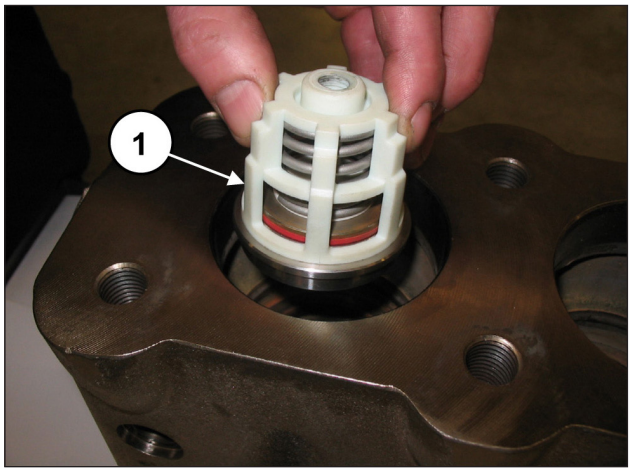


Abb. 113

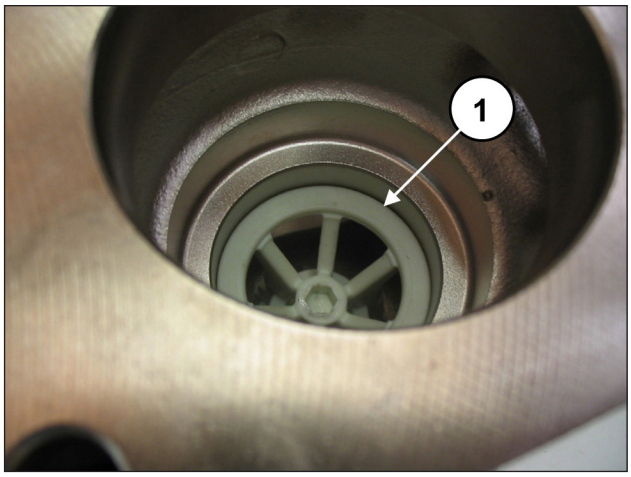


Abb. 114

Setzen Sie den Distanzring des Ventilsitzes (Pos. ①, Abb. 115) in Anlage auf das Distanzstück (Pos. ①, Abb. 116).

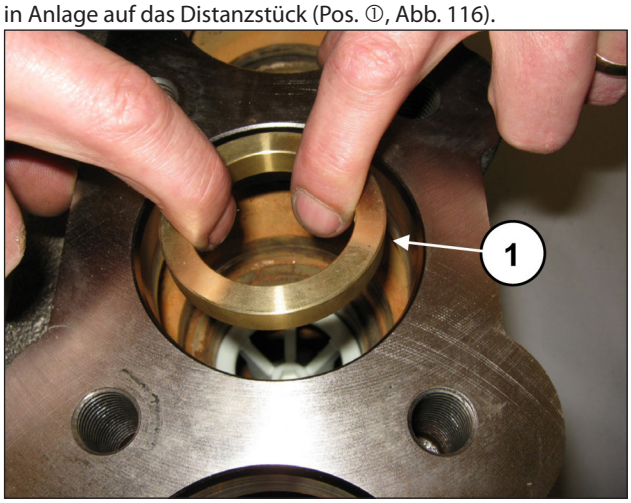


Abb. 115

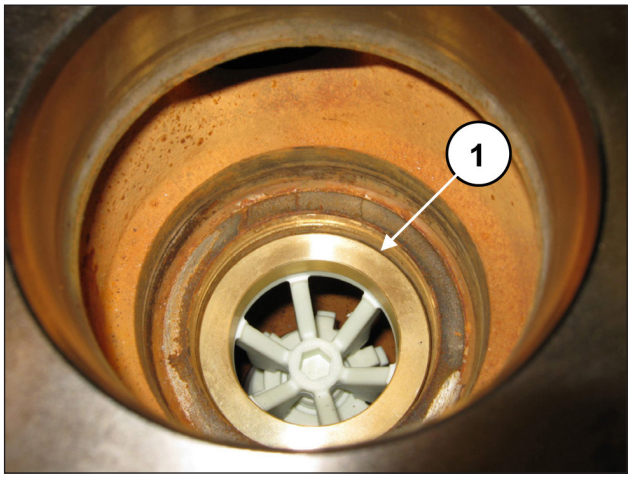


Abb. 116

Montieren Sie den O-Ring, Pos. 6 Explosionszeichnung (Pos. ①, Abb. 117) und den Stützring, Pos. 16 Explosionszeichnung (Pos. ②, Abb. 117) auf den Sitz des Druckventils.

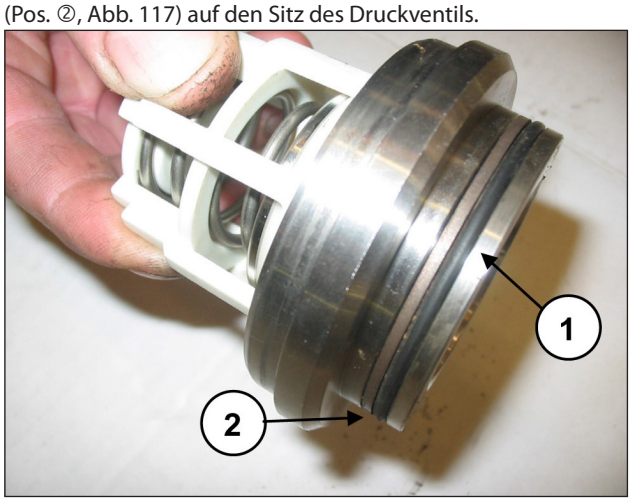


Abb. 117

Setzen Sie die Druckventilgruppe ein (Pos. ①, Abb. 118). Die Ventilgruppe muss bündig eingesetzt sein und so erscheinen wie in Pos. ①, Abb. 119.

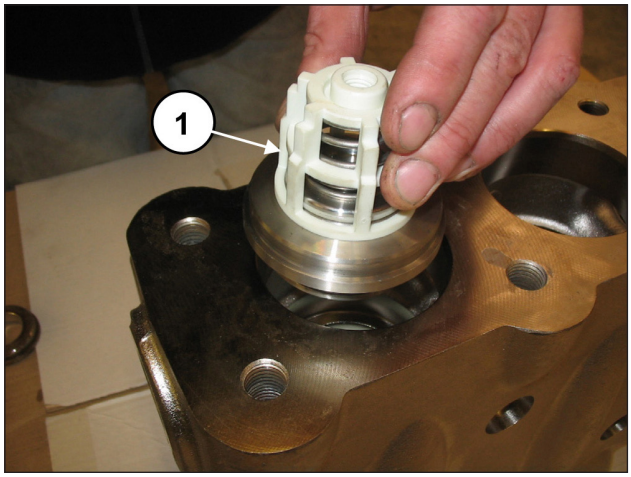


Abb. 118

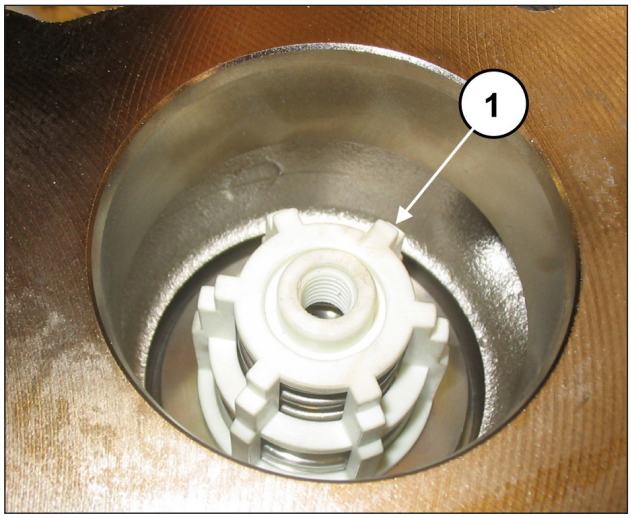


Abb. 119

Setzen Sie den Stützring ein, Pos. 18 Explosionszeichnung (Pos. ①, Abb. 120).

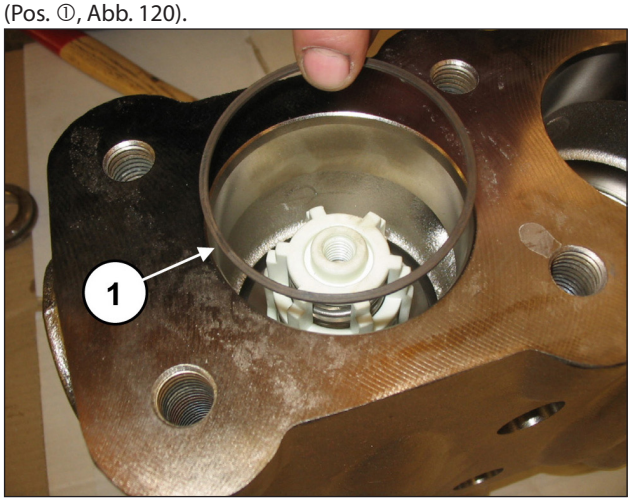


Abb. 120

Setzen Sie den O-Ring ein, Pos. 19 Explosionszeichnung (Pos. ①, Abb. 121).

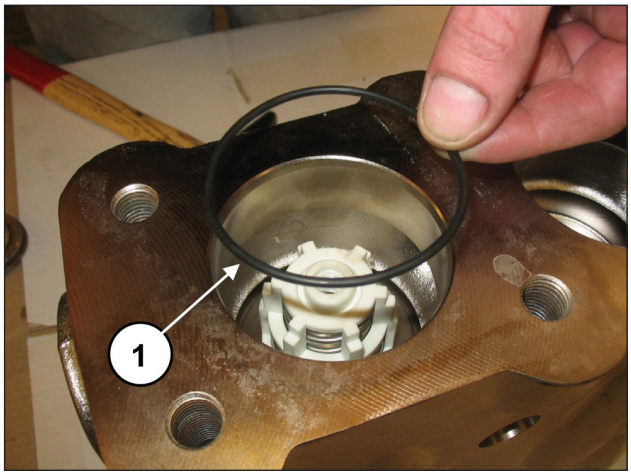


Abb. 121

**Achten Sie besonders auf das Einsetzen des O-Rings Pos. ①, Abb. 122.**
**Verwenden Sie das Werkzeug Art. 27516000, damit der O-Ring beim Einsetzen nicht reißt.**

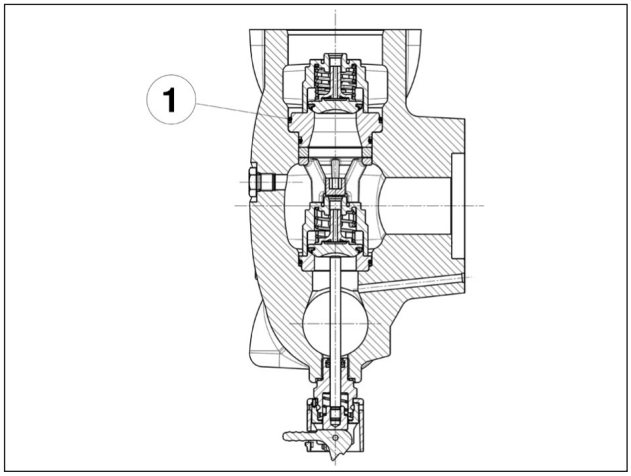


Abb. 122

Setzen Sie den Ring des Ventilsitzes (Pos. ①, Abb. 123) und die Feder ein (Pos. ①, Abb. 124).

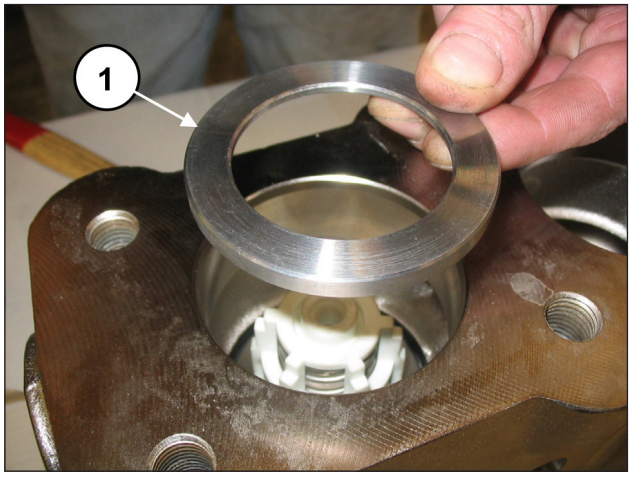


Abb. 123

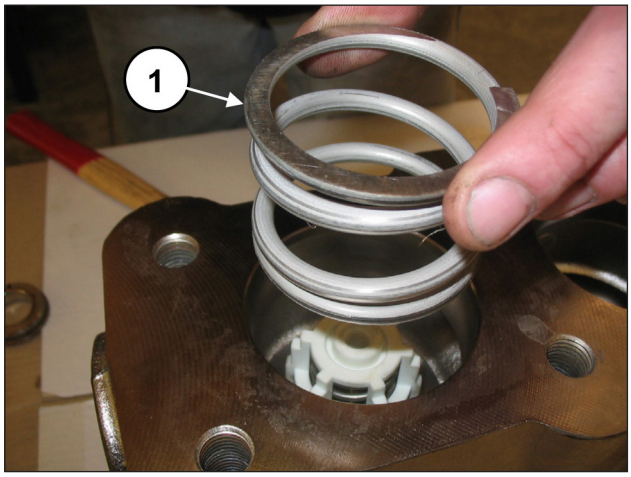


Abb. 124

Montieren Sie den O-Ring, Pos. 19 Explosionszeichnung (Pos. ①, Abb. 125) und den Stützring, Pos. 23 Explosionszeichnung (Pos. ②, Abb. 125) auf die Druckventilkappe.

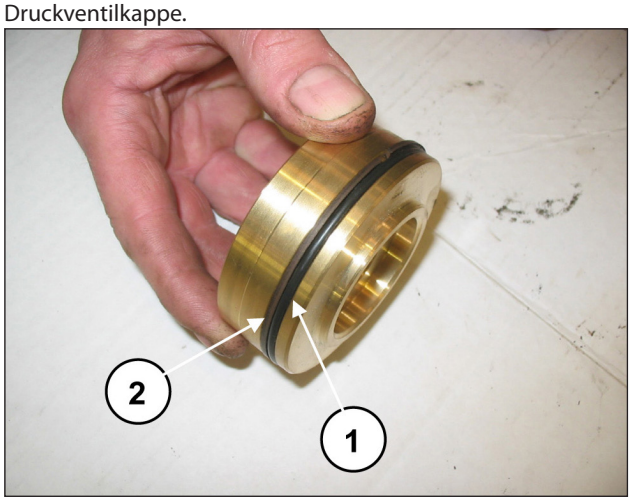


Abb. 125

Setzen Sie die Ventilkappe samt O-Ring und Stützring ein. Bringen Sie nach Montage der Ventilgruppen und Ventilkappen den Ventildeckel an (Pos. ①, Abb. 126) und ziehen Sie die 8 Schrauben M16x55 fest (Pos. ①, Abb. 127).

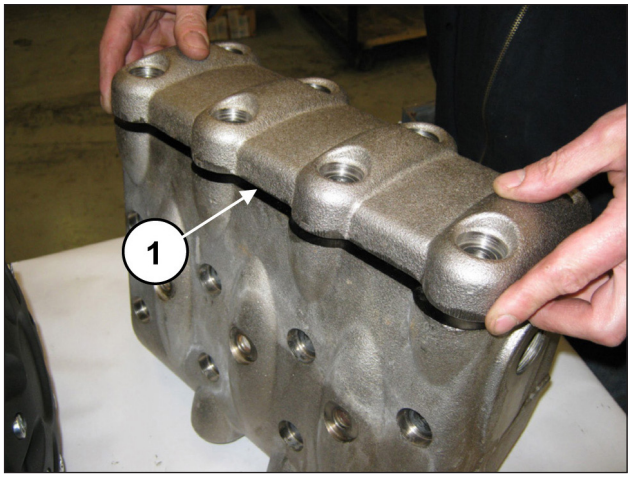


Abb. 126

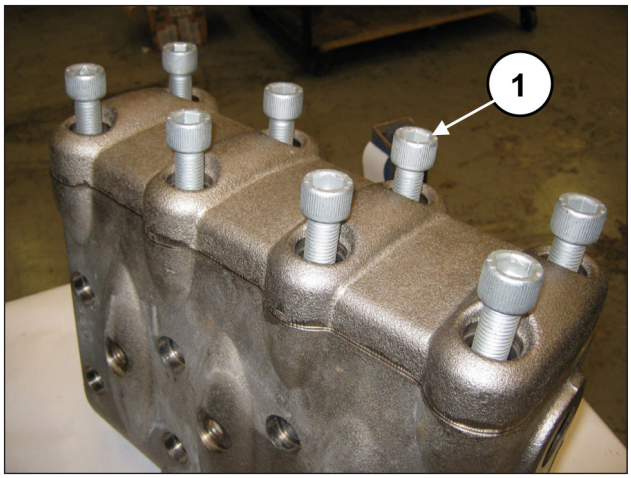


Abb. 127

Montieren Sie die 6 frontseitigen O-Ringe des Pumpengehäuses (Pos. ①, Abb. 128).

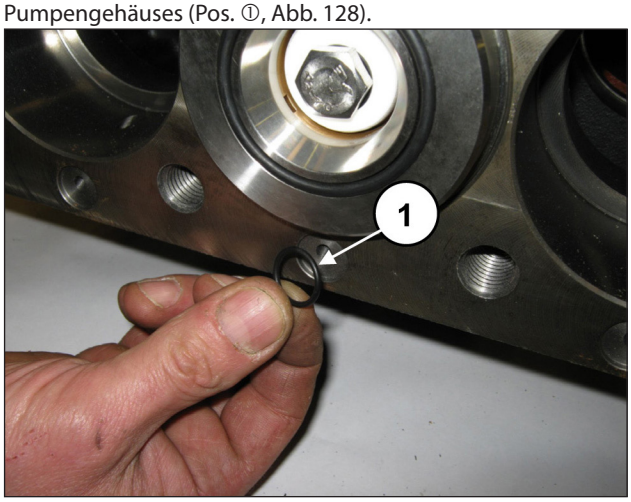


Abb. 128

Bauen Sie den Kopf auf das Pumpengehäuse an (Pos. ①, Abb. 129) und achten Sie dabei, nicht gegen die Kolben zu stoßen. Ziehen Sie dann die 8 Schrauben M16x180 fest (Pos. ①, Abb. 130).

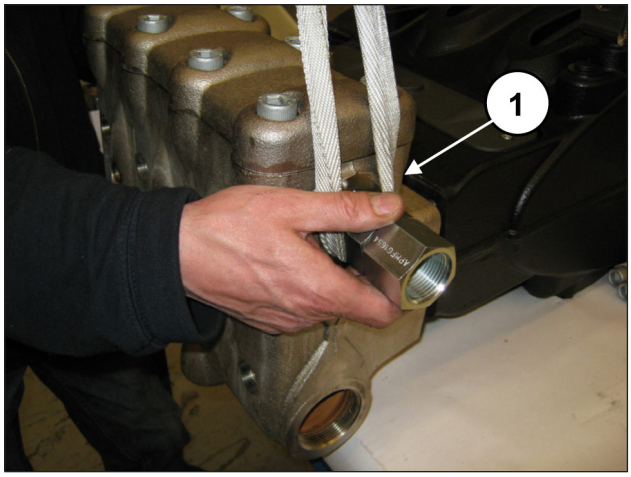


Abb. 129

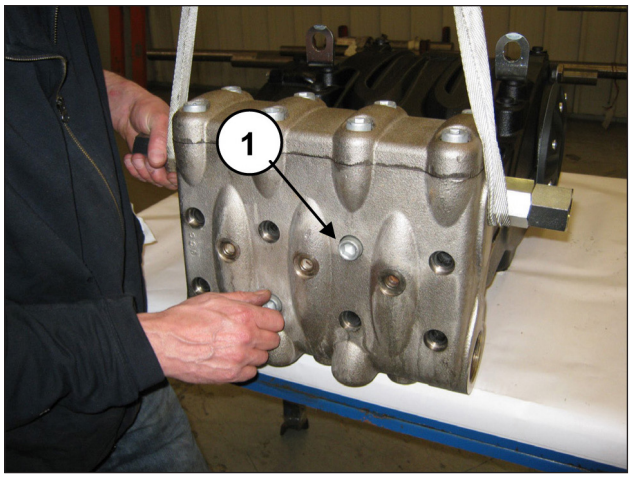


Abb. 130

Eichen Sie die Schrauben M16x180 mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

**Ziehen Sie die 8 Schrauben M16x180 von den 4 Innenschrauben ausgehend über Kreuz an. Setzen Sie den Anzug dann mit den 4 Außenschrauben weiterhin über Kreuz fort.**

Eichen Sie die Schrauben M16x55 des Deckels mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.
Bringen Sie die Ventilöffner an (Pos. ①, Abb. 131) und drehen Sie diese mit einem 30 mm Schlüssel fest (Pos. ①, Abb. 132).

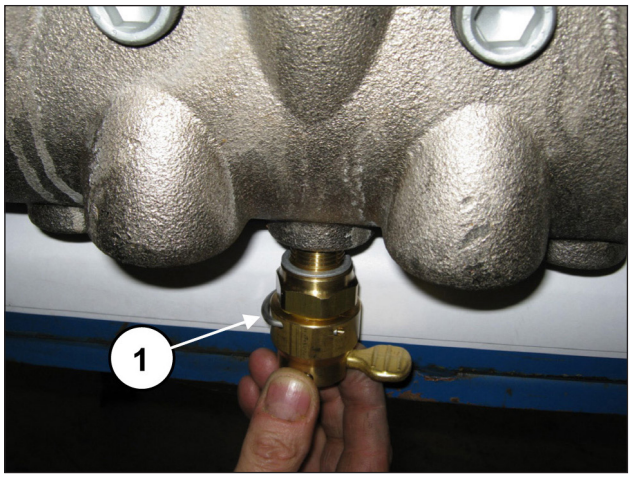


Abb. 131

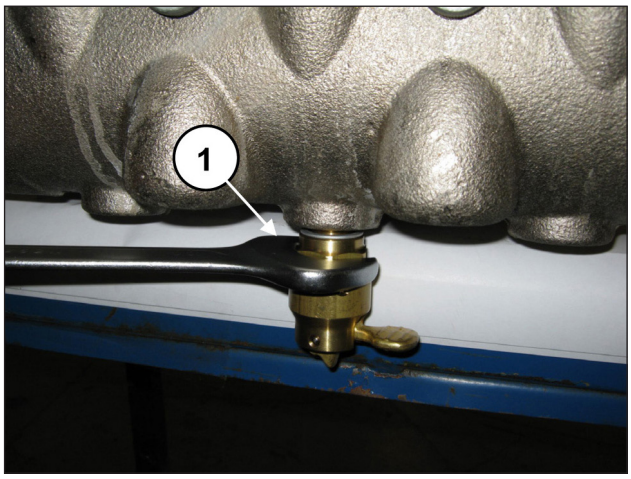


Abb. 132

Montieren Sie die frontseitigen Verschlüsse G1/4" des Kopfs samt O-Ring.
Eichen Sie die Verschlüsse G1/4" mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

### 2.2.3 Ausbau des Kopfs MW45 MW50 MW55 - Ventilgruppen

Der Kopf bedarf einer vorbeugenden Wartung lt. Angaben in der ***Betriebs- und Wartungsanleitung***.
Die Arbeiten beschränken sich auf die Inspektion oder den Austausch der Ventile im Bedarfsfall.
Verfahren Sie zur Abnahme der Ventilgruppen wie folgt:
Lösen Sie die 8 Schrauben M16x45 des Druckventildeckels (Pos. ①, Abb. 133) und nehmen Sie den Deckel ab (Pos. ①, Abb. 134).

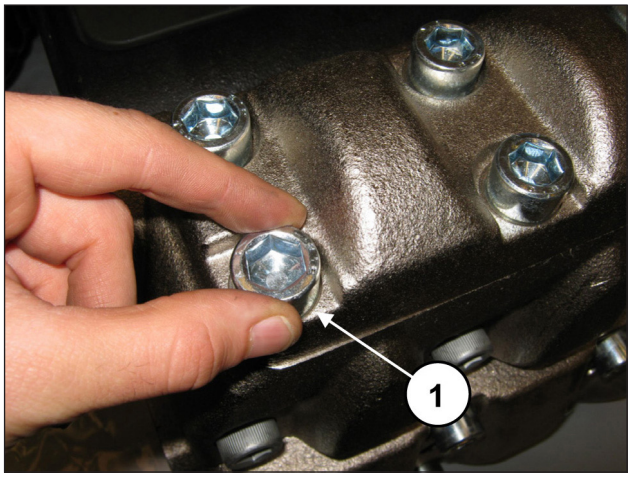


Abb. 133

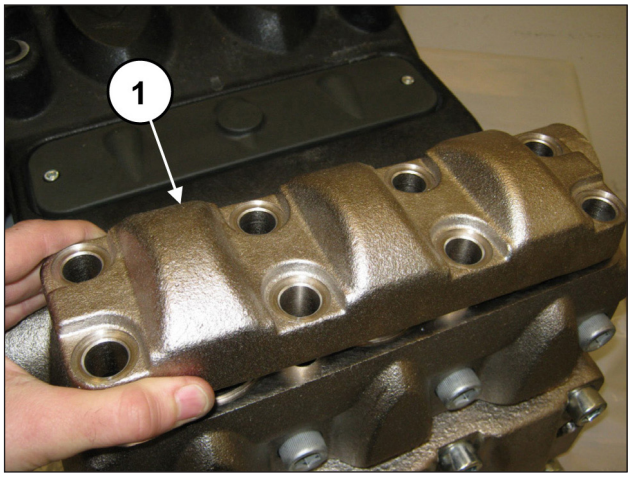


Abb. 134

Entfernen Sie die Druckventilgruppe mithilfe eines Abziehers mit Schlagwerk (Art. 27516400) an der Bohrung M10 der Ventilführung (Pos. ①, Abb. 135).

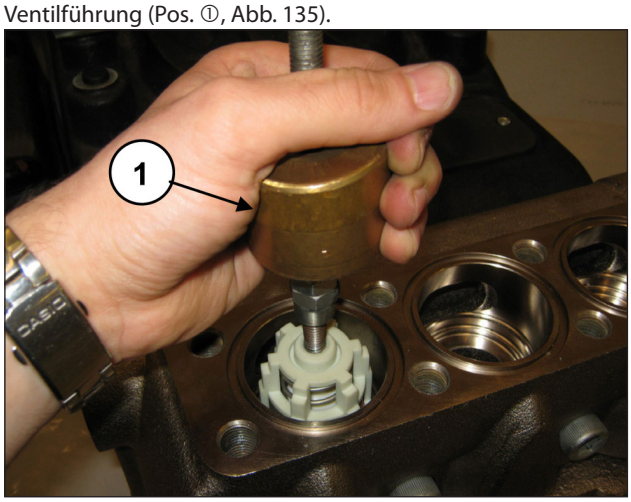


Abb. 135

Lösen Sie die 8 Schrauben M16x45 des Saugventildeckels (Pos. ①, Abb. 136) und nehmen Sie den Deckel ab (Pos. ①, Abb. 137).

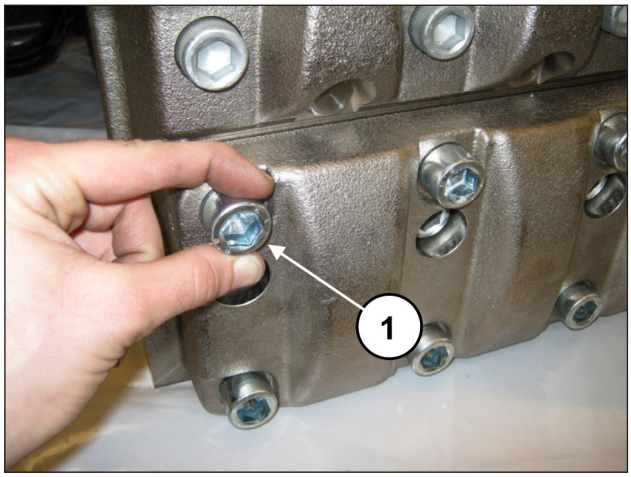


Abb. 136

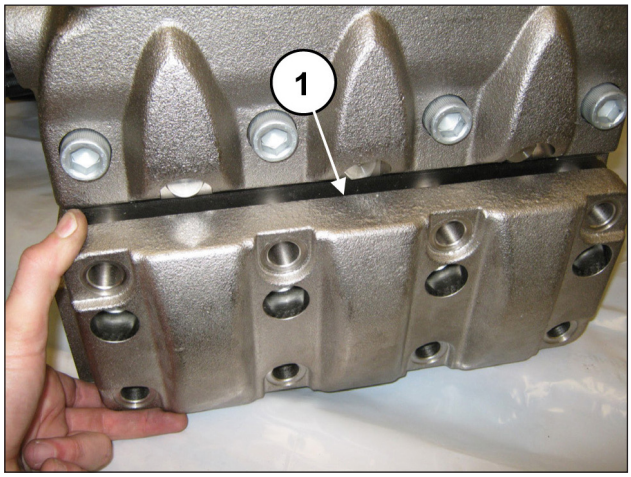


Abb. 137

Entfernen Sie die Saugventilgruppe mithilfe eines Abziehers mit Schlagwerk (Art. 27516400) an der Bohrung M10 der Ventilführung (Pos. ①, Abb. 138).

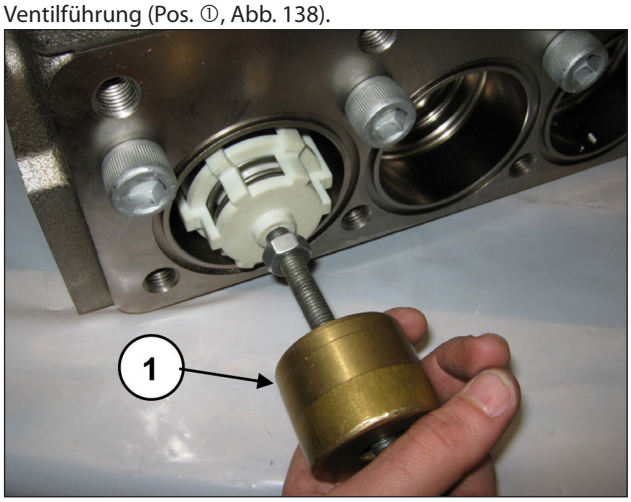


Abb. 138

Drehen Sie den Ventilöffner mit einem 30 mm Schlüssel ab (Pos. ①, Abb. 139).

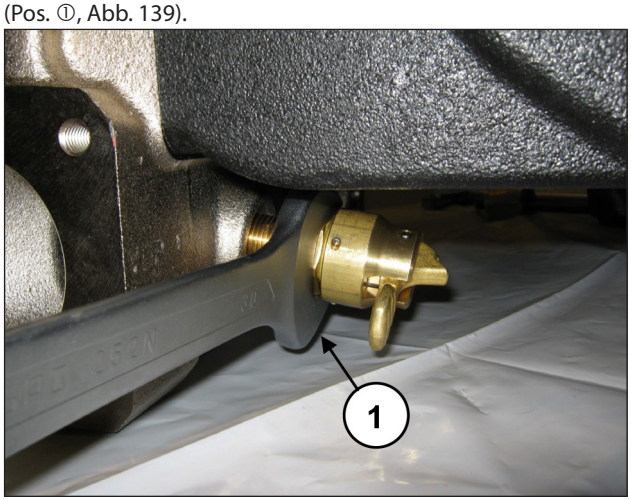


Abb. 139

Bauen Sie die Saug- und Druckventilgruppen durch Anziehen einer Schraube M10 aus, um durch Drücken auf die innere Führung die Ventilführung aus dem Ventilsitz herausziehen zu können (Pos. ①, Abb. 140).

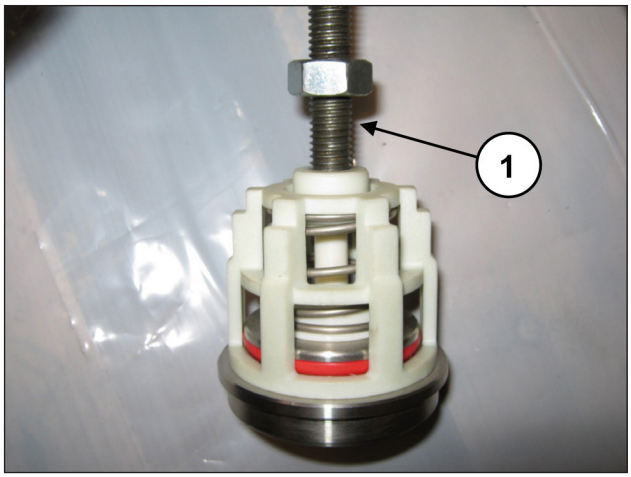


Abb. 140

Beenden Sie den Ausbau, indem Sie die frontseitigen Verschlüsse G1/4" und die unteren Verschlüsse G1/2" am Kopf abnehmen.
Sie können nun den Kopf vom Pumpengehäuse durch Lösen der 8 Schrauben M16x150 demontieren (Pos. ①, Abb. 141).
Achten Sie beim Ausbau des Kopfs darauf, nicht gegen die Kolben zu stoßen (Abb. 142).

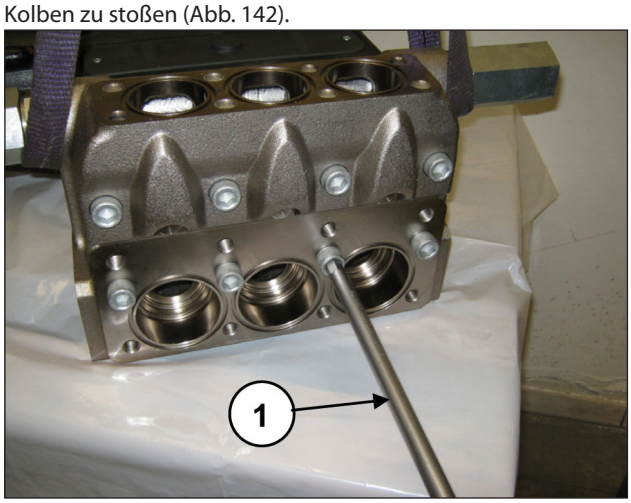


Abb. 141

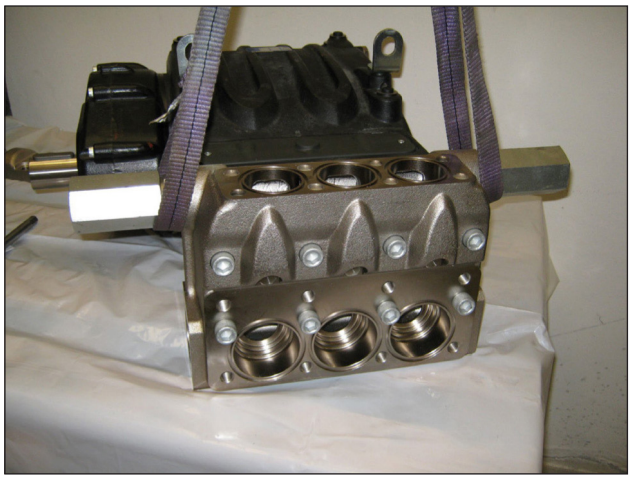

Abb. 142

### 2.2.4 Einbau des Kopfs MW45 MW50 MW55 - Ventilgruppen

**Achten Sie besonders auf den Verschleißzustand der einzelnen Bauteile und tauschen Sie diese bei Bedarf aus.**
**Ersetzen Sie bei jeder Inspektion der Ventile alle O-Ringe sowohl der Ventilgruppen als auch der Ventilkappen.**

**Vor dem Wiedereinbau der Ventilgruppen reinigen und trocknen Sie gründlich ihre Sitze im Kopf, siehe Pfeile (Pos. ①, Abb. 143).**

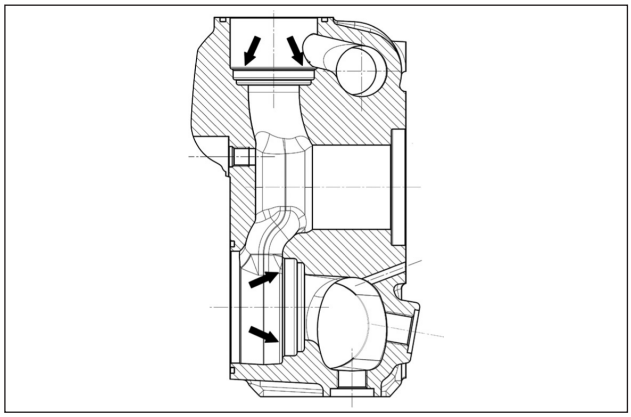

Abb. 143

Verfahren Sie für den Wiedereinbau in umgekehrter Ausbaureihenfolge zu den Angaben in Abschn. 2.2.3.
Montieren Sie die Saug- und Druckventilgruppen (Abb. 144 und Abb. 145).
Um das Einsetzen der Ventilführung in den Sitz zu erleichtern, verwenden Sie ein Rohr, das auf den horizontalen Flächen der Führung aufliegt (Abb. 146) und benutzen Sie ein Schlagwerk am gesamten Umfang.

Abb. 144

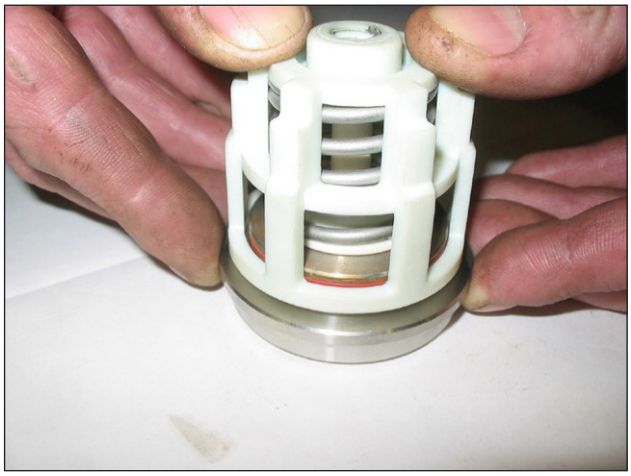

Abb. 145

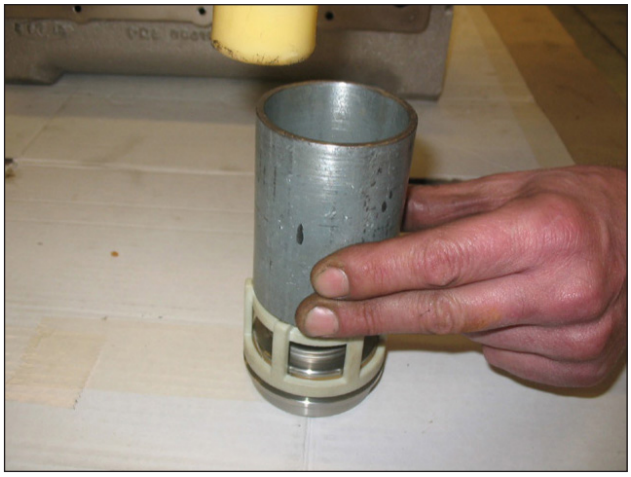

Abb. 146

**Achten Sie beim Einsetzen der Ventilgruppen (Saug- und Druckseite) in den Kopf auf die korrekte Einbaureihenfolge der O-Ringe und der Stützringe.**

Die vorschriftsmäßige Einbaureihenfolge der Ventilgruppen in den Kopf lautet:
Setzen Sie auf Saugseite den Stützring ein, Pos. 6 Explosionszeichnung (Pos. ①, Abb. 147).

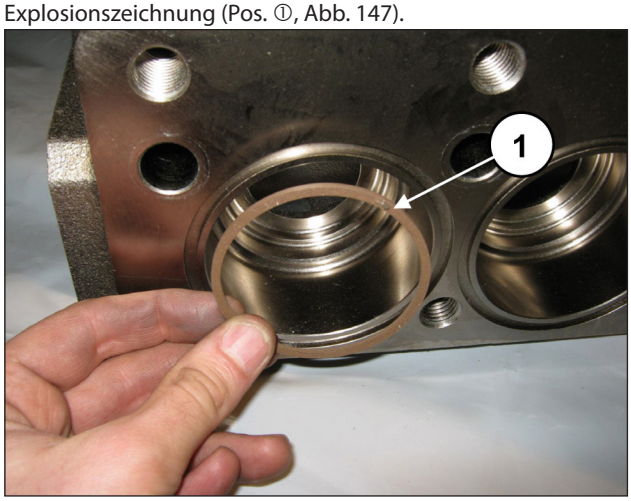


Abb. 147

Setzen Sie den O-Ring ein, Pos. 7 Explosionszeichnung (Pos. ①, Abb. 148).

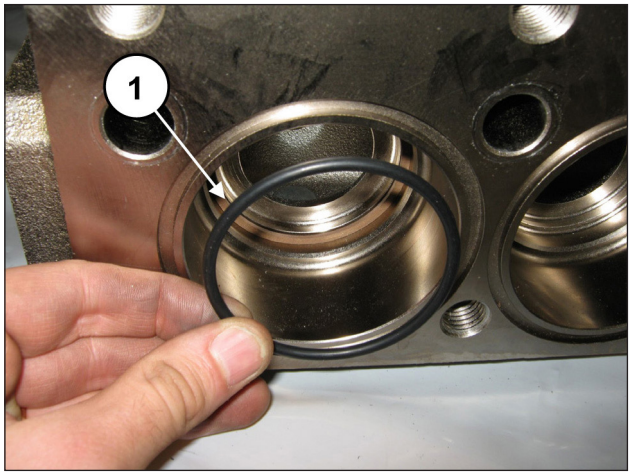


Abb. 148

Vergewissern Sie sich, dass O- und Stützring bündig im Sitz montiert sind.
Setzen Sie die Saugventilgruppe ein (Pos. ①, Abb. 149).
Die komplette Ventilgruppe muss bündig eingesetzt sein und so erscheinen wie in Pos. ①, Abb. 150.

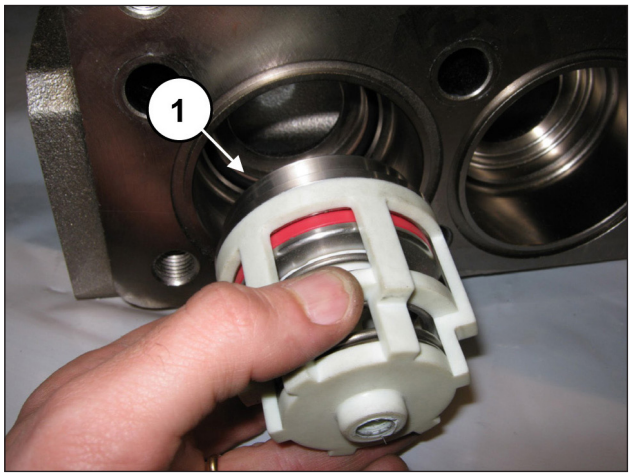


Abb. 149

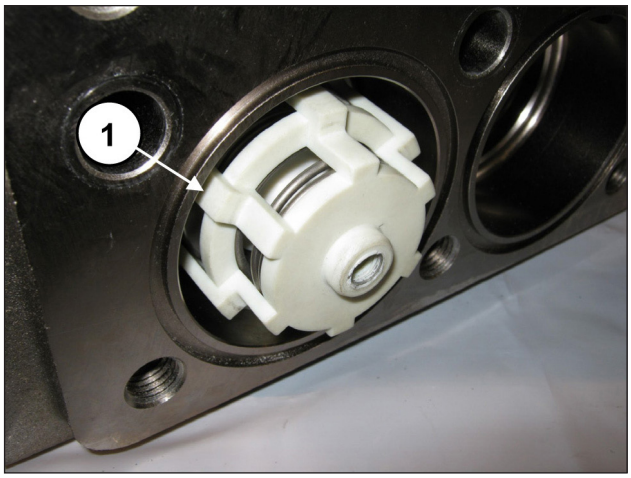


Abb. 150

Setzen Sie den frontseitigen O-Ring an den Saugventilen ein (Pos. ①, Abb. 151).

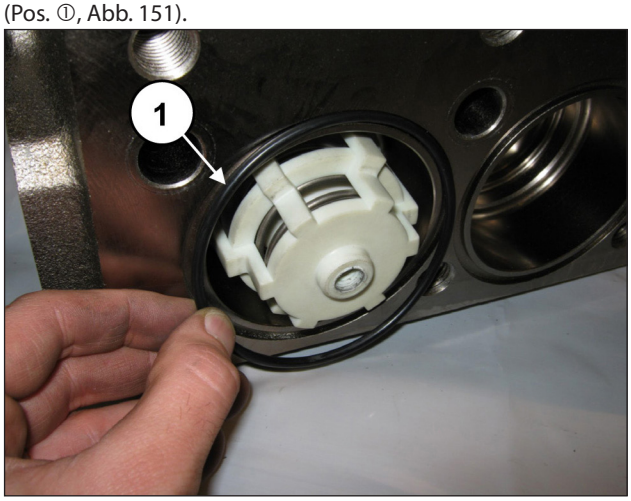


Abb. 151

Bringen Sie nach Montage der Saugventilgruppen den Saugventildeckel an (Pos. ①, Abb. 152) und ziehen Sie die 8 Schrauben M16x45 fest (Pos. ①, Abb. 153).

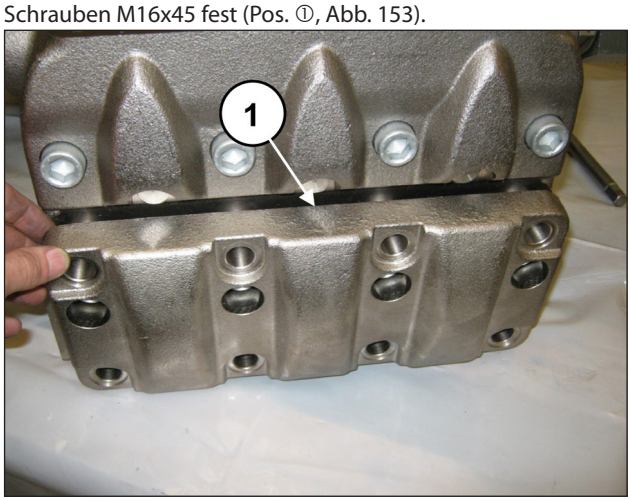


Abb. 152

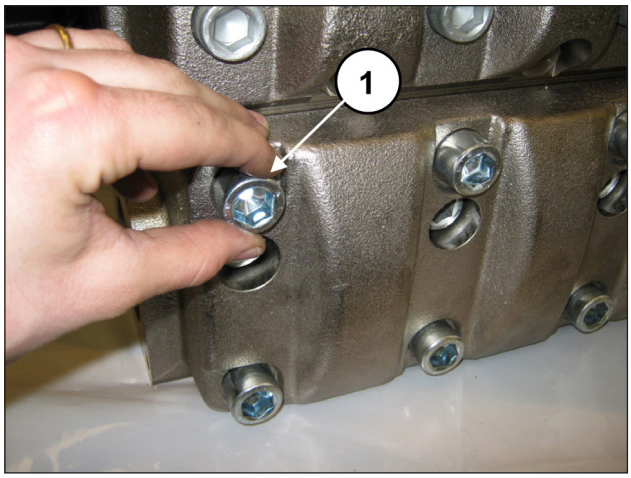


Abb. 153

Fahren Sie mit der Montage der Druckventilgruppen fort:
Setzen Sie den Stützring ein, Pos. 23 Explosionszeichnung (Pos. ①, Abb. 154).

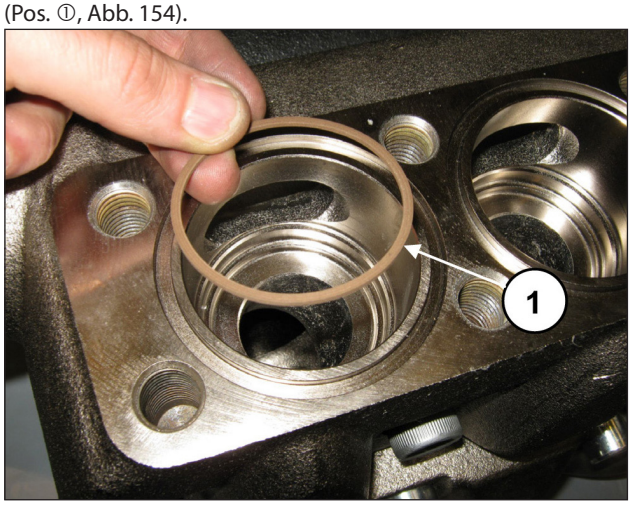


Abb. 154

Setzen Sie den O-Ring ein, Pos. 24 Explosionszeichnung (Pos. ①, Abb. 155).

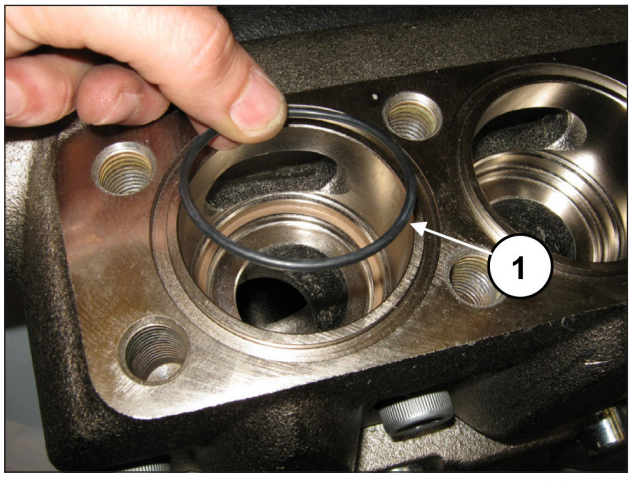


Abb. 155

Vergewissern Sie sich, dass O- und Stützring bündig im Sitz montiert sind.
Setzen Sie die Druckventilgruppe ein (Pos. ①, Abb. 156).
Die komplette Ventilgruppe muss bündig eingesetzt sein und so erscheinen wie in Pos. ①, Abb. 157.

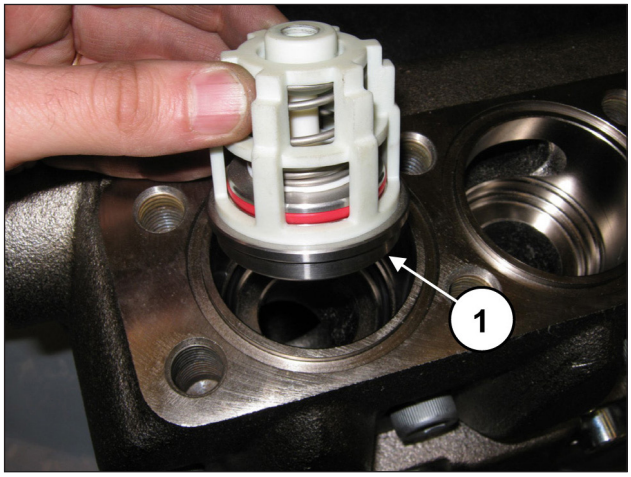


Abb. 156

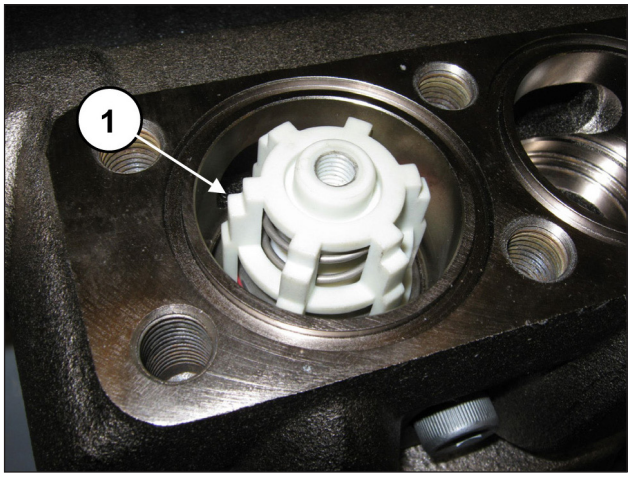


Abb. 157

Setzen Sie den frontseitigen O-Ring an den Druckventilen ein (Pos. ①, Abb. 158).

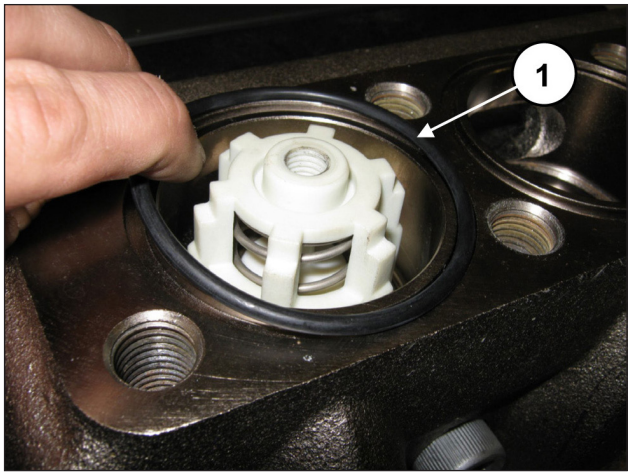


Abb. 158

Bringen Sie nach Montage der Druckventilgruppen den Druckventildeckel an (Pos. ①, Abb. 159) und ziehen Sie die 8 Schrauben M16x45 fest (Pos. ①, Abb. 160).

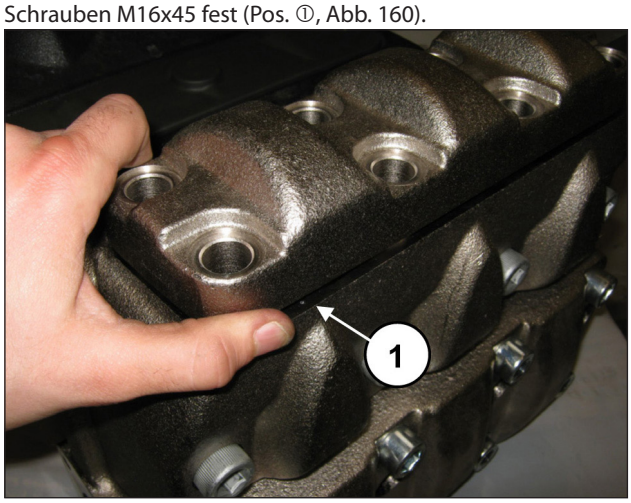


Abb. 159

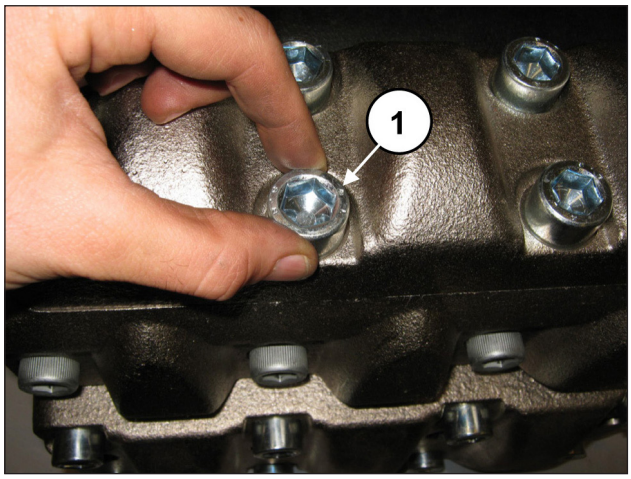


Abb. 160

Montieren Sie die 6 frontseitigen O-Ringe des Pumpengehäuses (Pos. ①, Abb. 161).

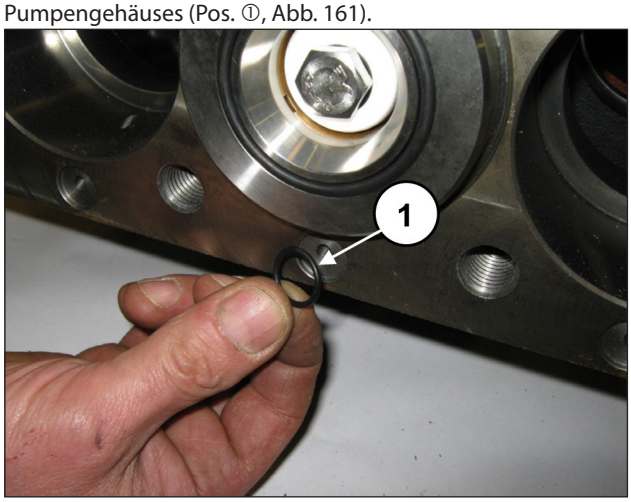


Abb. 161

Bauen Sie den Kopf auf das Pumpengehäuse an (Pos. ①, Abb. 162) und achten Sie dabei, nicht gegen die Kolben zu stoßen. Ziehen Sie dann die 8 Schrauben M16x150 fest (Pos. ①, Abb. 163).

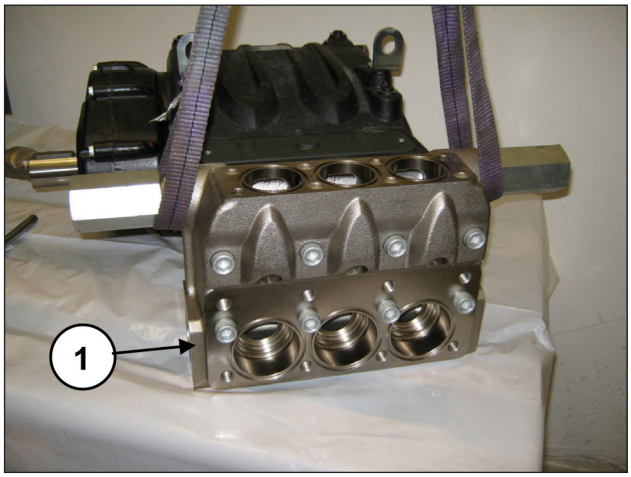


Abb. 162

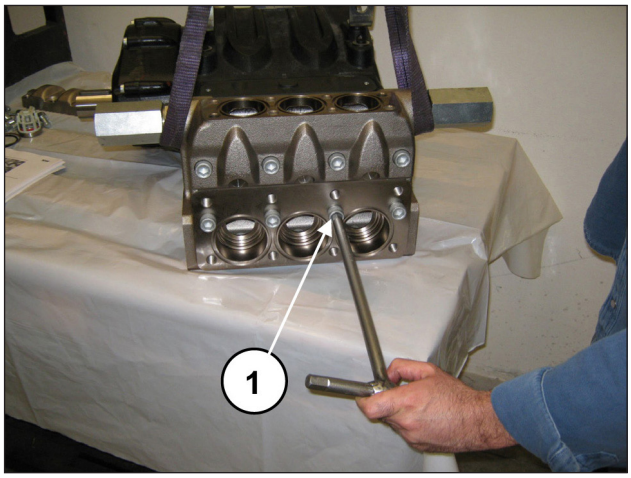


Abb. 163

Eichen Sie die Schrauben M16x150 mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

**Ziehen Sie die 8 Schrauben M16x150 von den 4 Innenschrauben ausgehend über Kreuz an. Setzen Sie den Anzug dann mit den 4 Außenschrauben weiterhin über Kreuz fort.**

Eichen Sie die Schrauben M16x45 der Saug- und Druckventildeckel mit einem Drehmomentschlüssel, wie in Kapitel 3 EICHWERTE FÜR DEN SCHRAUBENANZUG gezeigt. Bringen Sie die Ventilöffner an (Pos. ①, Abb. 164) und drehen Sie diese mit einem 30 mm Schlüssel fest (Pos. ①, Abb. 165).

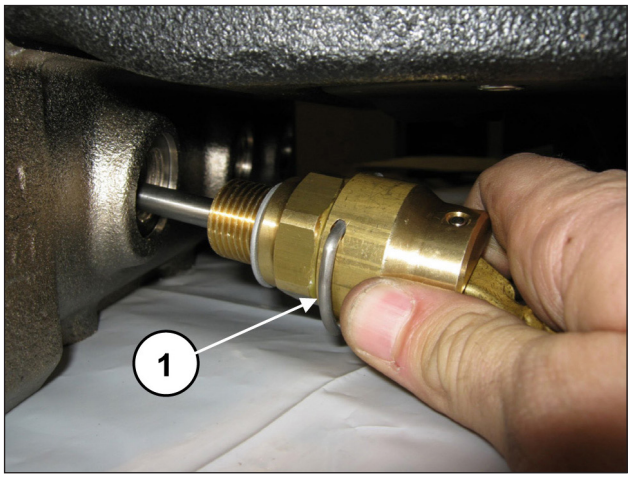


Abb. 164

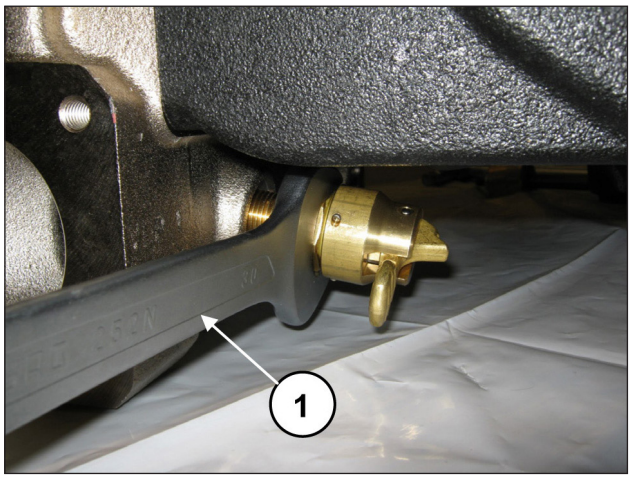


Abb. 165

Montieren Sie die Verschlüsse G1/2" auf der unteren Seite des Kopfs samt Unterlegscheiben.
Eichen Sie die Verschlüsse G1/2" mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.
Montieren Sie die frontseitigen Verschlüsse G1/4" des Kopfs samt O-Ring.
Eichen Sie die Verschlüsse G1/4" mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

### 2.2.5 Ausbau der Kolbengruppe - Lager - Dichtungen

Die Kolbengruppe bedarf einer regelmäßigen Prüfung lt. Angaben in der Tabelle der vorbeugenden Wartung der ***Betriebs- und Wartungsanleitung***.
Die Eingriffe beschränken sich lediglich auf die Sichtprüfung der Ablassbohrung am unteren Inspektionsdeckel. Sollten Störungen / Schwingungen am Druckmanometer oder Tropferscheinungen aus der Ablassbohrung auftreten, muss das Dichtungspaket überprüft und ggf. ausgetauscht werden.
Verfahren Sie zur Abnahme der Kolbenbaugruppen wie folgt:
Lösen Sie für den Zugriff auf die Kolbengruppe die Schrauben M16x180 (bei MW32-MW36-MW40) bzw. die Schrauben M16x150 (bei MW45-MW50-MW55) und bauen Sie den Kopf aus.

**Ziehen Sie den Kopf mit größter Vorsicht heraus, um nicht gegen die Kolben zu stoßen.**

Demontieren Sie die Kolben durch Abdrehen der Befestigungsschrauben (Pos. ①, Abb. 166).
Streifen Sie den Kolben aus dem Dichtungshalter und überprüfen Sie die Kolbenoberfläche auf etwaige Kratzer, Verschleiß- oder Kavitationsanzeichen

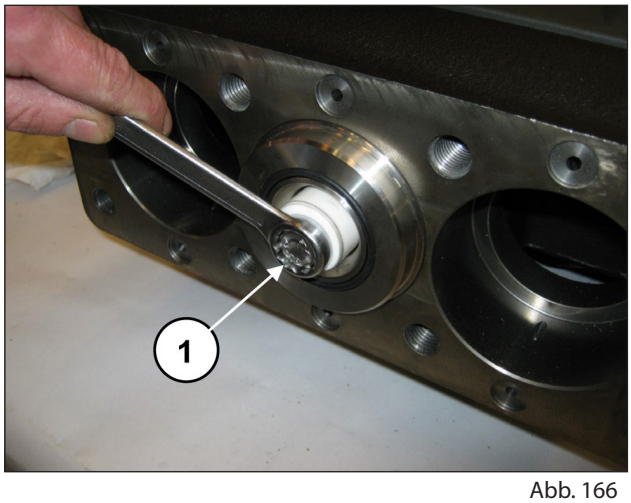


Abb. 166

Demontieren Sie den oberen Inspektionsdeckel durch Abdrehen der 2 Befestigungsschrauben (Pos. ①, Abb. 167).

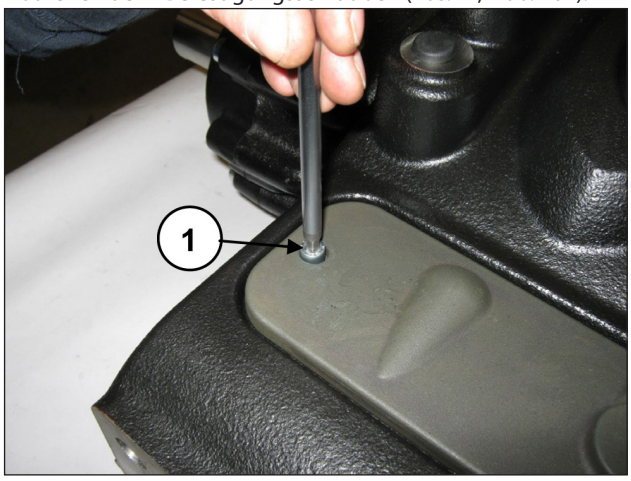


Abb. 167

Drehen Sie die Welle von Hand so, dass die 3 Kolben an ihren oberen Totpunkt bewegt werden.
Setzen Sie den Dorn Art. 27632500 zwischen Kolbenführung und Kolben ein (Pos. ①, Abb. 168).

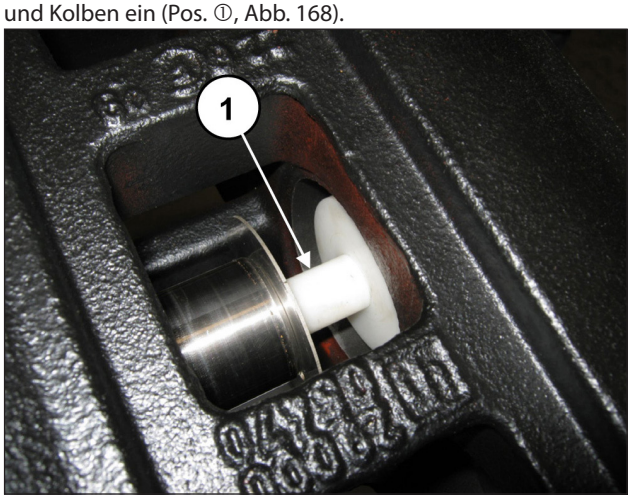


Abb. 168

Schieben Sie die Kolbenführung durch Drehen der Welle soweit vor, dass der mitgetriebene Dorn den Dichtungshalter und die gesamte Kolbenbaugruppe herausdrückt (Pos. ①, Abb. 169).

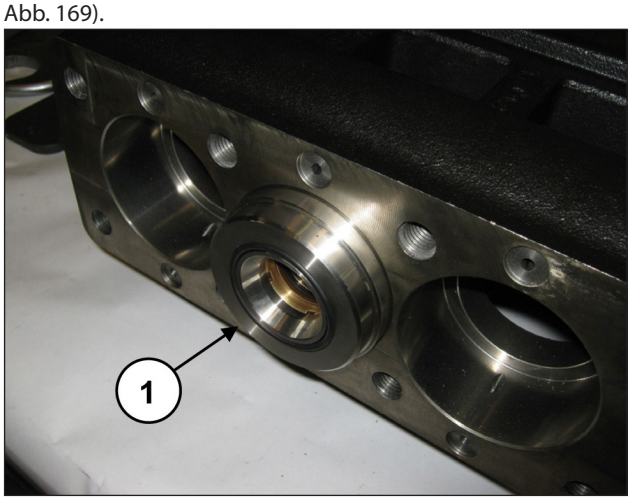


Abb. 169

Entfernen Sie den Dichtungshalter und den Dorn. Nehmen Sie den O-Ring am Boden des Dichtungshalters ab, sollte er im Pumpengehäuse verblieben sein (Pos. ①, Abb. 170).

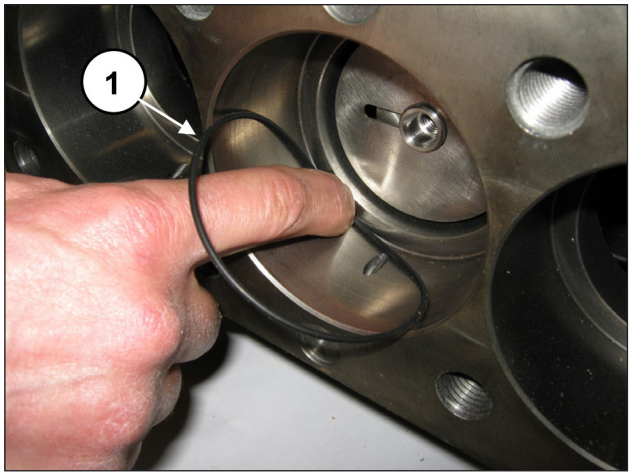


Abb. 170

Entfernen Sie die Spritzschutzringe von den Kolbenführungen (Pos. ①, Abb. 171).

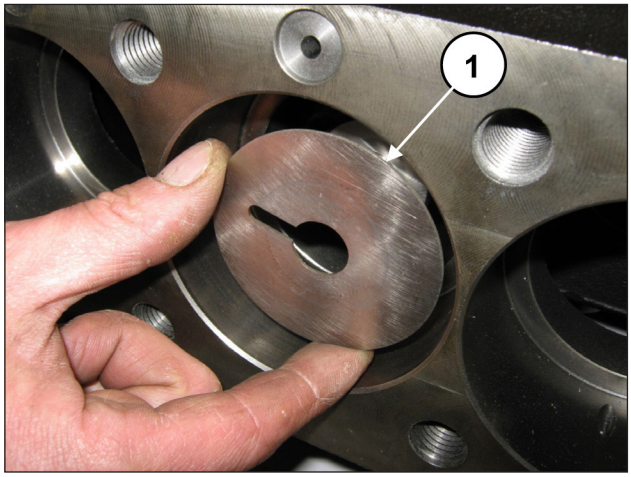


Abb. 171

Trennen Sie den Dichtungshalter von der Buchse (Pos. ①, Abb. 172) und legen Sie somit die Druckdichtungen frei (Pos. ①, Abb. 173).

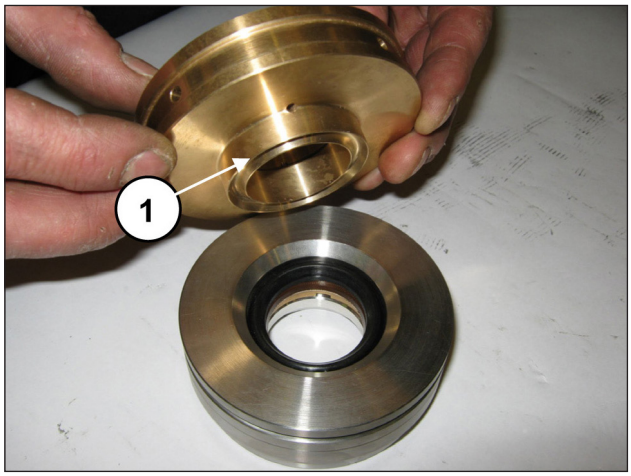


Abb. 172

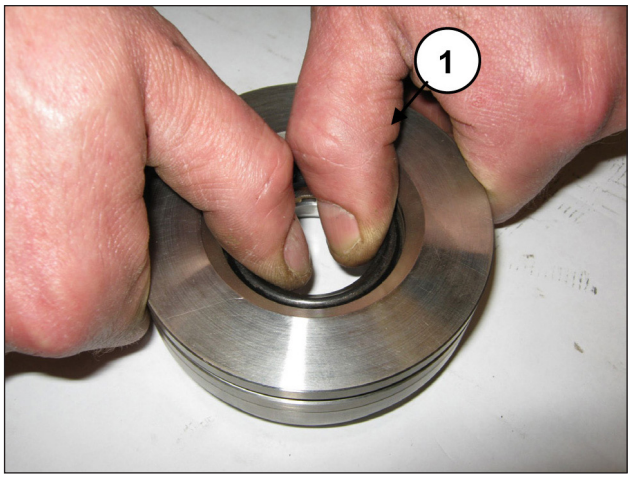


Abb. 173

Zur Abnahme der ND-Dichtung müssen Sie eine Fühlerlehre oder ein ähnliches Werkzeug verwenden, das den Sitz des Dichtungshalters nicht beschädigt (Pos. ①, Abb. 174).

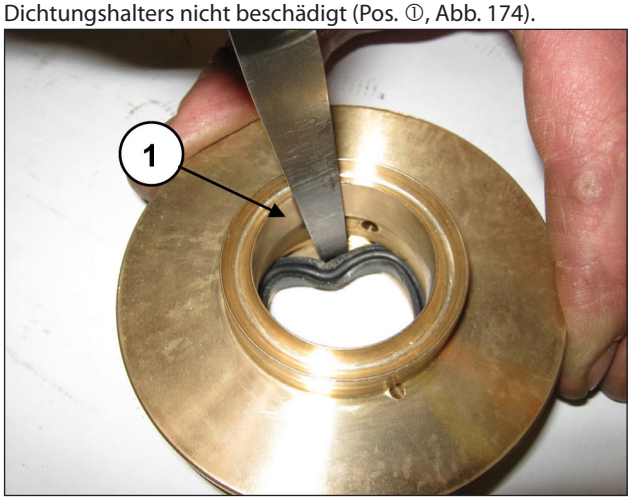


Abb. 174

### 2.2.6 Einbau der Kolbengruppe - Lager - Dichtungen

Verfahren Sie für den Wiedereinbau in umgekehrter Ausbaureihenfolge zu den Angaben in Abschn. 2.2.5.

**Ersetzen Sie die Druckdichtungen, indem Sie die Dichtlippen mit Silikonfett befeuchten (nicht bestreichen). Achten Sie besonders darauf, die Dichtungen beim Einsetzen in die Buchse nicht zu beschädigen.**

**Bei jedem Ausbau müssen die Druckdichtungen mit sämtlichen O-Ringen ersetzt werden.**

Setzen Sie die ND-Dichtung in den Dichtungshalter ein (Pos. ①, Abb. 175) und achten Sie hierbei auf die Einbaurichtung mit nach vorn gerichteter Dichtlippe (zum Kopf hin).

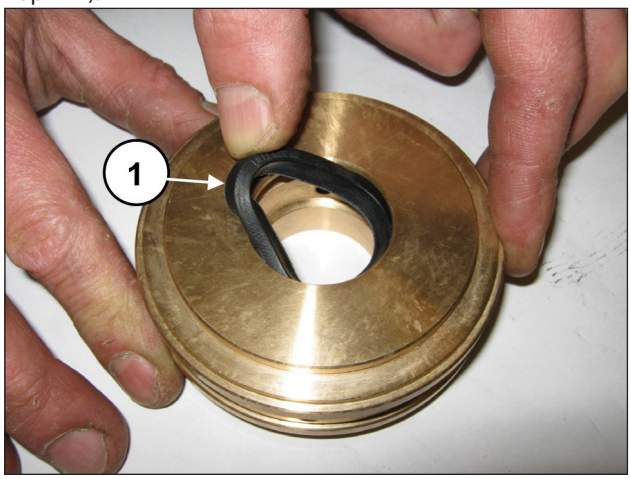


Abb. 175

Montieren Sie den Kopfring (Pos. ①, Abb. 176), die HD-Dichtung (Pos. ①, Abb. 177) und den Restop-Ring (Pos. ①, Abb. 178).

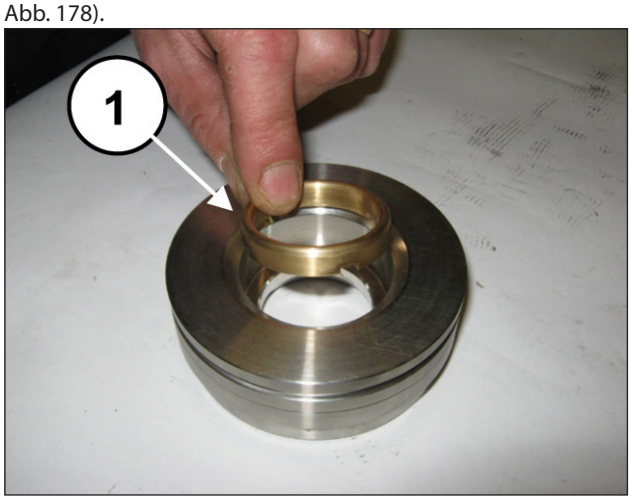


Abb. 176

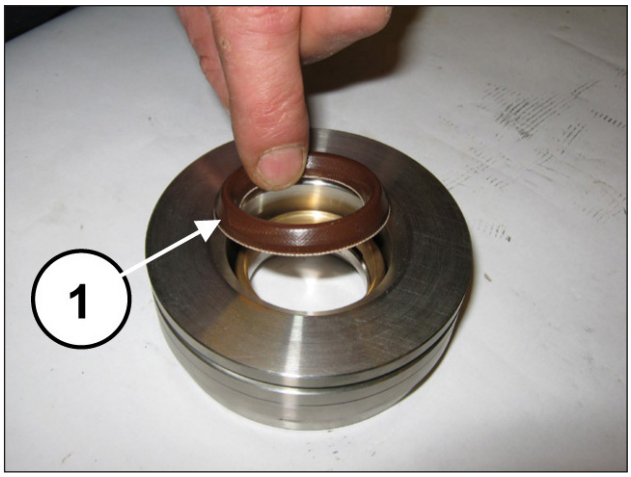


Abb. 177

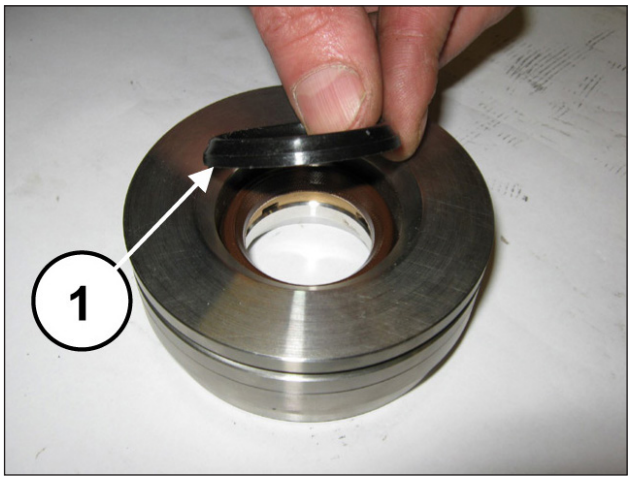


Abb. 178

Verbinden Sie Dichtungshalter mit Buchse (Pos. ①, Abb. 179).

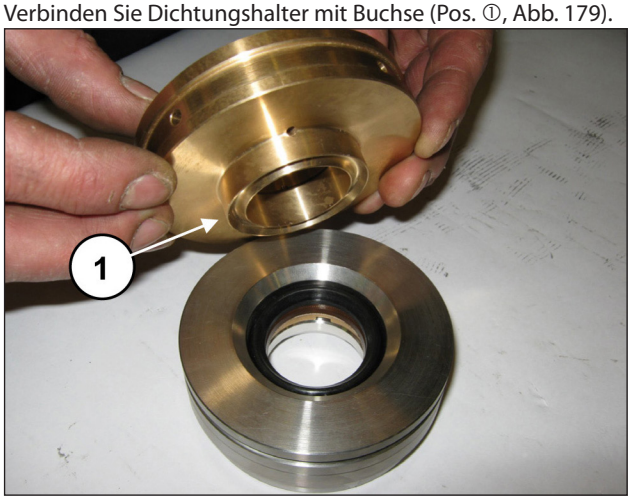


Abb. 179

Montieren Sie die Spritzschutzringe in die Aufnahme an der Kolbenführung (Pos. ①, Abb. 180).

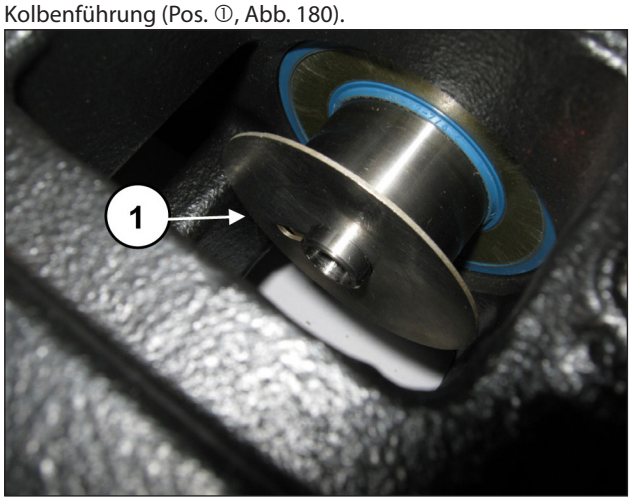


Abb. 180

Setzen Sie die Unterlegscheibe Ø10x18x0.9 auf die Befestigungsschraube des Kolbens (Pos. ①, Abb. 181).

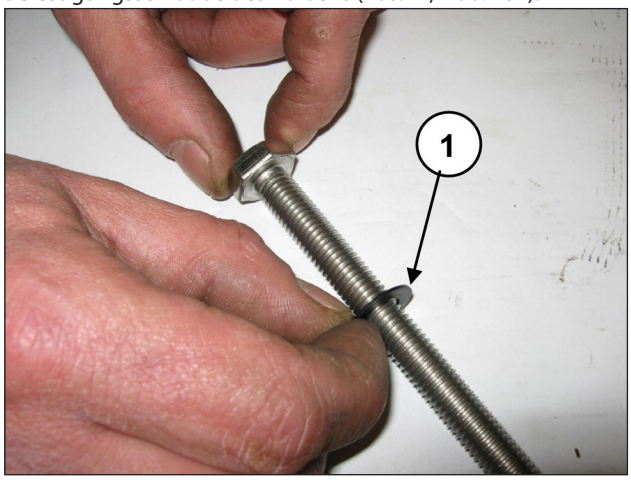


Abb. 181

Montieren Sie die Kolben in die entsprechenden Führungen (Pos. ①, Abb. 182) und befestigen Sie diese lt. Pos. ①, Abb. 183.

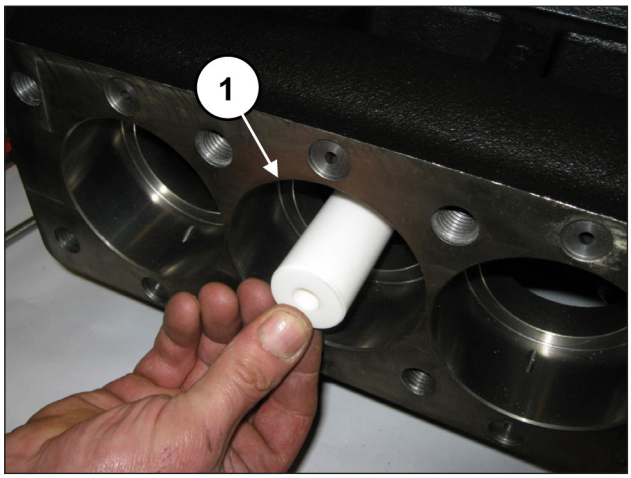


Abb. 182

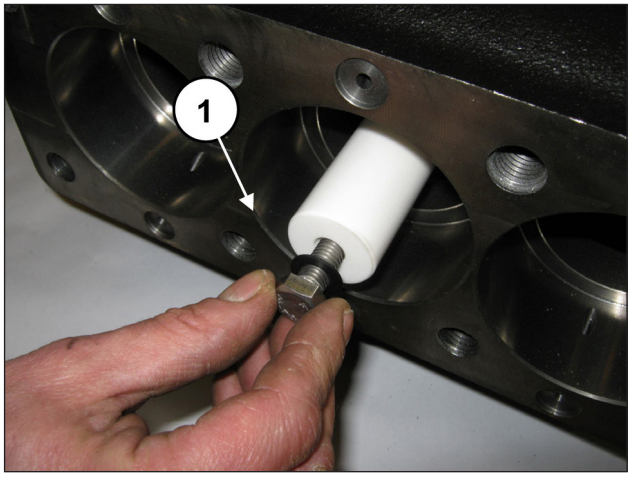


Abb. 183

Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.
Montieren Sie den O-Ring in das Pumpengehäuse (Pos. ①, Abb. 184) und anschließend die vorab zusammengebaute Gruppe Buchse-Dichtungshalter (mitsamt O-Ring) bis auf Anschlag (Pos. ①, Abb. 185).

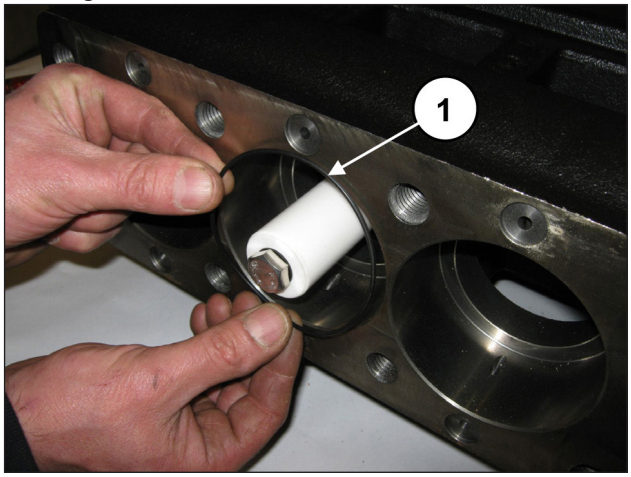


Abb. 184

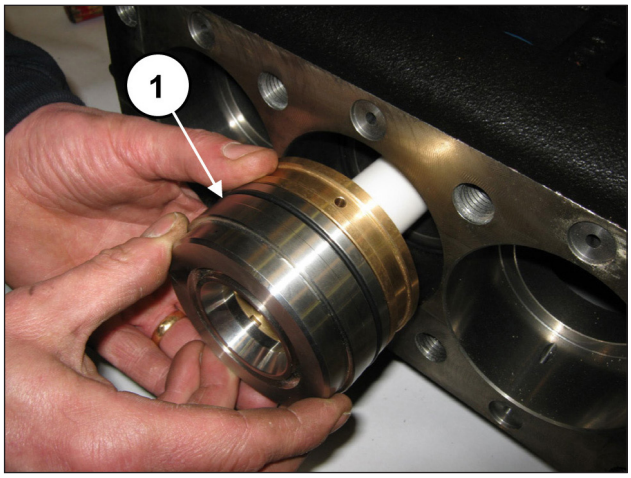


Abb. 185

Vergewissern Sie sich, dass die Gruppe Buchse-Dichtungshalter bündig in ihrem Sitz liegt (Pos. ①, Abb. 186).

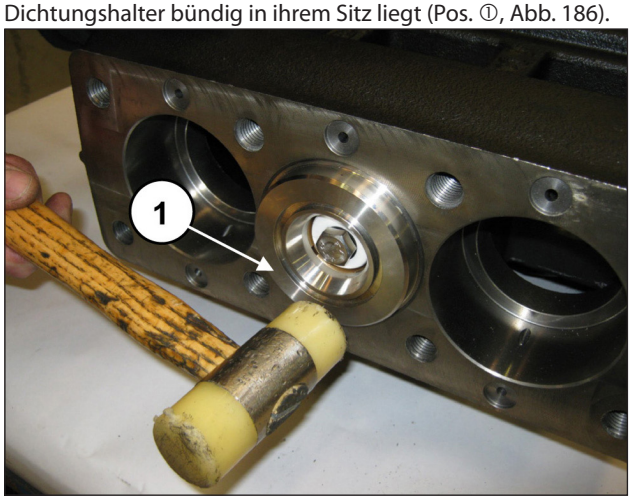


Abb. 186

Setzen Sie den frontseitigen O-Ring der Buchse ein (Pos. ①, Abb. 187) und den O-Ring an der Umlaufbohrung (Pos. ①, Abb. 188).

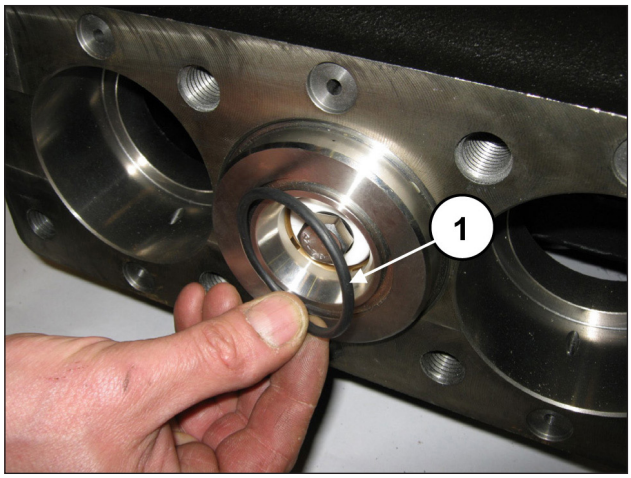


Abb. 187

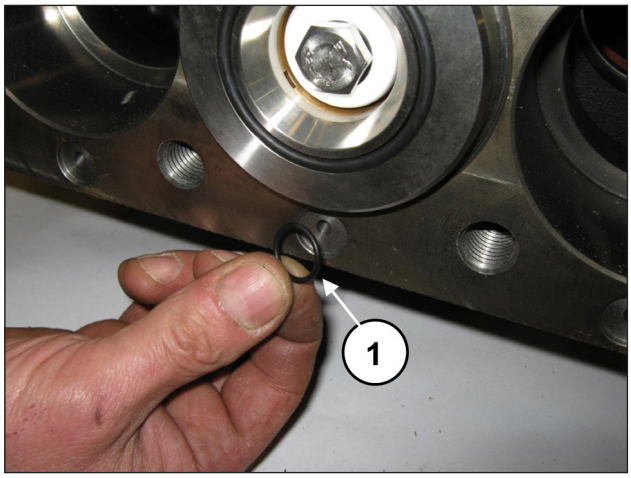


Abb. 188

Setzen Sie auf die Inspektionsdeckel den O-Ring (Pos. ①, Abb. 189) und montieren Sie die Deckel anhand von 2+2 Schrauben M6x14 (Pos. ①, Abb. 190).

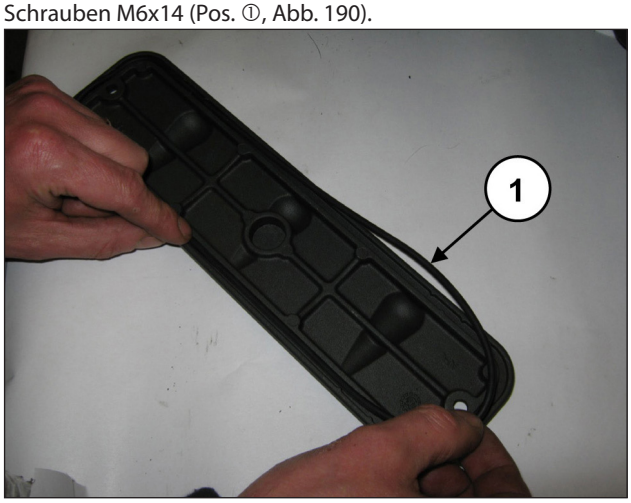


Abb. 189

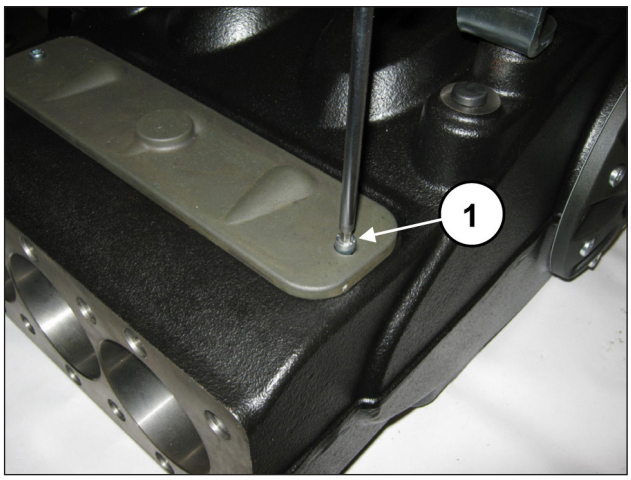


Abb. 190

Eichen Sie die Schrauben mit einem Drehmomentschlüssel, wie in Kapitel 3 gezeigt.

## 3 EICHWERTE FÜR DEN SCHRAUBENANZUG

Ziehen Sie die Schrauben ausschließlich mit einem Drehmomentschlüssel fest.

| Beschreibung | Position Explosionszeichnung | Anzugsmoment Nm |
|---|---|---|
| Schraube M10x30 Gehäusedeckel | 89 HD - 91 ND | 45 |
| Verschluss G1/2x13 Gehäuse | 91 HD - 93 ND | 40 |
| Schraube M16x30 Hebebügel | 51 HD - 53 ND | 200 |
| Schraube M10x40 Getriebedeckel | 81 HD - 83 ND | 45 |
| Schraube M10x25 Zahnkranzarretierung | 76 HD - 78 ND | 45 |
| Schraube M10x40 Getriebegehäuse | 81 HD - 83 ND | 45 |
| Schraube M6x14 oberer und unterer Deckel | 60 HD - 62 ND | 10 |
| Schraube M10x30 Lagerdeckel | 89 HD - 91 ND | 45 |
| Schraube M10x1.5x80 Pleuelbefestigung | 53 HD - 55 ND | 65* |
| Schraube M6x20 Kolbenführung | 47 HD - 49 ND | 10 |
| Schraube M10x140 Kolbenbefestigung | 28 HD - 18 ND | 40 |
| Schraube M16x55 HD-Ventildeckel | 24 | 333 |
| Schraube M16x45 ND-Ventildeckel | 19 | 333 |
| Verschluss G1/2" ND-Kopf | 4 | 40 |
| Verschluss G1/4"x13 Kopf | 100 HD - 21 ND | 40 |
| Schraube M16x180 HD-Kopf | 26 | 333** |
| Schraube M16x150 ND-Kopf | 43 | 333** |
| Ventilöffner | 2 | 40 |

* Ziehen Sie alle Schrauben gleichzeitig bis auf Anzugsmoment fest

** Ziehen Sie die Schrauben von den 4 Innenschrauben ausgehend über Kreuz an. Setzen Sie den Anzug dann mit den 4 Außenschrauben weiterhin über Kreuz fort.

## 4 REPARATURWERKZEUGE

Die Wartung der Pumpe kann durch einfache Aus- und Einbauwerkzeuge erfolgen. Folgende Werkzeuge sind verfügbar:

**Für den Einbau:**

| | |
|---|---|
| Welle (Pleuelbefestigung) | Art. 27566200 |
| Lager auf Kurbelwelle | Art. 27604700 |
| Ritzellager auf Getriebegehäuse | Art. 27604900 |
| Kurbelwellenlager auf Getriebegehäuse | Art. 27605000 |
| Kurbelwellenlager auf Lagerdeckel | Art. 27605000 |
| Ölabstreifring Kolbenführung | Art. 27605300 |
| Lager auf Ritzel | Art. 27604800 |
| Ölabstreifring Ritzel | Art. 27605200 |
| O-Ring Druckventilsitz MW32-MW36-MW40 | Art. 27516000 |

**Für den Ausbau:**

| | |
|---|---|
| Ölabstreifring Kolbenführung | Art. 27918500 |
| Welle (Pleuelbefestigung) | Art. 27566200 |
| Saug-/Druckventilgruppe | Art. 27516400 |
| O-Ring Saugventilsitz MW32-MW36-MW40 | Art. 27516200 |
| Gruppe Buchse + Dichtungshalter | Art. 27632500 |

# 5 SPEZIALVERSIONEN

Im Nachhinein finden Sie die Anweisungen zur Reparatur der Spezialversionen. Soweit nicht anders angegeben, gelten die vorstehenden Angaben für die Pumpen MW in Standardversion.

- Pumpen MWN - MWF: für die Reparatur gelten die Anweisungen der Pumpen MW in Standardversion.
- Pumpen MWR - MWNR: für die Reparatur gelten die Anweisungen der Pumpen MW in Standardversion, mit Ausnahme der Druckdichtungen, die in einem gesonderten Abschnitt behandelt werden.

## 5.1 PUMPE IN VERSION MWR - MWNR

### 5.1.1 Ausbau der Gruppe - Lager - Dichtungen

Trennen Sie den Dichtungshalter von der Buchse, entfernen Sie dann den Federring und den Abstreifring (Pos. ①②, Abb. 191), um die Druckdichtungen freizulegen (Pos. ①, Abb. 192).

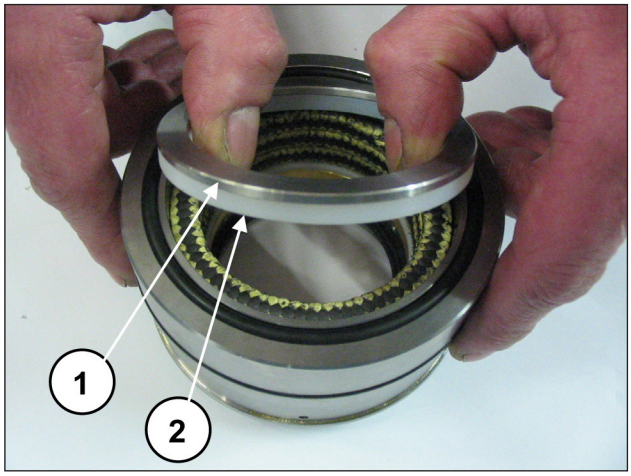


Abb. 191

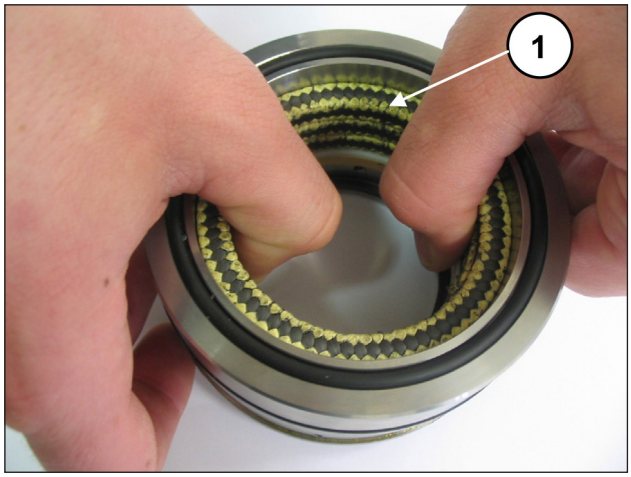


Abb. 192

Zur Abnahme der ND-Dichtung müssen Sie eine Fühlerlehre oder ein ähnliches Werkzeug verwenden, das den Sitz des Dichtungshalters nicht beschädigt (Pos. ①, Abb. 193).

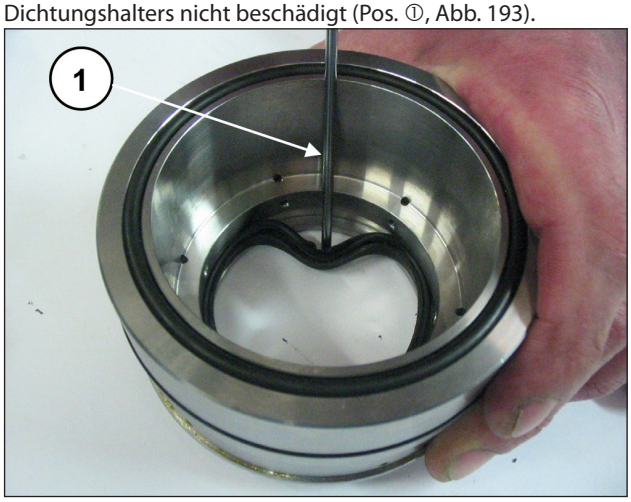


Abb. 193

### 5.1.2 Einbau der Gruppe - Lager - Dichtungen

Verfahren Sie für den Wiedereinbau in umgekehrter Ausbaureihenfolge zu den Angaben in Abschn. 2.2.3.

**Ersetzen Sie die Druckdichtungen, indem Sie die Dichtlippen mit Silikonfett befeuchten (nicht bestreichen). Achten Sie besonders darauf, die Dichtungen beim Einsetzen in die Buchse nicht zu beschädigen.**

**Bei jedem Ausbau müssen die Druckdichtungen mit sämtlichen O-Ringen ersetzt werden.**

Setzen Sie die ND-Dichtung in den Halter der Stopfbuchse ein (Pos. ①, Abb. 194) und achten Sie hierbei auf die Einbaurichtung mit nach vorn gerichteter Dichtlippe (zum Kopf hin) und auf den O-Ring (Pos. ②, Abb. 122).

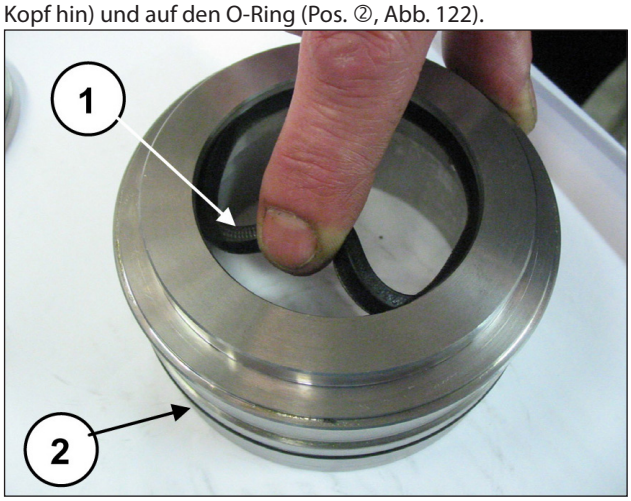


Abb. 194

Montieren Sie den Lagerring und den Stützring (Pos. ①②, Abb. 195) sowie die drei Stopfbuchsen. Achten Sie dabei, dass die Schlitze in einem Winkel von 120° zueinander ausgerichtet sind (Pos. ①, Abb. 196), darüber hinaus den Abstreifring der Stopfbuchsen und den Federring (Pos. ①②, Abb. 197).

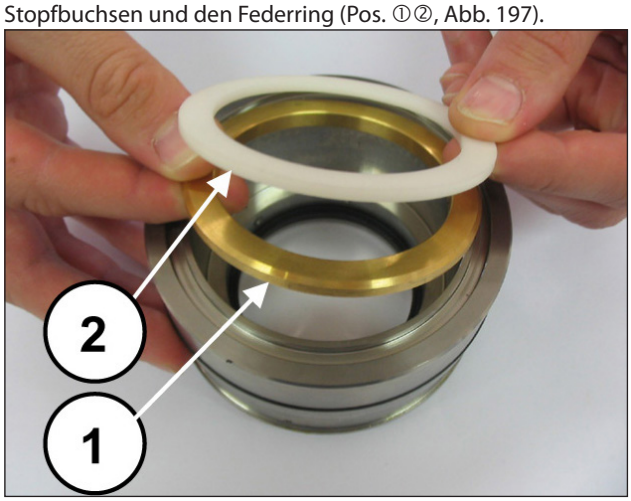


Abb. 195

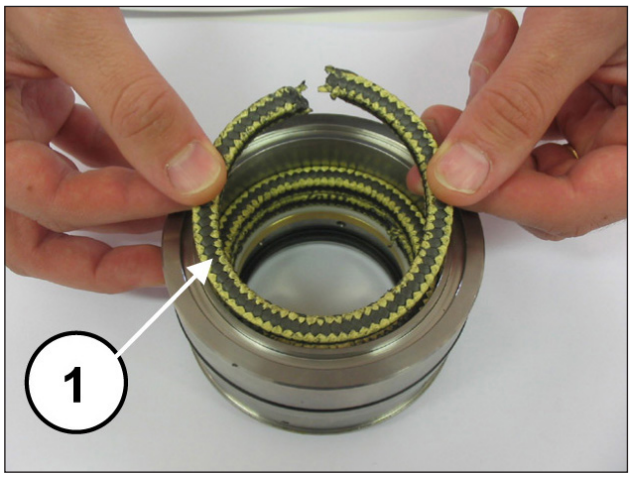


Abb. 196

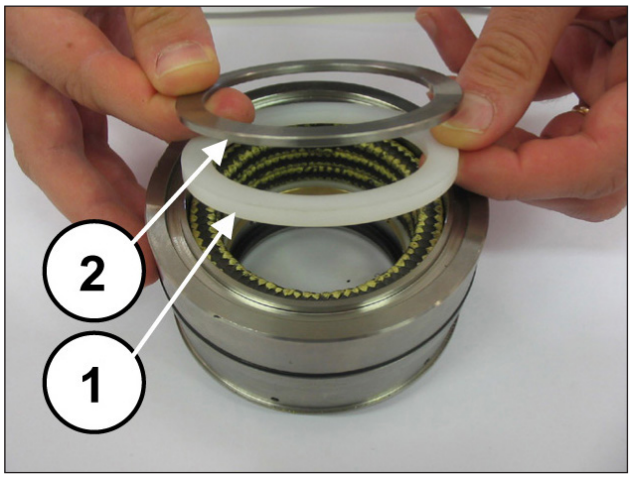


Abb. 197

Montieren Sie nun den Kopfring der Stopfbuchsen samt O-Ring (Pos. ①, Abb. 198) und setzen Sie diesen in den Sitz am Kopf ein.

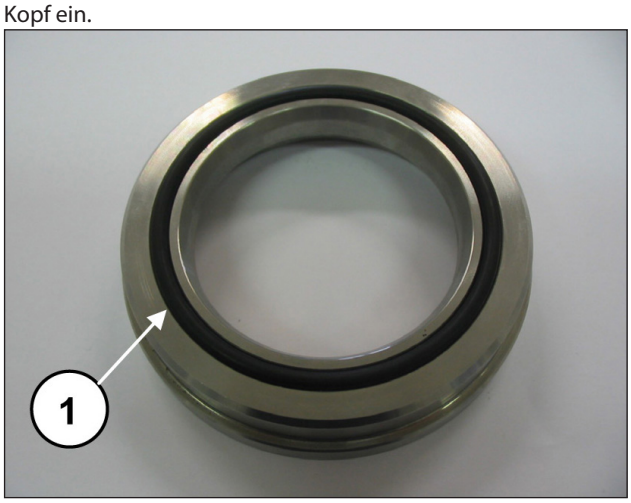


Abb. 198

## 6 WIEDERHERSTELLUNG DES PUMPENKOPFS

Sollte der Kopf in den Kolbenkammern deutliche Kavitationsanzeichen infolge einer nicht korrekten Pumpenversorgung aufweisen, kann der beschädigte Kopf ohne Bedarf eines Austausch wiederhergestellt werden.
Führen Sie zur Wiederherstellung des Kopfs die Bearbeitungen lt. Abb. 199 für MW 32-36-40 und Versionen MWF-MWR aus, lt. Abb. 200 für MW 45-50-55 und Versionen MWF-MWR:

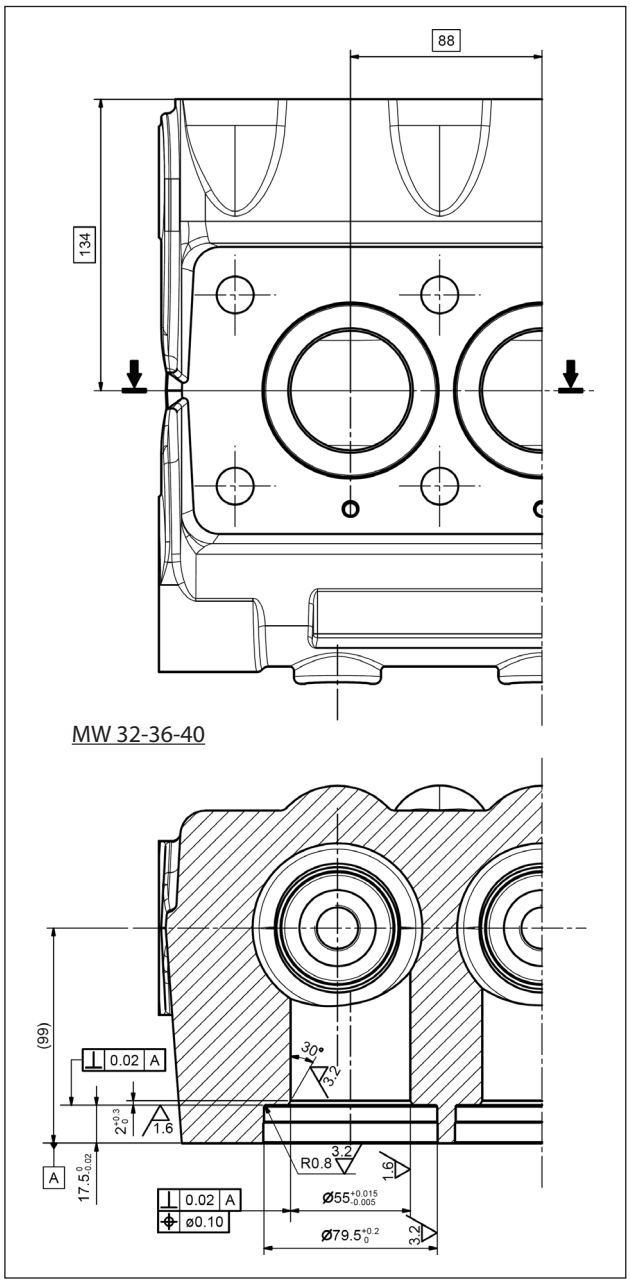


Abb. 199

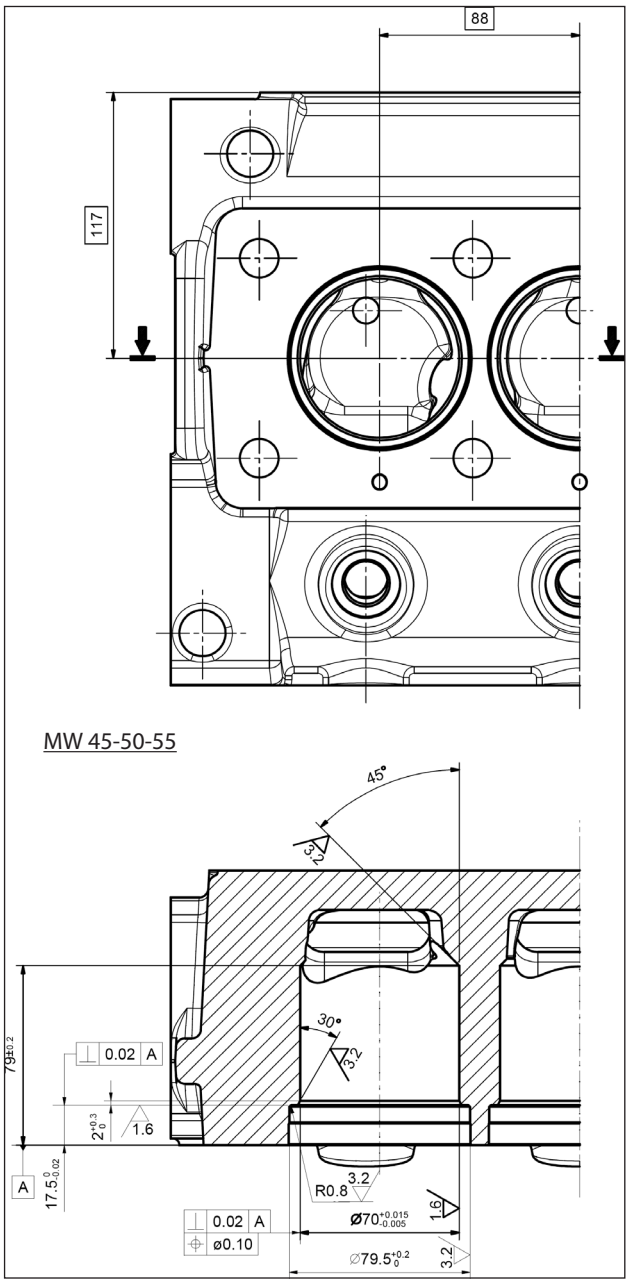


Abb. 200

**MW 32-36-40 und Versionen MWF-MWR (Abb. 201)**

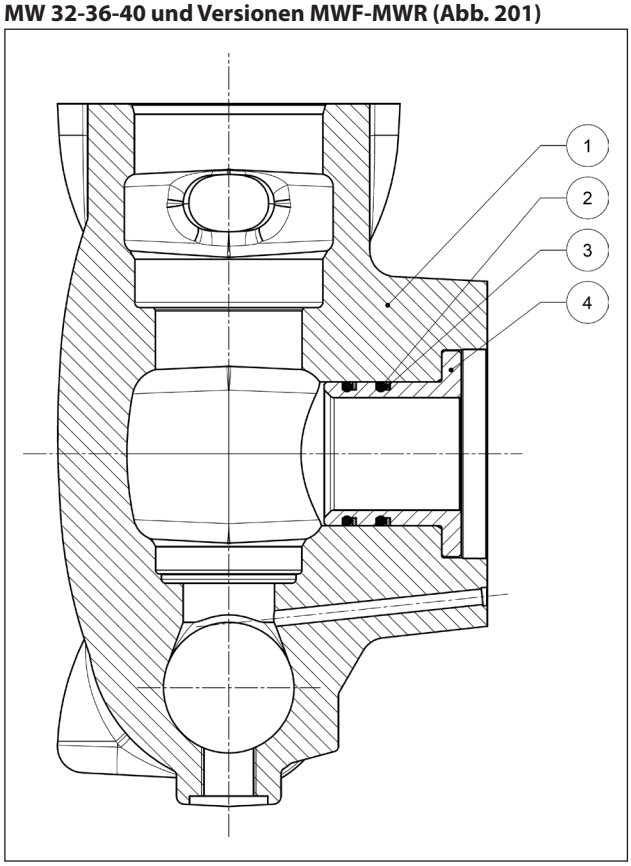


Abb. 201

① HD-Kopf MW - Art. 73120015 - Menge 1
② O-Ring - Art. 90408000 - Menge 6
③ Stützring - Art. 90523800 - Menge 6
④ HD-Buchse MW - Art. 73215956 - Menge 3

**MW 45-50-55 und Versionen MWF-MWR (Abb. 202)**

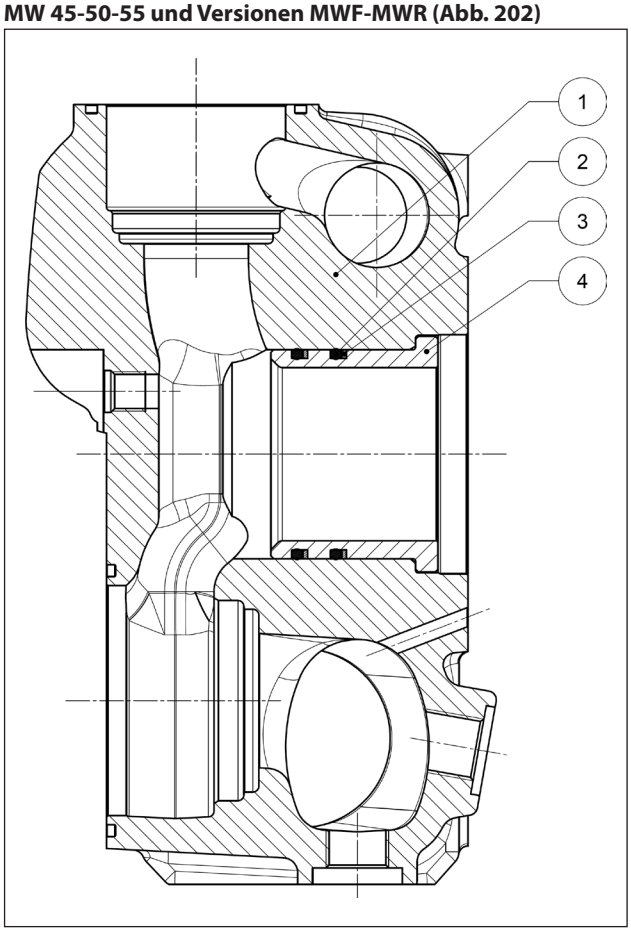


Abb. 202

① ND-Kopf MW - Art. 73120115 - Menge 1
② O-Ring - Art. 90411500 - Menge 6
③ Stützring - Art. 90527400 - Menge 6
④ ND-Buchse MW - Art. 73216056 - Menge 3

## 7 AUSTAUSCH DER PLEUELAUGENBUCHSE

Führen Sie das Setzen der Buchse und die anschließenden Bearbeitungen im Kaltzustand aus und beachten Sie dabei die Maße und Toleranzen gemäß Abb. 203.

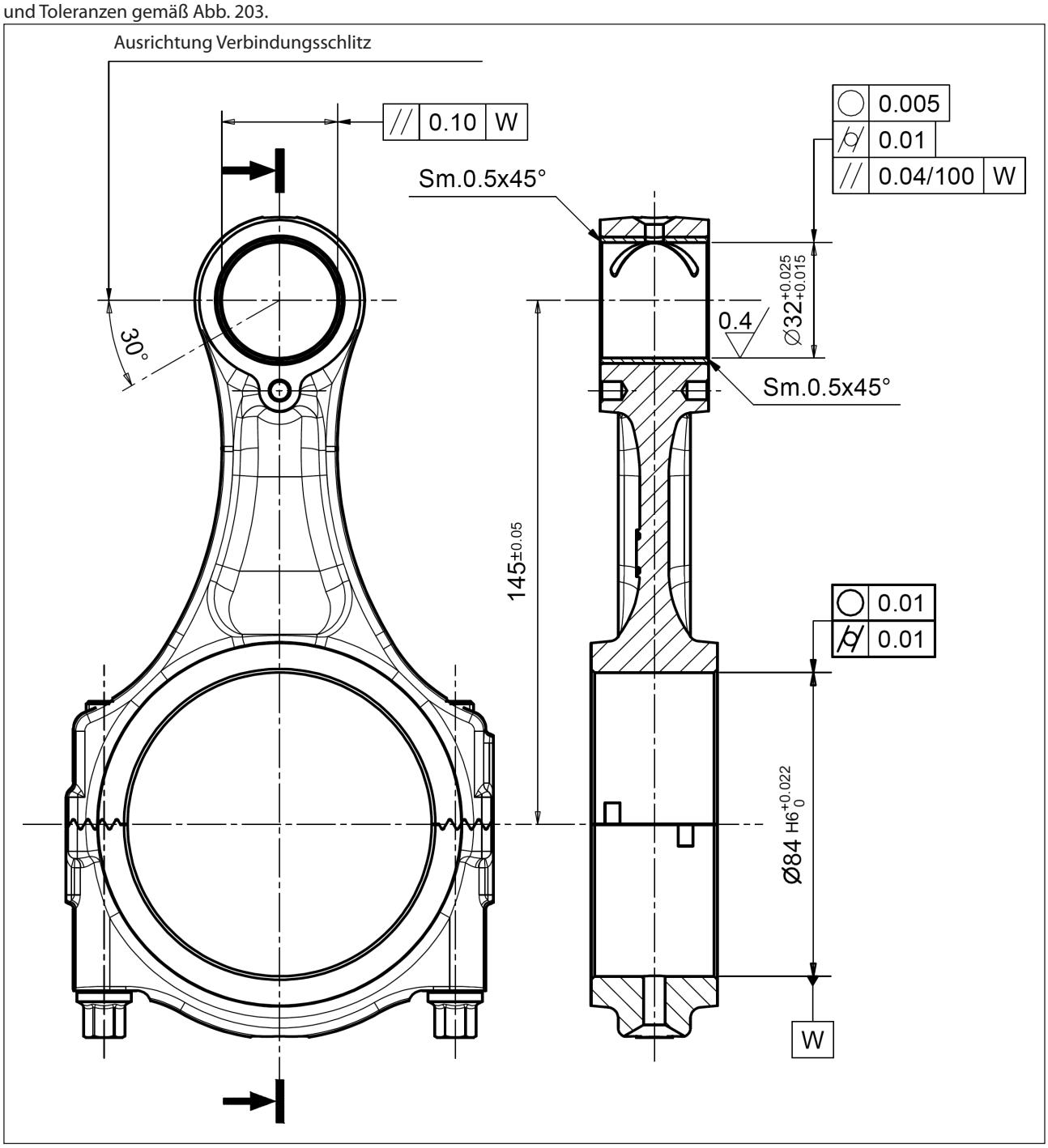


Abb. 203

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# 1 INTRODUCCIÓN

Este manual describe las instrucciones para la reparación de las bombas MW y debe ser atentamente leído y comprendido antes de utilizar la bomba.
De un correcto uso y un mantenimiento adecuado depende el funcionamiento regular y la duración de la bomba.
Interpump Group no se responsabiliza de los daños causados por negligencia o falta de observación de las normas descritas sobre el presente manual.

## 1.1 DESCRIPCIÓN DE LOS SÍMBOLOS

Leer atentamente lo indicado en el presente manual antes de realizar cada operación.

**Señal de advertencia**

Leer atentamente lo indicado en el presente manual antes de realizar cada operación.

**Señal de Peligro**
Utilizar gafas de protección

**Señal de Peligro**
Utilizar guantes de protección para realizar cualquier tipo de operación

# 2 DECLARACIÓN DE REPARACIÓN

## 2.1 REPARACIÓN DE LA PARTE MECÁNICA

Las operaciones de reparación de la parte mecánica deben ser realizadas después de haber retirado todo el aceite del cárter. Para eliminar el aceite es necesario quitar el tapón de llenado de aceite pos. ①, Fig. 1 y a continuación el tapón de descarga pos. ②, Fig. 1.

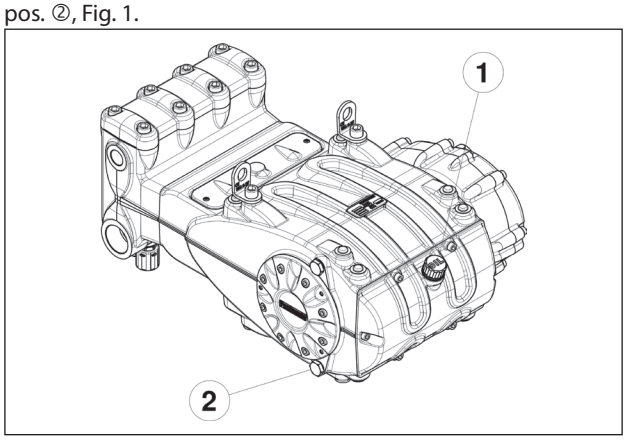


Fig. 1

**El aceite agotado debe ser colocado en un recipiente adecuado y eliminado en los correspondientes centros.**
**No debe dispersarse en el ambiente.**

### 2.1.1 Desmontaje de la parte mecánica

La secuencia correcta es la siguiente:
Vaciar el aceite contenido en la bomba y desmontar la tapa del cárter (con la junta tórica) aflojando los 6 tornillos M10 (pos. ①, Fig. 2).

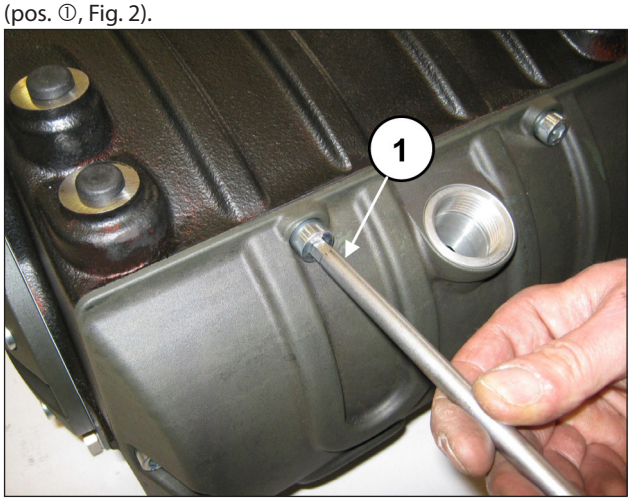


Fig. 2

Desmontar la lengüeta del eje PTO (pos. ①, Fig. 3).


Fig. 3

Aflojar los tornillos de fijación de la tapa del reductor (pos. ①, Fig. 4).

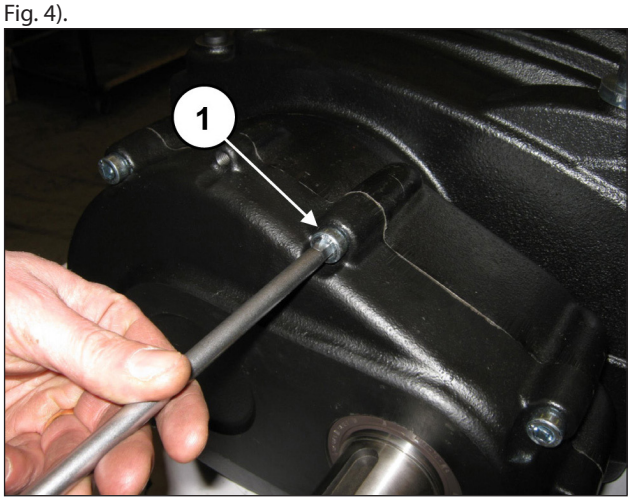


Fig. 4

Enroscar en los orificios específicos 3 tornillos prisioneros o tornillos roscados M8 (pos. ①, Fig. 5) para que actúen de extractores y 2 tornillos M10 lo suficientemente largos como para sujetar la tapa (pos. ②, Fig. 5).

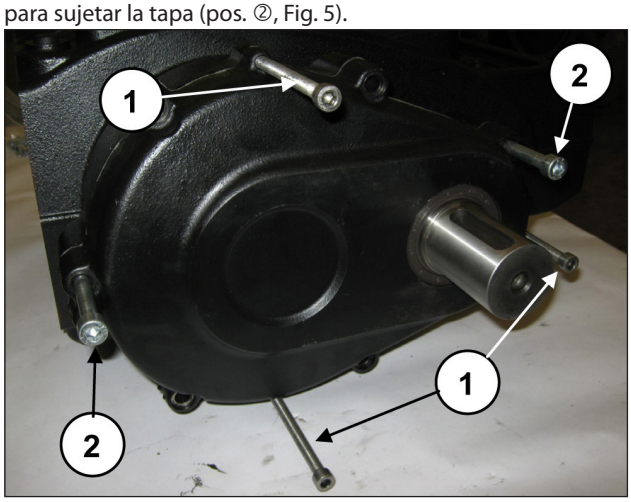


Fig. 5

Apretar de manera gradual los 3 tornillos M8 (pos. ①, Fig. 6) que actúan como extractores, hasta desmontar por completo el grupo de la tapa y el piñón.

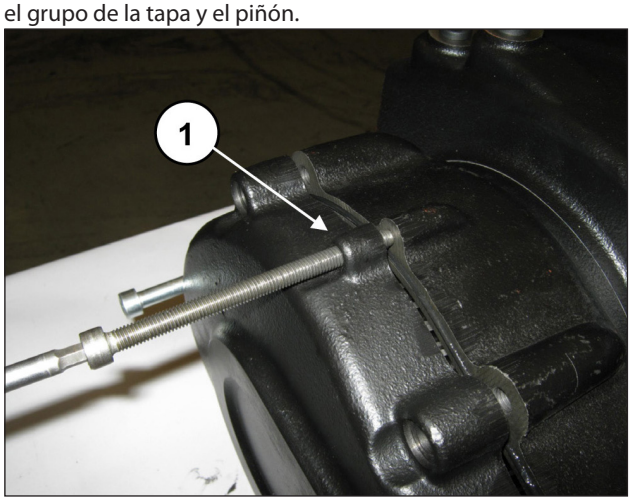


Fig. 6

La tapa del reductor se puede desmontar del piñón como se indica a continuación:
Desmontar la anilla seeger Ø120 (pos. ①, Fig. 7).

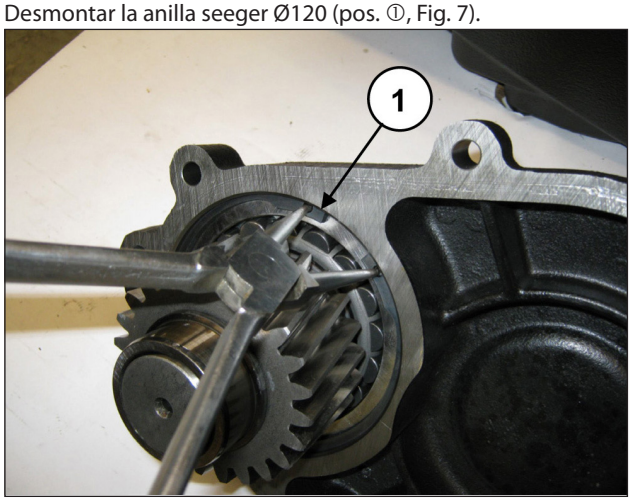


Fig. 7

Separar el piñón de la tapa presionando con una herramienta de percusión el piñón (pos. ①, Fig. 8).

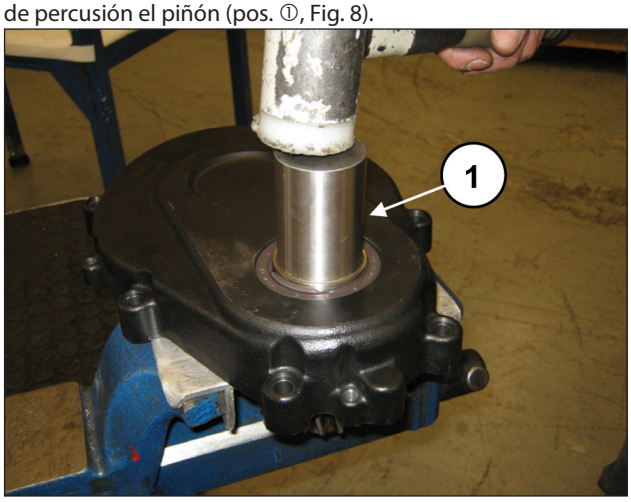


Fig. 8

Desmontar la anilla seeger Ø55 (pos. ①, Fig. 9) y la anilla de apoyo del cojinete (pos. ①, Fig. 10) del piñón.

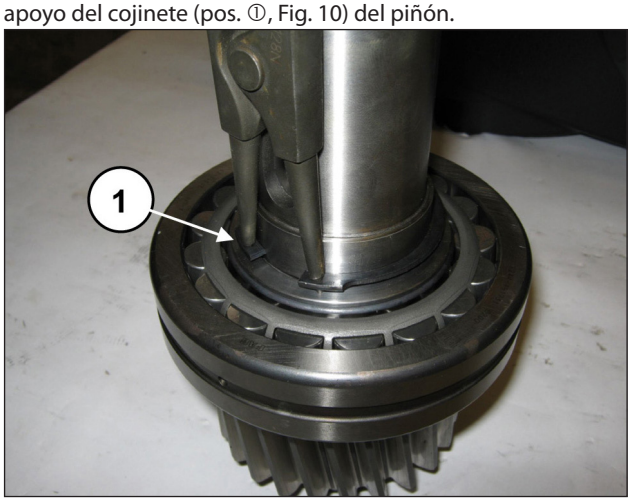


Fig. 9

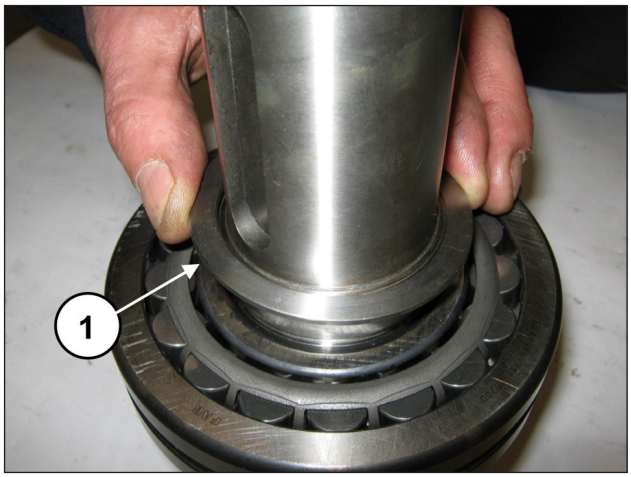


Fig. 10

Extraer el retén de la tapa del reductor desde el lado interno de la tapa (pos. ①, Fig. 11).

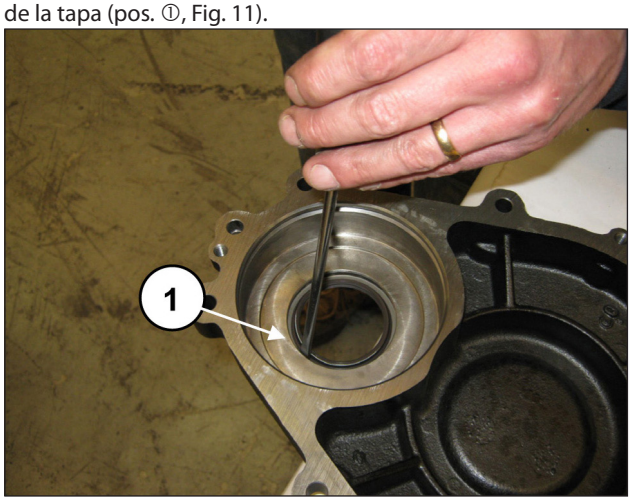


Fig. 11

Aflojar los tornillos que fijan el tope de la corona (pos. ①, Fig. 12) y desmontarlo (pos. ①, Fig. 13).

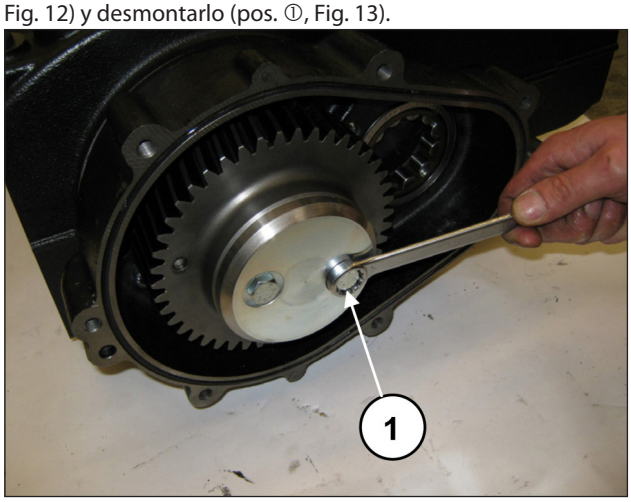


Fig. 12

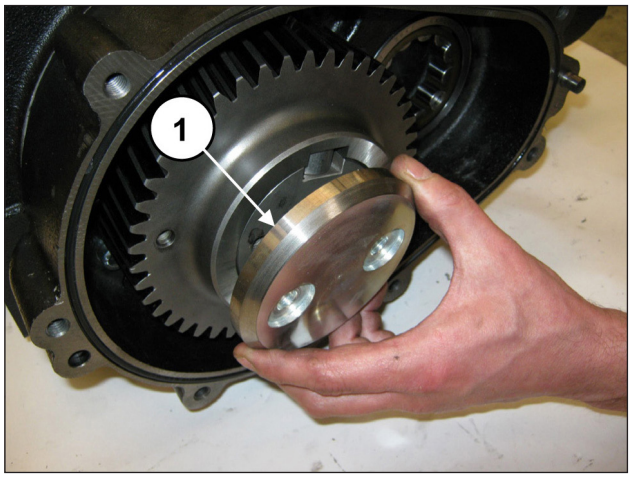


Fig. 13

Extraer la corona (pos. ①, Fig. 14). Si es necesario, aplicar un extractor de percusión en los 2 orificios M8 (, pos. ②, Fig. 14).

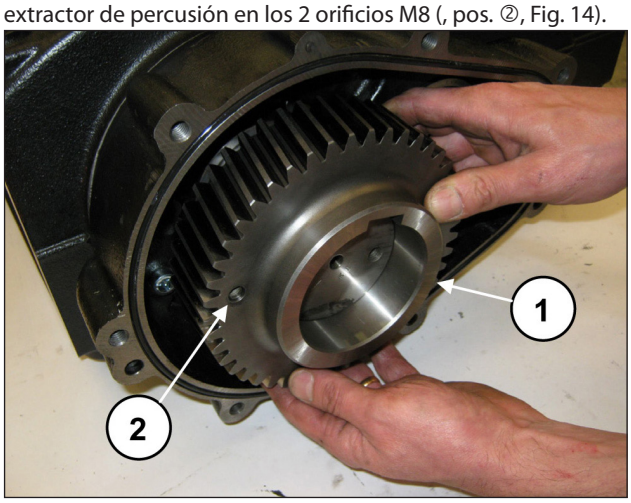


Fig. 14

Quitar la lengüeta del eje PTO (pos. ①, Fig. 15).

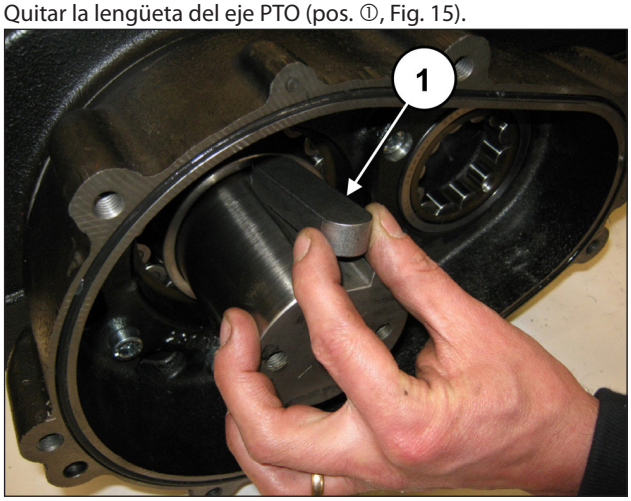


Fig. 15

Extraer la anilla de apoyo de la corona (pos. ①, Fig. 16).


Fig. 16

Aflojar los tornillos de la biela (pos. ①, Fig. 17).

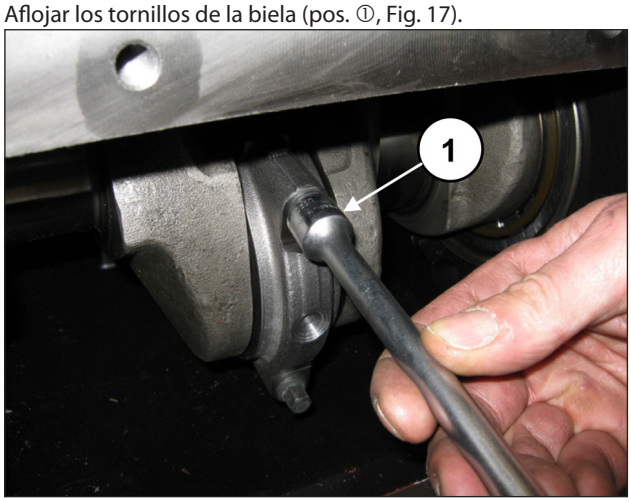


Fig. 17

Desmontar los sombreretes de la biela con los semicojinetes inferiores, controlando el orden de desmontaje.

**Al montar los sombreretes de la biela y sus semibielas se deben respetar el orden y el emparejamiento de desmontaje.**

Para evitar posibles errores, sombreretes y semibielas han sido enumerados en un lateral (pos. ①, Fig. 18).

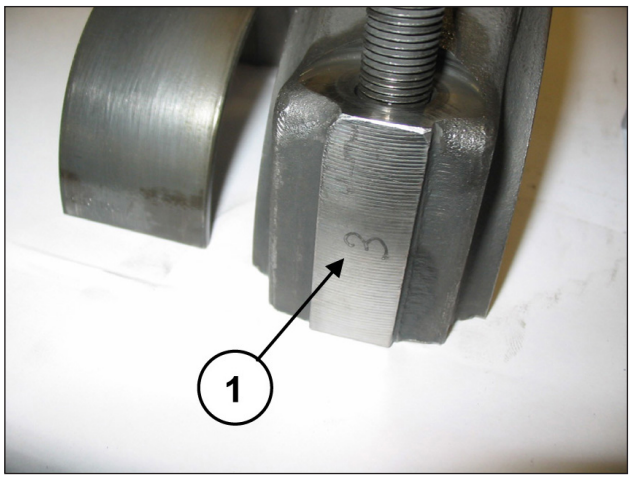


Fig. 18

Desplazar las semibielas hacia la parte hidráulica para extraer el eje acodado. Para facilitar la operación, utilizar la herramienta específica (cód. 27566200), (pos. ①, Fig. 19).

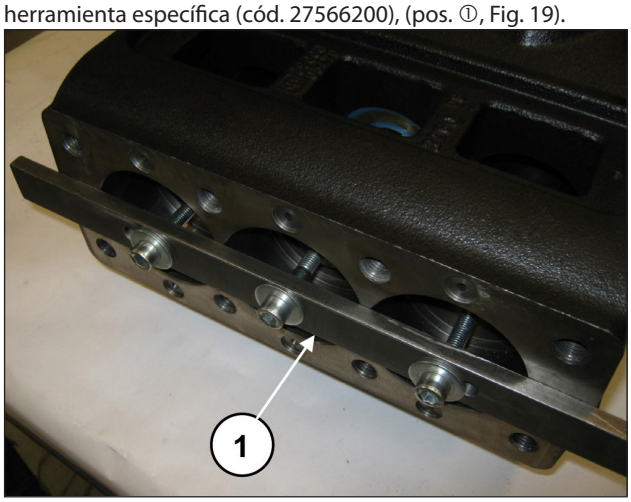


Fig. 19

Extraer los 3 semicojinetes superiores de las semibielas (pos. ①, Fig. 20).

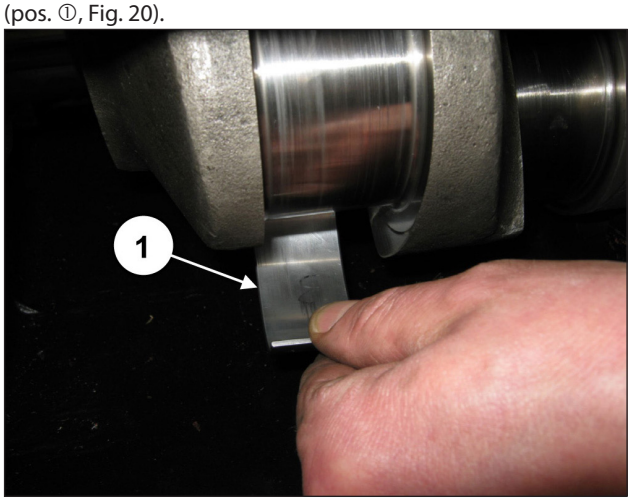


Fig. 20

Aflojar los tornillos de fijación de la caja del reductor (pos. ①, Fig. 21 y Fig. 22).

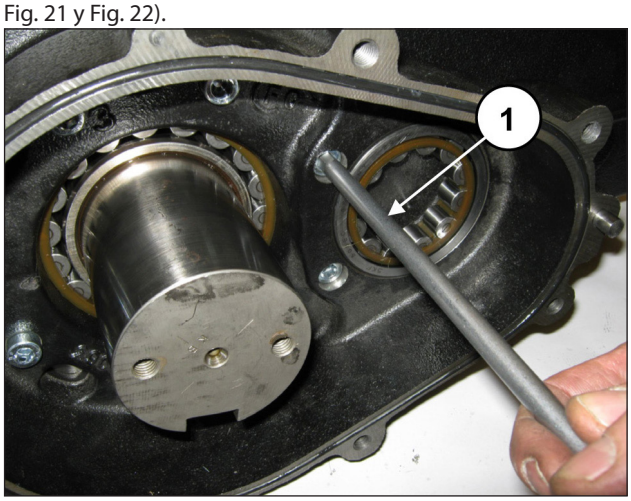


Fig. 21

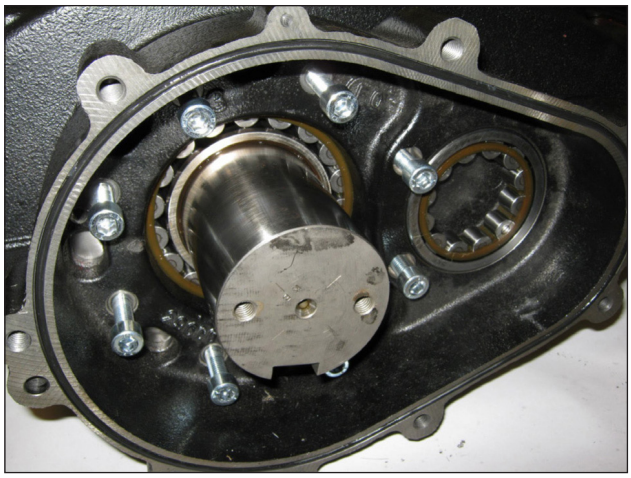

Fig. 22

Enroscar en los orificios específicos 3 tornillos prisioneros o tornillos roscados M8 (pos. ①, Fig. 23) para que actúen de extractores y 2 tornillos M10 lo suficientemente largos como para sujetar la caja del reductor (pos. ②, Fig. 23).

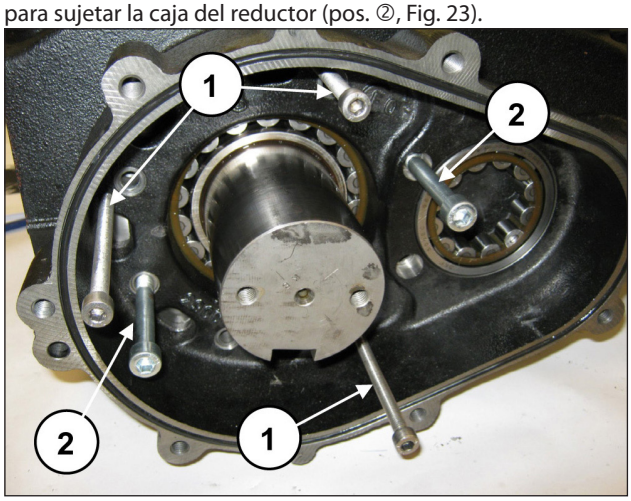


Fig. 23

Apretar de manera gradual los 3 tornillos M8 (pos. ①, Fig. 24) para evitar que la caja se incline demasiado y se bloquee en el alojamiento.
Extraer la caja sujetando el eje para evitar que se dañe (pos. ①, Fig. 25).

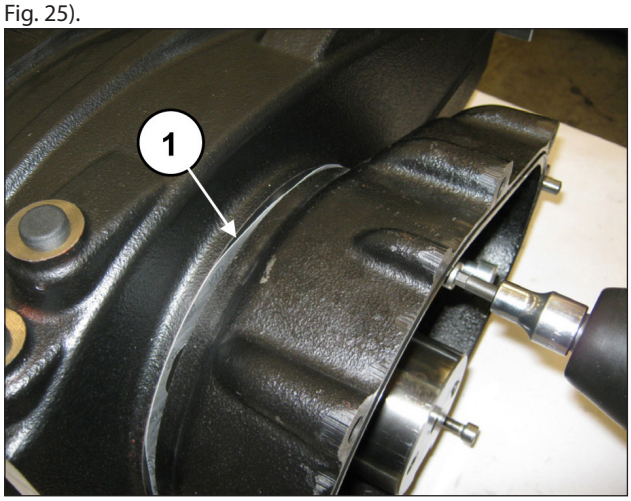


Fig. 24

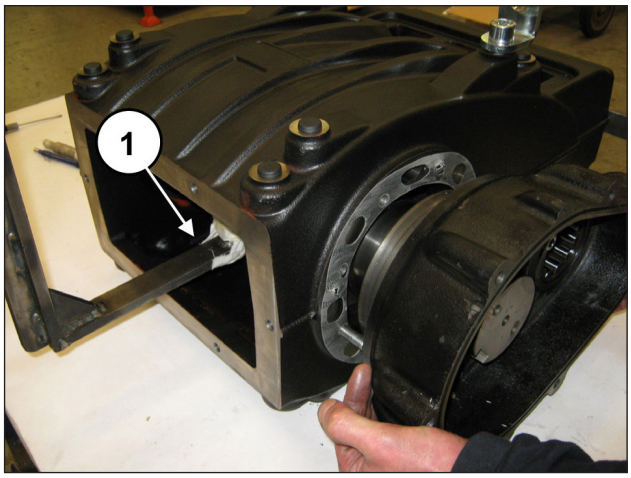


Fig. 25

En la parte opuesta, extraer los tornillos de fijación de la tapa del cojinete (pos. ①, Fig. 26 y Fig. 27).

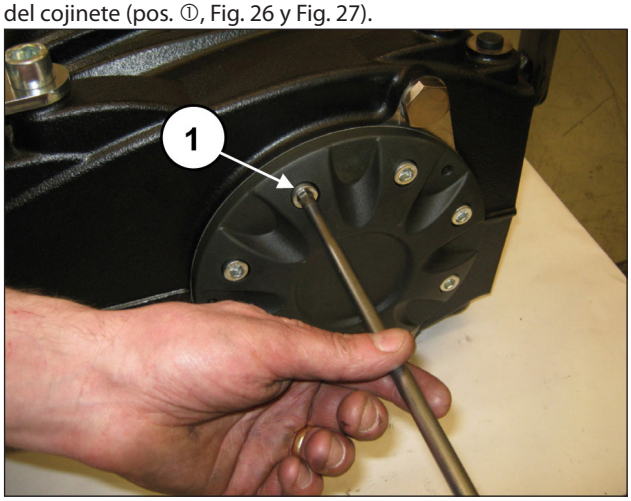


Fig. 26

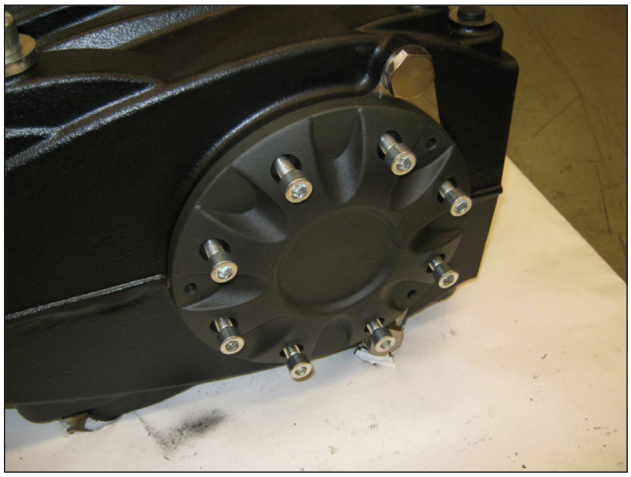

Fig. 27

Enroscar en los orificios específicos 3 tornillos prisioneros o tornillos roscados M8 (pos. ①, Fig. 28) que actúen como extractores.

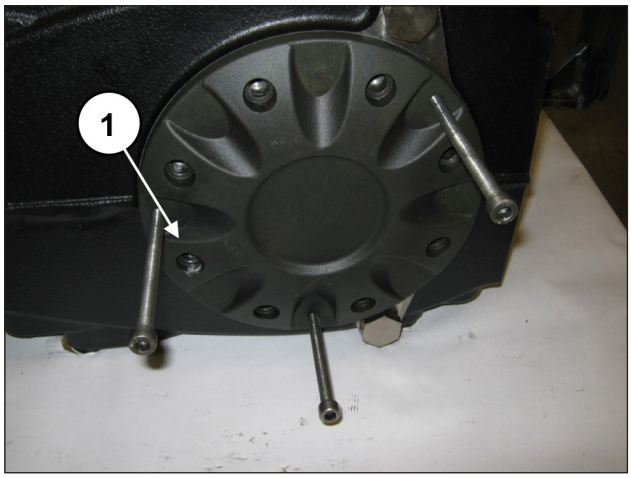


Fig. 28

Apretar de manera gradual los 3 tornillos M8 (pos. ①, Fig. 29) para evitar que la tapa se incline demasiado y se bloquee en el alojamiento.
Extraer la tapa del cojinete sujetando el eje para evitar que se dañe (pos. ①, Fig. 30).

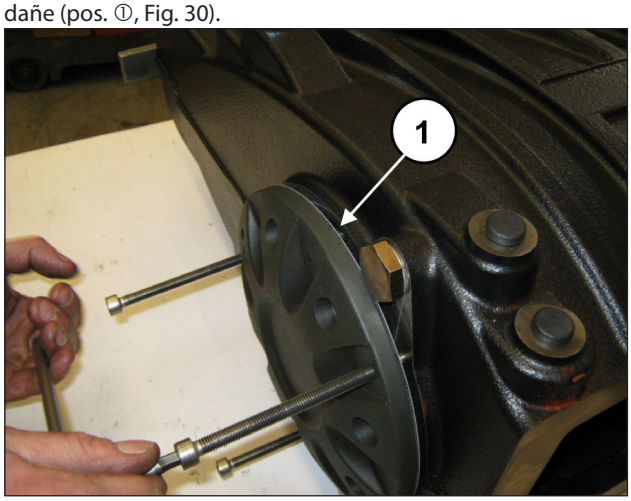


Fig. 29

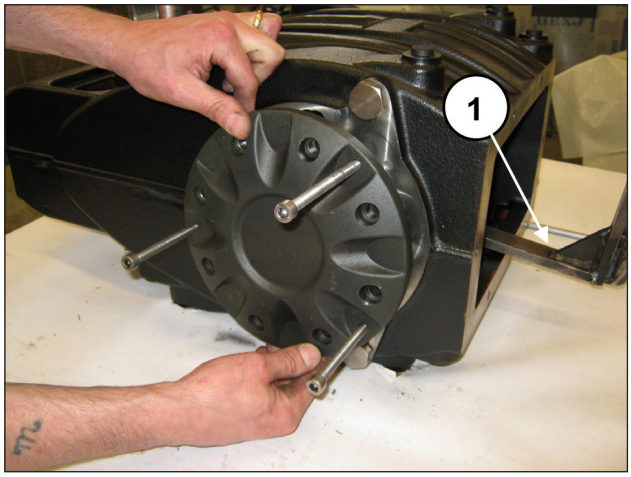


Fig. 30

Extraer el cárter del eje acodado desde el lado del PTO (pos. ①, Fig. 31).

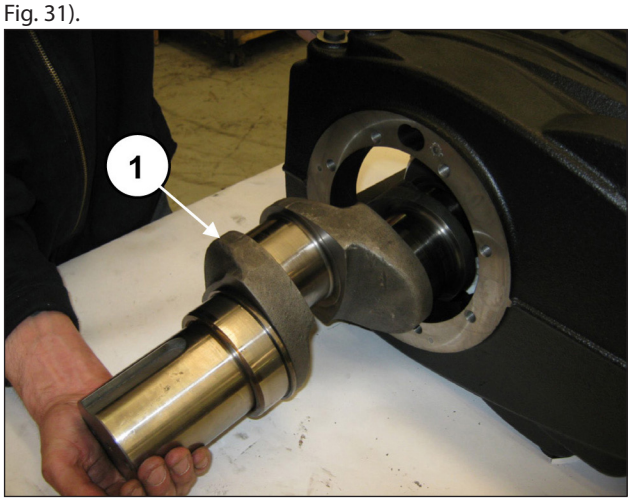


Fig. 31

En aquellos casos en los que sea necesario sustituir una o más bielas, o guías del pistón, actuar del siguiente modo:
Aflojar los tornillos de la herramienta cód. 27566200 para desbloquear las bielas (pos. ①, Fig. 32) y, a continuación, extraer los grupos biela-guía del pistón por la abertura posterior del cárter (pos. ①, Fig. 33).

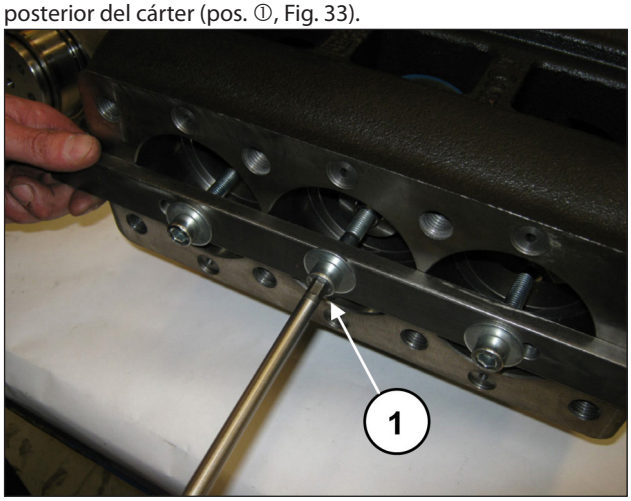


Fig. 32

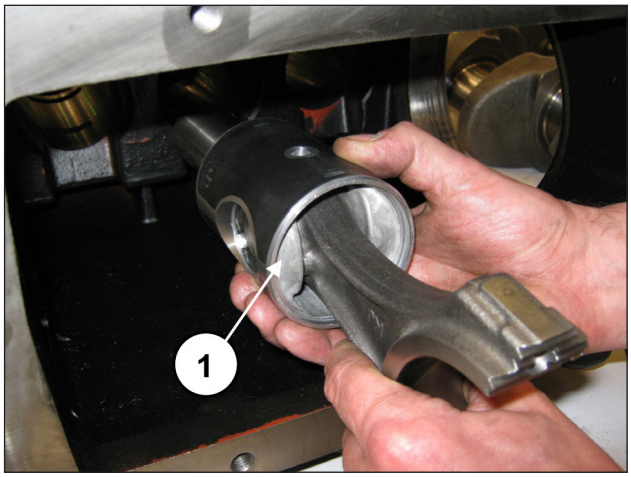


Fig. 33

Ahora es posible desmontar los retenes de la guía del pistón. Proceder con atención para no dañar la leva de deslizamiento de la guía.

**En caso de tener que sustituir los retenes de la guía del pistón sin desmontar la parte mecánica, es posible extraer los retenes utilizando la herramienta cód. 27918500 como se indica a continuación:**

Introducir la herramienta entre el vástago y el labio del retén (pos. ①, Fig. 34) e introducir a fondo la parte cónica en el retén con una herramienta de percusión (pos. ①, Fig. 35).


Fig. 34

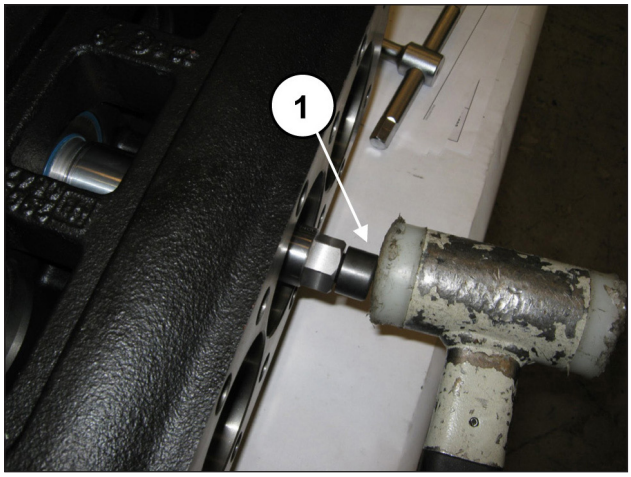


Fig. 35

Extraer el retén utilizando la pieza de percusión de la herramienta (pos. ①, Fig. 36).

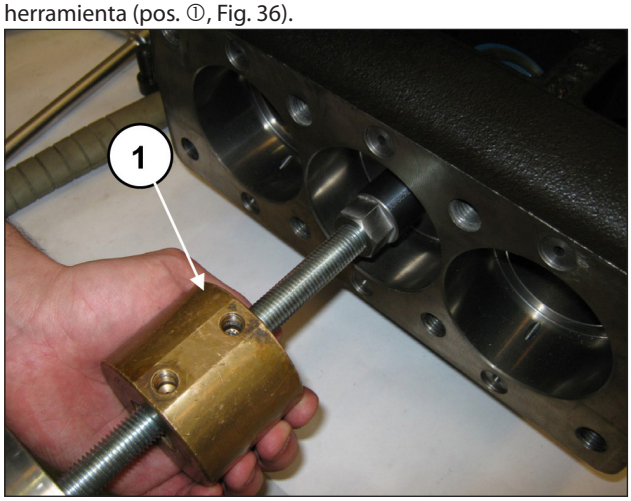


Fig. 36

Desmontar las 2 anillas seeger de bloqueo de la clavija (pos. ①, Fig. 37).

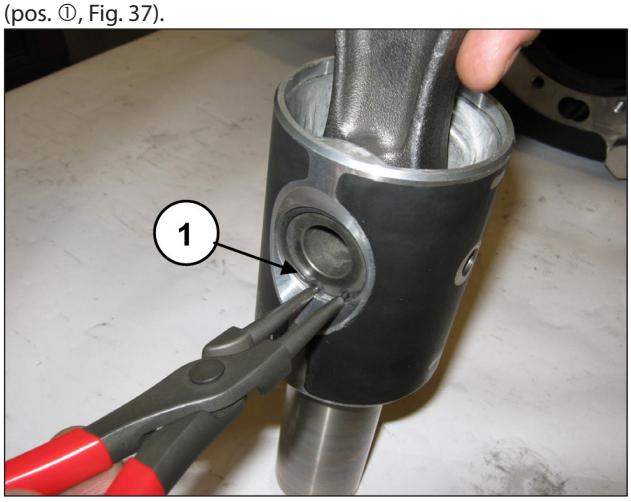


Fig. 37

Extraer la clavija (pos. ①, Fig. 38) y, a continuación, la biela (pos. ①, Fig. 39).

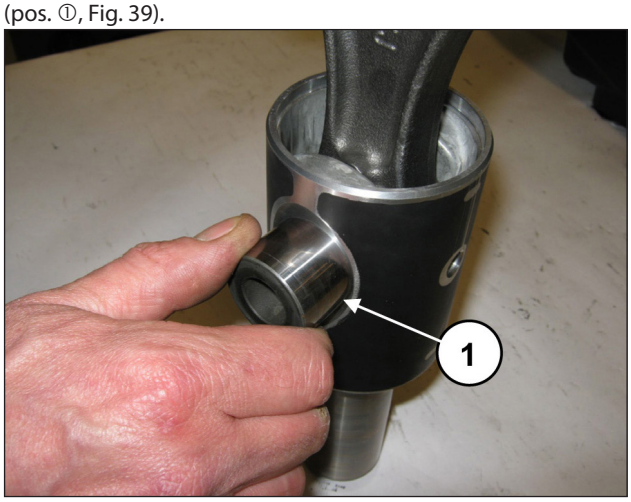


Fig. 38

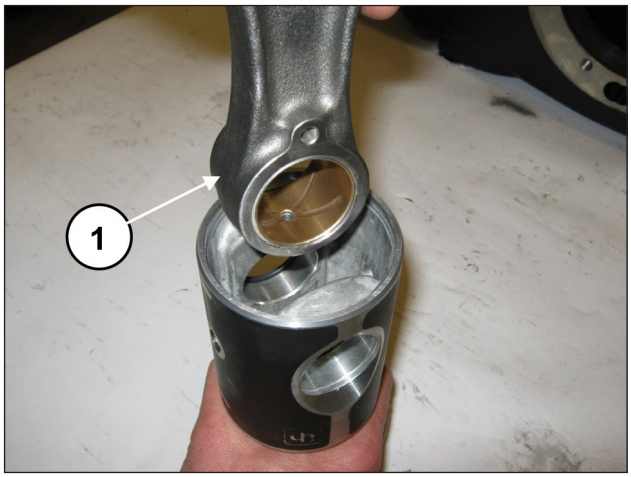


Fig. 39

Acoplar las semibielas en los sombreretes ya desmontados, controlando la numeración (pos. ①, Fig. 40).

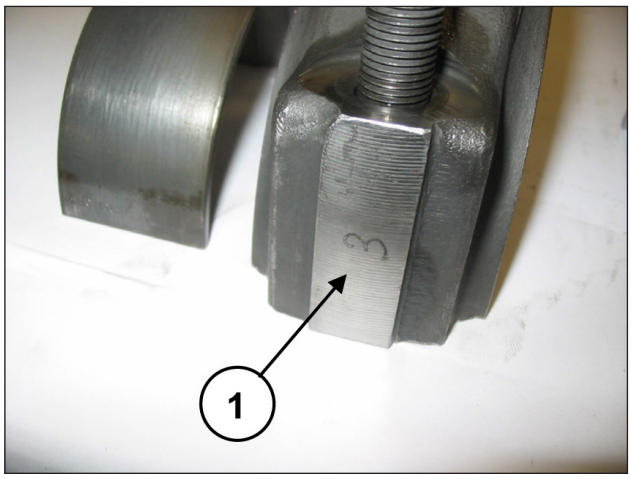


Fig. 40

Para separar el vástago de la guía del pistón, es necesario aflojar los tornillos de cabeza cilíndrica M6 con la llave específica (pos. ①, Fig. 41).

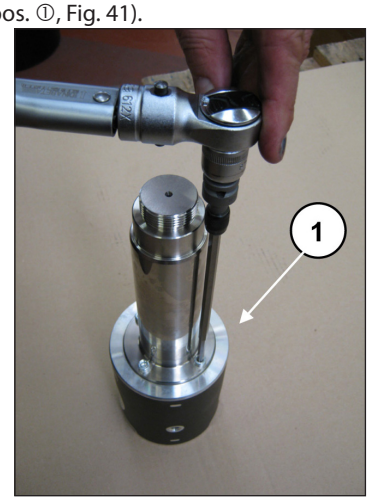


Fig. 41

### 2.1.2 Montaje de la parte mecánica

Seguir en orden contrario la secuencia de desmontaje descrita en el apart. 2.1.1.
La secuencia correcta es la siguiente:
Ensamblar el vástago en la guía del pistón.
Introducir el vástago de guía del pistón en el alojamiento de la guía del pistón (pos. ①, Fig. 42) y fijarlo con los 4 tornillos de cabeza cilíndrica M6x20 (pos. ①, Fig. 43).


Fig. 42


Fig. 43

Bloquear la guía del pistón con la herramienta específica y apretar los tornillos con la llave dinamométrica (pos. ①, Fig. 44) como se indica en el capítulo 3.

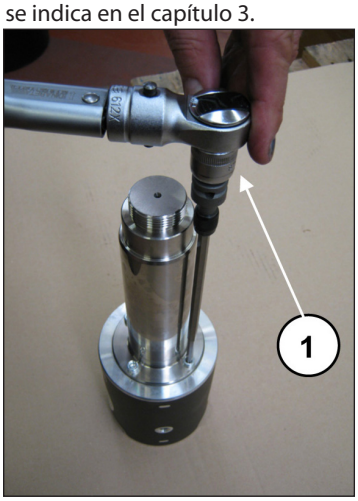


Fig. 44

Introducir la biela en la guía del pistón (pos. ①, Fig. 39) y, a continuación, la clavija (pos. ①, Fig. 38). Aplicar las dos anillas de tope (pos. ①, Fig. 37).

**Si los componentes están montados correctamente, el pie de biela, la guía del pistón y la clavija debe girar libremente.**

Separar los sombreretes de las semibielas; controlar los números laterales para emparejarlos de manera correcta (pos. ①, Fig. 40).
Comprobar que el cárter esté limpio e introducir el grupo semibiela-guía pistón dentro de las levas del cárter (pos. ①, Fig. 33).

**Introducir el grupo semibiela-guía del pistón en el cárter de manera que la numeración de las semibielas pueda verse desde arriba.**

Bloquear los tres grupos con la herramienta cód. 27566200, (pos. ①, Fig. 32).
Premontar la anilla interna de los cojinetes del eje acodado (en ambos lados del eje hasta el tope) utilizando la herramienta cód. 27604700, (pos. ①, Fig. 45) (pos. ①, Fig. 46).

**Las anillas internas y externas de los cojinetes se han de montar respetando el emparejamiento de desmontaje.**


Fig. 45


Fig. 46

Introducir el eje desde el lado del PTO sin golpear los cilindros de las bielas montados anteriormente (pos. ①, Fig. 47) y (pos. ①, Fig. 48).

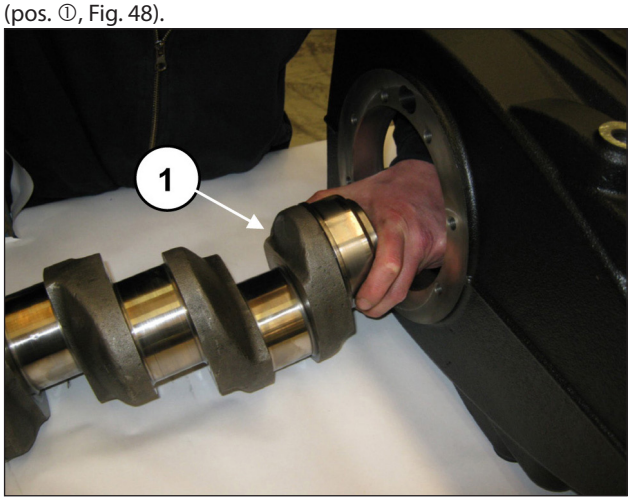


Fig. 47

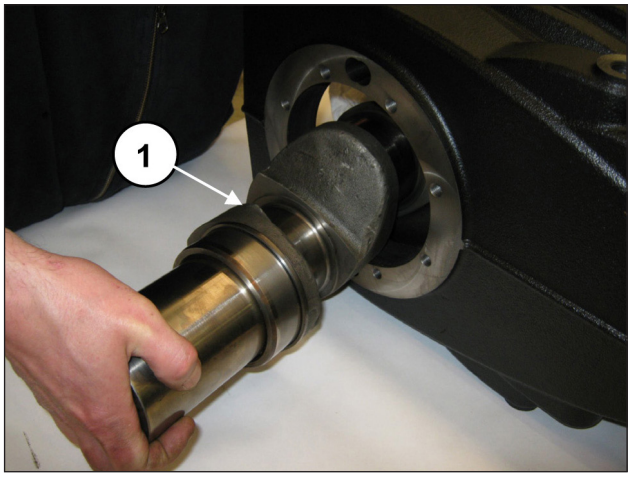


Fig. 48

**El eje acodado se ha de montar de manera que el lado PTO se encuentre en la parte opuesta a los orificios G1/2" para los tapones de descarga de aceite del cárter de la bomba (pos. ②, Fig. 50).**

Continuar hasta que el eje entre por completo en el cárter (pos. ①, Fig. 49 y Fig. 50).

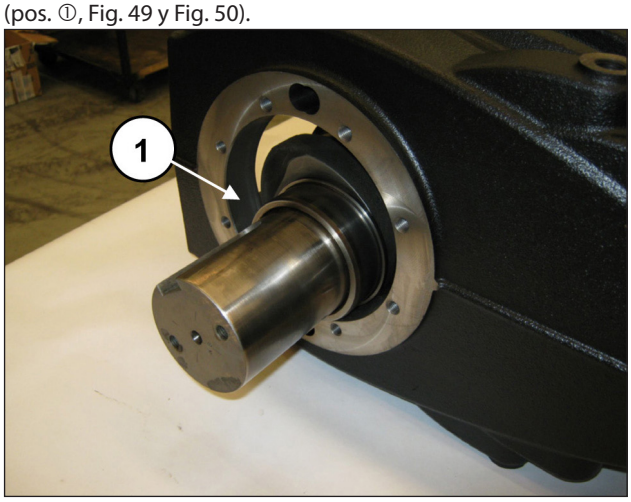


Fig. 49

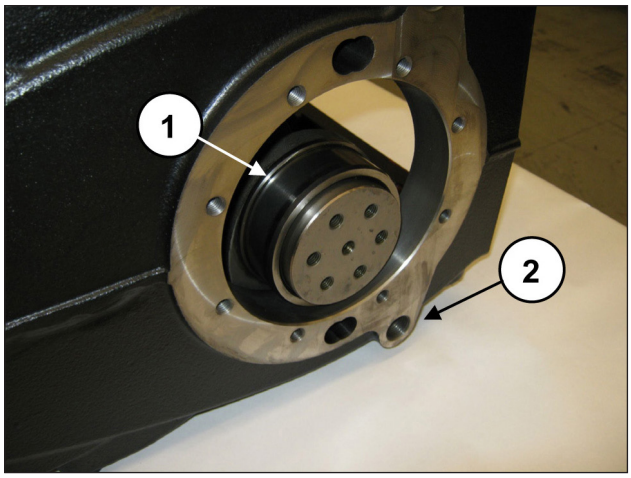


Fig. 50

Premontar la anilla externa del cojinete del piñón en la caja del reductor utilizando la herramienta cód. 27604900, (pos. ①, Fig. 51) para introducirla a fondo (pos. ①, Fig. 52).


Fig. 51

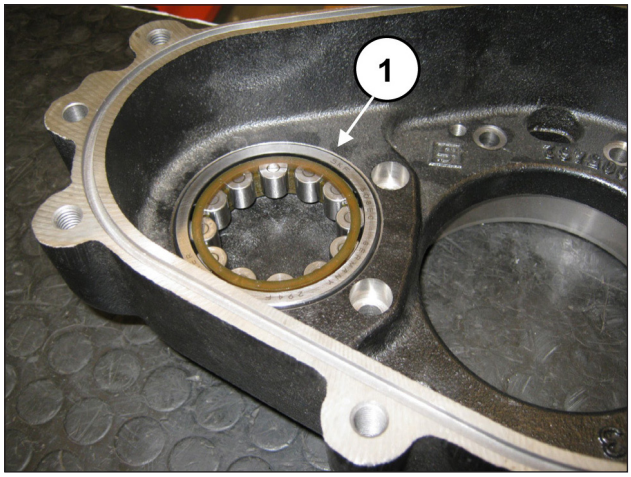


Fig. 52

Desde el lado opuesto de la caja del reductor, premontar la anilla externa del cojinete del eje acodado utilizando la herramienta cód. 27605000, (pos. ①, Fig. 53) para introducirla a fondo (pos. ①, Fig. 54).

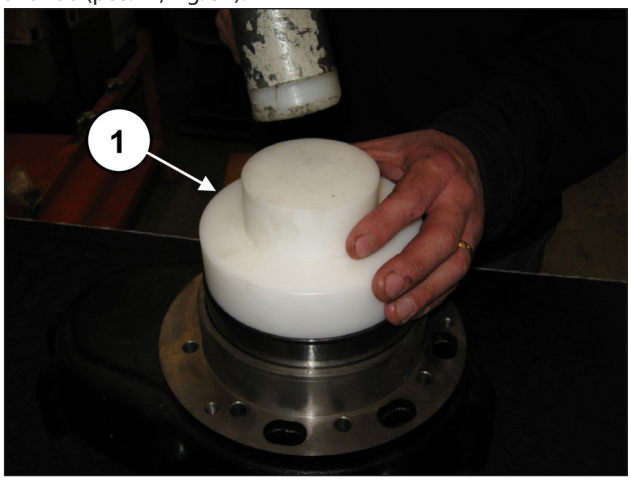


Fig. 53

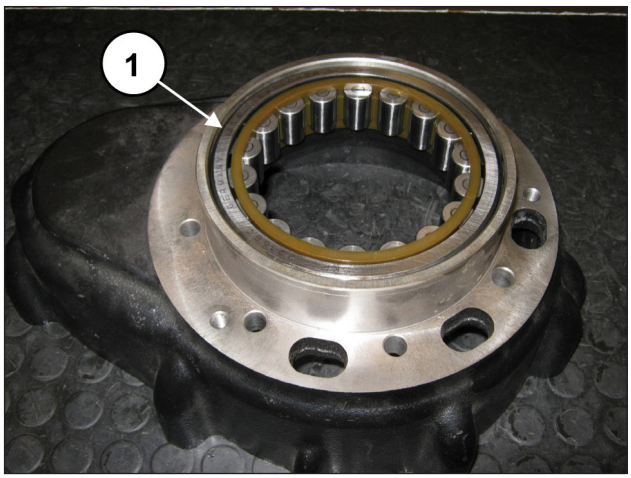


Fig. 54

Repetir la operación en la tapa del cojinete para premontar la anilla externa del cojinete del eje acodado utilizando la herramienta cód. 27605000, (pos. ①, Fig. 55) para introducirla a fondo (pos. ①, Fig. 56).

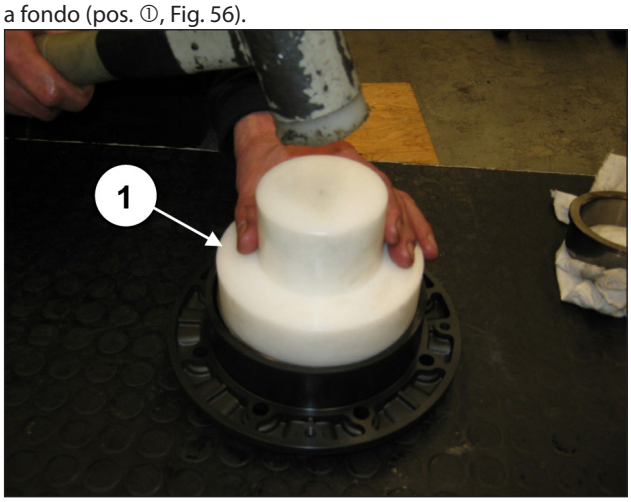


Fig. 55

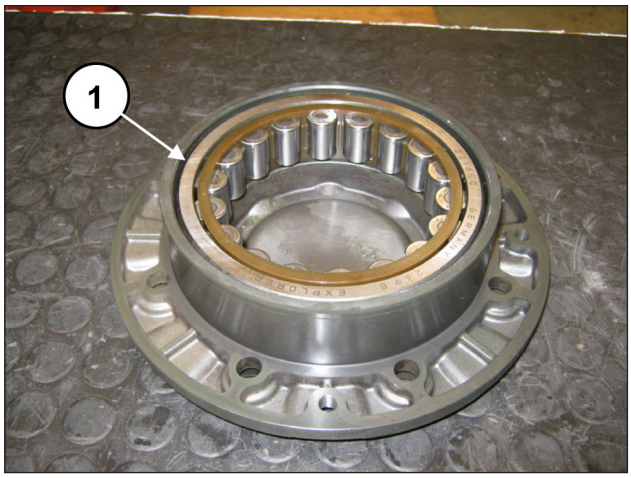


Fig. 56

Introducir la junta lateral en la tapa del cojinete (pos. ①, Fig. 57) y levantar el eje acodado para facilitar la introducción de la tapa (pos. ①, Fig. 58).

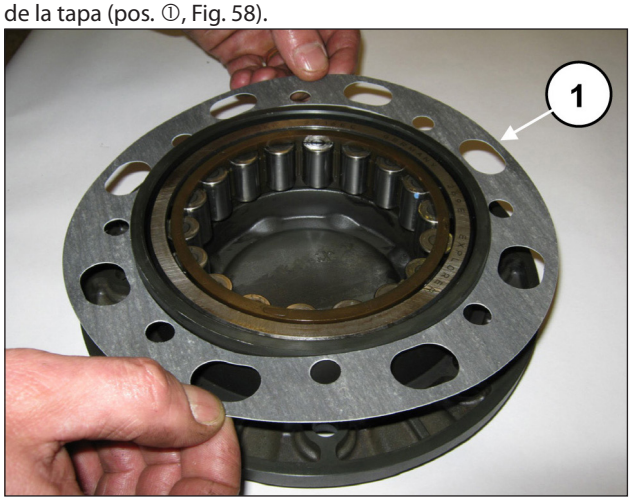


Fig. 57

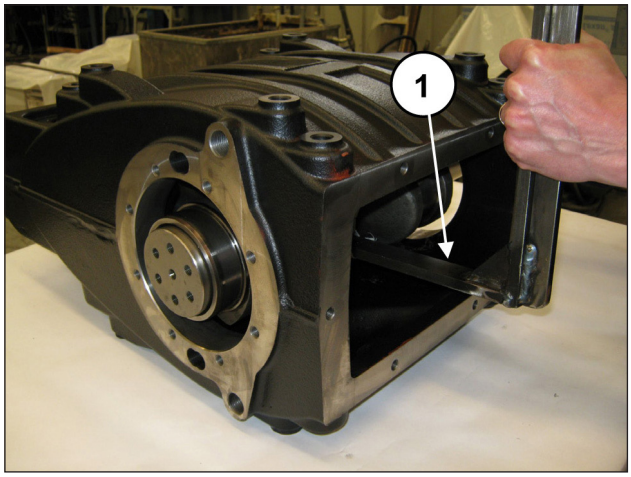


Fig. 58

Montar la tapa del cojinete (y la junta) utilizando una herramienta de percusión (pos. ①, Fig. 59)

**Orientar la tapa del cojinete de manera que el logo "Pratissoli" esté en posición horizontal.**

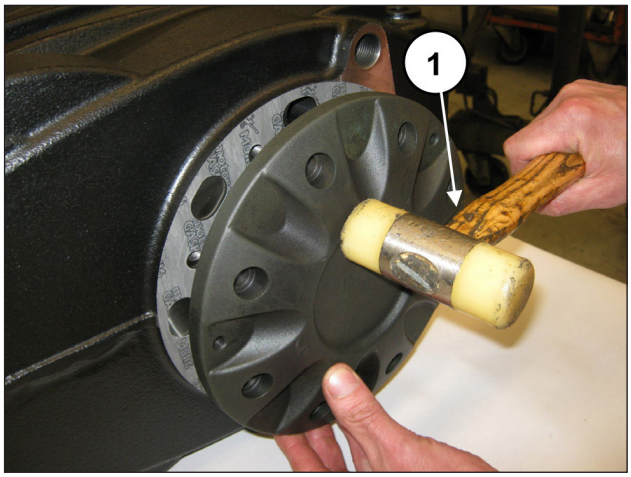


Fig. 59

Apretar los 8 tornillos M10x30 (pos. ①, Fig. 60).
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3.

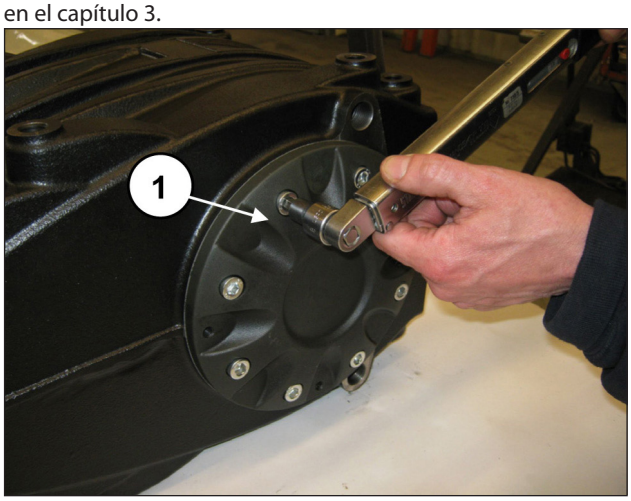


Fig. 60

Desde el lado opuesto, introducir la junta lateral en la caja del reductor (pos. ①, Fig. 61) y levantar el eje acodado para facilitar la introducción de la tapa (pos. ①, Fig. 62).

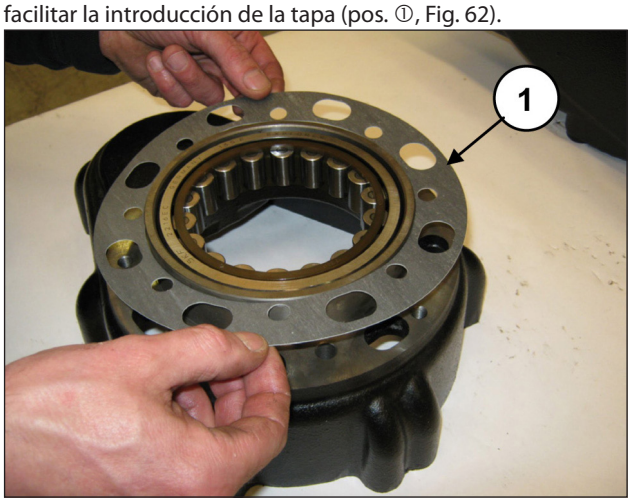


Fig. 61

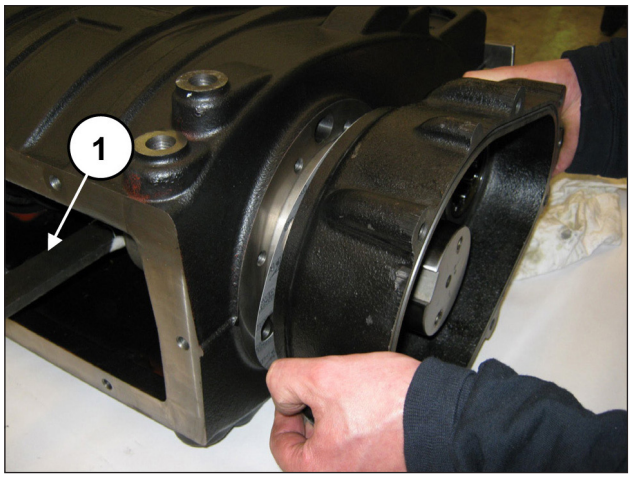


Fig. 62

Montar la caja del reductor (y la junta) utilizando una herramienta de percusión (pos. ①, Fig. 63).

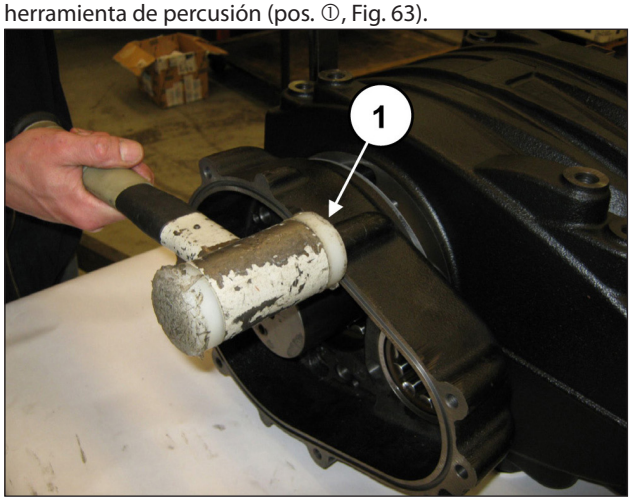


Fig. 63

Apretar los 8 tornillos M10x40 (pos. ①, Fig. 64).
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS.

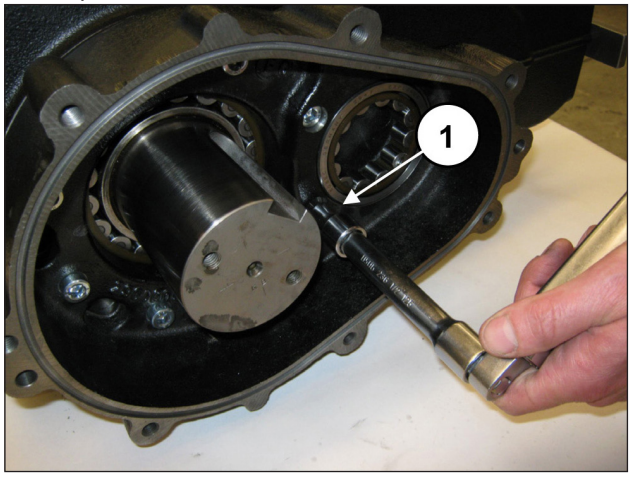


Fig. 64

Desmontar la herramienta que bloquea las bielas cód. 27566200, (pos. ①, Fig. 32).

Introducir los semicojinetes superiores entre las bielas y el eje (pos. ①, Fig. 65).

**Para montar correctamente los cojinetes, la lengüeta de referencia de los semicojinetes debe encajar en el alojamiento de la semibiela (pos. ①, Fig. 66).**

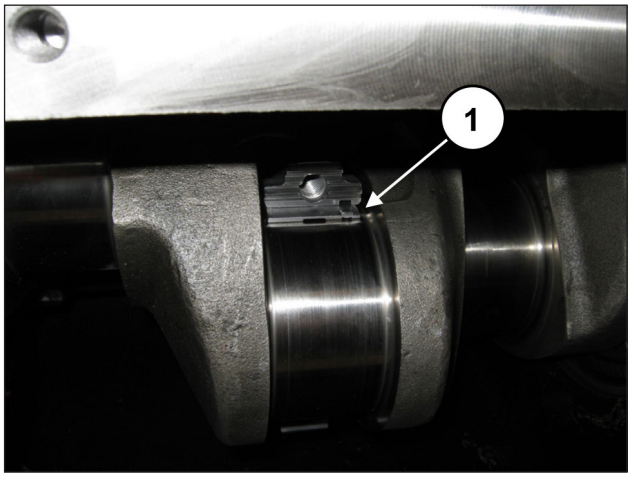


Fig. 65

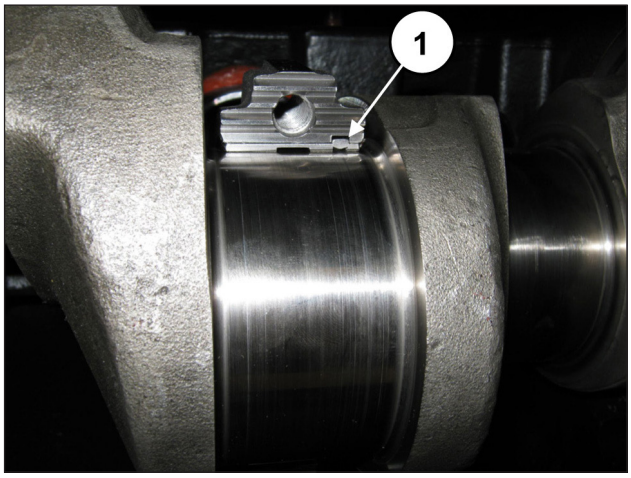


Fig. 66

Montar los semicojinetes inferiores en los sombreretes (pos. ①, Fig. 67). Comprobar que la lengüeta de referencia de los semicojinetes esté dentro del alojamiento del sombrerete (pos. ②, Fig. 67).
Fijar los sombreretes a las semibielas con los tornillos M10x1.5x80 (pos. ①, Fig. 68).

**Prestar atención al sentido correcto de montaje de los sombreretes. La numeración debe estar orientada hacia arriba.**

Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS, aplicando el parte de apriete a los tornillos de manera simultánea.

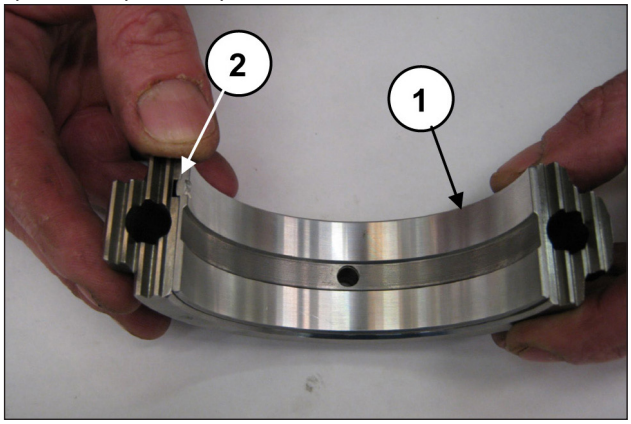


Fig. 67

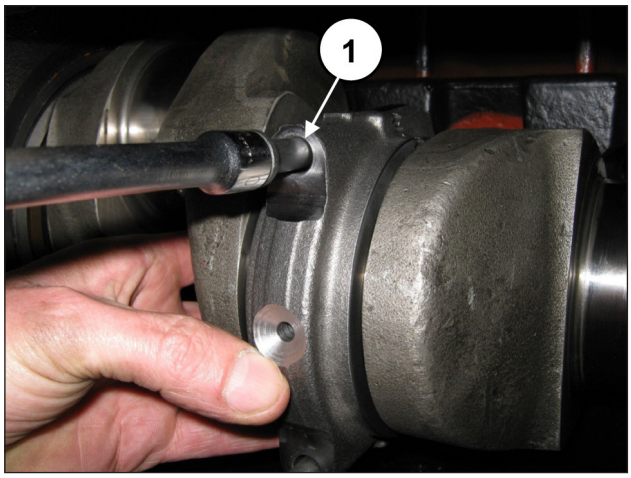


Fig. 68

**Ad terminar las operaciones, comprobar la holgura axial de las bielas en ambas direcciones.**

Introducir el retén de la guía del pistón en el alojamiento del cárter utilizando la herramienta cód. 27605300, (pos. ① y ②, Fig. 69/a y Fig. 69/b).

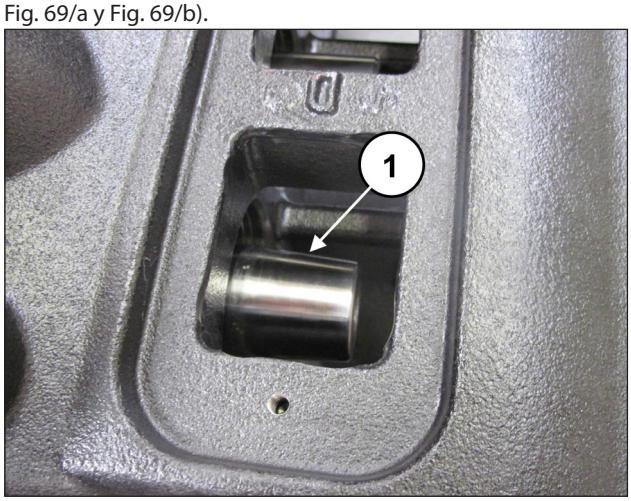


Fig. 69/a

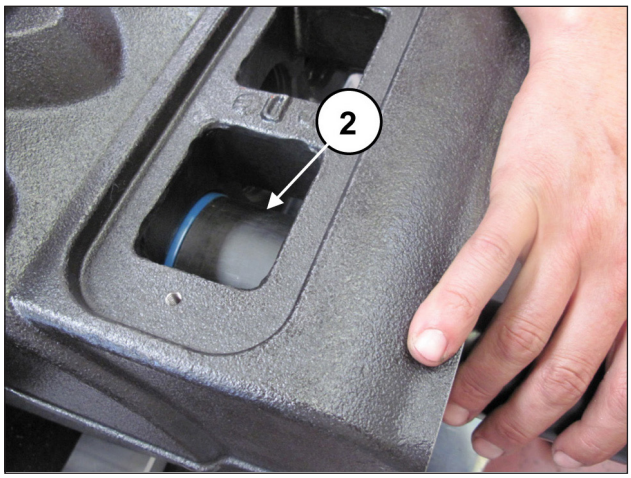


Fig. 69/b

Introducir la junta tórica en la tapa posterior (pos. ①, Fig. 70) y montar la tapa en el cárter con los 6 tornillos M10x30 (pos. ①, Fig. 71).

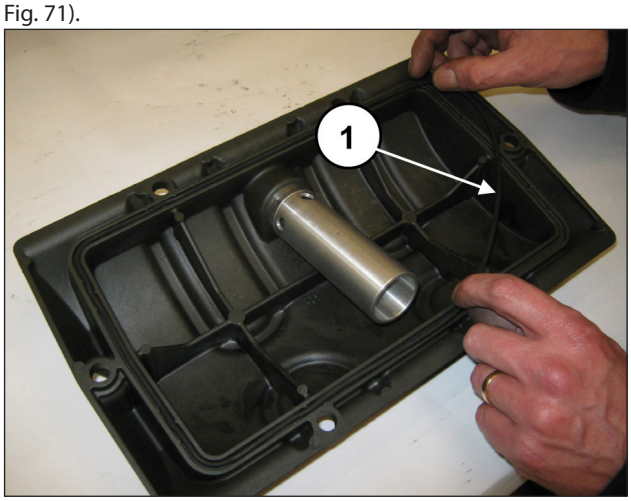


Fig. 70

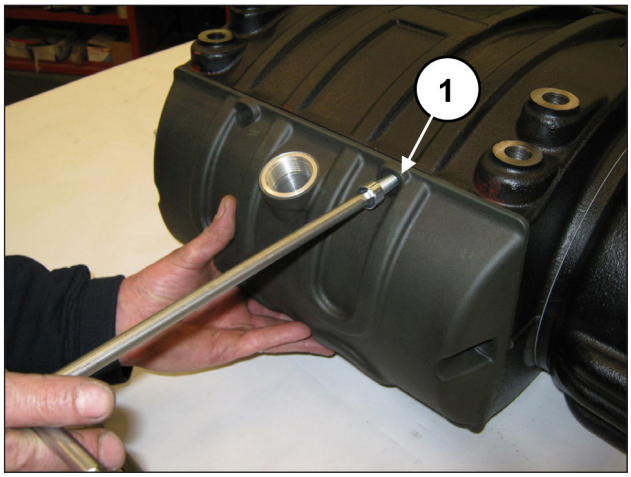


Fig. 71

**Comprobar que la junta tórica entre a fondo en el alojamiento de la tapa para evitar que se dañe al apretar los tornillos.**

Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS. Introducir la anilla de apoyo de la corona en el codo del eje acodado (pos. ①, Fig. 72) hasta el tope (pos. ①, Fig. 73).

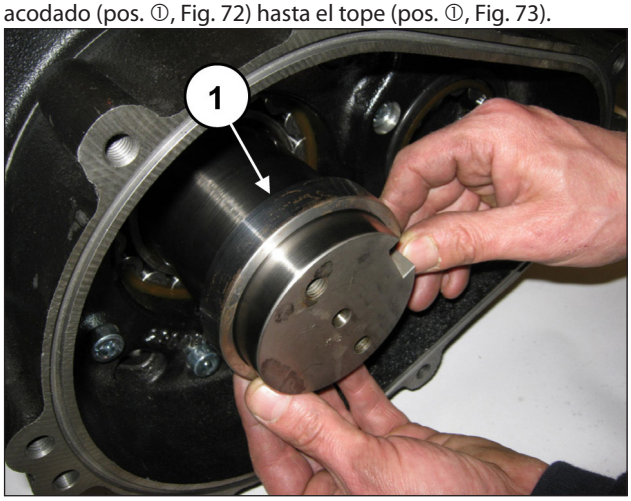


Fig. 72

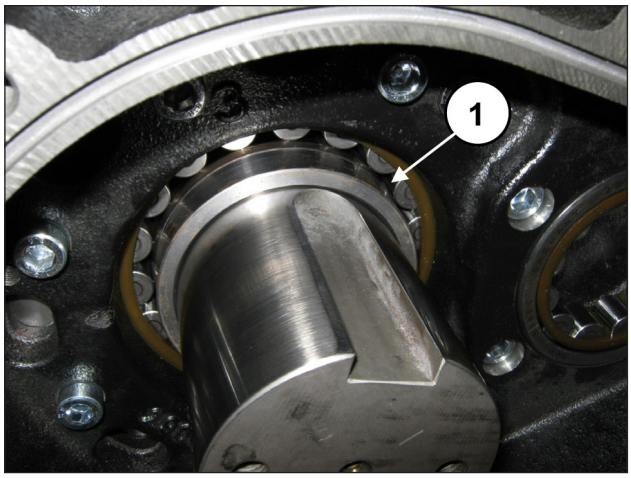


Fig. 73

Introducir la lengüeta 22x14x80 en el alojamiento del eje (pos. ①, Fig. 74) e introducir la corona en el eje (pos. ①, Fig. 75).

**Montar la corona de modo que los dos orificios M8 utilizados para la extracción estén orientados hacia la parte externa de la bomba (pos. ②, Fig. 75).**

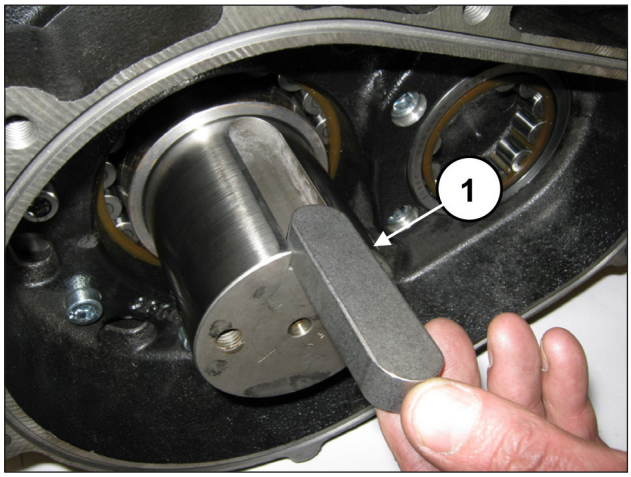


Fig. 74

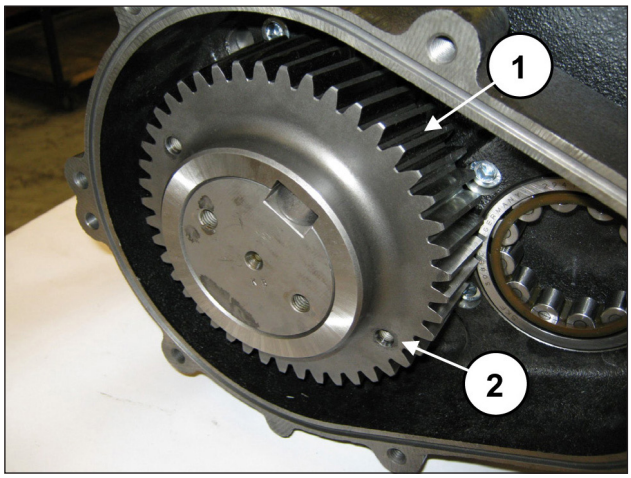


Fig. 75

Fijar el tope de la corona (pos. ①, Fig. 76) con los 2 tornillos M10x25.
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 (pos. ①, Fig. 77).

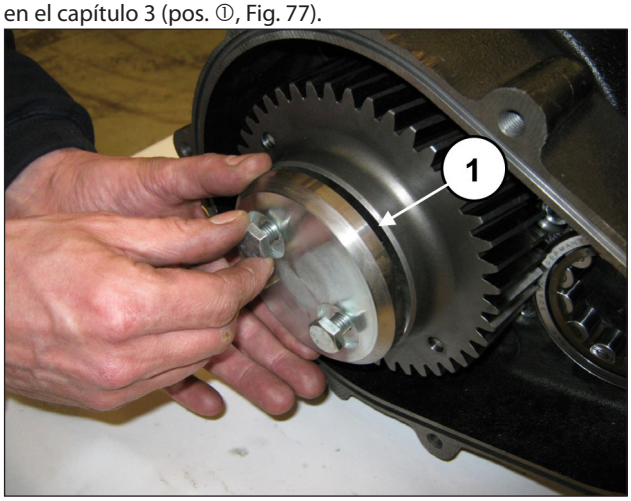


Fig. 76

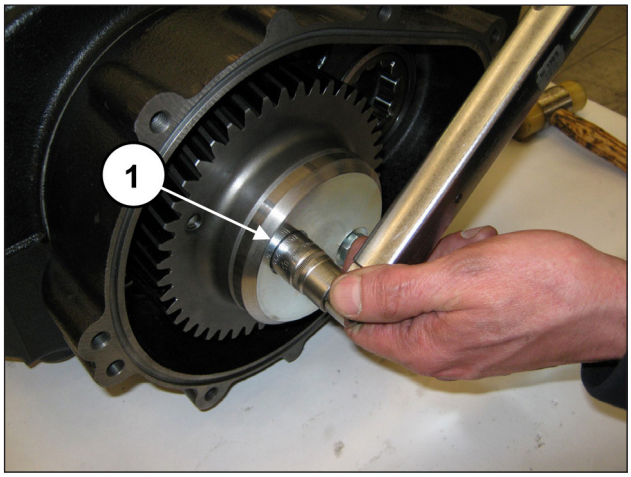


Fig. 77

Colocar las 2 clavijas Ø10x24 en la caja del reductor (pos. ①, Fig. 78) e introducir la junta tórica (pos. ①, Fig. 79).

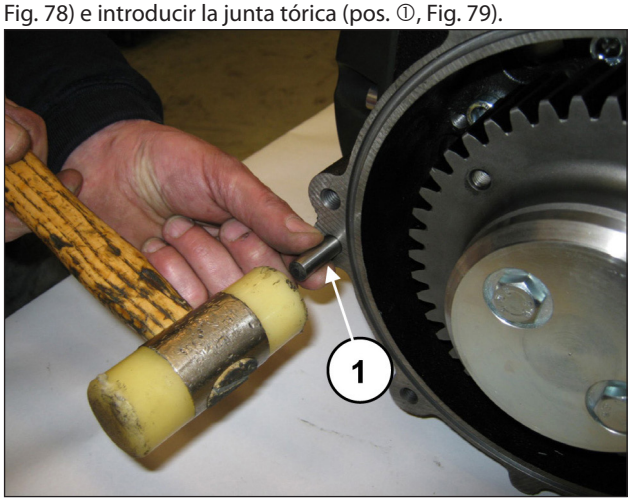


Fig. 78

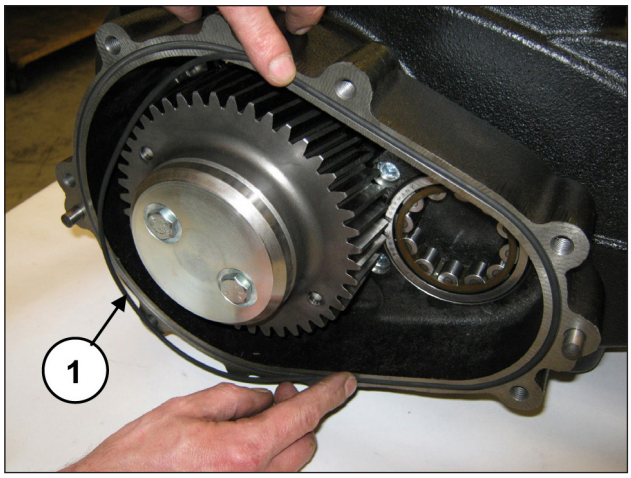


Fig. 79

Ensamblar el piñón en la tapa del reductor como se indica a continuación:
Premontar en el piñón la anilla interna del cojinete 40x90x23 (pos. ①, Fig. 80) introduciéndola a fondo.

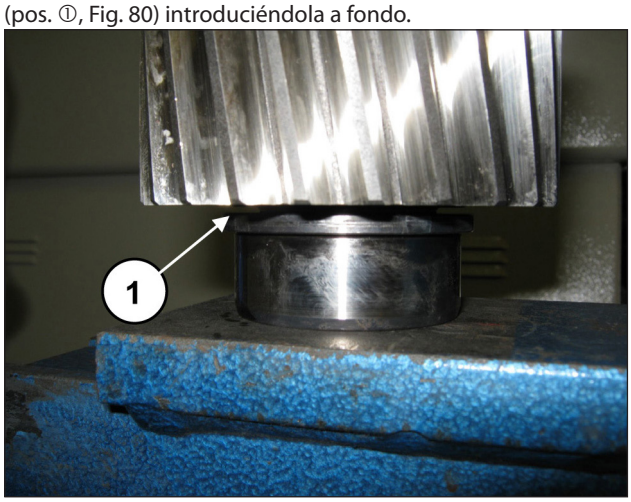


Fig. 80

Desde el lado opuesto del piñón, premontar el cojinete 55x120x29 (pos. ①, Fig. 81) introduciéndolo a fondo con la herramienta cód. 27604800, (pos. ①, Fig. 82).

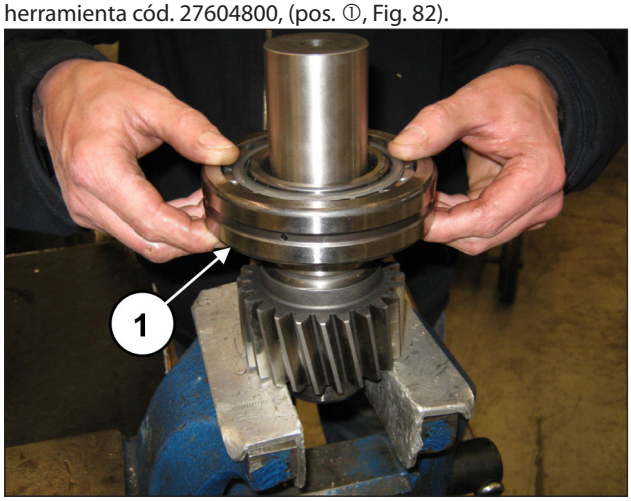


Fig. 81

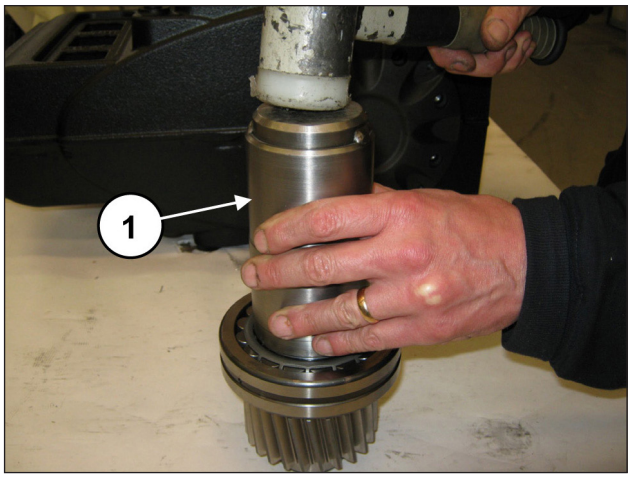


Fig. 82

Introducir la anilla de apoyo del cojinete (pos. ①, Fig. 83) y colocar la anilla seeger Ø55 (pos. ①, Fig. 84).


Fig. 83

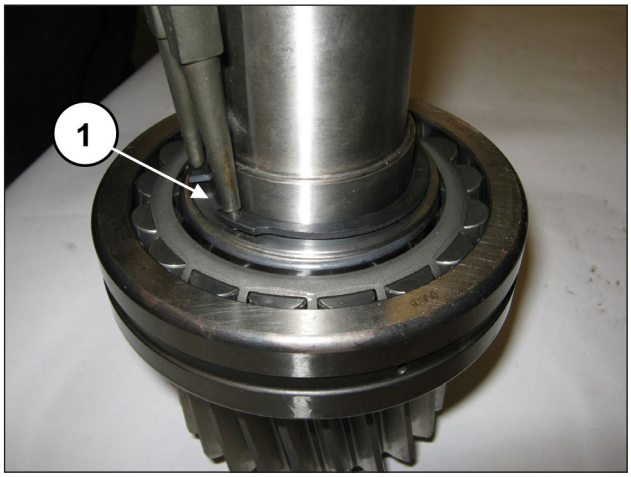


Fig. 84

Introducir el piñón premontado en el alojamiento de la tapa del reductor utilizando una herramienta de percusión (pos. ①, Fig. 85).

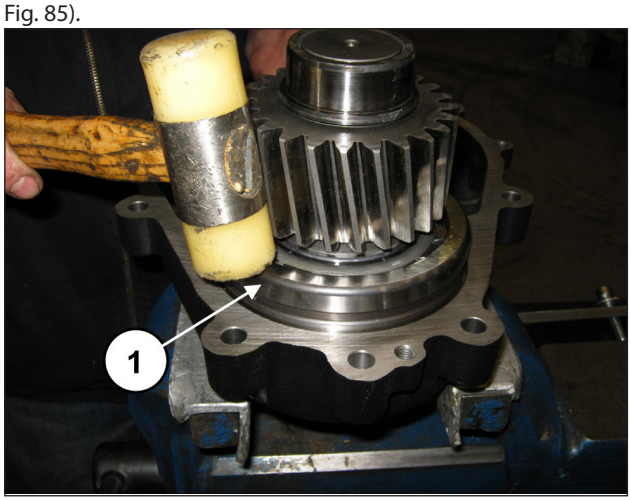


Fig. 85

Introducir en el alojamiento la anilla seeger Ø120 (pos. ①, Fig. 86).

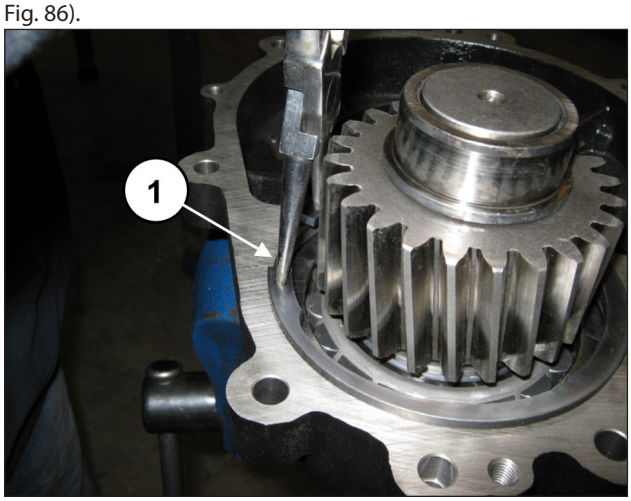


Fig. 86

Montar la tapa del reductor con la herramienta de percusión (pos. ①, Fig. 87) y fijarla con los 7 tornillos M10x40 (pos. ①, Fig. 88).
Controlar el ensamblaje de los dos elementos del cojinete 40x90x23.
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3.

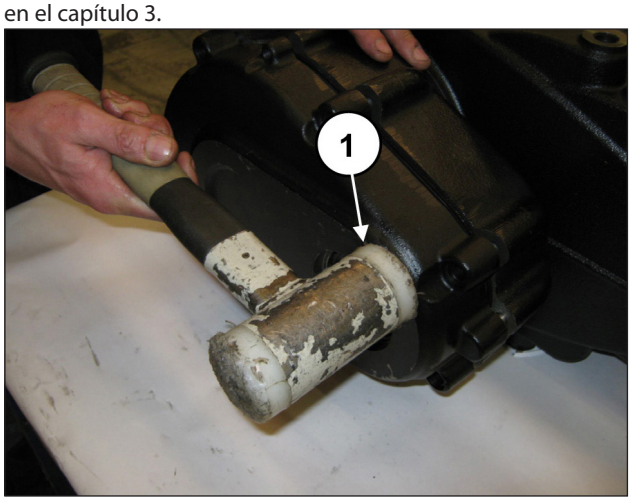


Fig. 87

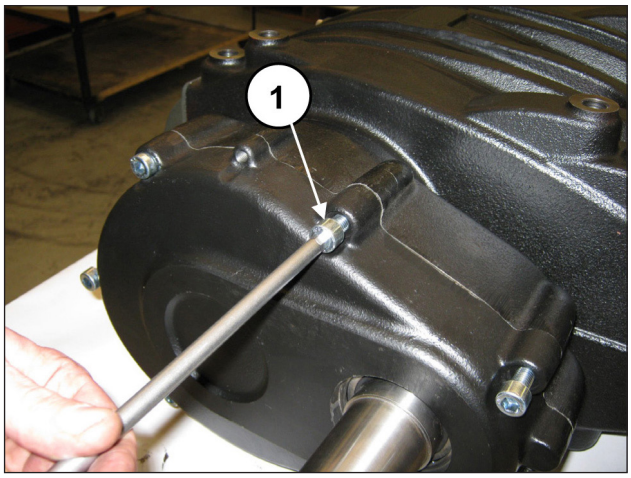


Fig. 88

Introducir el retén en la tapa del reductor utilizando la herramienta cód. 27605200, (pos. ①, Fig. 89).
Antes de montar el retén, comprobar las condiciones del labio de estanqueidad. Si se ha de sustituir, colocar una anilla nueva en el fondo del alojamiento como se indica en la Fig. 90.

**En el caso que el eje presente un desgaste diametral en correspondencia con el labio de retención, con el fin de evitar tener que realizar la operación de rectificación, es posible volver a colocar la anilla en el segundo tope como se indica en la Fig. 90.**

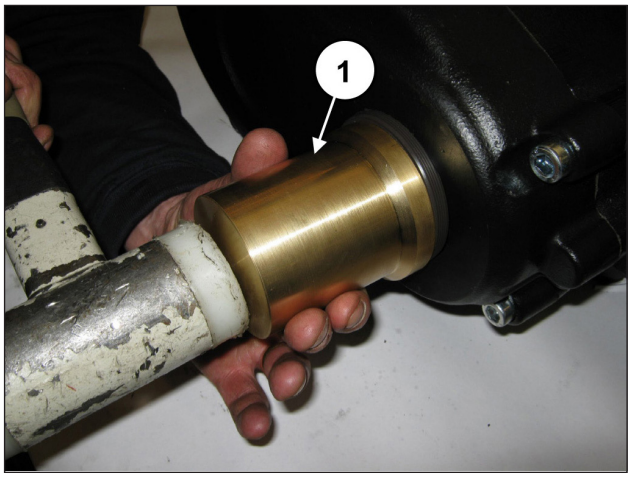


Fig. 89

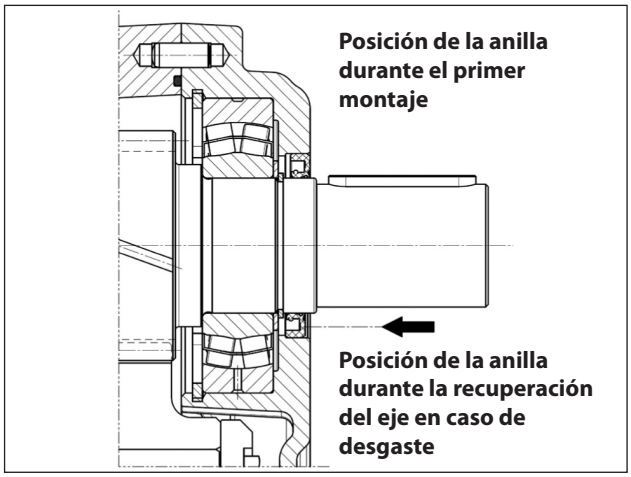


Fig. 90

**Introducir el retén en el piñón con cuidado para no dañarlo.**

Aplicar las tapas de inspección con la junta tórica (pos. ①, Fig. 91) y fijarlas con 2+2 tornillos M6x14 (pos. ①, Fig. 92).
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS.

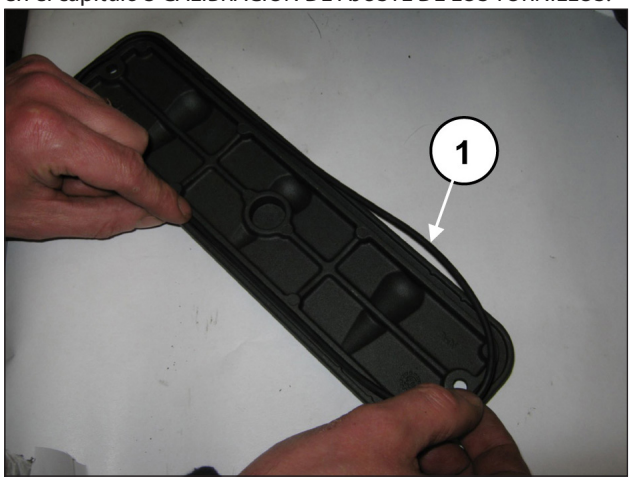


Fig. 91

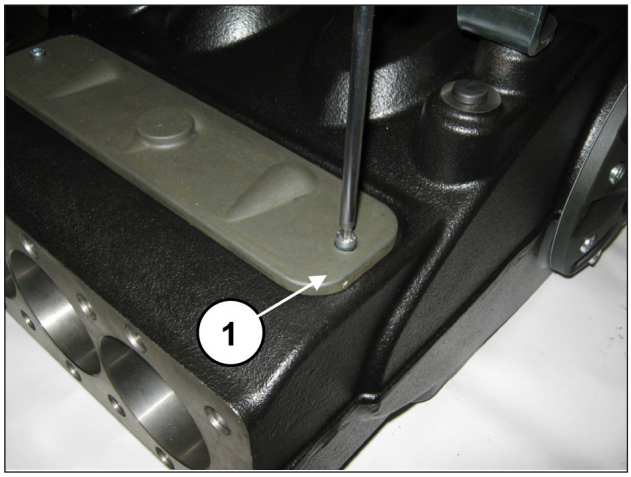


Fig. 92

Introducir la lengüeta 14x9x60 en el piñón.
Aplicar los tapones y las bridas de elevación con los tornillos M16x30 (pos. ①, Fig. 93).
Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS.

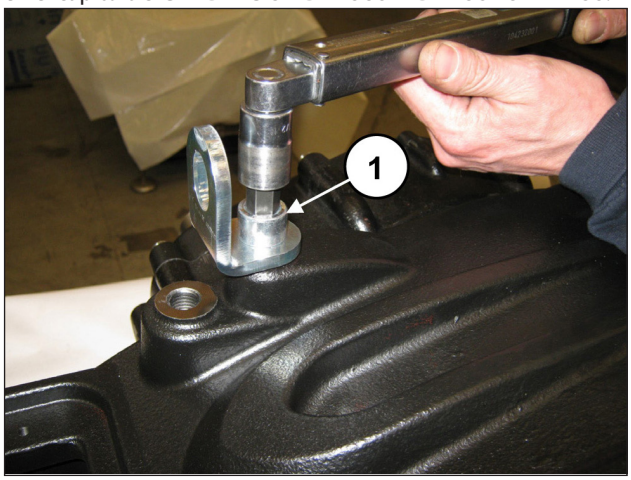


Fig. 93

Introducir el aceite en el cárter tal y como se indica en el ***Manual de uso y mantenimiento***, punto 7.4.

### 2.1.3 Clases de mayoraciones y minoraciones previstas

| TABLA DE MINORACIONES PARA EJE ACODADO Y SEMICOJINETES DE LA BIELA | | | |
|---|---|---|---|
| **Clases de recuperación (mm)** | **Código semicojinete superior** | **Código semicojinete inferior** | **Rectificación sobre el diámetro del perno del eje (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| TABLA DE MAYORACIONES PARA CÁRTER DE LA BOMBA Y GUÍA DEL PISTÓN | | |
|---|---|---|
| **Clases de recuperación (mm)** | **Código de la guía pistón** | **Rectificación en alojamiento del cárter de la bomba (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 REPARACIÓN DE LA PARTE HIDRÁULICA

### 2.2.1 Desmontaje de la cabeza MW32 MW36 MW40 - grupos de válvulas

La cabeza requiere mantenimiento preventivo como se indica en el ***Manual de uso y mantenimiento***.
Las intervenciones se limitan a la inspección o sustitución de las válvulas, en el caso que sea necesario:
Para extraer los grupos de válvula operar del siguiente modo:
Aflojar los 8 tornillos M16x55 de la tapa de válvulas (pos. ①, Fig. 94) y desmontar la tapa (pos. ①, Fig. 95).

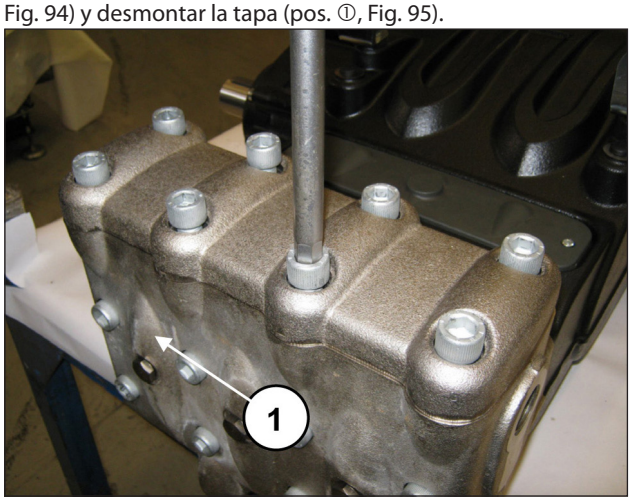


Fig. 94

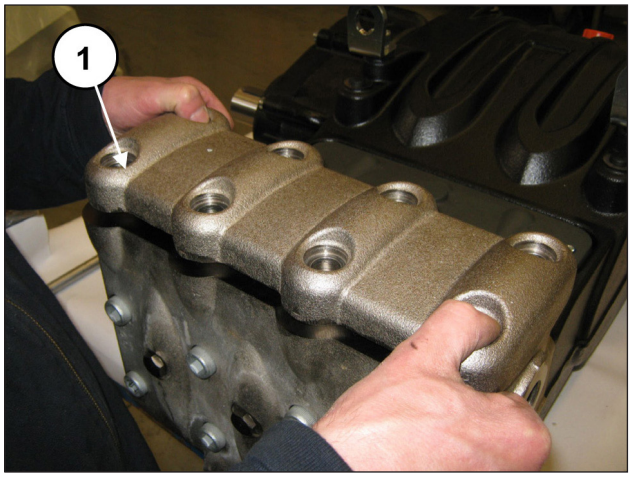


Fig. 95

Extraer el tapón de la válvula introduciendo un extractor de percusión en el orificio M10 del tapón de la válvula (pos. ①, Fig. 96).

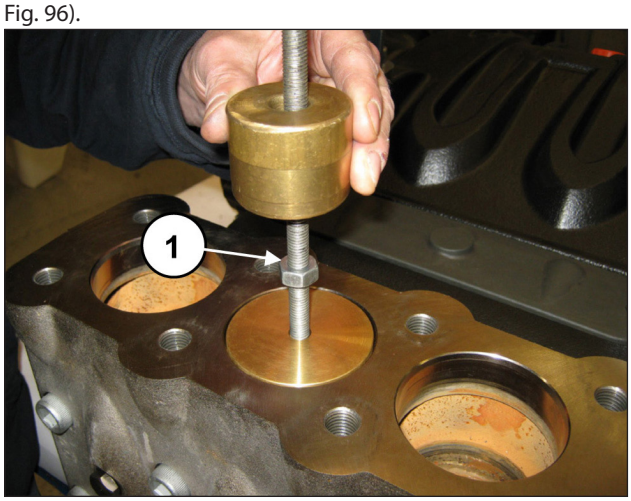


Fig. 96

Extraer el muelle (pos. ①, Fig. 97).

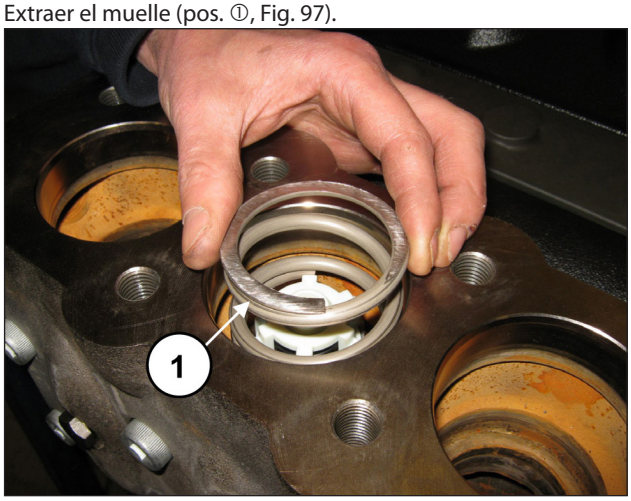


Fig. 97

Extraer el grupo de la válvula de envío introduciendo un extractor de percusión (cód. 27516400) en el orificio M10 de la guía de la válvula (pos. ①, Fig. 98).

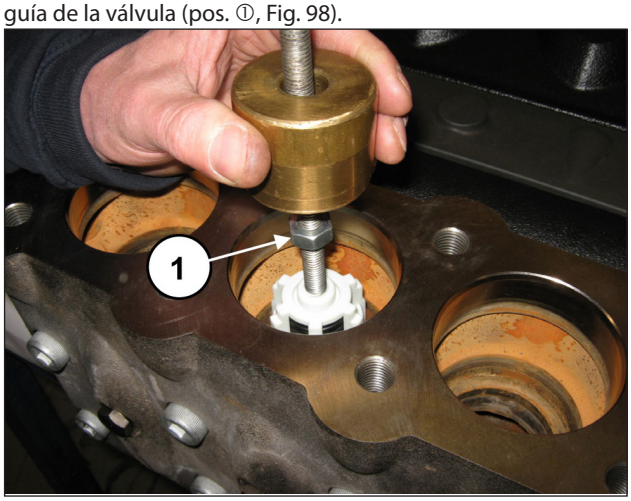


Fig. 98

Extraer la anilla distanciadores del alojamiento de la válvula (pos. ①, Fig. 99).

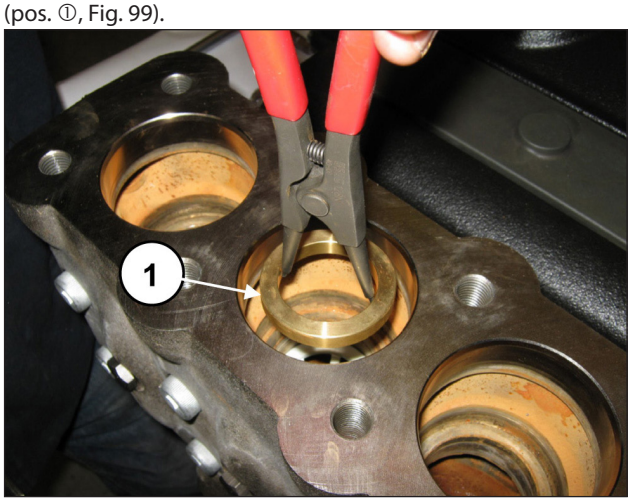


Fig. 99

Extraer el distanciador de la guía de la válvula introduciendo una llave hexagonal de 8 mm en el alojamiento y haciendo palanca para facilitar la extracción (pos. ①, Fig. 100).


Fig. 100

Extraer el grupo de la válvula de aspiración introduciendo un extractor de percusión (cód. 27516400) en el orificio M10 de la guía de la válvula (pos. ①, Fig. 101).

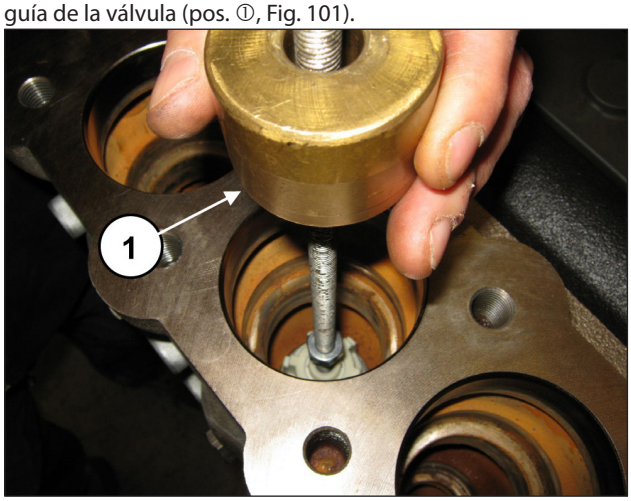


Fig. 101

**En caso de dificultad para extraer el grupo de la válvula de aspiración (por ejemplo, si se han formado depósitos debidos a largos periodos de inactividad de la bomba) utilizar el extractor cód. 27516200, (pos. ①, Fig. 102) y actuar como se indica a continuación.**

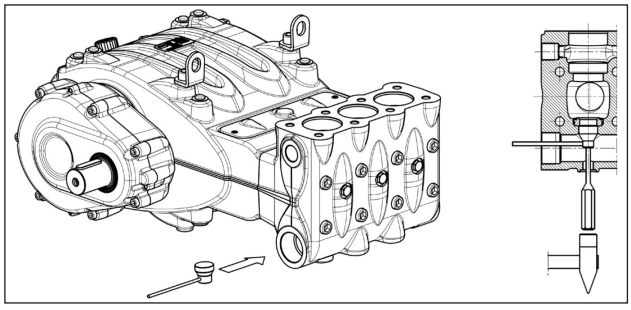

Fig. 102

Desenroscar el dispositivo de apertura de las válvulas con una llave de 30 mm (pos. ①, Fig. 103).

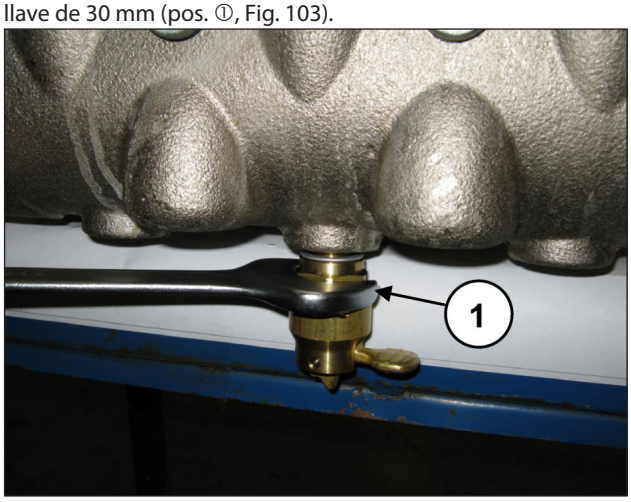


Fig. 103

Desmontar los grupos de las válvulas de aspiración y envío atornillando un tornillo M10 para presionar la guía interna y extraer la guía de la válvula de la sede (pos. ①, Fig. 104).

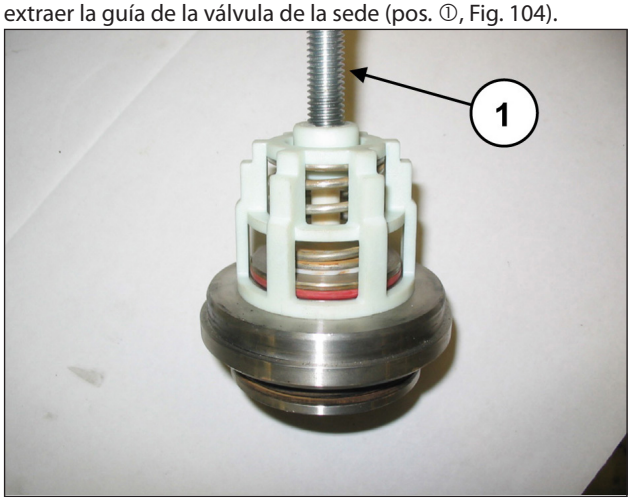


Fig. 104

Quitar los tapones G1/4" frontales de la cabeza.
Ahora es posible desmontar la cabeza del cárter de la bomba aflojando los 8 tornillos M16x180 (pos. ①, Fig. 105).
Durante el desmontaje de la cabeza, no golpear los pistones (pos. ①, Fig. 106).

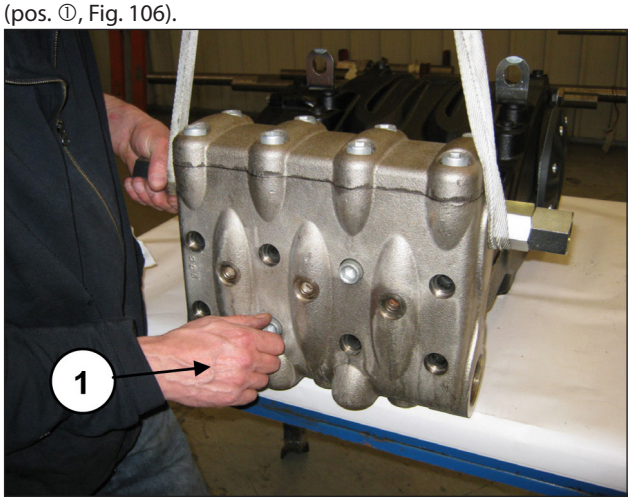


Fig. 105

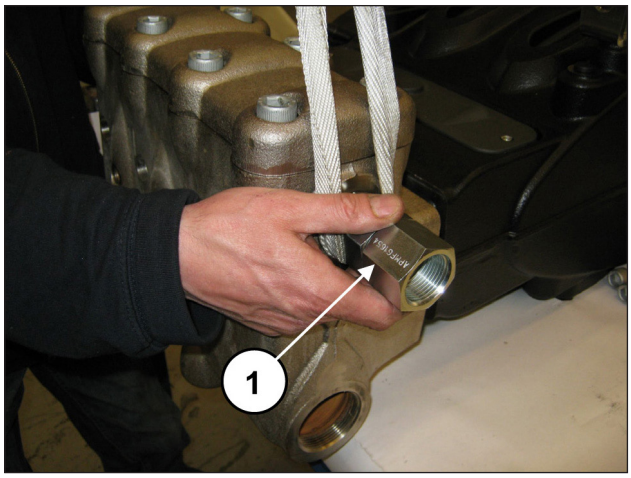


Fig. 106

### 2.2.2 Montaje de la cabeza MW32 MW36 MW40 - grupos de válvulas

**Controlar el desgaste de los componentes y sustituirlos si es necesario.**
**A cada inspección de las válvulas, sustituir todas las juntas tóricas sea de los grupos que de los tapones de válvula.**

**Antes de volver a colocar los grupos de válvula, limpiar y secar perfectamente los correspondientes alojamientos en la cabeza tal y como indican las flechas (pos. ①, Fig. 107).**

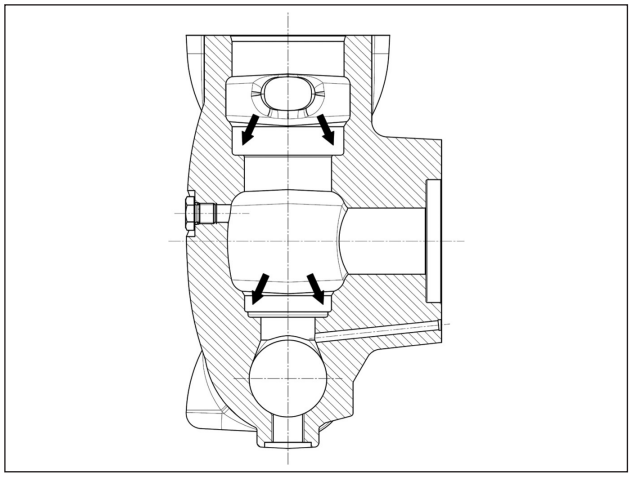

Fig. 107

Seguir en orden contrario la secuencia de desmontaje descrita en el apart. 2.2.1.

Ensamblar los grupos de las válvulas de aspiración y envío (Fig. 108 y Fig. 109) sin invertir los muelles desmontados anteriormente.
Para facilitar la introducción de la guía de la válvula en su sede se puede utilizar un tubo que apoye sobre los pisos horizontales de la guía (Fig. 110) y utilizar un martillo de timbre actuando sobre toda la circunferencia.

Fig. 108

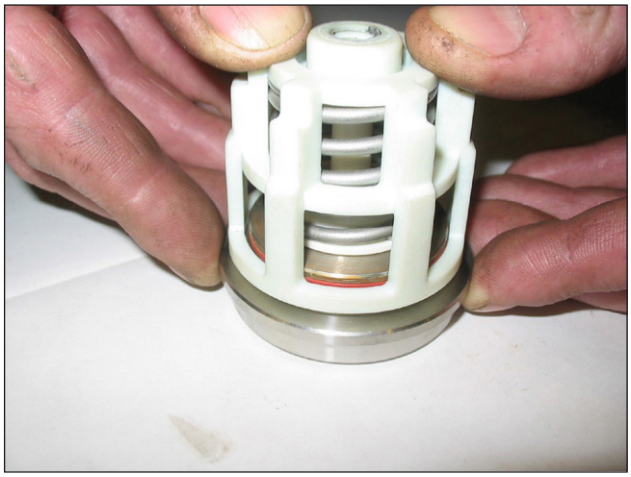

Fig. 109

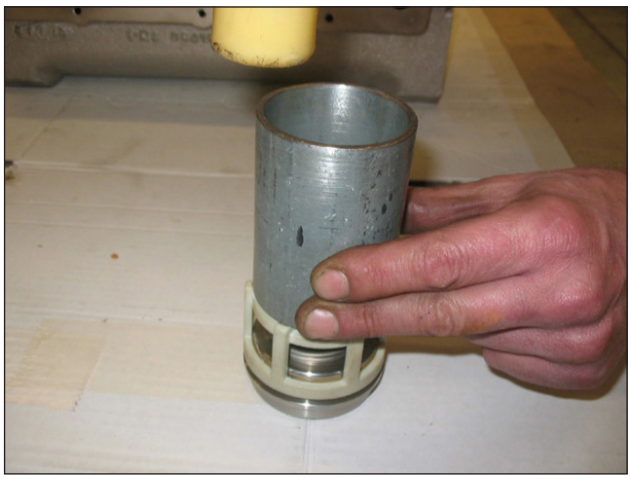

Fig. 110

**Introducir los grupos de las válvulas de aspiración y envío en la cabeza, controlando la secuencia de introducción de las juntas tóricas y de las anillas anti extrusión.**

La secuencia correcta de montaje de los grupos de válvulas en la cabeza es la siguiente:

Introducir la anilla anti extrusión, pos. dibujo desglosado 5 (pos. ①, Fig. 111).

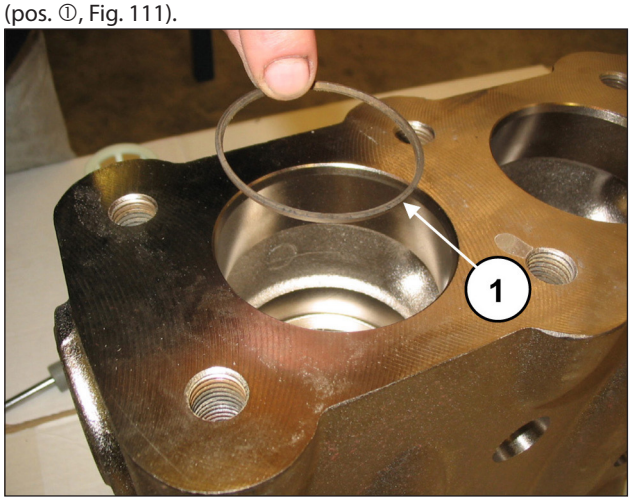


Fig. 111

Introducir la junta tórica, pos. dibujo desglosado 6 (pos. ①, Fig. 112).

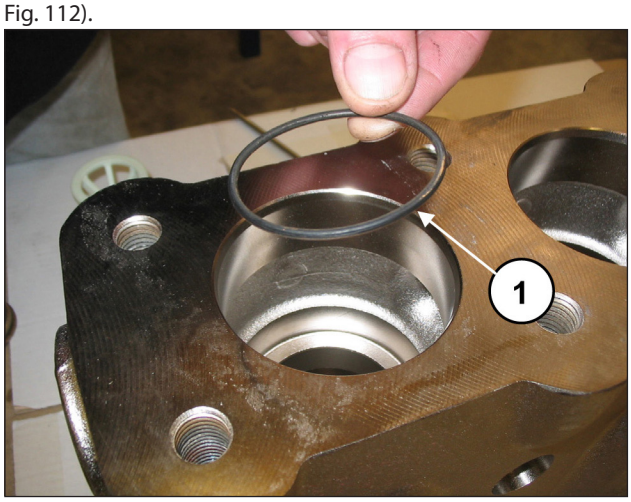


Fig. 112

Comprobar que la junta tórica y la anilla anti extrusión estén colocadas de manera correcta en el alojamiento.
Introducir el grupo de la válvula de aspiración (pos. ①, Fig. 113) y, a continuación, el distanciador (pos. ①, Fig. 114).
El grupo de la válvula se ha de introducir a fondo como se indica en la pos. ①, Fig. 114.

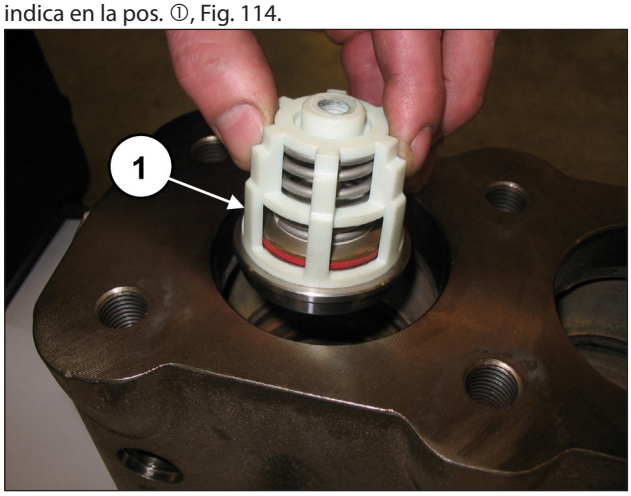


Fig. 113

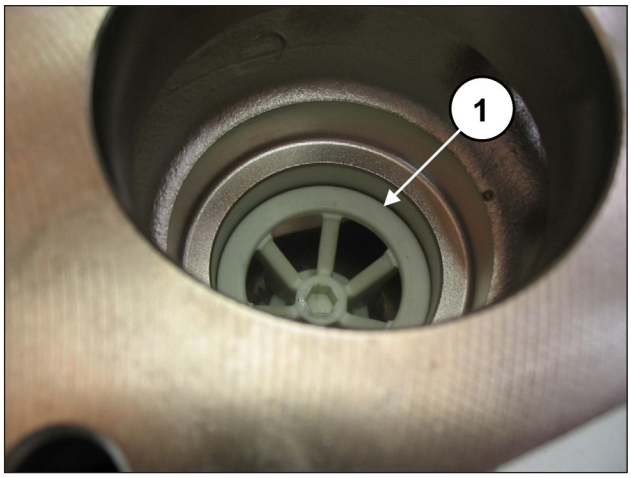


Fig. 114

Introducir la anilla distanciadora del alojamiento de la válvula (pos. ①, Fig. 115) de manera que haga tope en el distanciador (pos. ①, Fig. 116).

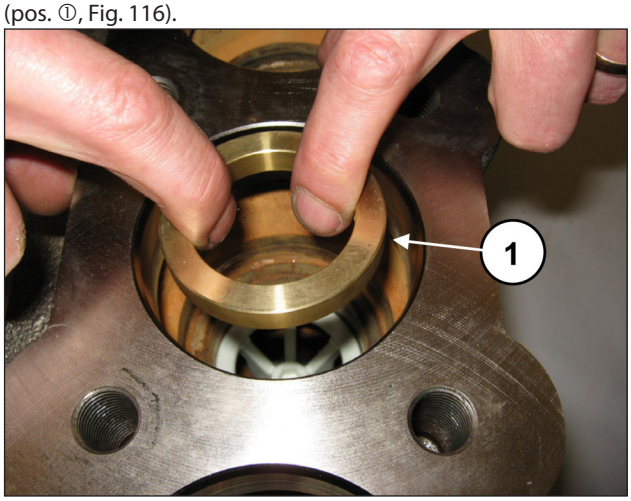


Fig. 115

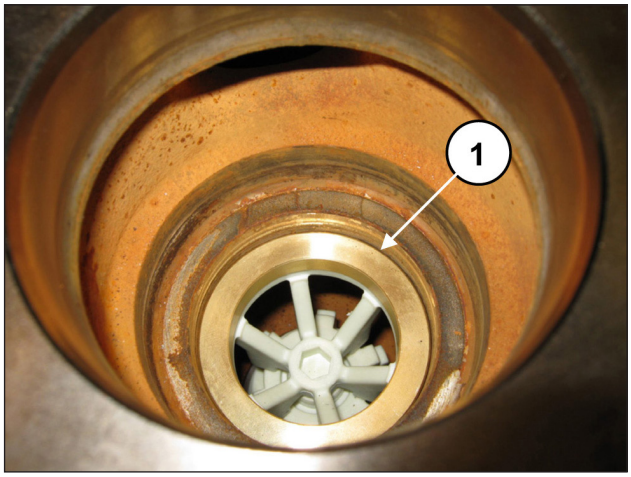


Fig. 116

Montar la junta tórica, pos. dibujo desglosado 6 (pos. ①, Fig. 117) y la anilla anti extrusión pos. desglosado 16 (pos. ②, Fig. 117) en la sede de la válvula de envío.


Fig. 117

Introducir el grupo de la válvula de envío (pos. ①, Fig. 118). El grupo de la válvula se ha de introducir a fondo como se indica en la pos. ①, Fig. 119.

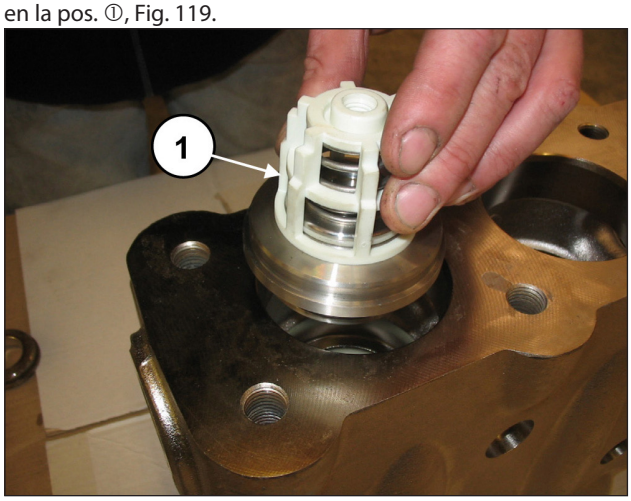


Fig. 118

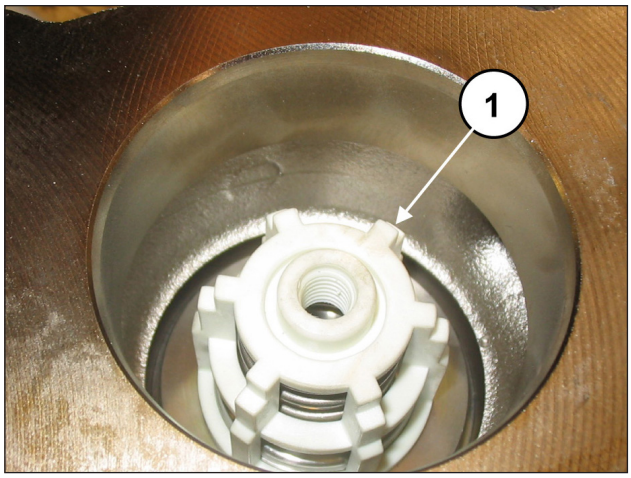


Fig. 119

Introducir la anilla anti extrusión, pos. dibujo desglosado 18 (pos. ①, Fig. 120).

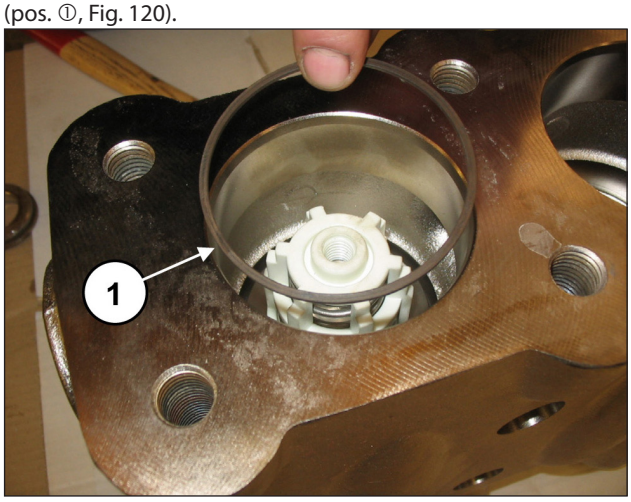


Fig. 120

Introducir la junta tórica, pos. dibujo desglosado 19 (pos. ①, Fig. 121).

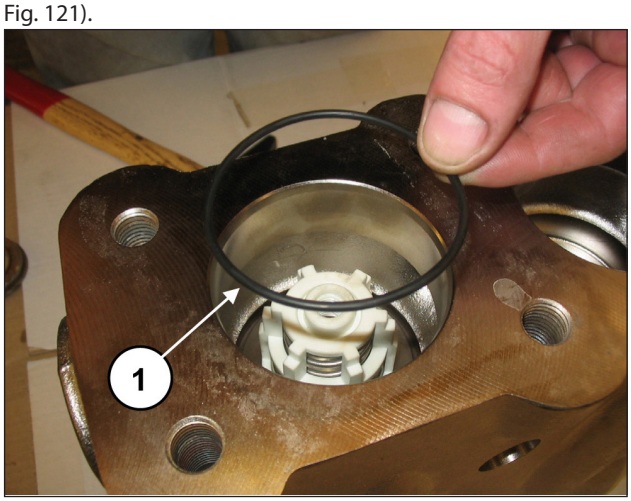


Fig. 121

**Introducir con atención la junta tórica indicada en la pos. ①, Fig. 122.**
**Se recomienda utilizar la herramienta cód. 27516000 para no cortar la junta tórica al introducirla.**

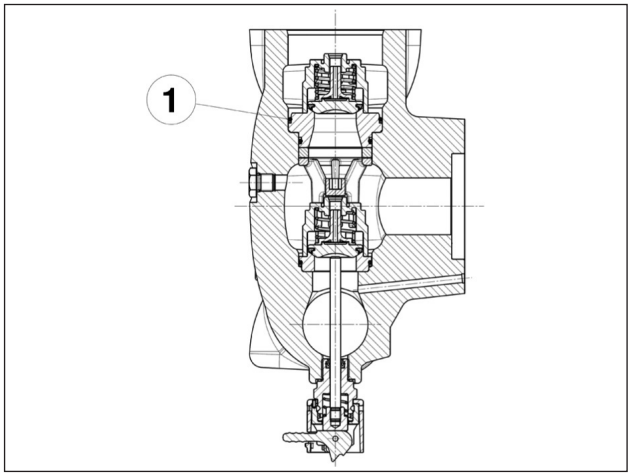


Fig. 122

Introducir la anilla del alojamiento de la válvula (pos. ①, Fig. 123) y el muelle (pos. ①, Fig. 124).

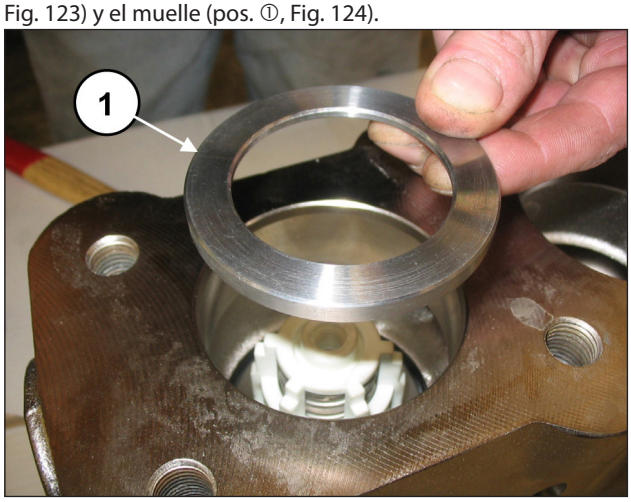


Fig. 123

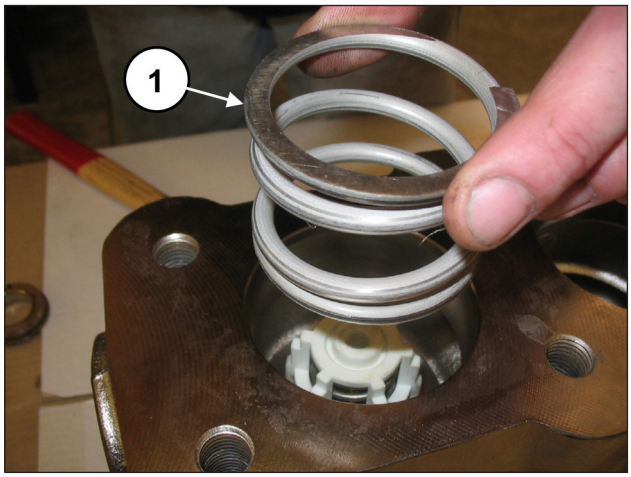


Fig. 124

Montar la junta tórica, pos. dibujo desglosado 19 (pos. ①, Fig. 125) y la anilla anti extrusión pos. desglosado 23 (pos. ②, Fig. 125) en el tapón de la válvula de envío.

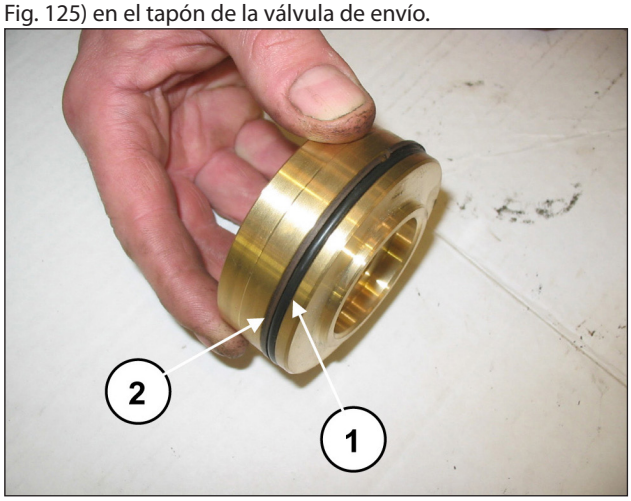


Fig. 125

Introducir el tapón de la válvula con la junta tórica y las anillas anti extrusión.

Al terminar de montar los grupos y el tapón de la válvula, aplicar la tapa de las válvulas (pos. ①, Fig. 126) y apretar los 8 tornillos M16x55 (pos. ①, Fig. 127).

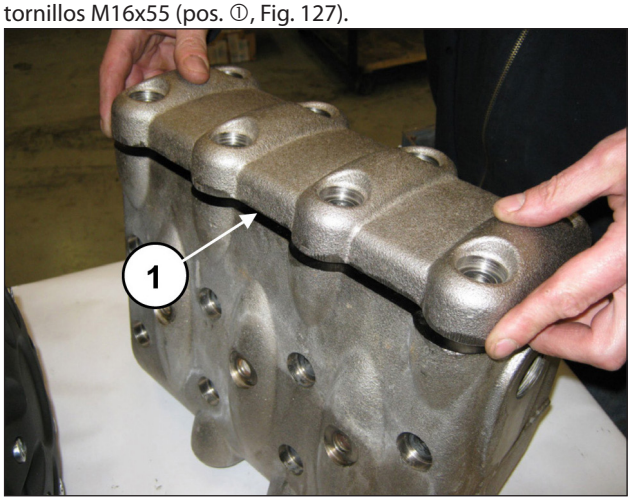


Fig. 126

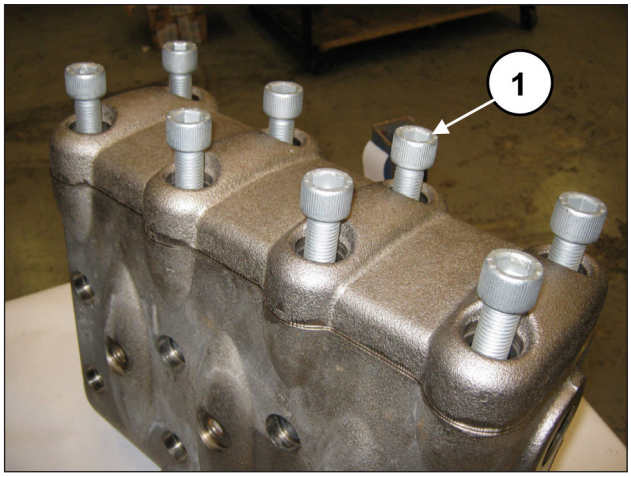


Fig. 127

Aplicar las 6 juntas tóricas frontales del cárter de la bomba (pos. ①, Fig. 128).

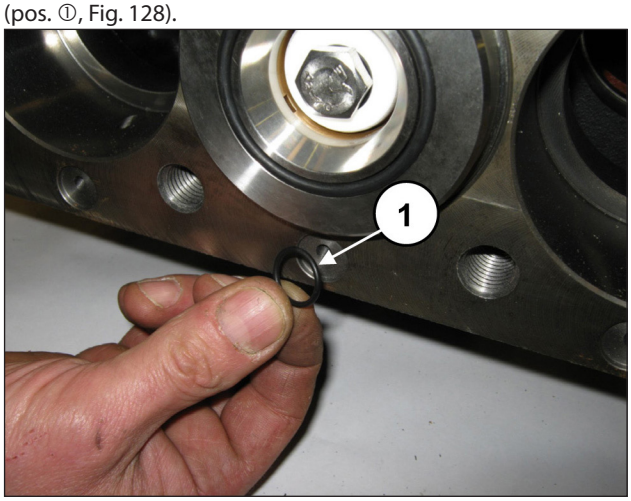


Fig. 128

Montar la cabeza en el cárter de la bomba (pos. ①, Fig. 129) sin golpear los pistones y apretar los 8 tornillos M16x180 (pos. ①, Fig. 130).

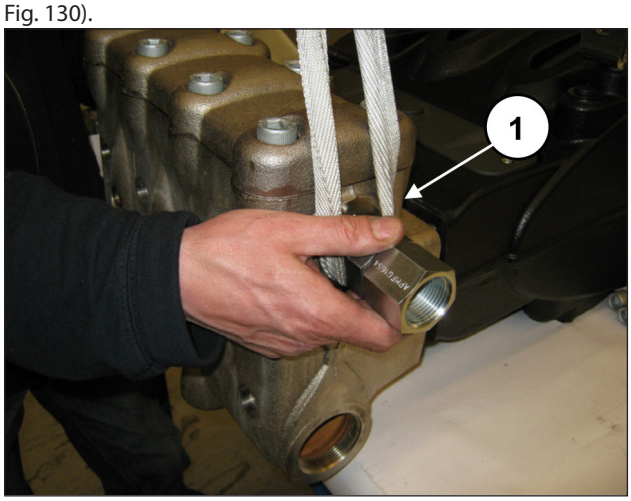


Fig. 129

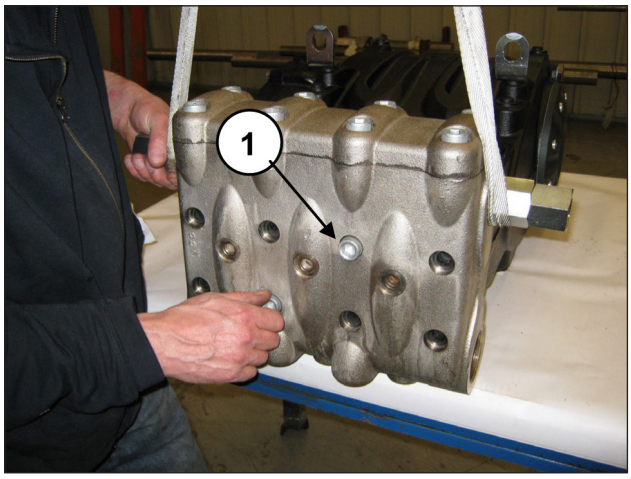


Fig. 130

Ajustar los tornillos M16x180 con la llave dinamométrica como se indica en el capítulo 3.

**Apretar en diagonal los 4 tornillos M16x180 internos y a continuación los 4 externos.**

Ajustar los tornillos M16x55 con la llave dinamométrica como se indica en el capítulo 3.
Aplicar los dispositivos de apertura de las válvulas (pos. ①, Fig. 131) y enroscarlos con la llave de 30 mm (pos. ①, Fig. 132).

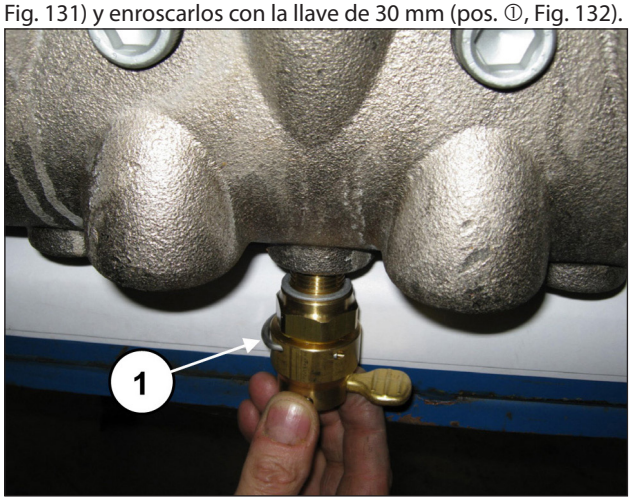


Fig. 131

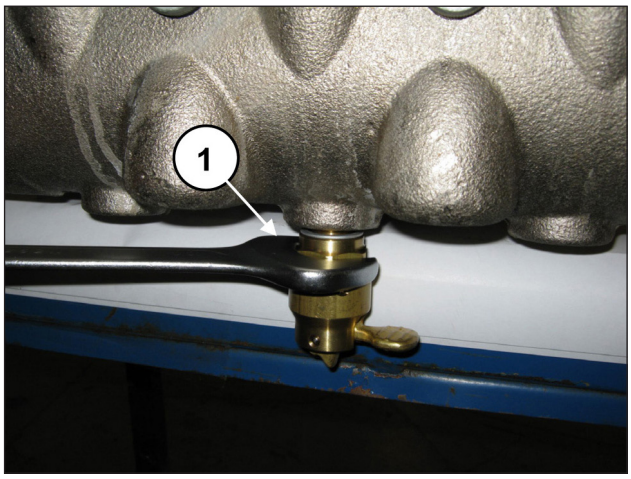


Fig. 132

Aplicar los tapones G1/4" frontales de la cabeza con las juntas tóricas correspondientes.
Ajustar los tapones G1/4" con la llave dinamométrica como se indica en el capítulo 3.

### 2.2.3 Desmontaje de la cabeza MW45 MW50 MW55 - grupos de válvulas

La cabeza requiere mantenimiento preventivo como se indica en el ***Manual de uso y mantenimiento***.
Las intervenciones se limitan a la inspección o sustitución de las válvulas, en el caso que sea necesario:
Para extraer los grupos de válvula operar del siguiente modo:
Aflojar los 8 tornillos M16x45 de la tapa de las válvulas de envío (pos. ①, Fig. 133) y desmontar la tapa (pos. ①, Fig. 134).

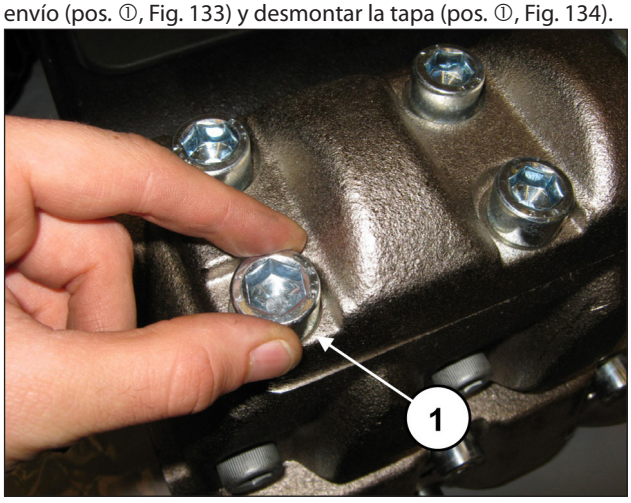


Fig. 133

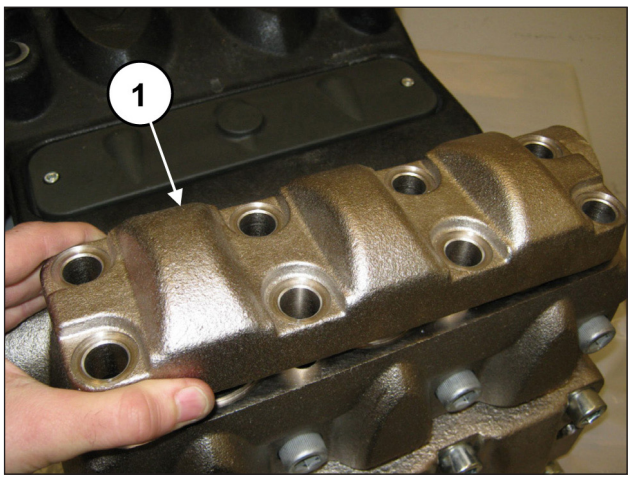


Fig. 134

Extraer el grupo de la válvula de envío introduciendo un extractor de percusión (cód. 27516400) en el orificio M10 de la guía de la válvula (pos. ①, Fig. 135).

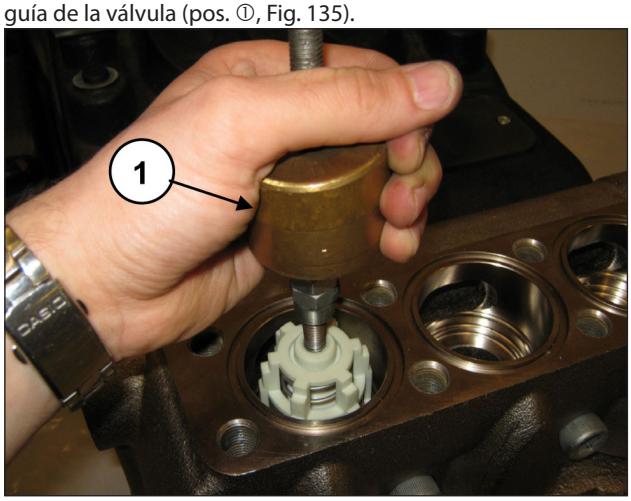


Fig. 135

Aflojar los 8 tornillos M16x45 de la tapa de las válvulas de aspiración (pos. ①, Fig. 136) y desmontar la tapa (pos. ①, Fig. 137).

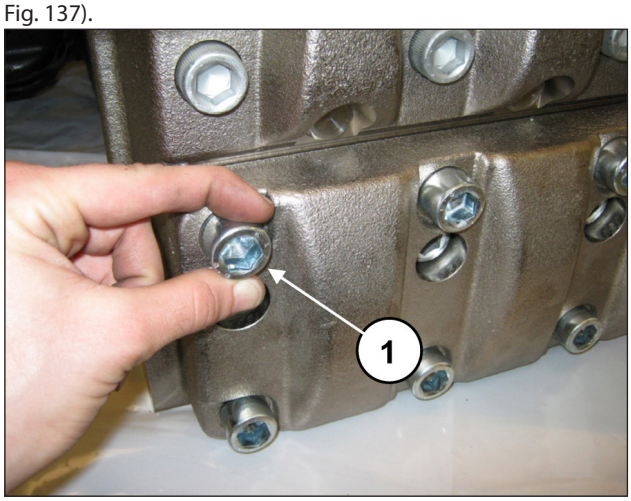


Fig. 136

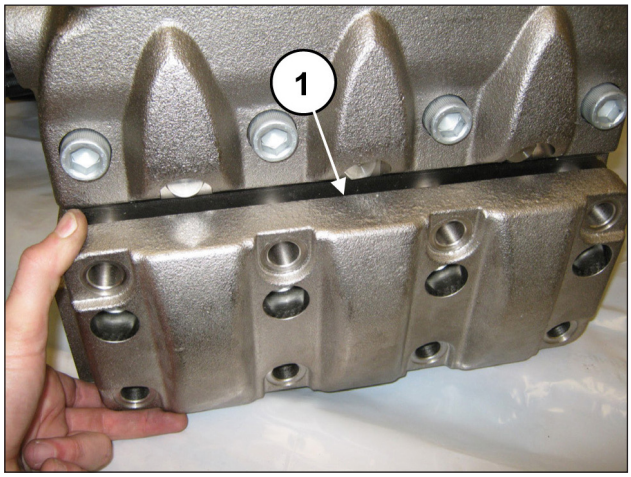


Fig. 137

Extraer el grupo de la válvula de aspiración introduciendo un extractor de percusión (cód. 27516400) en el orificio M10 de la guía de la válvula (pos. ①, Fig. 138).


Fig. 138

Desenroscar el dispositivo de apertura de las válvulas con una llave de 30 mm (pos. ①, Fig. 139).

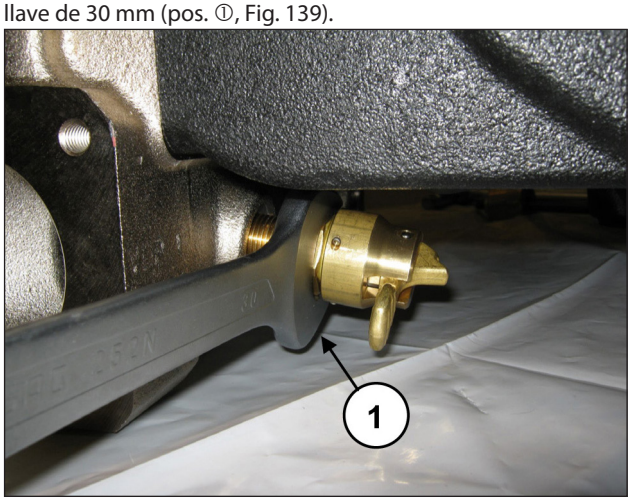


Fig. 139

Desmontar los grupos de las válvulas de aspiración y envío atornillando un tornillo M10 para presionar la guía interna y extraer la guía de la válvula de la sede (pos. ①, Fig. 140).

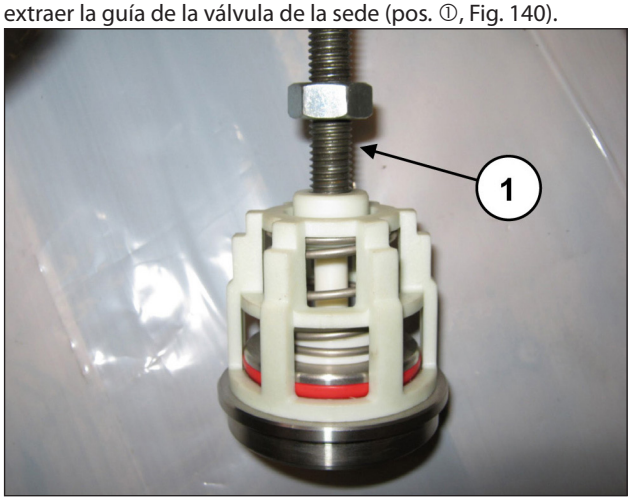


Fig. 140

Quitar los tapones G1/4" frontales y los tapones G1/2" de la parte inferior de la cabeza para completar la secuencia de desmontaje.

Ahora es posible desmontar la cabeza del cárter de la bomba aflojando los 8 tornillos M16x150 (pos. ①, Fig. 141).
Durante el desmontaje de la cabeza, no golpear los pistones (Fig. 142).

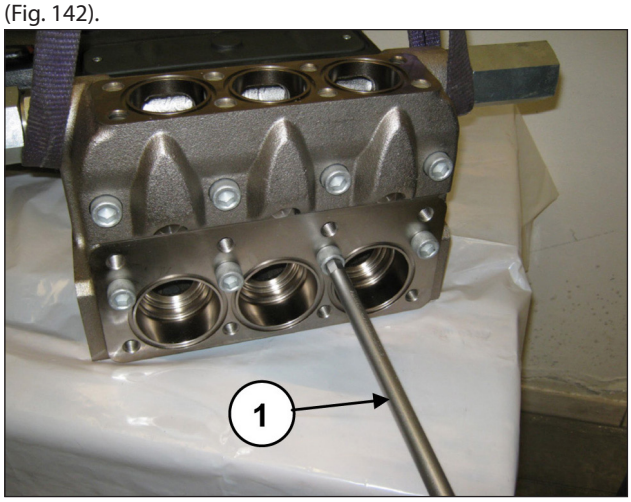


Fig. 141

Fig. 142

### 2.2.4 Desmontaje de la cabeza MW45 MW50 MW55 - grupos de válvulas

**Controlar el desgaste de los componentes y sustituirlos si es necesario.**
**A cada inspección de las válvulas, sustituir todas las juntas tóricas sea de los grupos que de los tapones de válvula.**

**Antes de volver a colocar los grupos de válvula, limpiar y secar perfectamente los correspondientes alojamientos en la cabeza tal y como indican las flechas (pos. ①, Fig. 143).**

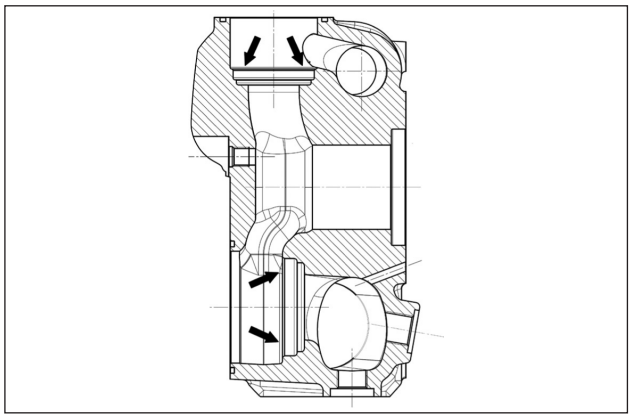

Fig. 143

Seguir en orden contrario la secuencia de desmontaje descrita en el apart. 2.2.3.

Ensamblar los grupos de la válvula de aspiración y de envío (Fig. 144 y Fig. 145).
Para facilitar la introducción de la guía de la válvula en su sede se puede utilizar un tubo que apoye sobre los pisos horizontales de la guía (Fig. 146) y utilizar un martillo de timbre actuando sobre toda la circunferencia.

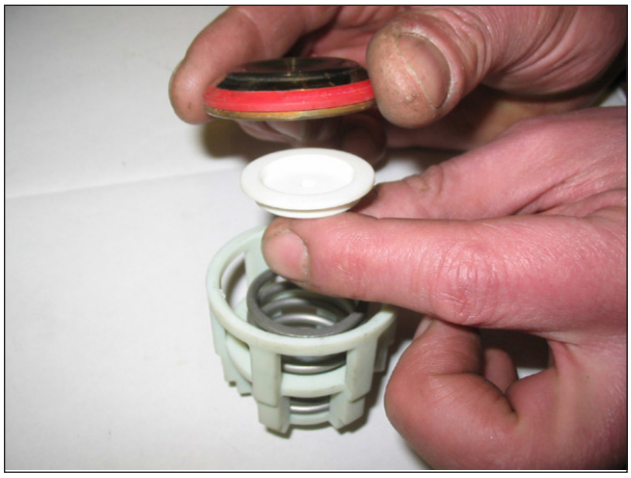

Fig. 144

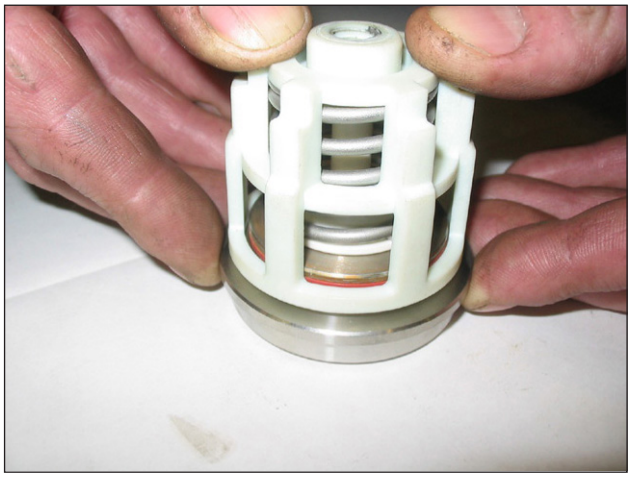

Fig. 145

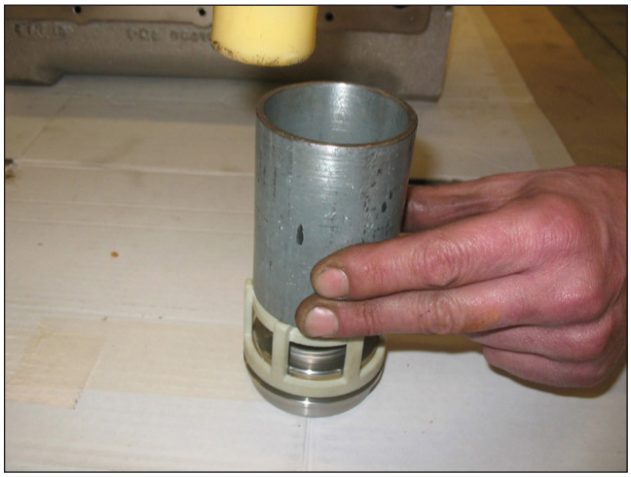

Fig. 146

**Introducir los grupos de las válvulas de aspiración y envío en la cabeza, controlando la secuencia de introducción de las juntas tóricas y de las anillas anti extrusión.**

La secuencia correcta de montaje de los grupos de válvulas en la cabeza es la siguiente:

Introducir la anilla anti extrusión en aspiración, pos. dibujo desglosado 6 (pos. ①, Fig. 147).

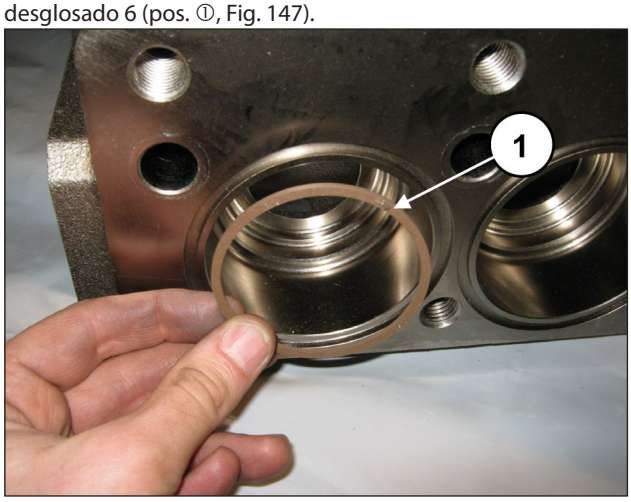


Fig. 147

Introducir la junta tórica, pos. dibujo desglosado 7 (pos. ①, Fig. 148).

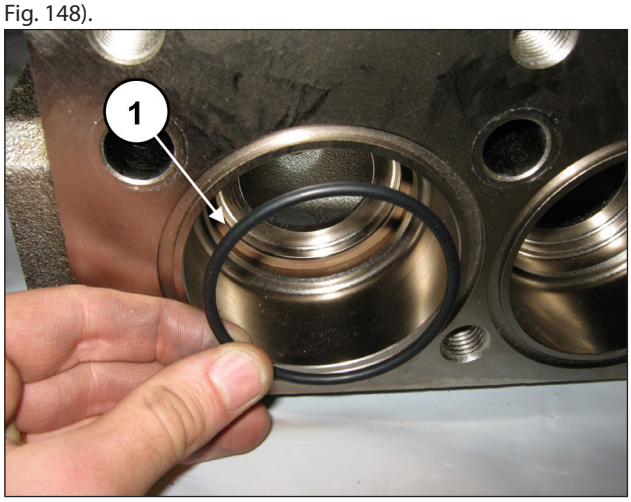


Fig. 148

Comprobar que la junta tórica y la anilla anti extrusión estén colocadas de manera correcta en el alojamiento.
Introducir el grupo de la válvula de aspiración (pos. ①, Fig. 149).
El grupo de la válvula se ha de introducir a fondo como se indica en la pos. ①, Fig. 150.

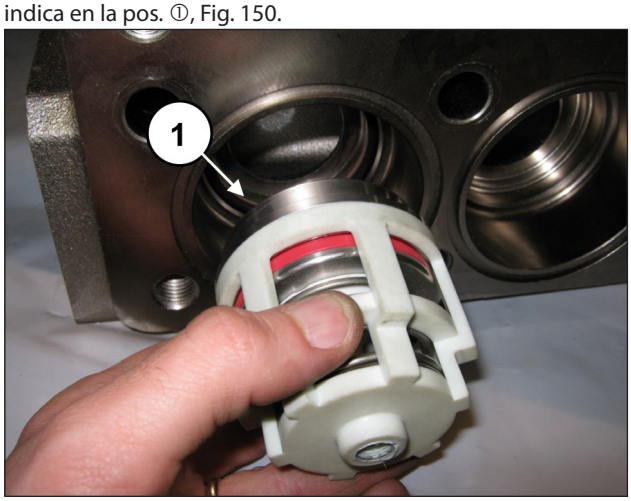


Fig. 149

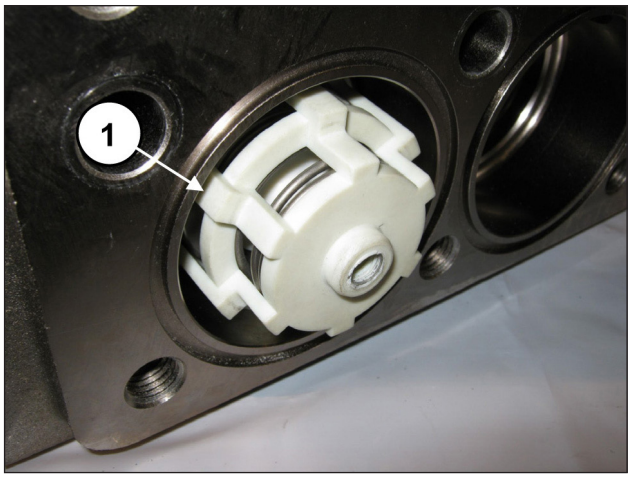


Fig. 150

Aplicar la junta tórica frontal en las válvulas de aspiración (pos. ①, Fig. 151).

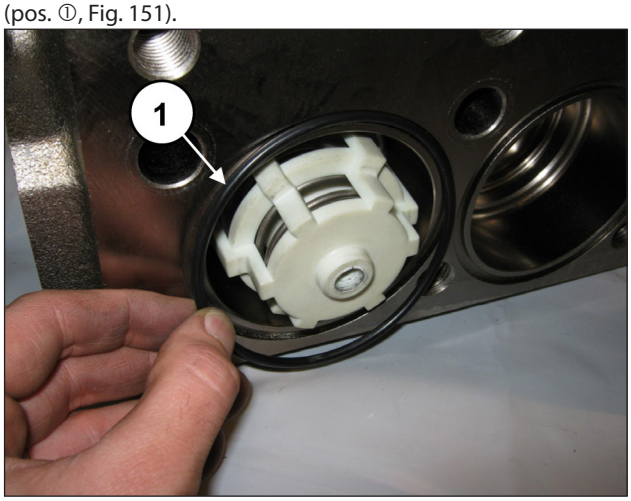


Fig. 151

Al terminar de montar los grupos de la válvula de aspiración, aplicar la tapa de las válvulas de aspiración (pos. ①, Fig. 152) y apretar los 8 tornillos M16x45 (pos. ①, Fig. 153).

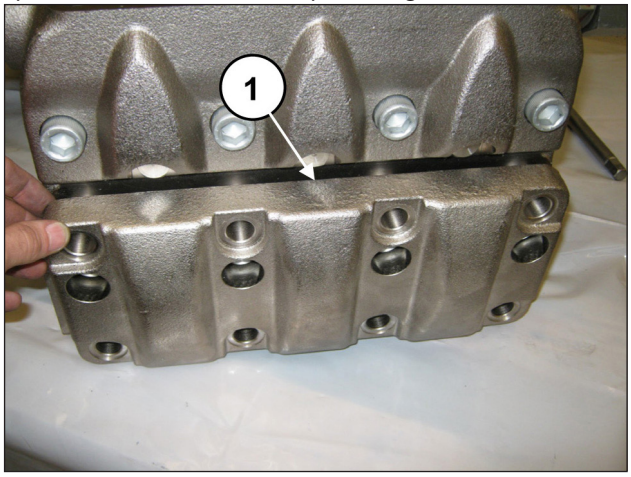


Fig. 152

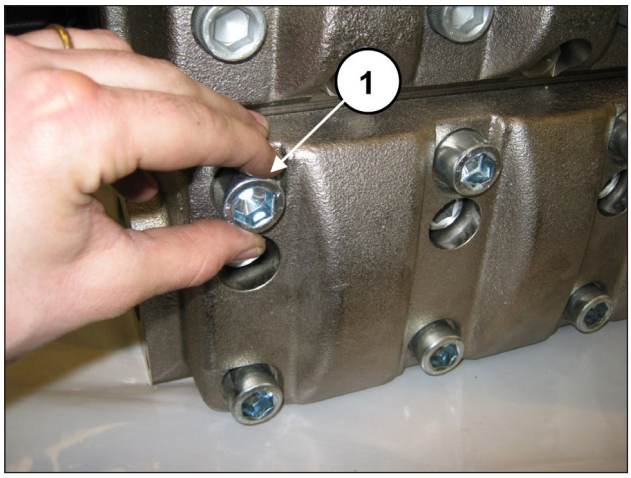


Fig. 153

Ahora, montar los grupos de la válvula de envío:
Introducir la anilla anti extrusión, pos. dibujo desglosado 23 (pos. ①, Fig. 154).

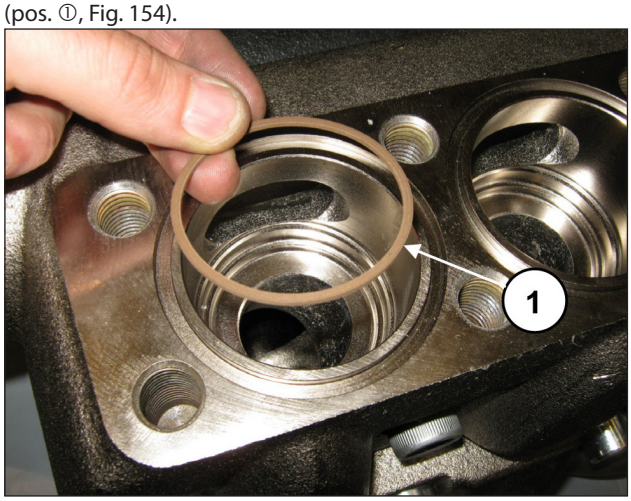


Fig. 154

Introducir la junta tórica, pos. dibujo desglosado 24 (pos. ①, Fig. 155).

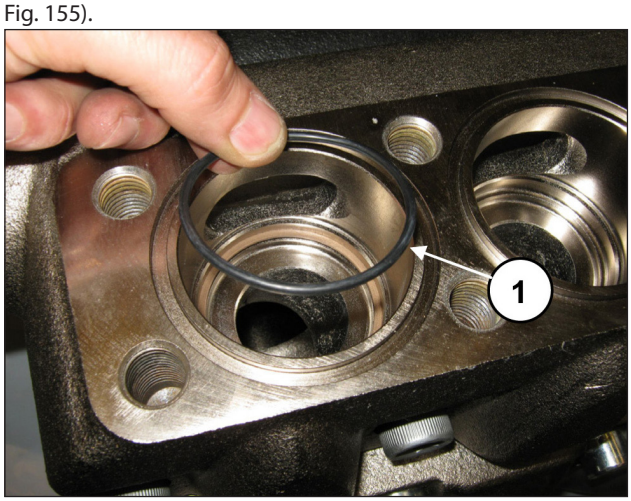


Fig. 155

Comprobar que la junta tórica y la anilla anti extrusión estén colocadas de manera correcta en el alojamiento.

Introducir el grupo de la válvula de envío (pos. ①, Fig. 156). El grupo de la válvula se ha de introducir a fondo como se indica en la pos. ①, Fig. 157.


Fig. 156

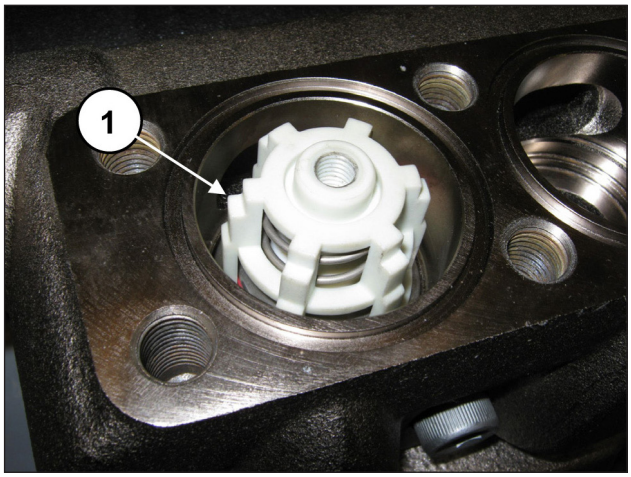


Fig. 157

Aplicar la junta tórica frontal en las válvulas de envío (pos. ①, Fig. 158).

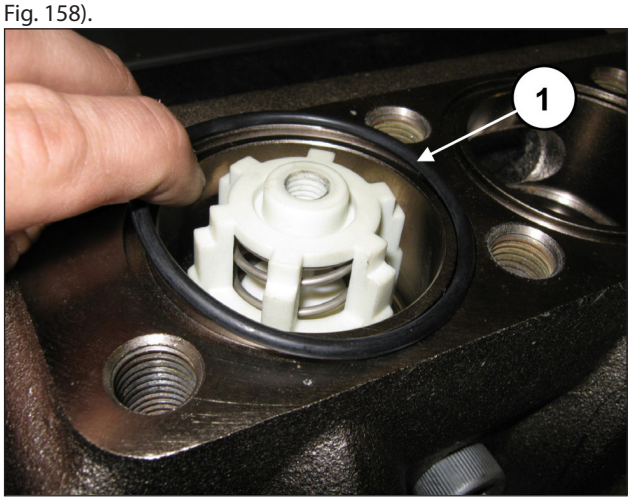


Fig. 158

Al terminar de montar los grupos de la válvula de envío, aplicar la tapa de las válvulas de envío (pos. ①, Fig. 159) y apretar los 8 tornillos M16x45 (pos. ①, Fig. 160).

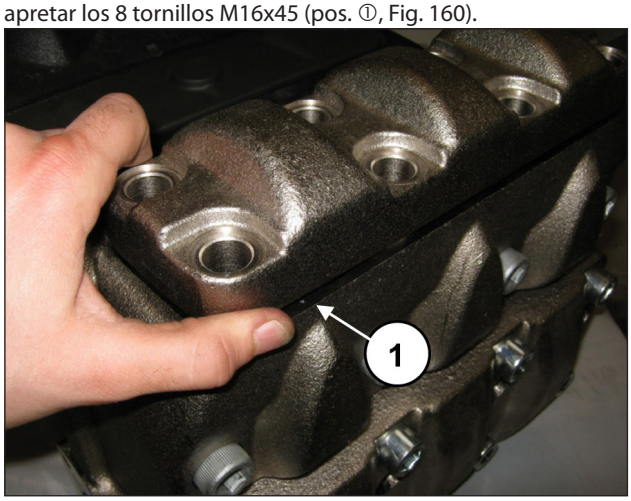


Fig. 159

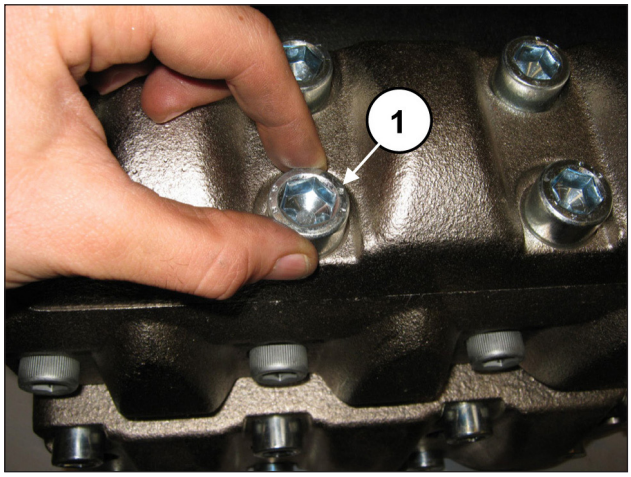


Fig. 160

Aplicar las 6 juntas tóricas frontales del cárter de la bomba (pos. ①, Fig. 161).

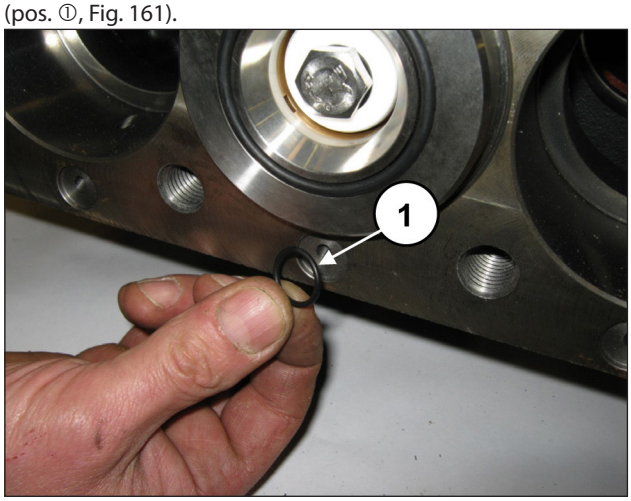


Fig. 161

Montar la cabeza en el cárter de la bomba (pos. ①, Fig. 162) sin golpear los pistones y apretar los 8 tornillos M16x150 (pos. ①, Fig. 163).

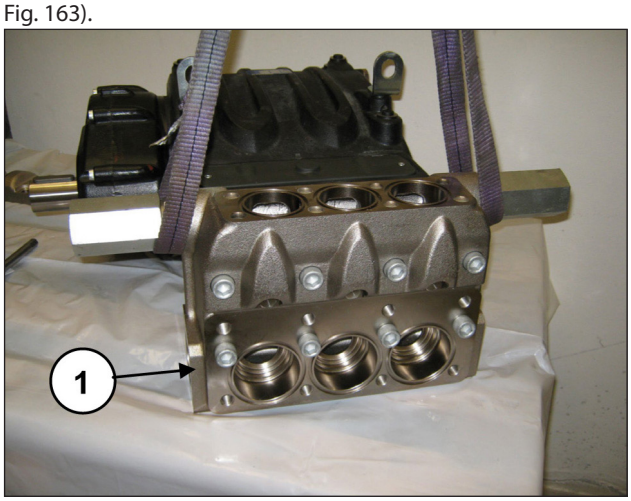


Fig. 162

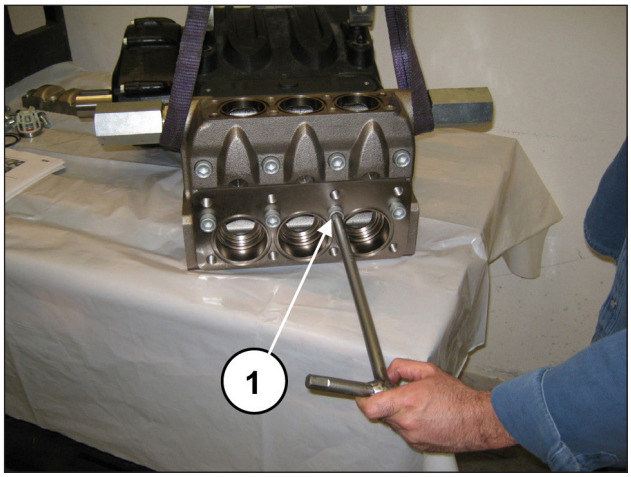


Fig. 163

Ajustar los tornillos M16x150 con la llave dinamométrica como se indica en el capítulo 3.

**Apretar en diagonal los 4 tornillos M16x150 internos y a continuación los 4 externos.**

Ajustar los tornillos M16x45 de las tapas de aspiración y envío con la llave dinamométrica como se indica en el capítulo 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS.
Aplicar los dispositivos de apertura de las válvulas (pos. ①, Fig. 164) y enroscarlos con la llave de 30 mm (pos. ①, Fig. 165).

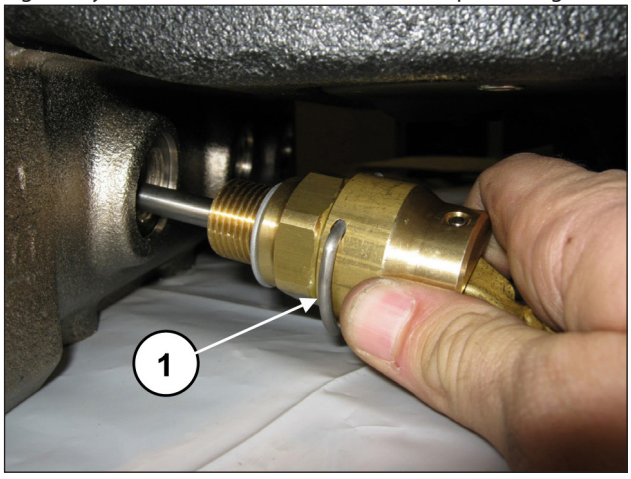


Fig. 164

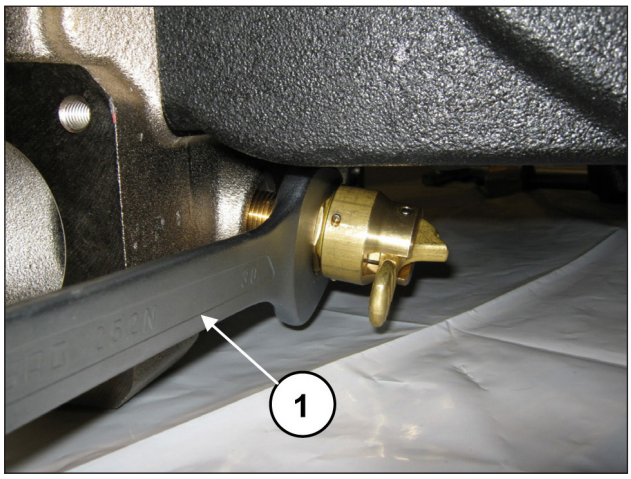


Fig. 165

Aplicar los tapones G1/2" en la parte inferior de la cabeza con las arandelas.
Ajustar los tapones G1/2" con la llave dinamométrica como se indica en el capítulo 3.
Aplicar los tapones G1/4" frontales de la cabeza con las juntas tóricas correspondientes.
Ajustar los tapones G1/4" con la llave dinamométrica como se indica en el capítulo 3.

### 2.2.5 Desmontaje del grupo pistón - soportes - juntas

Controlar el grupo del pistón de manera periódica como se indica en la tabla de mantenimiento preventivo del ***Manual de uso y mantenimiento***.
Controlar de manera visual el drenaje del orificio de la tapa de inspección inferior. Si se detectan anomalías y oscilaciones en el manómetro de envío o pérdidas por el orificio de drenaje, controlar y sustituir el paquete de juntas.
Para extraer los grupos de pistón operar del siguiente modo:
Para acceder al grupo del pistón, es necesario aflojar los tornillos M16x180 (en las bombas MW32-MW36-MW40) o los tornillos M16x150 (en las bombas MW45-MW50-MW55) y desmontar la cabeza.

**Extraer la cabeza con cuidado para no golpear los pistones.**

Desmontar los pistones aflojando los tornillos de fijación (pos. ①, Fig. 166).
Extraer el pistón del soporte de juntas y comprobar que su superficie no esté rayada ni presente signos de desgaste o cavitación.

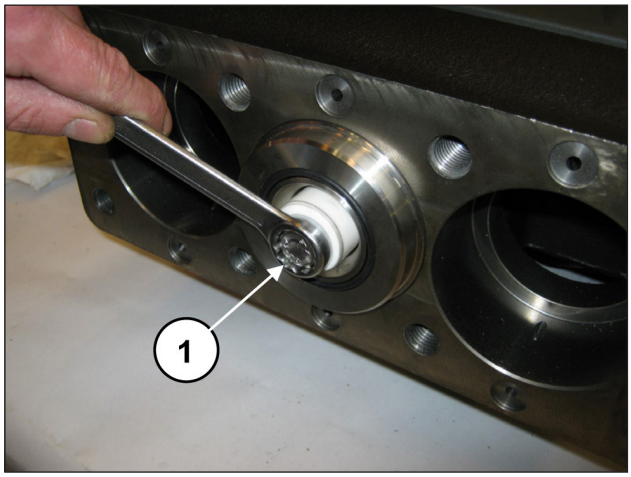


Fig. 166

Quitar la tapa de inspección superior aflojando los 2 tornillos de fijación (pos. ①, Fig. 167).

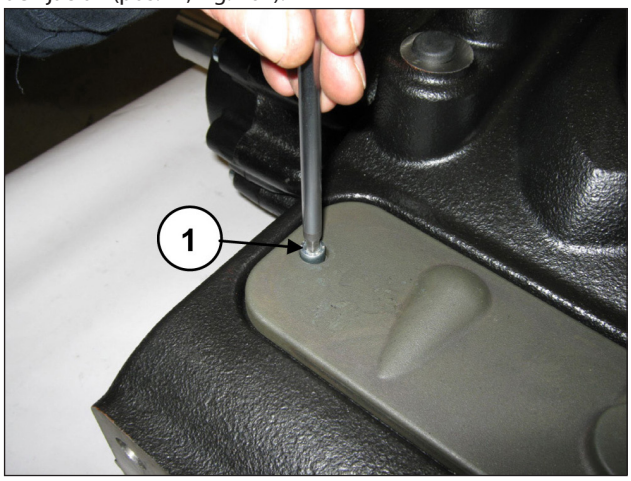


Fig. 167

Girar a mano el eje para situar los 3 pistones en el punto muerto superior.
Introducir la herramienta tampón (cód. 27632500 entre la guía del pistón y el pistón (pos. ①, Fig. 168).

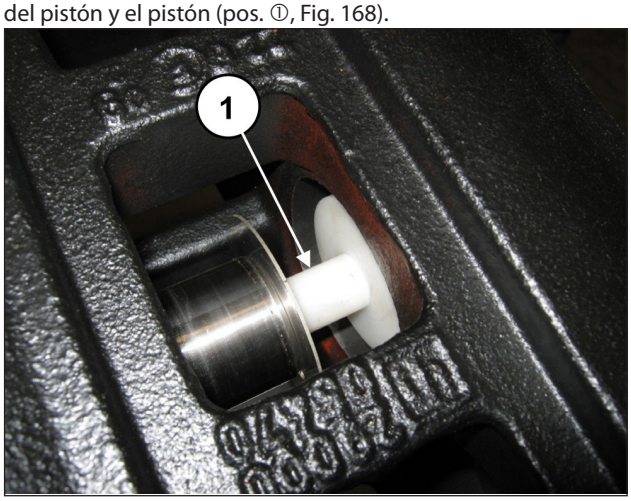


Fig. 168

Girar el eje para desplazar la guía del pistón de manera que el tampón avance y expulse el soporte de las juntas y el grupo del pistón completo (pos. ①, Fig. 169).

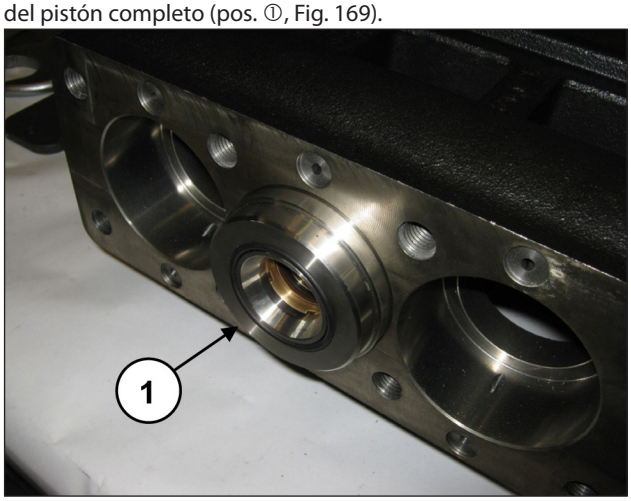


Fig. 169

Extraer el grupo de soporte de las juntas y la herramienta tampón.

Extraer la junta tórica del fondo del soporte de la junta si se queda dentro del cárter de la bomba (pos. ①, Fig. 170).


Fig. 170

Extraer los protectores contra salpicaduras de las guías de pistones (pos. ①, Fig. 171).

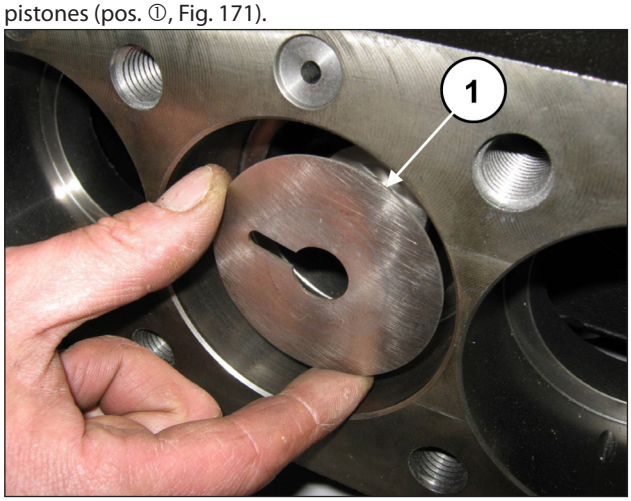


Fig. 171

Separar el soporte de las juntas de la camisa (pos. ①, Fig. 172) para acceder a las juntas de presión (pos. ①, Fig. 173).

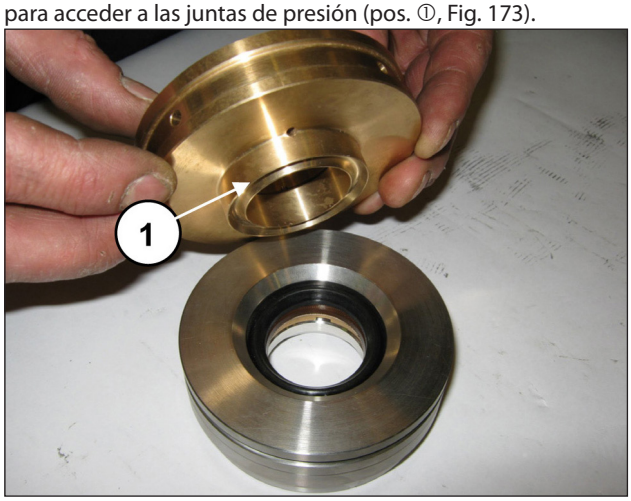


Fig. 172

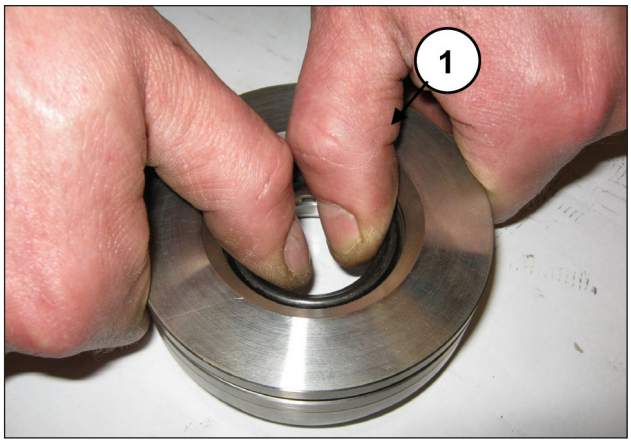


Fig. 173

Para quitar la junta de baja presión, es necesario utilizar un espesímetro o una herramienta que no dañe el alojamiento del soporte de la junta (pos. ①, Fig. 174).

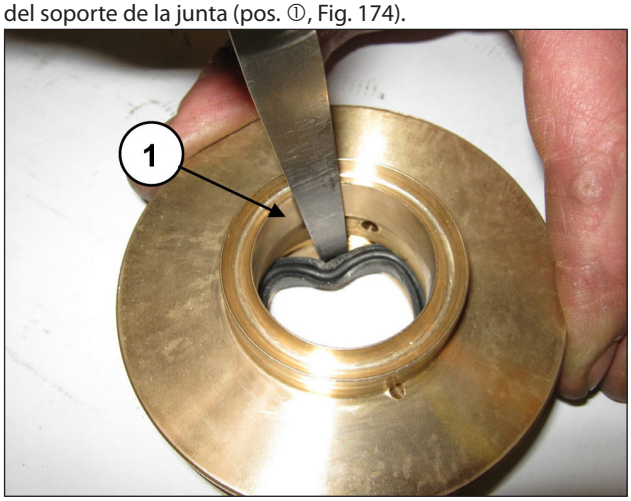


Fig. 174

### 2.2.6 Montaje del grupo pistón - soportes - juntas

Seguir en orden contrario la secuencia de desmontaje descrita en el apart. 2.2.5.

**Sustituir las juntas de presión, para ello humedecer los labios con grasa de silicona (sin esparcir) e introducirlas en la camisa con cuidado para no dañarlas.**

**Sustituir las juntas de presión y las juntas tóricas cada vez que se realicen operaciones de desmontaje.**

Introducir la junta de baja presión en el soporte de la junta (pos. ①, Fig. 175) controlando el sentido de montaje (el labio de retención debe estar hacia adelante, hacia el cabezal).

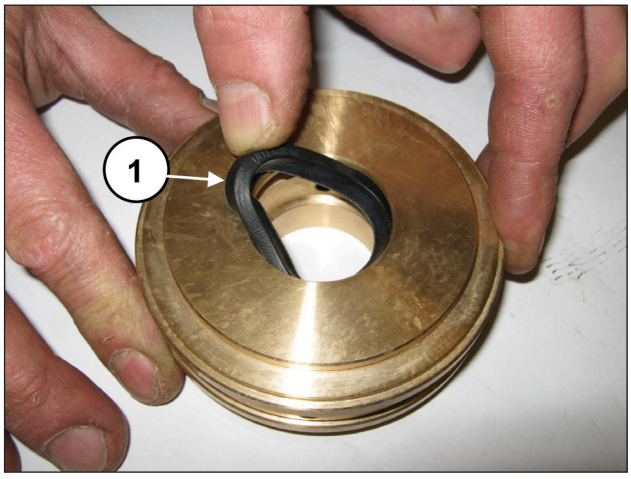


Fig. 175

Montar la anilla del cuello (pos. ①, Fig. 176), la junta de alta presión (pos. ①, Fig. 177) y la anilla restop (pos. ①, Fig. 178).

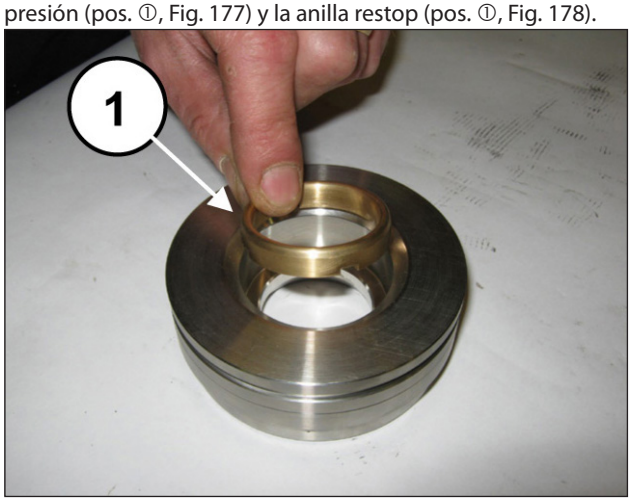


Fig. 176

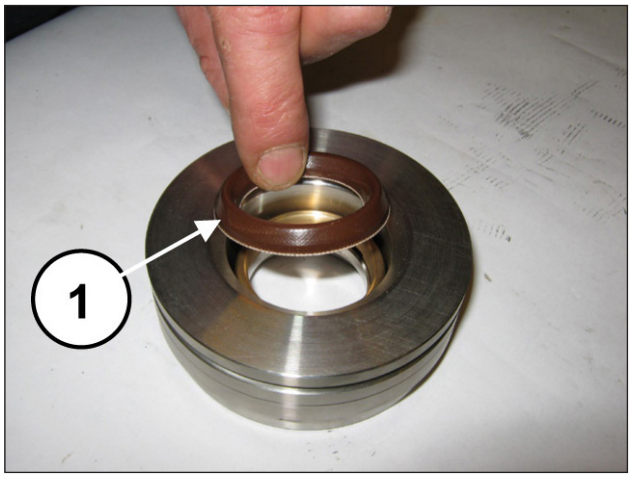


Fig. 177

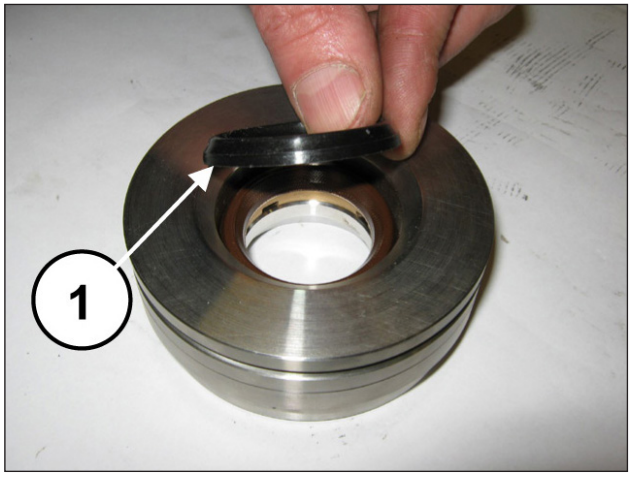


Fig. 178

Unir el soporte de las juntas a la camisa (pos. ①, Fig. 179).

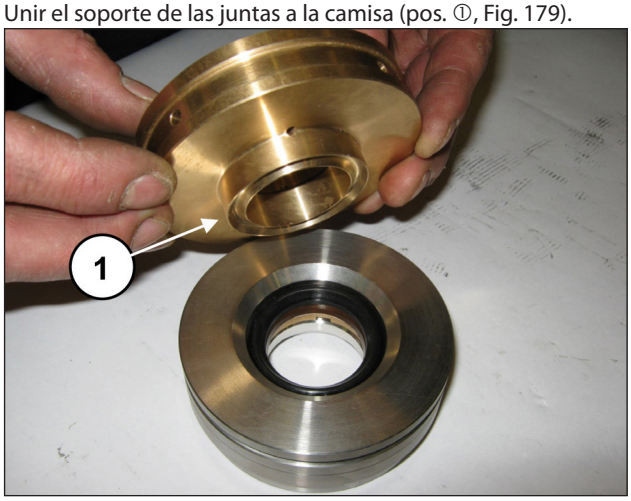


Fig. 179

Colocar los protectores contra salpicaduras en el alojamiento de la guía del pistón (pos. ①, Fig. 180).

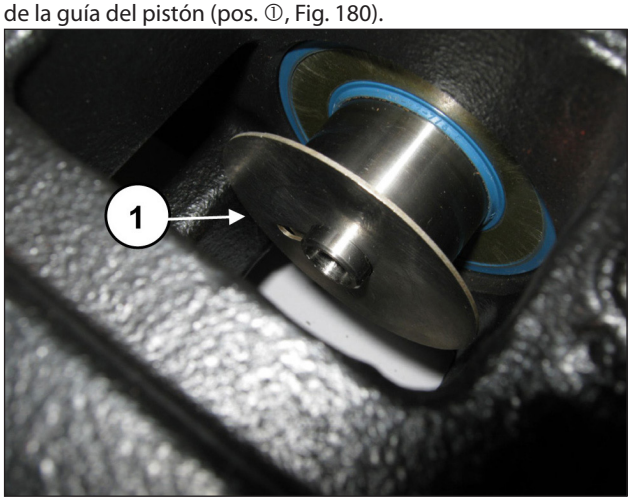


Fig. 180

Introducir la arandela Ø10x18x0.9 en el tornillo de fijación del pistón (pos. ①, Fig. 181).

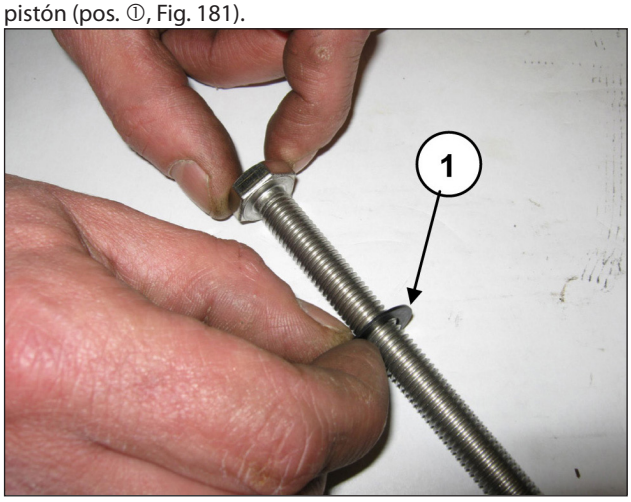


Fig. 181

Montar los pistones en las guías (pos. ①, Fig. 182) y extraerlos como se indica en la pos. ①, Fig. 183.

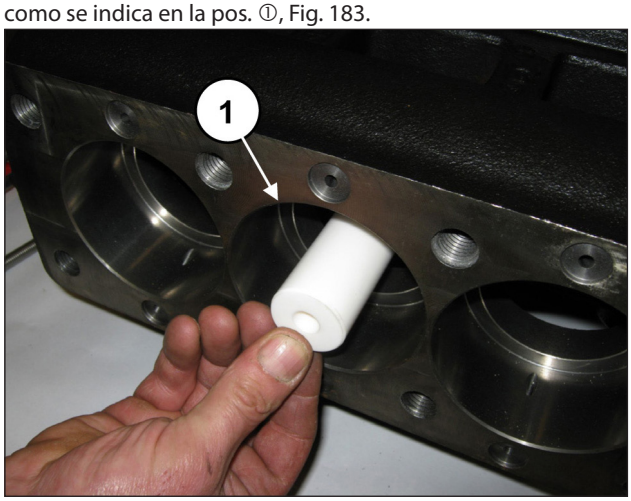


Fig. 182

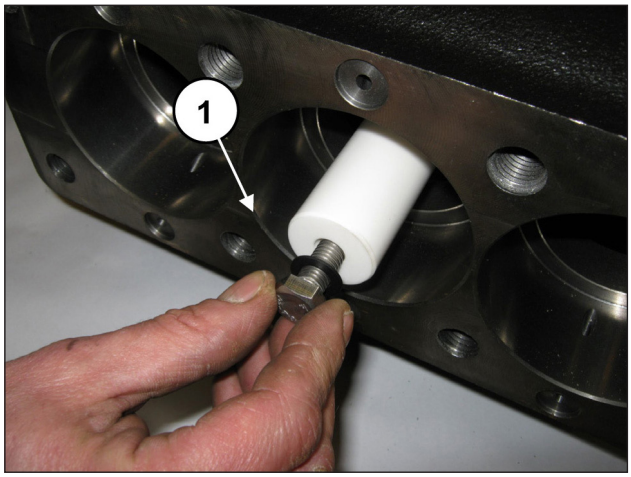


Fig. 183

Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3.
Introducir la junta tórica en el cárter de la bomba (pos. ①, Fig. 184) y, a continuación, el bloque camisa-soporte junta (con la junta tórica) ya ensamblado (pos. ①, Fig. 185).

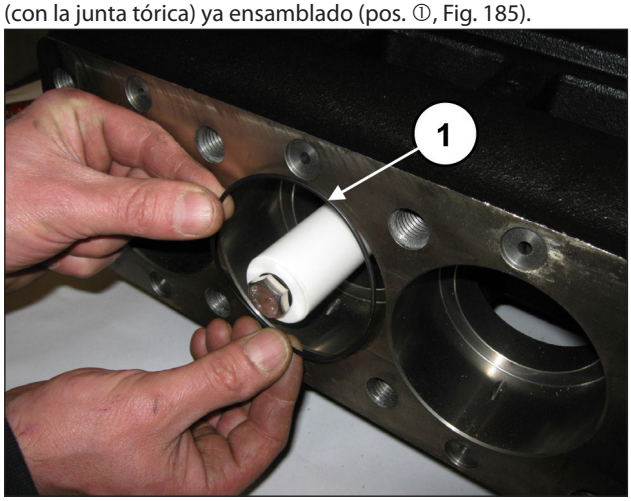


Fig. 184

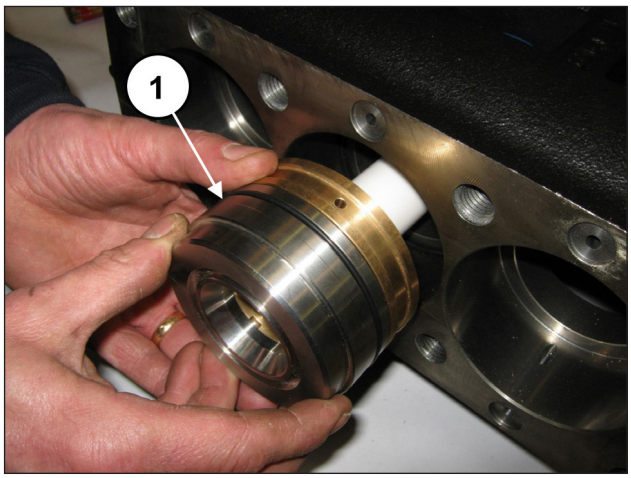


Fig. 185

Comprobar que el bloque camisa-soporte haga tope en el fondo del alojamiento (pos. ①, Fig. 186).

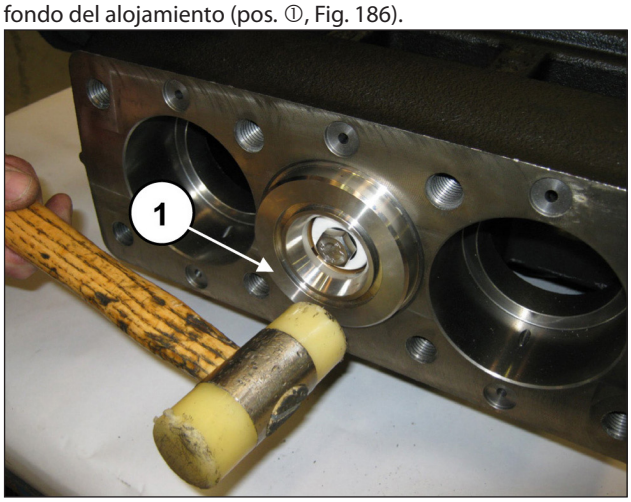


Fig. 186

Montar la junta tórica frontal de la camisa (pos. ①, Fig. 187) y la junta tórica del orificio de recirculación (pos. ①, Fig. 188).

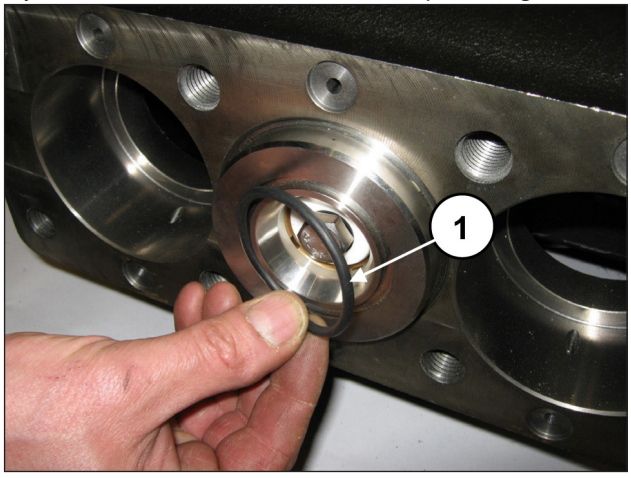


Fig. 187

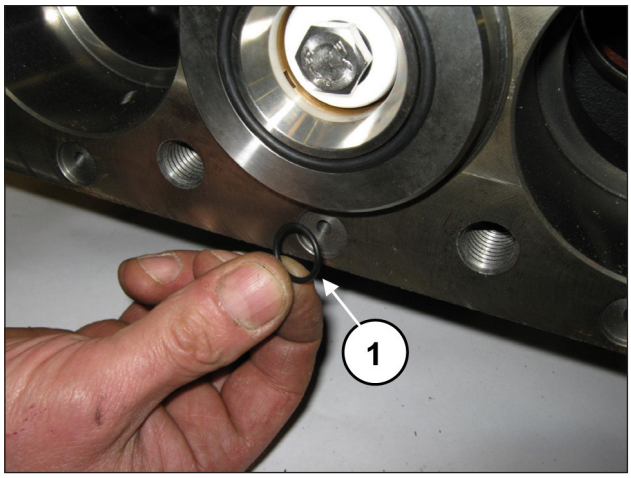


Fig. 188

Introducir la junta tórica (pos. ①, Fig. 189) en las tapas de inspección y montar las tapas con 2+2 tornillos M6x14 (pos. ①, Fig. 190).

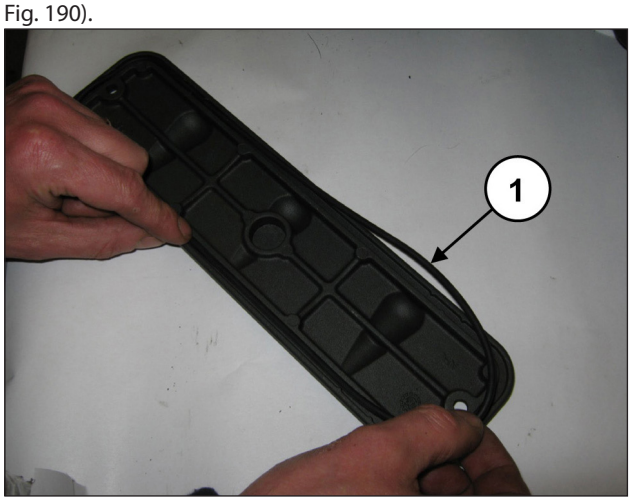


Fig. 189

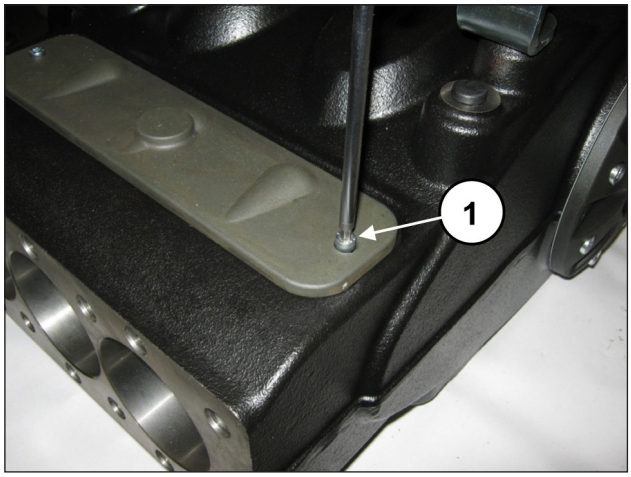


Fig. 190

Ajustar los tornillos con la llave dinamométrica como se indica en el capítulo 3.

## 3 CALIBRACIÓN DE AJUSTE DE LOS TORNILLOS

El ajuste de los tornillos debe realizarse exclusivamente con una llave dinamométrica.

| **Descripción** | **Posición dibujo desglosado** | **Par de apriete Nm** |
|---|---|---|
| Tornillo M10x30 de la tapa del cárter | 89 H.P. - 91 L.P. | 45 |
| Tapón G1/2x13 del cárter | 91 H.P. - 93 L.P. | 40 |
| Tornillo M16x30 del soporte de elevación | 51 H.P. - 53 L.P. | 200 |
| Tornillo M10x40 de la tapa del reductor | 81 H.P. - 83 L.P. | 45 |
| Tornillo M10x25 de tope de la corona | 76 H.P. - 78 L.P. | 45 |
| Tornillo M10x40 de la caja del reductor | 81 H.P. - 83 L.P. | 45 |
| Tornillo M6x14 de las tapas superior e inferior | 60 H.P. - 62 L.P. | 10 |
| Tornillo M10x30 de la tapa del cojinete | 89 H.P. - 91 L.P. | 45 |
| Tornillo M10x1.5x80 de apriete de la biela | 53 H.P. - 55 L.P. | 65* |
| Tornillo M6x20 de la guía del pistón | 47 H.P. - 49 L.P. | 10 |
| Tornillo M10x140 de fijación del pistón | 28 H.P. - 18 L.P. | 40 |
| Tornillo M16x55 de la tapa de válvulas HP | 24 | 333 |
| Tornillo M16x45 de la tapa de válvulas LP | 19 | 333 |
| Tapón G1/2" cabeza LP | 4 | 40 |
| Tapón G1/4"x13 cabeza | 100 H.P. - 21 L.P. | 40 |
| Tornillo M16x180 cabeza HP | 26 | 333** |
| Tornillo M16x150 cabeza LP | 43 | 333** |
| Dispositivo de apertura de las válvulas | 2 | 40 |

* Ajustar el par de apriete atornillando los tornillos de modo simultáneo

** Apretar en diagonal los 4 tornillos internos y a continuación los 4 externos.

## 4 HERRAMIENTAS DE REPARACIÓN

El mantenimiento de la bomba se puede llevar a cabo utilizando herramientas estándar para el montaje y el desmontaje de los componentes. Están disponibles las siguientes herramientas:

**Para el montaje:**

| | |
|---|---|
| Eje (bloqueo de las bielas) | cód. 27566200 |
| Cojinete del eje acodado | cód. 27604700 |
| Cojinete del piñón de la caja del reductor | cód. 27604900 |
| Cojinete del eje acodado de la caja del reductor | cód. 27605000 |
| Cojinete del eje acodado de la tapa del cojinete | cód. 27605000 |
| Retén guía pistón | cód. 27605300 |
| Cojinete del piñón | cód. 27604800 |
| Retén del piñón | cód. 27605200 |
| Junta tórica del alojamiento de la válvula de envío MW32-MW36-MW40 | cód. 27516000 |

**Para el desmontaje:**

| | |
|---|---|
| Retén guía pistón | cód. 27918500 |
| Eje (bloqueo de las bielas) | cód. 27566200 |
| Grupo de válvulas de aspiración y envío | cód. 27516400 |
| Alojamiento de válvula de aspiración MW32-MW36-MW40 | cód. 27516200 |
| Bloque camisa + soporte de juntas | cód. 27632500 |

# 5 VERSIONES ESPECIALES

A continuación se describe cómo reparar las versiones especiales. En los casos no especificados, respetar las instrucciones relativas a la versión de bomba MW estándar.

- Bombas MWN - MWF: seguir las instrucciones de la bomba MW estándar.
- Bombas MWR - MWNR: seguir las instrucciones de la bomba MW estándar, excepto en el caso de las juntas de presión para las que es necesario respetar las instrucciones del apartado específico.

## 5.1 BOMBA VERSIÓN MWR - MWNR

### 5.1.1 Desmontaje del grupo soportes - juntas

Separar el soporte de juntas de la camisa, desmontar la anilla del muelle y la anilla de retén (pos. ①②, Fig. 191) para acceder a las juntas de presión (pos. ①, Fig. 192).

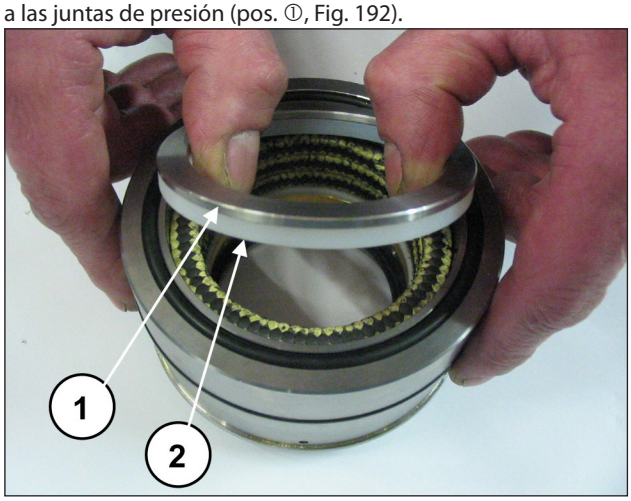


Fig. 191

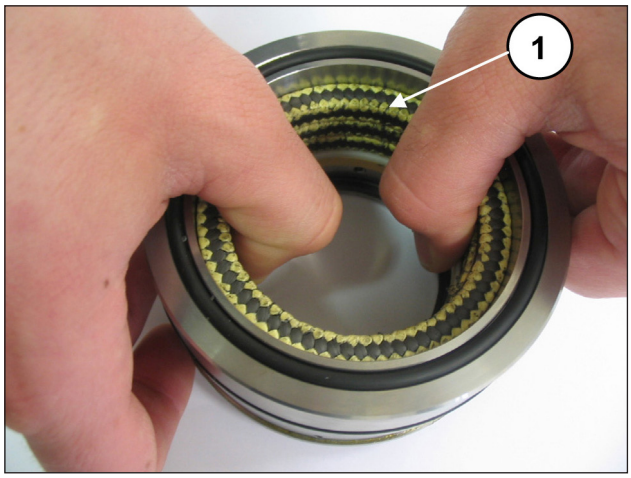


Fig. 192

Para quitar la junta de baja presión, es necesario utilizar un espesímetro o una herramienta que no dañe el alojamiento del soporte de la junta (pos. ①, Fig. 193).


Fig. 193

Montaje del grupo soportes - juntas

Seguir en orden contrario la secuencia de desmontaje descrita en el apart. 2.2.3.

**Sustituir las juntas de presión, para ello humedecer los labios con grasa de silicona (sin esparcir) e introducirlas en la camisa con cuidado para no dañarlas.**

**Sustituir las juntas de presión y las juntas tóricas cada vez que se realicen operaciones de desmontaje.**

Introducir la junta de baja presión en el soporte de las arandelas de prensaestopas (pos. ①, Fig. 194), controlando el sentido de montaje (el labio de retención debe estar hacia adelante, hacia el cabezal), y la junta tórica (pos. ②, Fig. 122).


Fig. 194

Montar la anilla de soporte y la anilla anti extrusión (pos. ①②, Fig. 195), las tres arandelas de prensaestopas de manera que las incisiones se encuentren a 120° entre sí (pos. ①, Fig. 196), el retén de las arandelas de prensaestopas y la anilla del muelle (pos. ①②, Fig. 197).

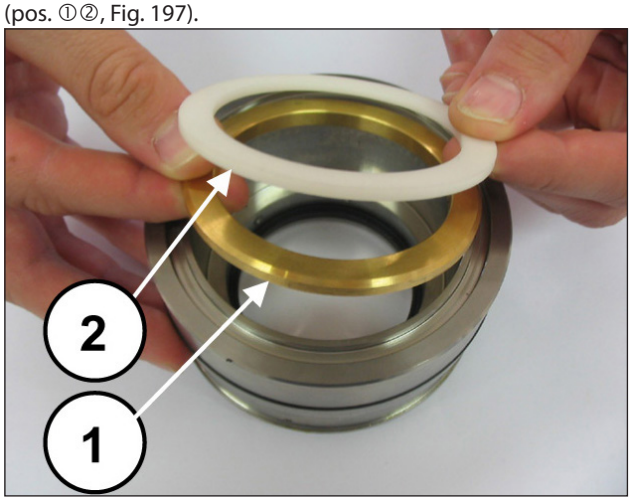


Fig. 195

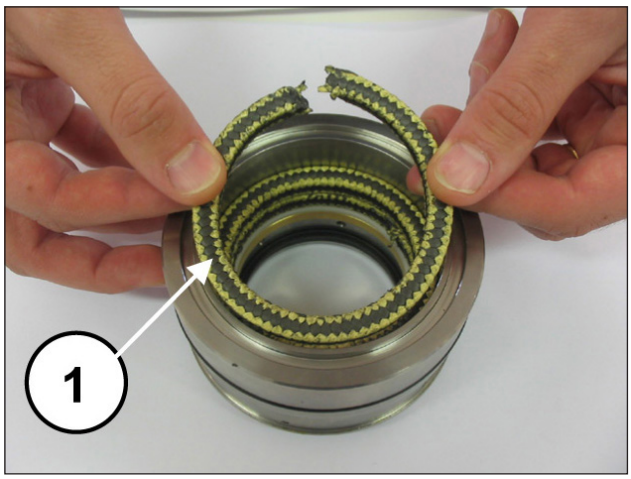


Fig. 196

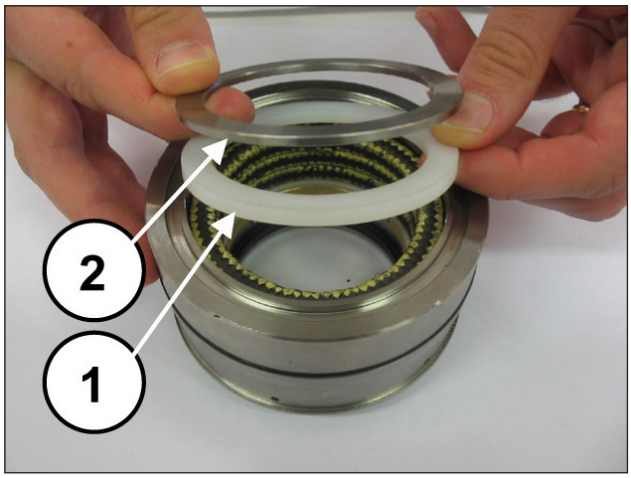


Fig. 197

Montar en la anilla del cuello de las arandelas de prensaestopas la junta tórica (pos. ①, Fig. 198) y colocarla en el alojamiento de la cabeza.


Fig. 198

## 6 RECUPERACIÓN DE LA CABEZA DE LA BOMBA

Si la cabeza presenta dentro de las cámaras de los pistones signos evidentes de cavitación, provocados por una alimentación incorrecta de la bomba, es posible recuperar la cabeza dañada para no tener que sustituirla.
Para recuperar la cabeza se han de realizar los trabajos indicados en la Fig. 199 para las bombas MW 32-36-40 y las versiones MWF-MWR, y en la Fig. 200 para las bombas MW 45-50-55 y las versiones MWF-MWR:

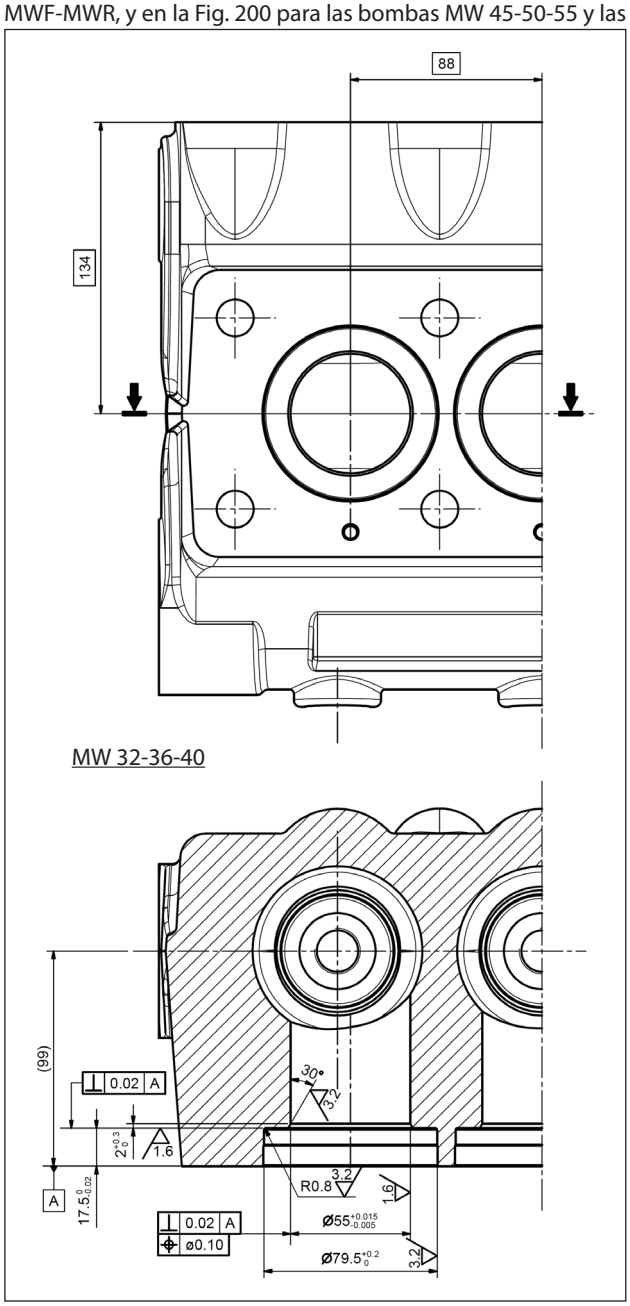


Fig. 199

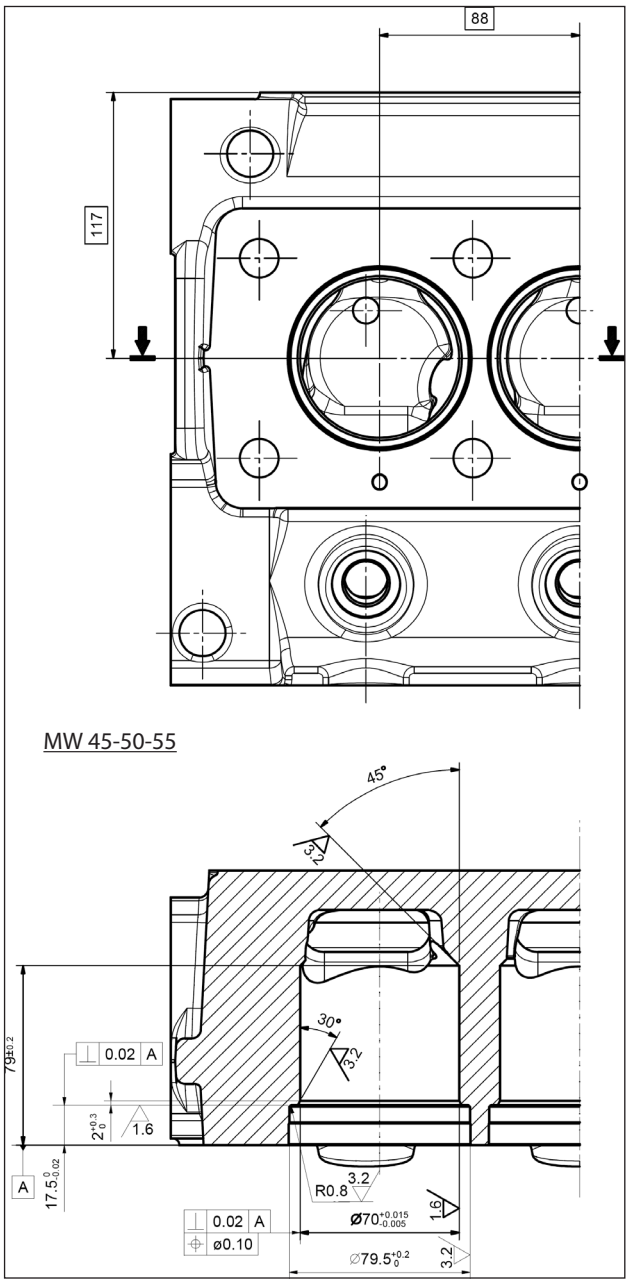


Fig. 200

**MW 32-36-40 y versiones MWF-MWR (Fig. 201)**

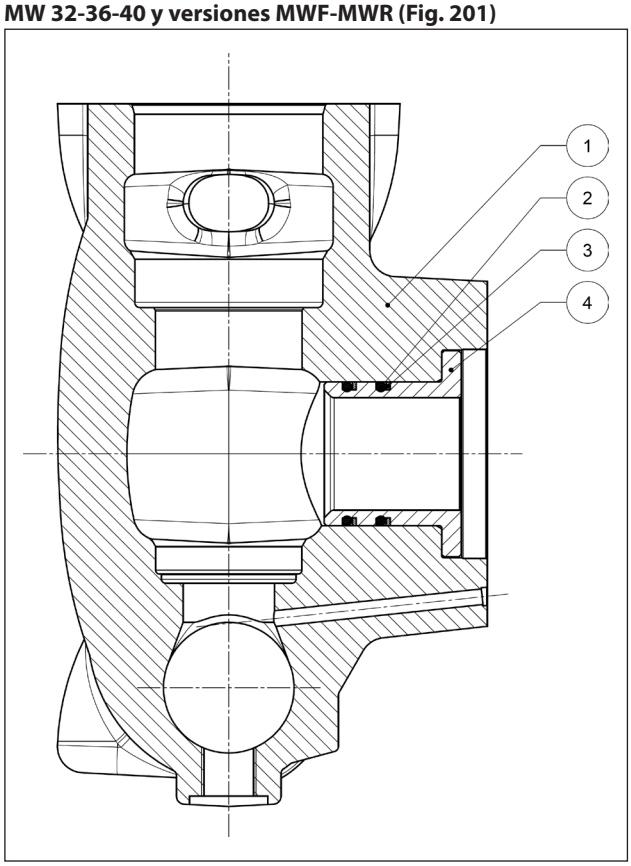


Fig. 201

① Cabeza MW HP - cód. 73120015 - cant. 1
② Junta tórica cód. 90408000 - cant. 6
③ Anilla anti extrusión - cód. 90523800 - cant. 6
④ Casquillo MW HP - cód. 73215956 - cant. 3

**MW 45-50-55 y versiones MWF-MWR (Fig. 202)**

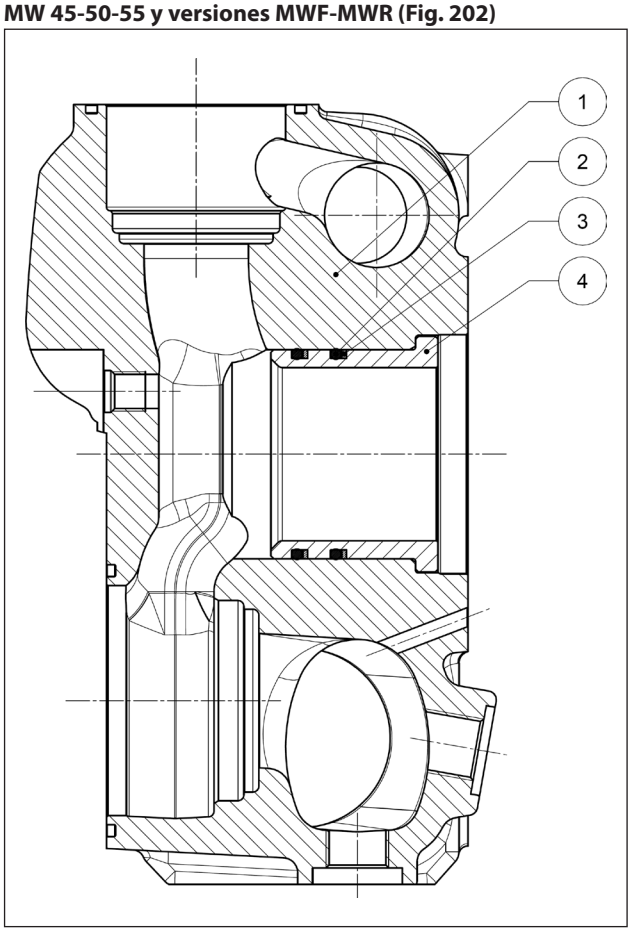


Fig. 202

① Cabeza MW LP - cód. 73120115 - cant. 1
② Junta tórica cód. 90411500 - cant. 6
③ Anilla anti extrusión - cód. 90527400 - cant. 6
④ Casquillo MW LP - cód. 73216056 - cant. 3

## 7 SUSTITUCIÓN DEL CASQUILLO PIE DE LA BIELA

Realizar la conexión en frío del buje y los trabajos necesarios respetando las dimensiones y las tolerancias indicadas en la Fig. 203.

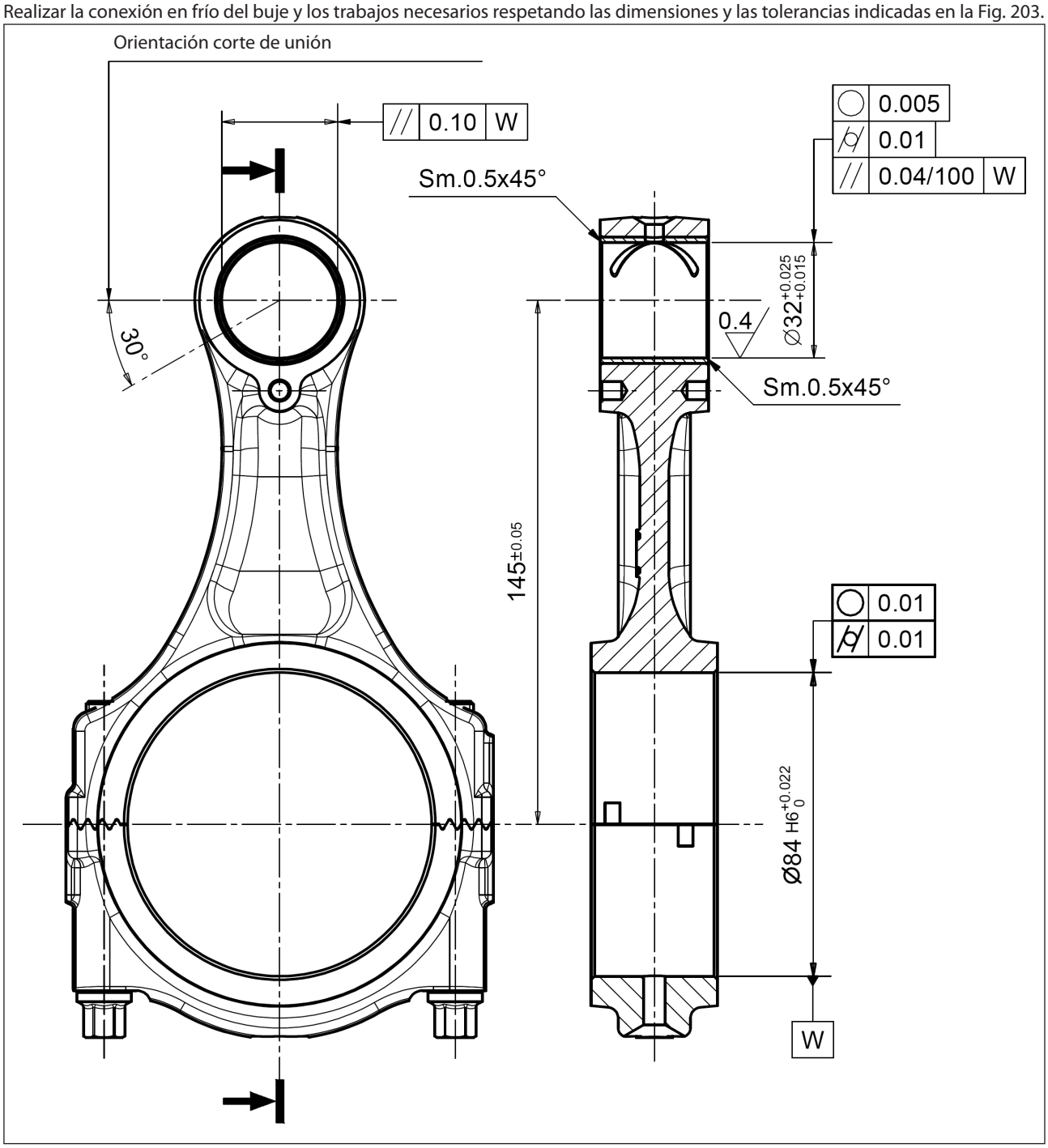


Fig. 203

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# 1 INTRODUÇÃO

Este manual descreve as instruções para a reparação das bombas da família MW e deve ser atentamente lido e compreendido antes de realizar qualquer intervenção na bomba.
O uso correto e a manutenção adequada depende do bom funcionamento e duração da bomba.
A Interpump Group não se responsabiliza por qualquer dano causado por negligência ou pelo não cumprimento das regras descritas neste manual.

## 1.1 DESCRIÇÕES DOS SÍMBOLOS

Leia atentamente as instruções contidas neste manual antes de qualquer operação.

**Sinal de Advertência**

Leia atentamente as instruções contidas neste manual antes de qualquer operação.

**Sinal de Perigo**
Use óculos de proteção.

**Sinal de Perigo**
Use luvas de proteção antes de cada operação.

# 2 NORMAS DE REPARAÇÃO

## 2.1 REPARAÇÃO DA PARTE MECÂNICA

As operações de reparação da parte mecânica devem ser realizadas depois de ter removido o óleo do carter.
Para retirar o óleo, é preciso remover a tampa de carga do óleo pos. ①, Fig. 1 e em seguida, a tampa de descarga pos. ②, Fig. 1.

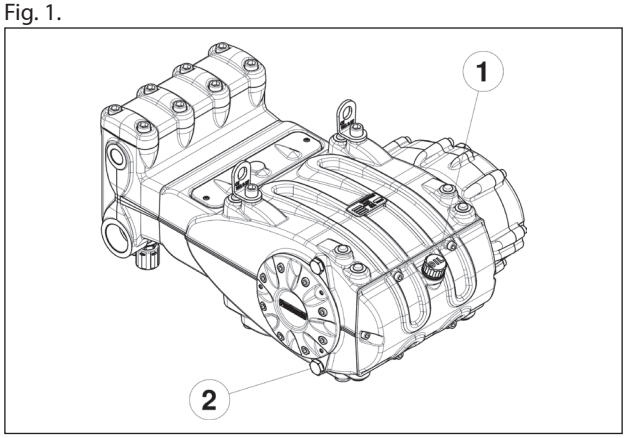


Fig. 1

**O óleo esgotado deve ser colocado em um recipiente adequado e disposto em centrais adequadas.**
**Não deve ser, de forma nenhuma, disposto no meio ambiente.**

### 2.1.1 Desmontagem da parte mecânica

A sequência correta é a seguinte.
Esvazie completamente a bomba do óleo, em seguida, organize a desmontagem da cobertura do carter (e relativo anel circular), soltando os seis parafusos M10 (pos. ①, Fig. 2).

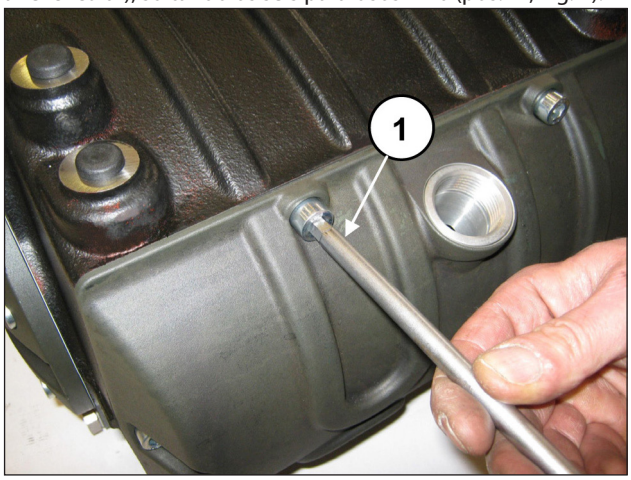


Fig. 2

Remova a lingueta o eixo PTO (pos. ①, Fig. 3).

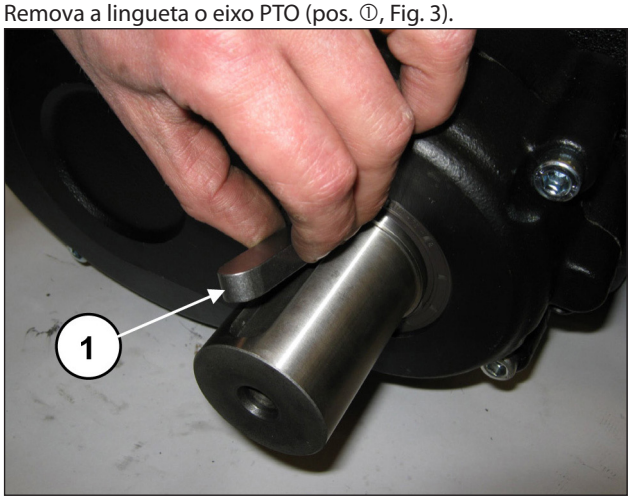


Fig. 3

Solte os parafusos de fixação da cobertura do redutor (pos. ①, Fig. 4).

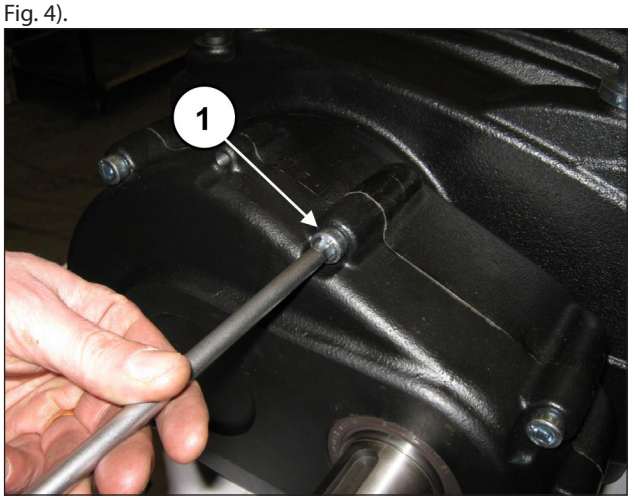


Fig. 4

Posicione três grãos ou parafusos rosqueados M8 (pos. ①, Fig. 5) com a função de extrator nos furos especiais e dois parafusos M10, suficientemente longos, com a função de sustentar a cobertura (pos. ②, Fig. 5).

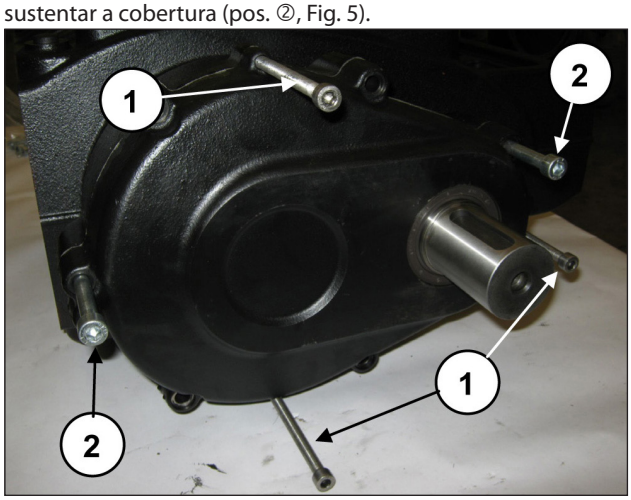


Fig. 5

Aperte gradualmente os três parafusos M8 (pos. ①, Fig. 6) com a função de extrator até remover completamente o grupo da cobertura e do pinhão

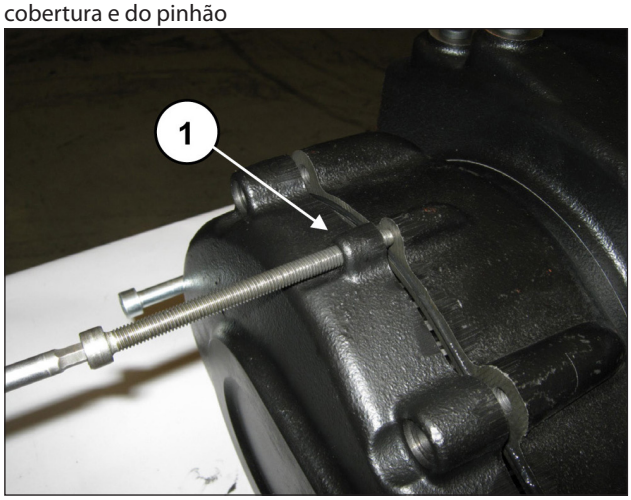


Fig. 6

É possível realizar a desmontagem completa da cobertura do redutor do pinhão, procedendo conforme a seguir:
Remova o anel elástico Ø120 (pos. ①, Fig. 7).

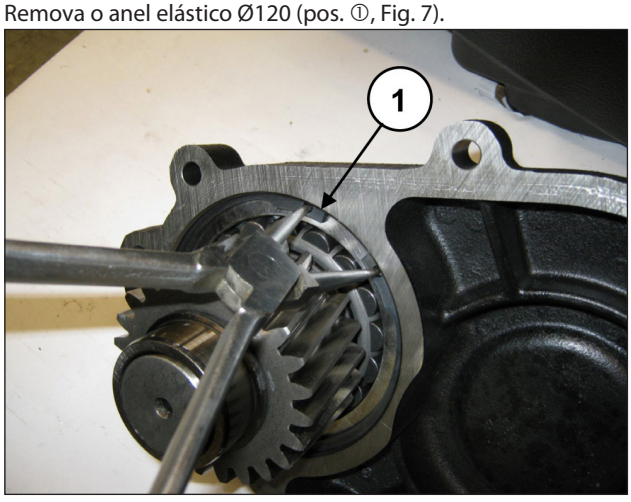


Fig. 7

Separe o pinhão da cobertura, agindo mediante o mecanismo de percussão no mesmo pinhão (pos. ①, Fig. 8).

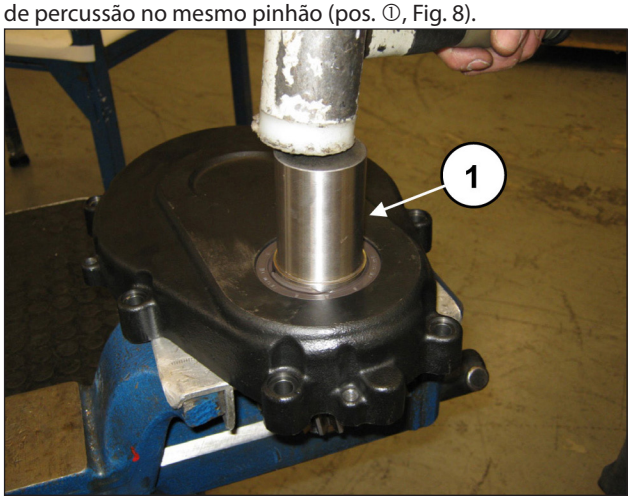


Fig. 8

Remova o anel elástico Ø55 (pos. ①, Fig. 9) e o anel de apoio do rolamento (pos. ①, Fig. 10) do pinhão

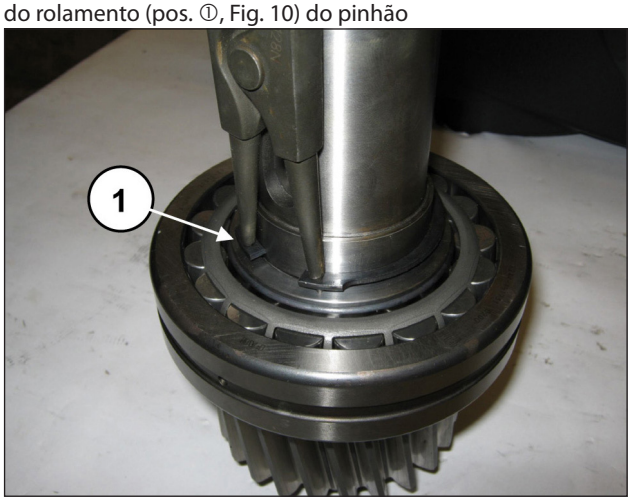


Fig. 9

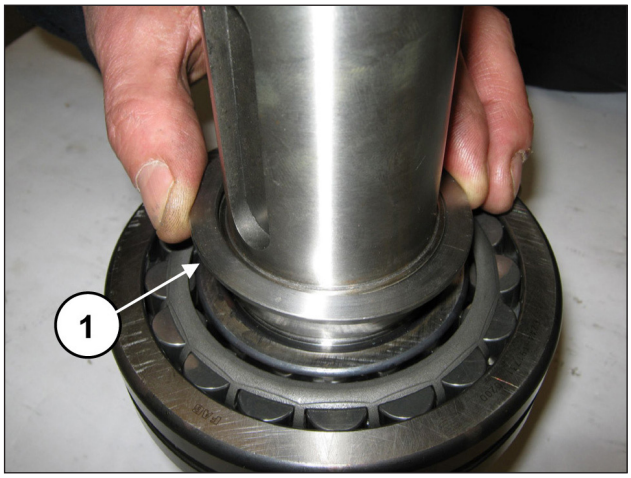


Fig. 10

Extraia as vedações do óleo da cobertura do redutor, agindo do lado interno da cobertura (pos. ①, Fig. 11).

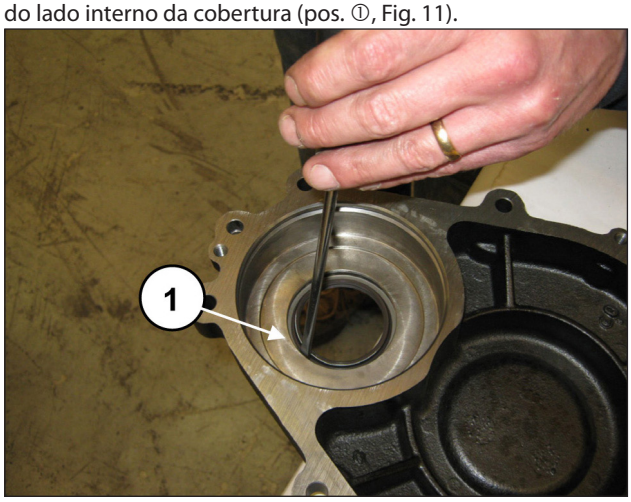


Fig. 11

Solte os parafusos que fixam a retenção da coroa (pos. ①, Fig. 12) e remova-os (pos. ①, Fig. 13).

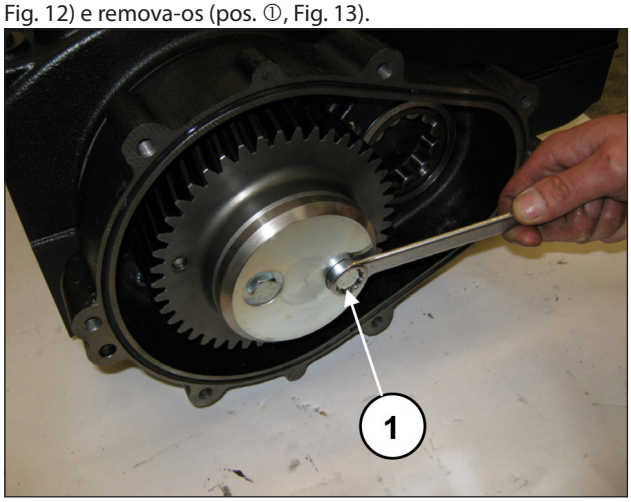


Fig. 12

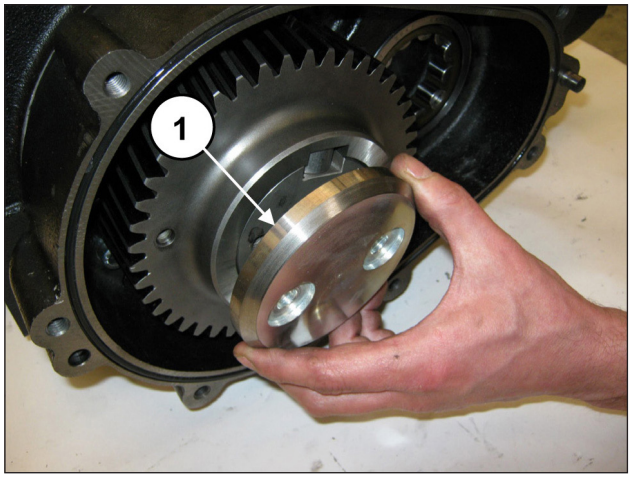


Fig. 13

Retire a coroa (pos. ①, Fig. 14). Se necessário, é possível usar um extrator de mecanismo de percussão para aplicar os dois furos M8 (pos. ②, Fig. 14).

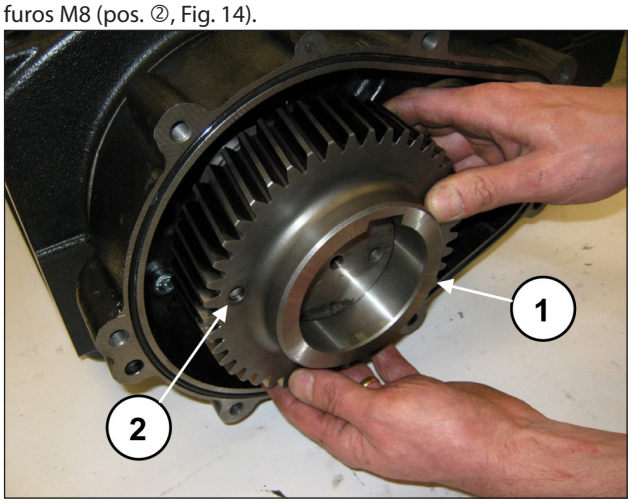


Fig. 14

Retire a lingueta do eixo (pos. ①, Fig. 15).


Fig. 15

Retire o anel de apoio da coroa (pos. ①, Fig. 16).

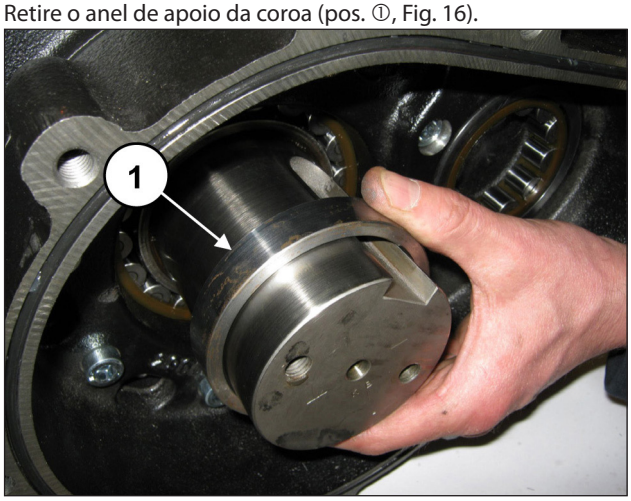


Fig. 16

Solte os parafusos da haste (pos. ①, Fig. 17).

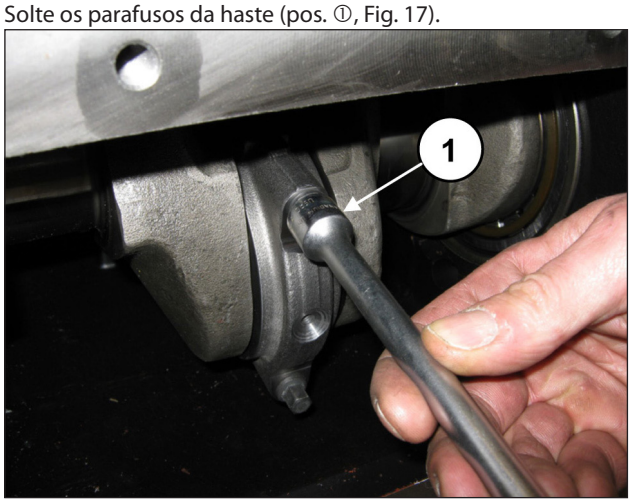


Fig. 17

Desmonte os chapéus da haste com os semi-rolamentos inferiores, tendo cuidado especial durante a desmontagem, na ordem em que são desmontados.

**Os chapéus da haste e as semi-hastes relativas devem ser remontados exatamente na mesma ordem e acoplamento em que foram desmontados.**

Para evitar possíveis erros do chapéu e semi-hastes, foram numerados em um lado (pos. ①, Fig. 18).

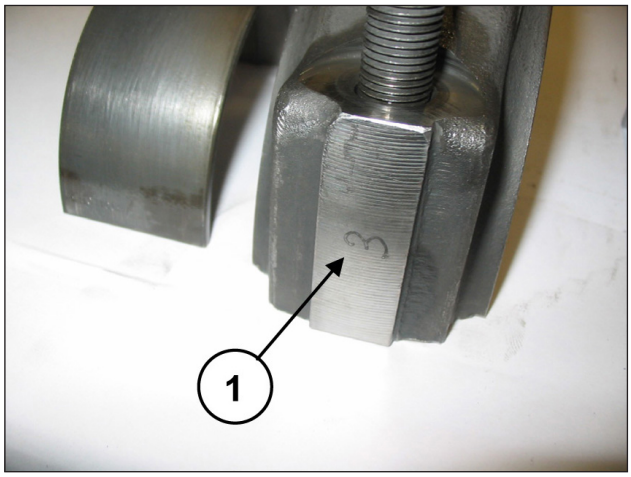


Fig. 18

Avance as semi-hastes completamente na direção da parte hidráulica para permitir o escape do eixo de manivela. Para facilitar a operação, use a ferramenta adequada (cód. 27566200), (pos. ①, Fig. 19).

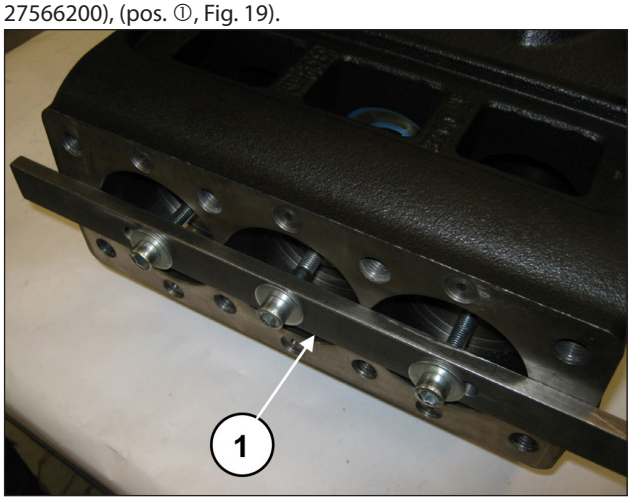


Fig. 19

Solte os três semi-rolamentos superiores das semi-hastes (pos. ①, Fig. 20).

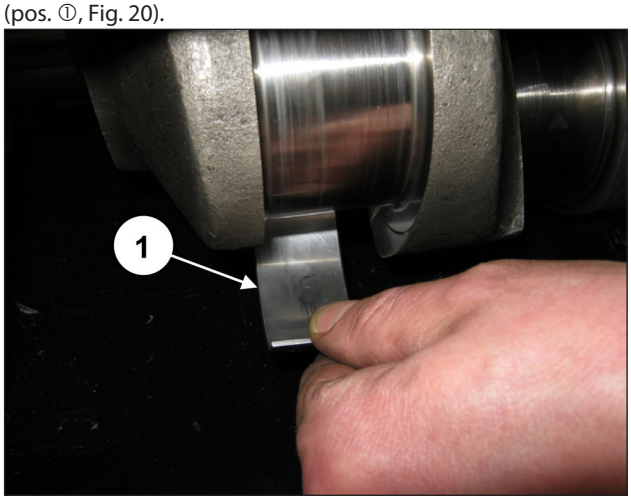


Fig. 20

Solte os parafusos de fixação da caixa do redutor (pos. ①, Fig. 21 e Fig. 22).

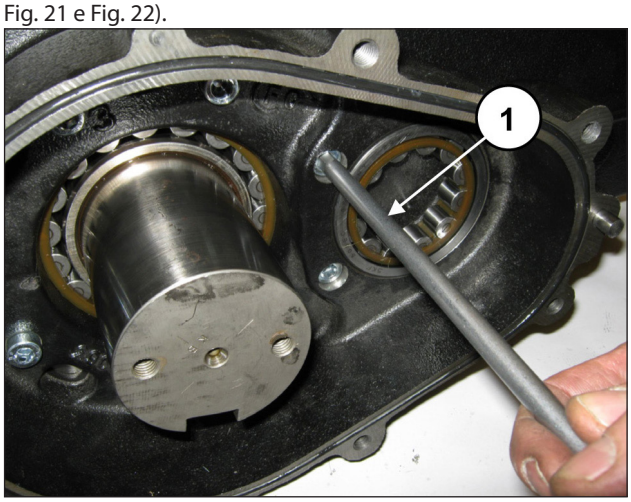


Fig. 21

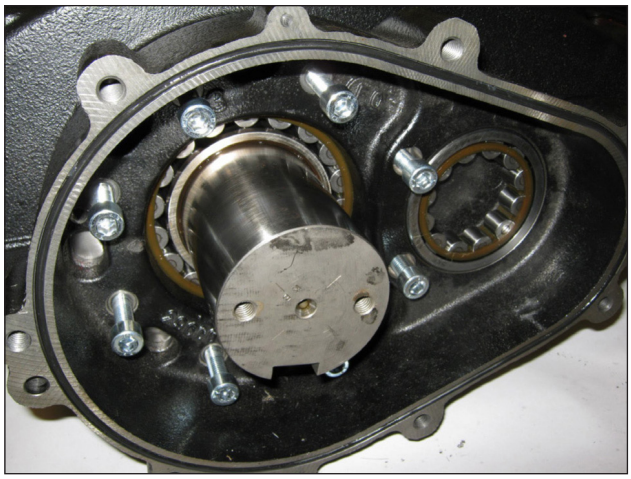

Fig. 22

Posicione três grãos ou parafusos rosqueados M8 (pos. ①, Fig. 23) com a função de extrator nos furos adequados e dois parafusos M10 suficientemente longos, com a função de sustentar a caixa do redutor (pos. ②, Fig. 23).

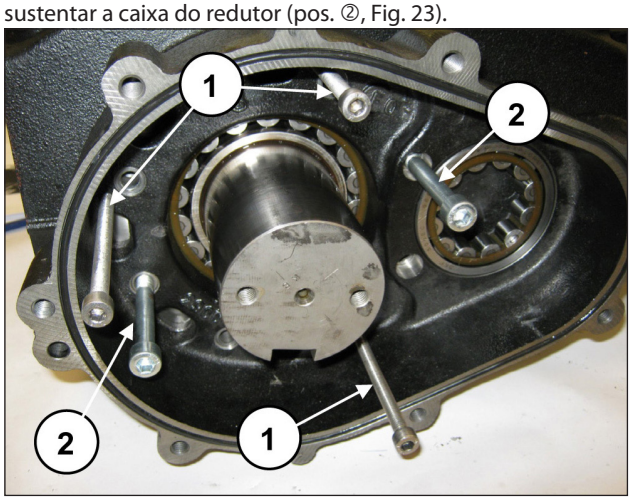


Fig. 23

Solte os três parafusos M8 gradualmente (pos. ①, Fig. 24), para evitar que a caixa possa se inclinar demais e bloquear o local. Forneça a remoção da caixa de sustentação do eixo, para evitar danos (pos. ①, Fig. 25).

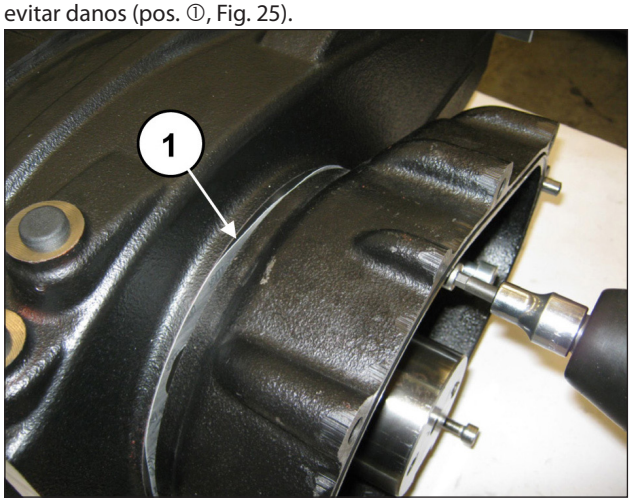


Fig. 24

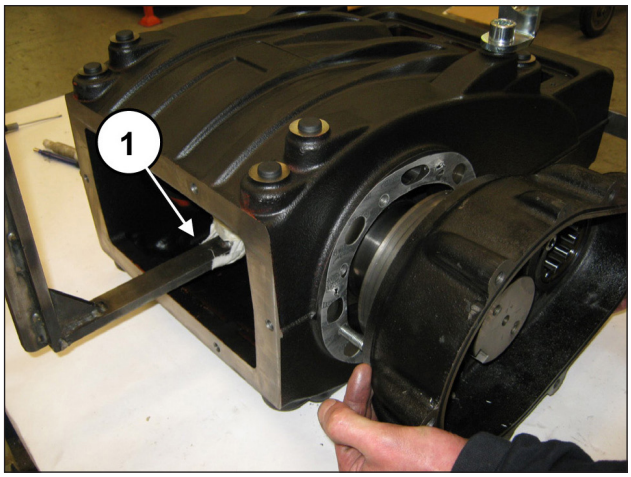


Fig. 25

No lado oposto, solte os parafusos de fixação da cobertura do rolamento (pos. ①, Fig. 26 e Fig. 27).

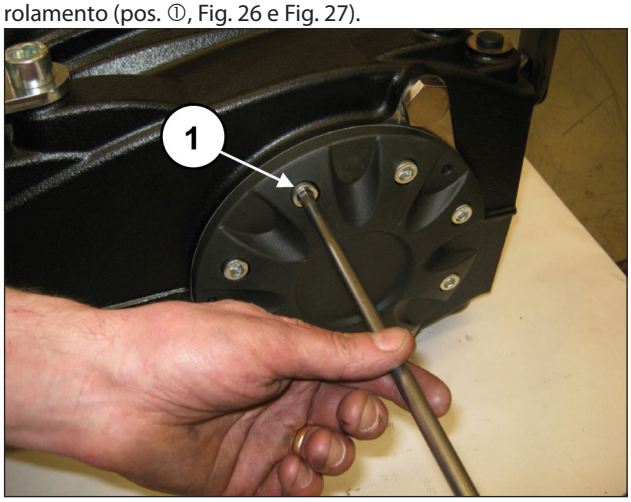


Fig. 26

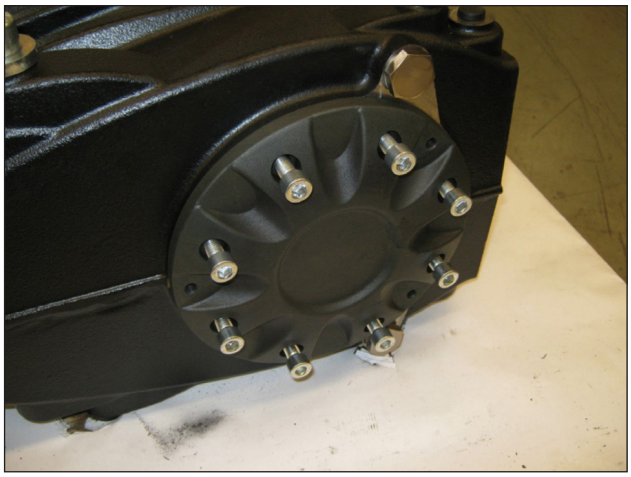

Fig. 27

Posicione três grãos ou parafusos rosqueados M8 (pos. ①, Fig. 28), com a função de extrator nos furos especiais

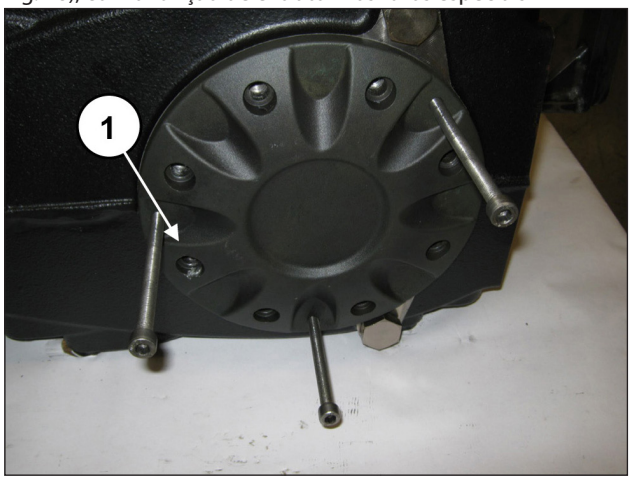


Fig. 28

Solte os três parafusos M8 gradualmente (pos. ①, Fig. 29) para evitar que a cobertura possa se inclinar demais e bloquear o local.
Forneça a remoção da cobertura do rolamento, sustentando o eixo para evitar danos (pos. ①, Fig. 30).

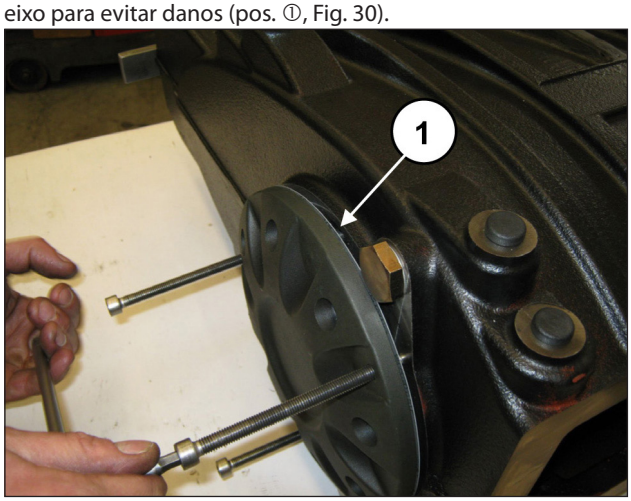


Fig. 29

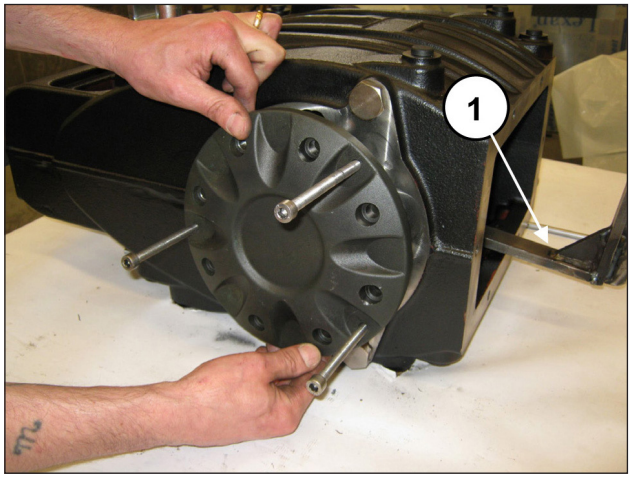


Fig. 30

Retire o eivo de manivela do carter do lado PTO (pos. ①, Fig. 31).

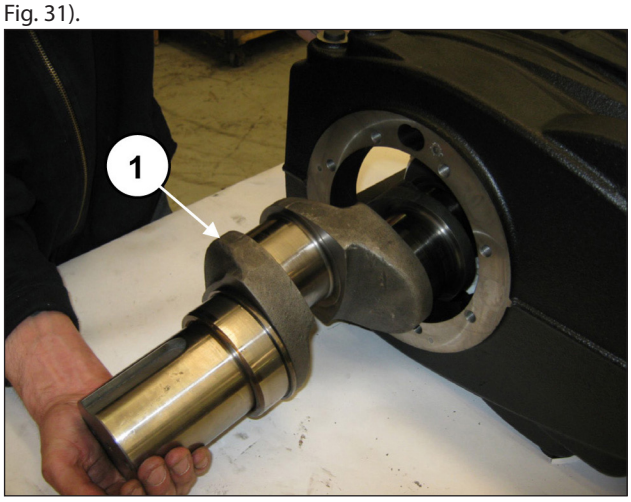


Fig. 31

No caso de ser necessário, substitua uma ou mais hastes ou guias do pistão, procedendo conforme a seguir:
Prossiga com o desapertar dos parafusos da ferramenta, cód. 27566200, para desbloquear as hastes (pos. ①, Fig. 32) e, em seguida, extraia os grupos da haste-guia do pistão da abertura posterior do carter (pos. ①, Fig. 33).

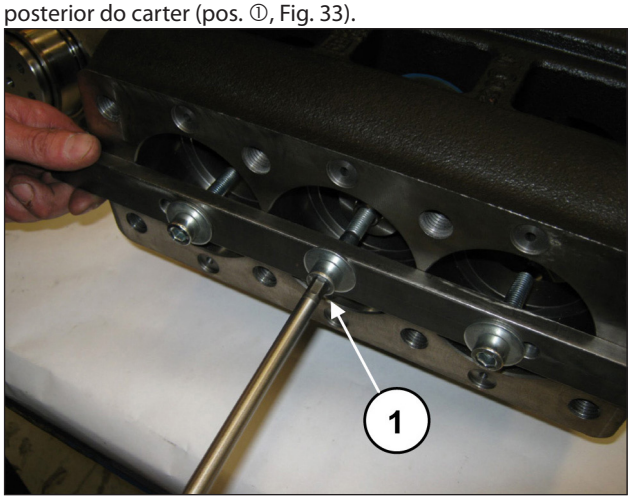


Fig. 32

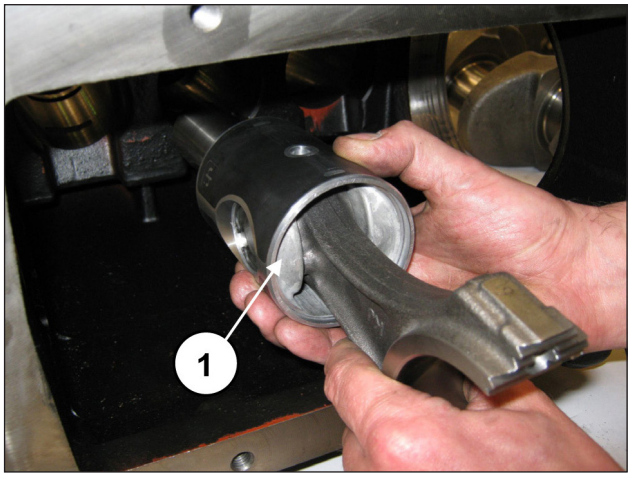


Fig. 33

Agora é possível proporcionar a desmontagem das vedações do óleo da guia do pistão, prestando atenção para não danificar a haste deslizante da guia do pistão.

**Caso seja necessária a substituição das vedações do óleo da guia do pistão sem desmontar toda a parte mecânica, é possível extrair as vedações do óleo usando a ferramenta especial, cód. 27918500, operando conforme o seguinte:**

Insira a ferramenta entre a haste e a borda das vedações do óleo (pos. ①, Fig. 34) e, mediante o mecanismo de percussão, forneça a inserção completa da zona cônica no interior da vedação do óleo (pos. ①, Fig. 35).


Fig. 34

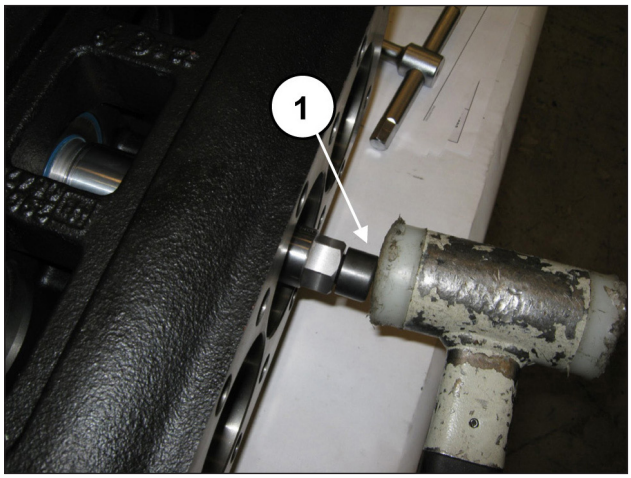


Fig. 35

Extraia as vedações do óleo usando o mecanismo de percussão da ferramenta (pos. ①, Fig. 36).

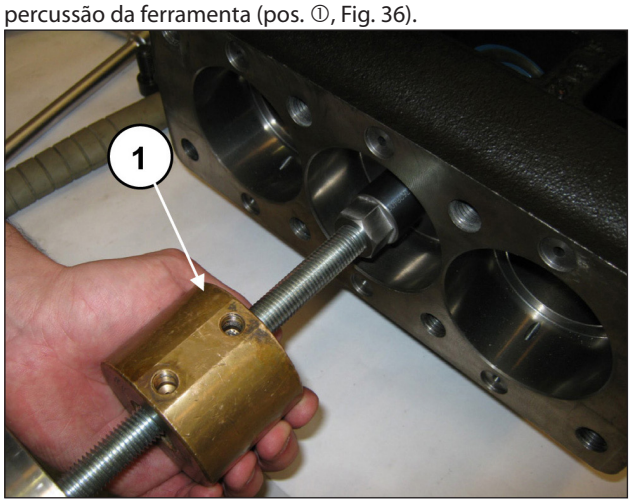


Fig. 36

Remova os dois anéis elásticos de bloqueio do pino (pos. ①, Fig. 37).

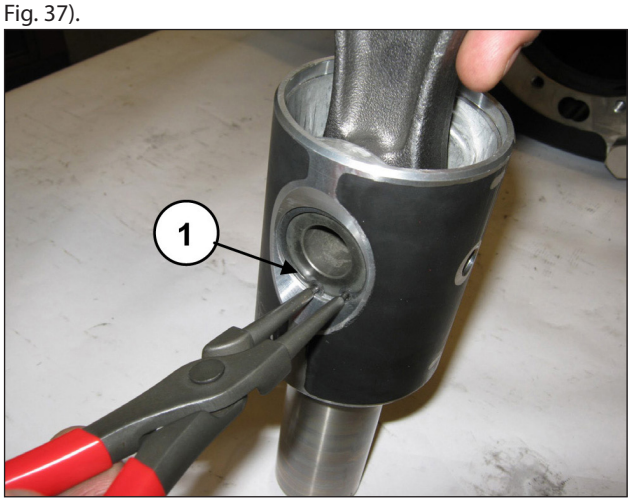


Fig. 37

Solte o pino (pos. ①, Fig. 38) e forneça a extração da haste (pos. ①, Fig. 39).

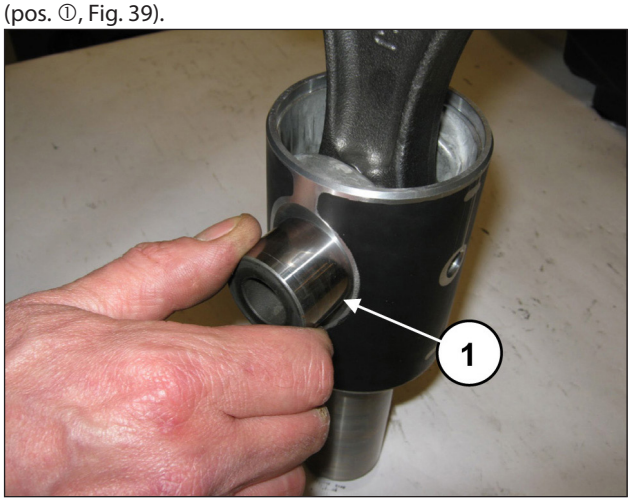


Fig. 38

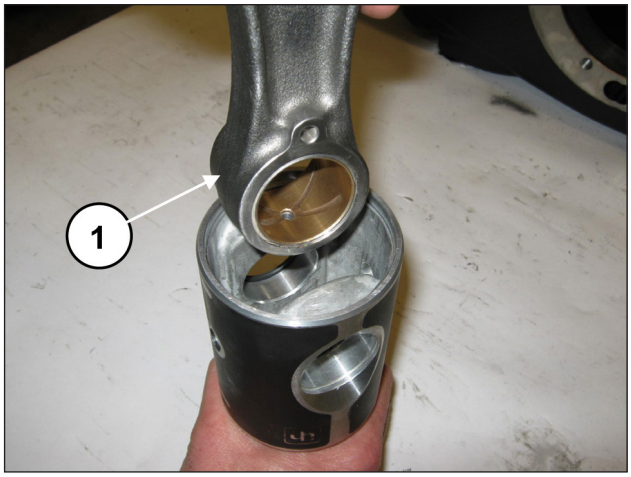


Fig. 39

Acople as semi-hastes aos chapéus anteriormente desmontados, fazendo referência à numeração (pos. ①, Fig. 40).

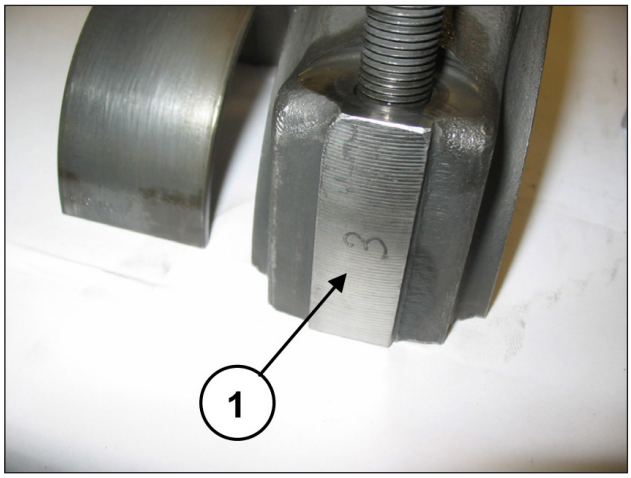


Fig. 40

Para separar a haste da guia do pistão, solte os parafusos do cabeçote cilíndrico M6, mediante a chave especial (pos. ①, Fig. 41).

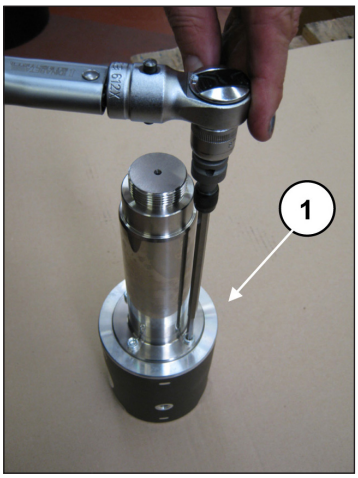


Fig. 41

### 2.1.2 Montagem da parte mecânica

Proceda com a montagem, seguindo o procedimento inverso ao indicado no parág. 2.1.1.
A sequência correta é a seguinte:
Monte o mesmo na guia do pistão.
Insira a mesma guia do pistão no local especial da guia do pistão (pos. ①, Fig. 42) e fixe-a a este último com os quatro parafusos do cabeçote cilíndrico M6x20 (pos. ①, Fig. 43).


Fig. 42


Fig. 43

*Bloqueie a guia do pistão no gancho com ajuda de ferramenta adequada e proceda com a calibragem dos parafusos com chave dinamométrica (pos. ①, Fig. 44), conforme indicado no capítulo 3.*

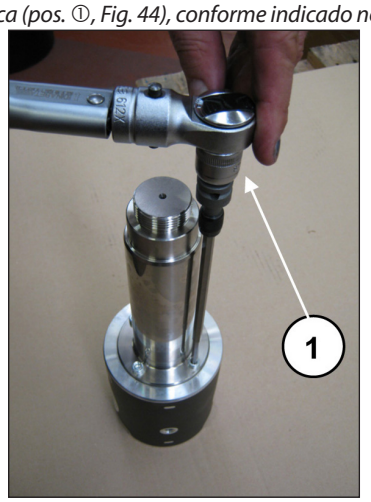


Fig. 44

Insira a haste na guia do pistão (pos. ①, Fig. 39) e, em seguida, insira o pino (pos. ①, Fig. 38). Aplique os dois elásticos perfilados (pos. ①, Fig. 37).

**A montagem correta é garantida se o pé da haste, a guia do pistão e o pino giram livremente.**

Separe os chapéus das semi-hastes. O acoplamento correto será garantido pela numeração colocada em um lado (pos. ①, Fig. 40).
Depois de ter verificado a limpeza correta do carter, insira o grupo da semi-haste-guia do pistão no interior das varas do carter (pos. ①, Fig. 33).

**A inserção do grupo da semi-haste-guia do pistão no carter deve ser feita orientando as semi-hastes com a numeração visível para cima.**

Bloqueie os três grupos da ferramenta adequada, cód. 27566200 (pos. ①, Fig. 32).
Pré-monte o anel interno dos rolamentos do eixo de manivela (em ambos os lados do eixo até a passagem), usando a ferramenta adequada, cód. 27604700 (pos. ①, Fig. 45) (pos. ①, Fig. 46).

**Os anéis internos e externos dos rolamentos devem ser remontados, mantendo o mesmo acoplamento com o qual foram montados.**


Fig. 45


Fig. 46

Insira o eixo do lado PTO, prestando atenção para não bater os eixos das hastes montadas anteriormente (pos. ①, Fig. 47) e (pos. ①, Fig. 48).

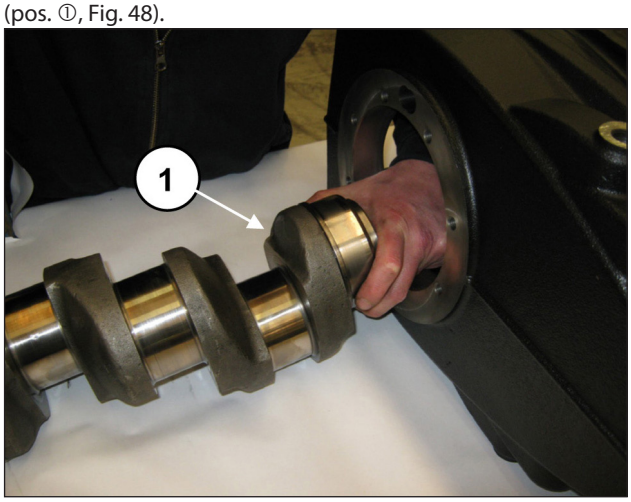


Fig. 47

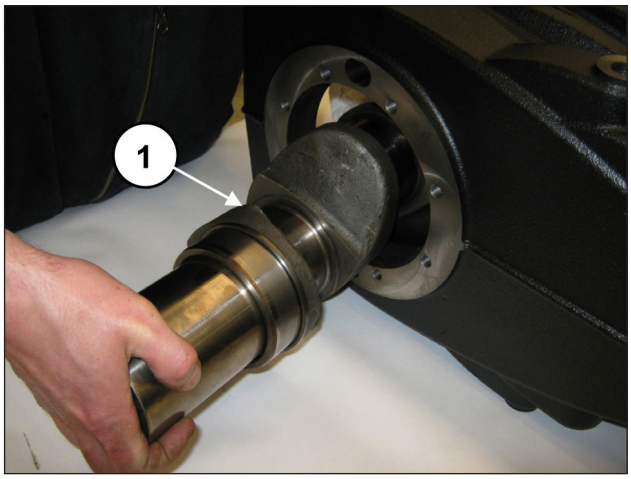


Fig. 48

**O eixo de manivela deve ser sempre montado com o lado PTO da parte oposta, em relação aos furos G1/2" para as tampas de descarga de óleo do carter da bomba (pos. ②, Fig. 50).**

Chegue até a inserção completa do eixo no carter (pos. ①, Fig. 49 e Fig. 50).

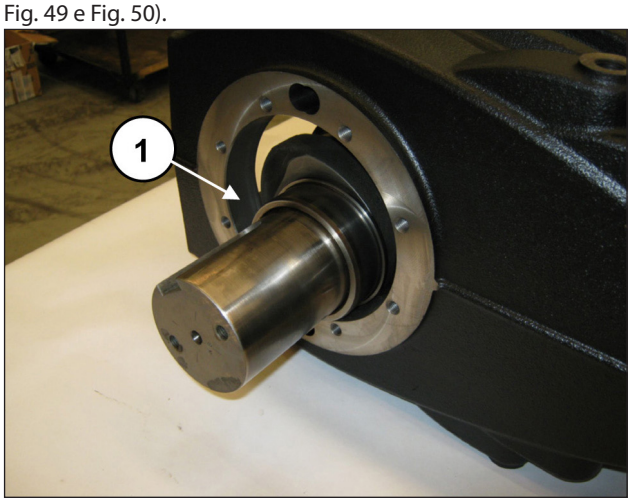


Fig. 49

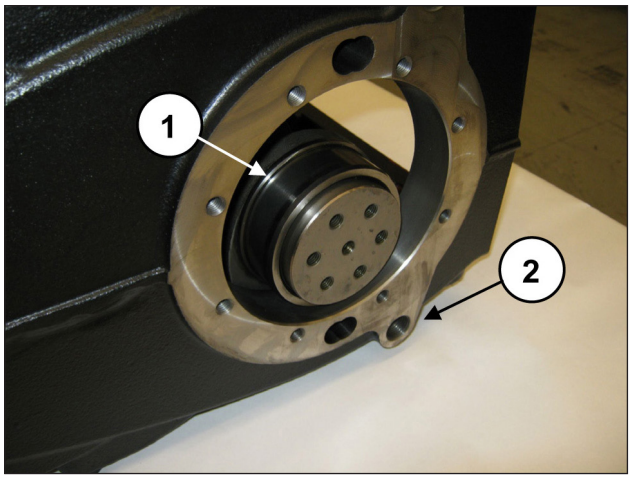


Fig. 50

Na caixa do redutor, pré-monte o anel externo do rolamento do pinhão, usando a ferramenta cód. 27604900 (pos. ①, Fig. 51), até a sua inserção completa na passagem (pos. ①, Fig. 52).

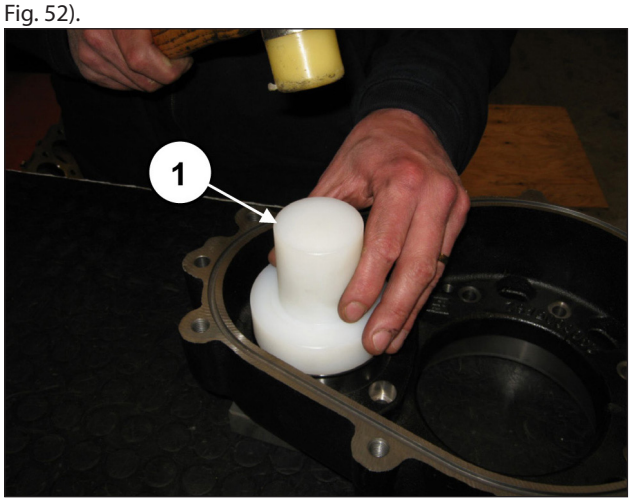


Fig. 51

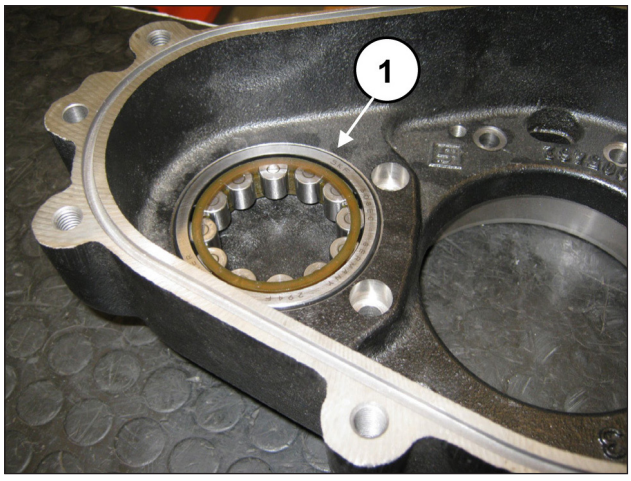


Fig. 52

Do lado oposto da caixa do redutor, pré-monte o anel externo do rolamento do eixo de manivela, usando a ferramenta cód. 27605000 (pos. ①, Fig. 53), até a sua inserção completa na passagem (pos. ①, Fig. 54).

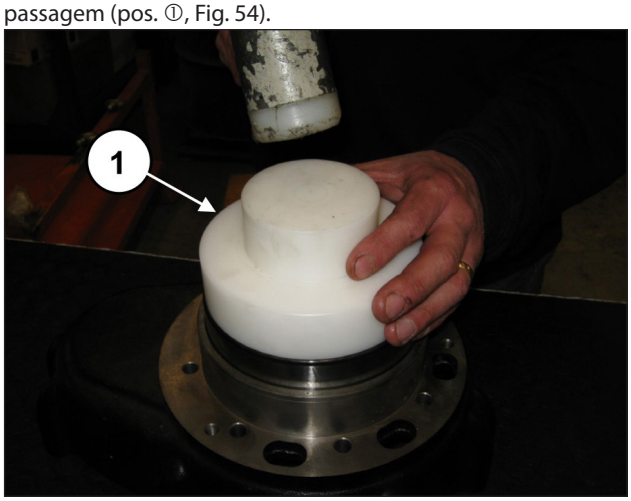


Fig. 53

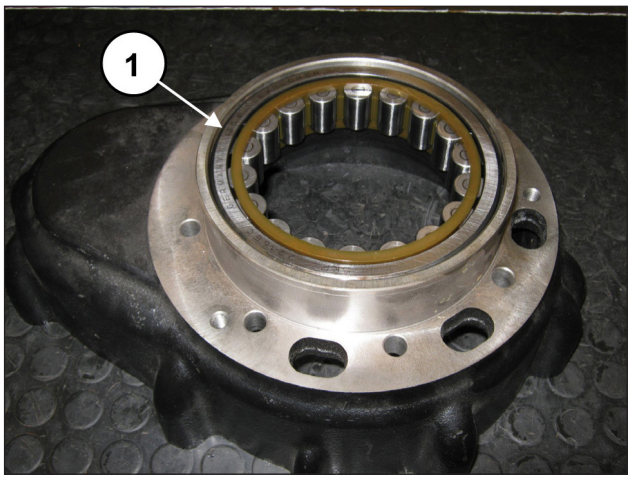


Fig. 54

Repita a operação na cobertura do rolamento pré-montando o anel externo do rolamento do eixo de manivela, mediante a ferramenta, cód. 27605000 (pos. ①, Fig. 55), até a sua inserção completa na passagem (pos. ①, Fig. 56).

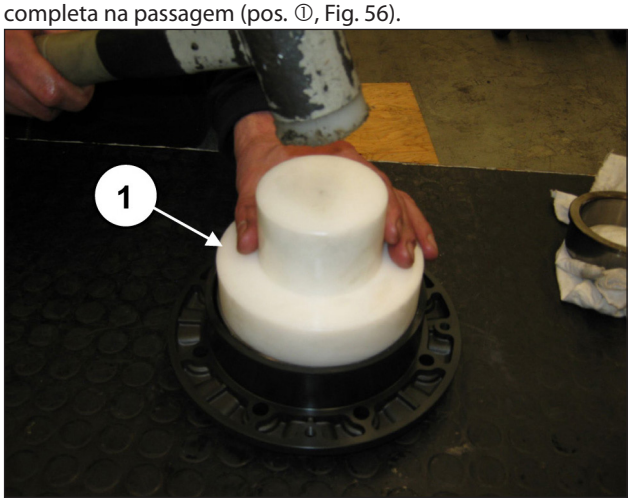


Fig. 55

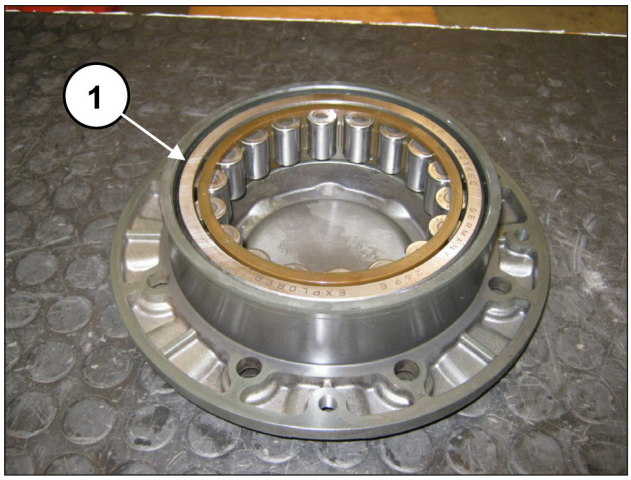


Fig. 56

Insira o forro lateral na cobertura do rolamento (pos. ①, Fig. 57) e eleve o eixo de manivela para favorecer a inserção da cobertura (pos. ①, Fig. 58).

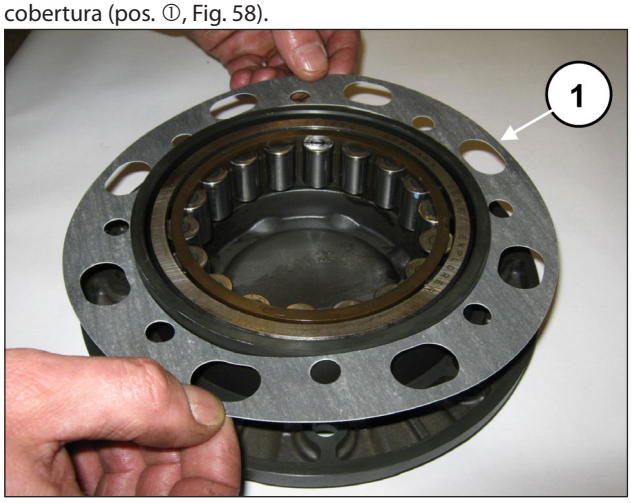


Fig. 57

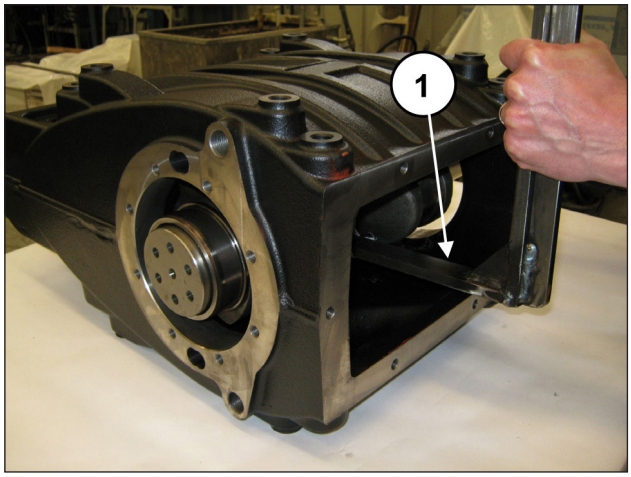


Fig. 58

Monte a cobertura do rolamento (e relativos forros), usando um mecanismo de percussão (pos. ①, Fig. 59)

**Oriente a cobertura do rolamento, de modo que o logotipo "Pratissoli" fique perfeitamente horizontal.**

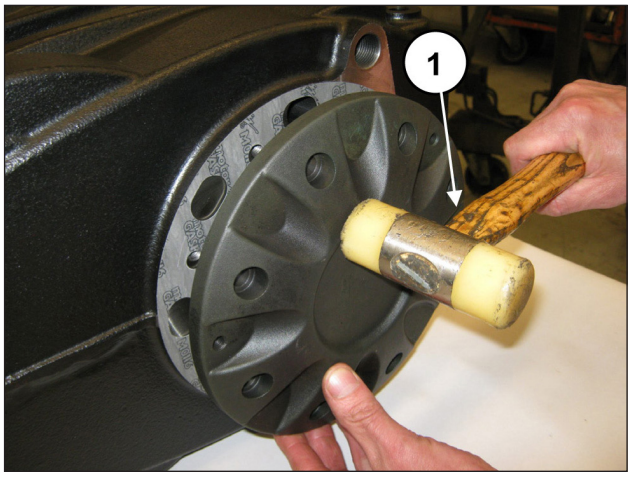


Fig. 59

Aperte os oito parafusos M10x30 (pos. ①, Fig. 60). Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3.

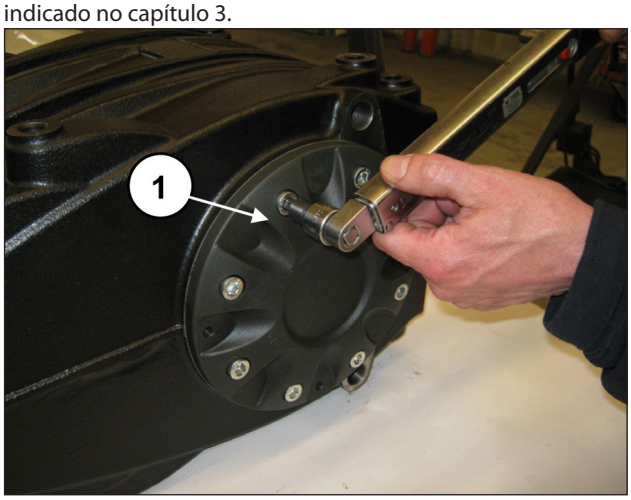


Fig. 60

Do lado oposto, insira o forro lateral na caixa do redutor (pos. ①, Fig. 61) e eleve o eixo de manivela para favorecer a inserção da cobertura (pos. ①, Fig. 62).

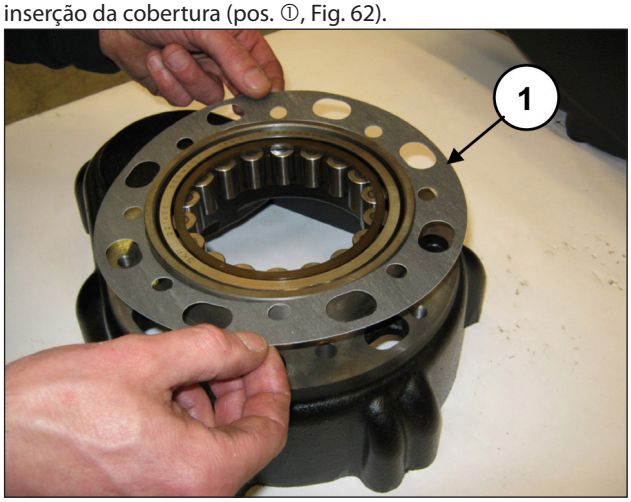


Fig. 61

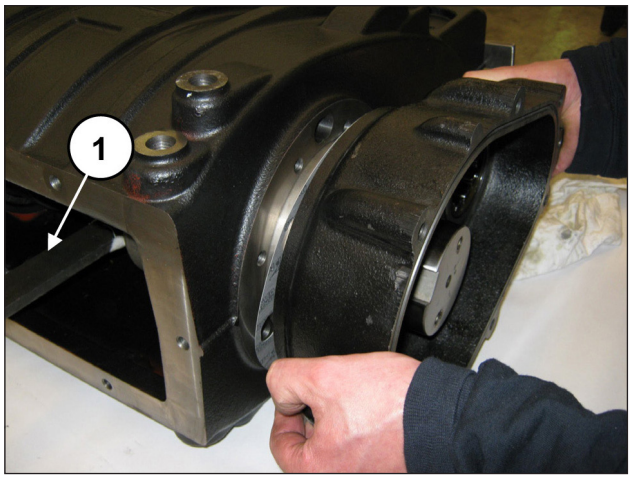


Fig. 62

Monte a caixa do redutor (e relativo forro), usando um mecanismo de percussão (pos. ①, Fig. 63).

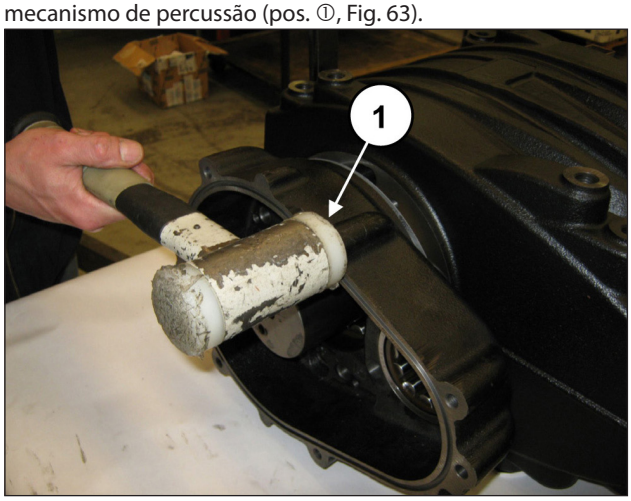


Fig. 63

Aperte os oito parafusos M10x40 (pos. ①, Fig. 64).
Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 CALIBRAGEM DO APERTO DOS PARAFUSOS.

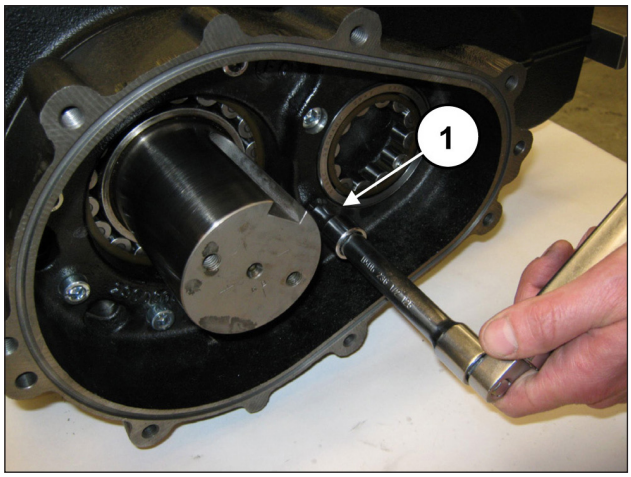


Fig. 64

Remova a ferramenta para o bloqueio da haste, cód. 27566200 (pos. ①, Fig. 32).
Insira os semi-rolamentos superiores entre a haste e o eixo (pos. ①, Fig. 65).

**Para uma montagem correta dos semi-rolamentos, certifique-se de que a lingueta de referência dos semi-rolamentos esteja posicionada na caixa adequada sobre a semi-haste (pos. ①, Fig. 66).**

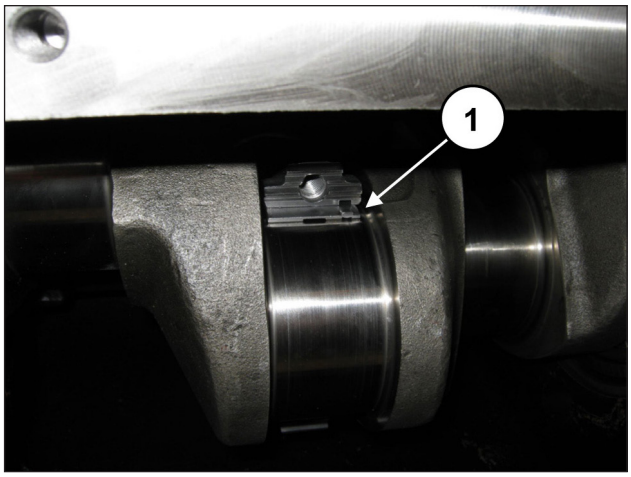


Fig. 65

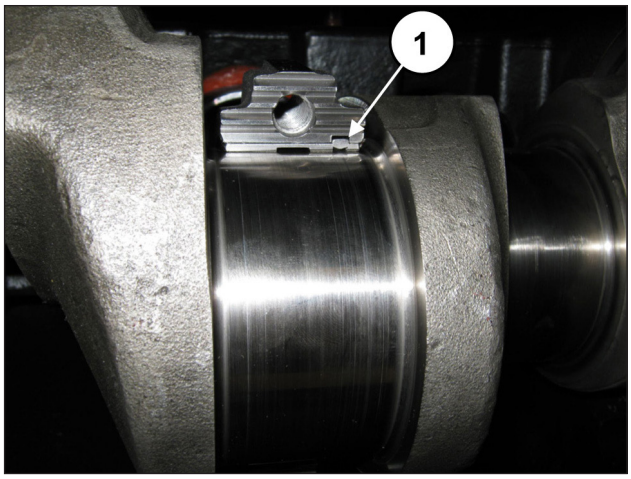


Fig. 66

Aplique os semi-rolamentos inferiores aos chapéus (pos. ①, Fig. 67), certificando-se que a lingueta de referência dos semi-rolamentos esteja posicionada na caixa sobre o chapéu (pos. ②, Fig. 67).
Fixe os chapéus nas semi-hastes, mediante os parafusos M10x1.5x80 (pos. ①, Fig. 68).

**Preste atenção na direção correta da montagem dos chapéus. A numeração deve ser virada para cima.**

Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 CALIBRAGEM DE APERTO DOS PARAFUSOS, trazendo os parafusos com o aperto simultaneamente.

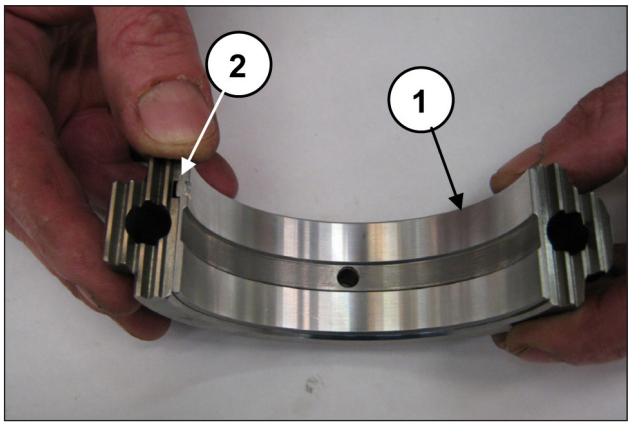


Fig. 67

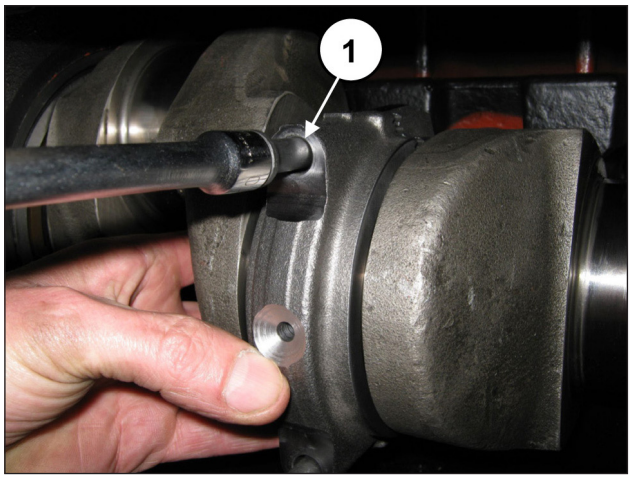


Fig. 68

**Com a operação concluída, verifique se as hastes tenham uma folga axial em todas as direções.**

Insira as vedações de óleo da guia do pistão no local do carter, mediante o uso da ferramenta adequada, cód. 27605300 (pos. ① e ②, Fig. 69/a e Fig. 69/b).

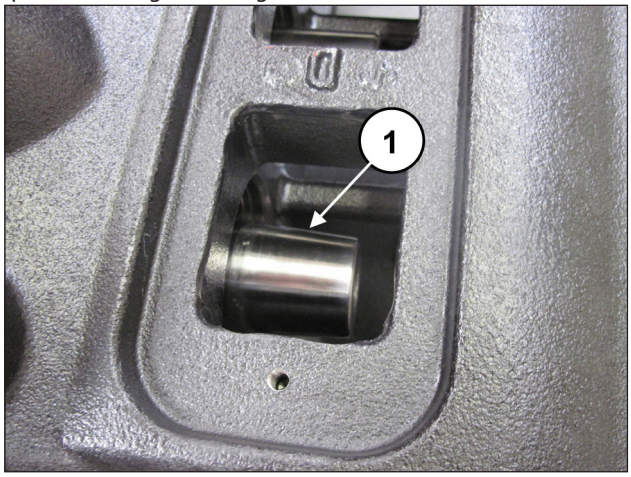


Fig. 69/a

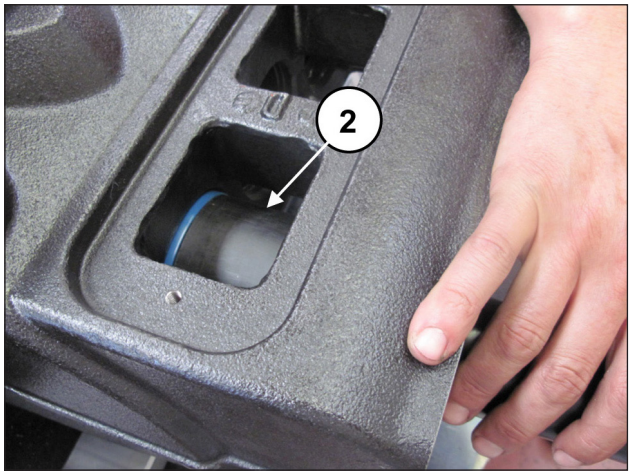


Fig. 69/b

Insira o anel circular na cobertura posterior (pos. ①, Fig. 70) e monte a cobertura no carter, mediante seis parafusos M10x30 (pos. ①, Fig. 71).

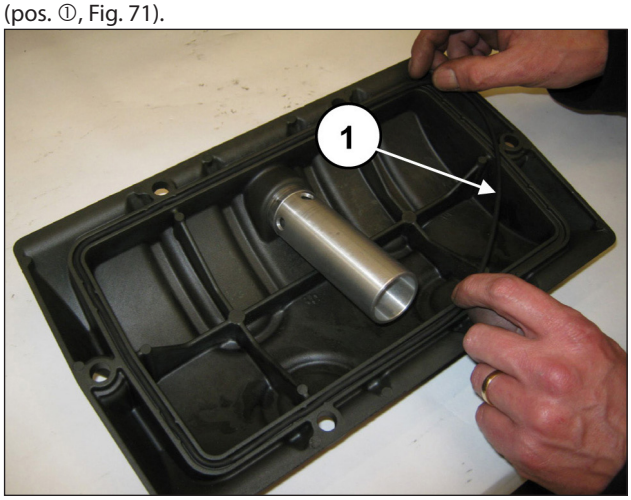


Fig. 70

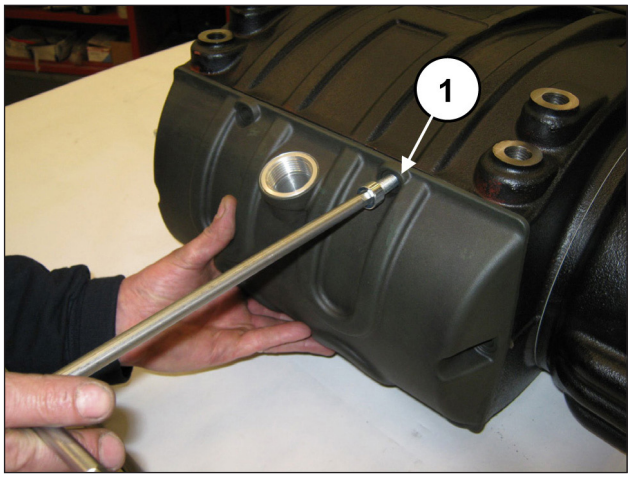


Fig. 71

**Preste atenção à correta e completa inserção do anel circular no local adequado na cobertura, para evitar que possa se danificar durante o aperto dos parafusos.**

Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 CALIBRAGEM DO APERTO DOS PARAFUSOS.
Insira o anel de suporte da coroa no suporte do eixo de manivelas (pos. ①, Fig. 72) até a passagem (pos. ①, Fig. 73).

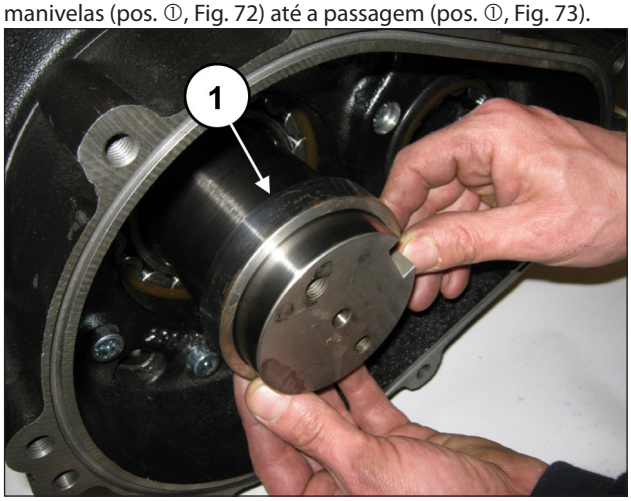


Fig. 72

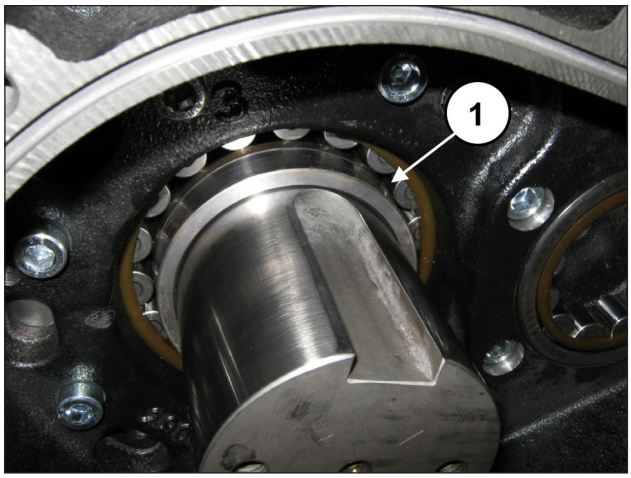


Fig. 73

Aplique a lingueta 22x14x80 no local do eixo (pos. ①, Fig. 74) e insira a coroa no eixo (pos. ①, Fig. 75).

**A coroa deve ser montada, certificando-se de que os dois furos M8 (a serem usados para a extração), resultem virados para o exterior da bomba (pos. ②, Fig. 75).**

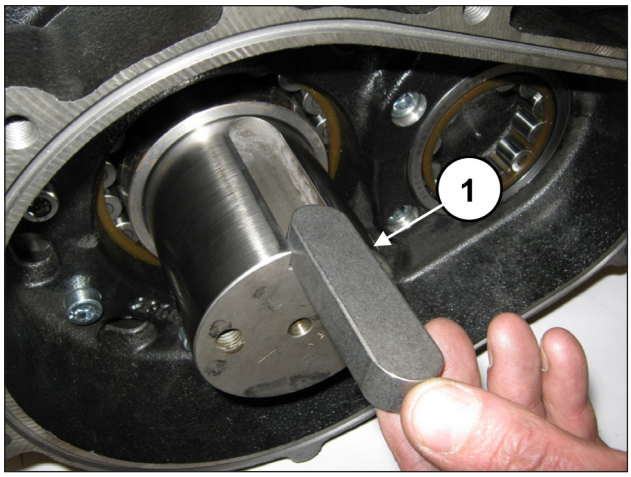


Fig. 74

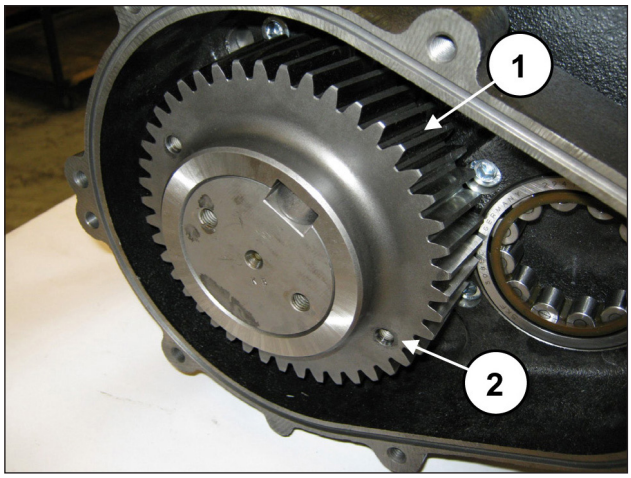


Fig. 75

Fixe a fixação da coroa (pos. ①, Fig. 76) usando os dois parafusos M10x25.
Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 (pos. ①, Fig. 77).

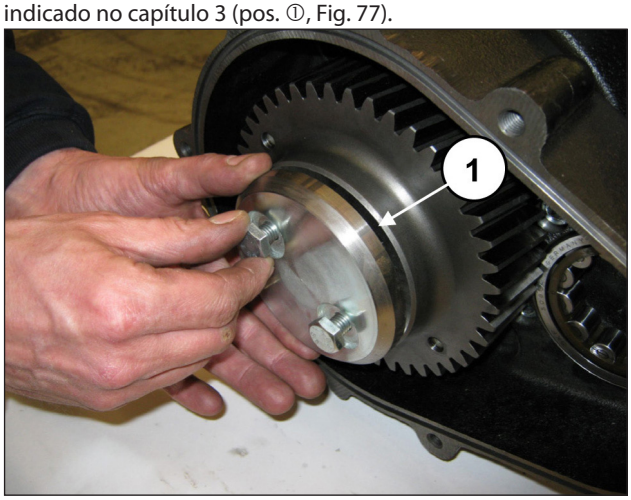


Fig. 76

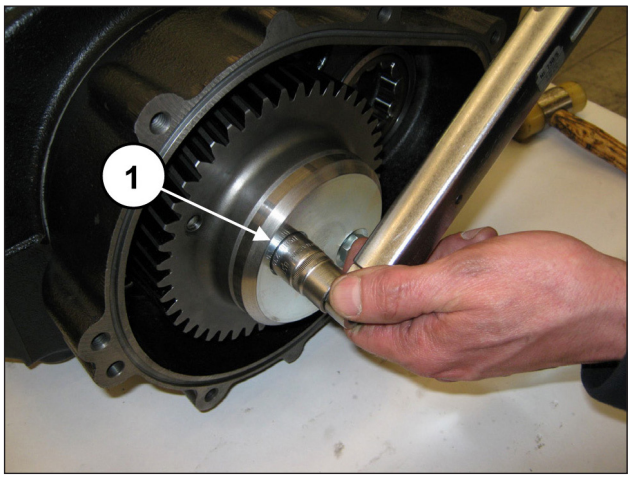


Fig. 77

Aplique os dois pinos Ø10x24 à caixa do redutor (pos. ①, Fig. 78) e insira o anel circular (pos. ①, Fig. 79).

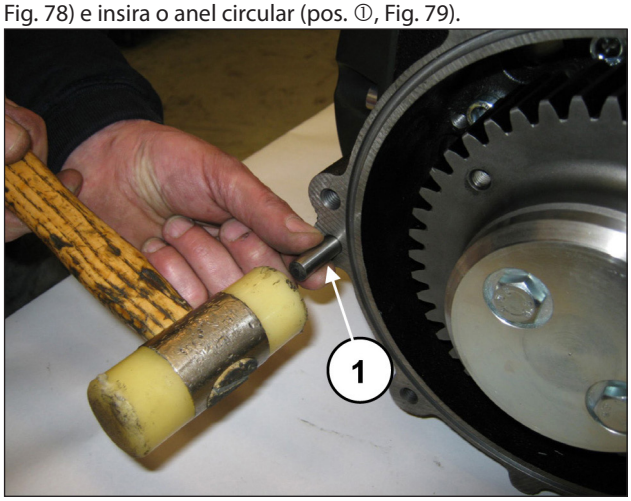


Fig. 78

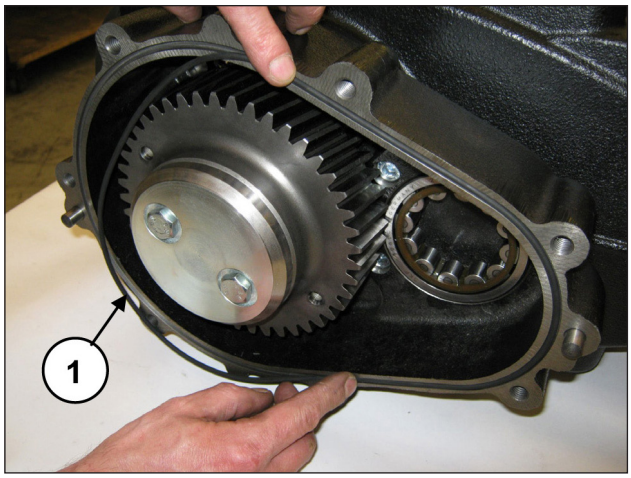


Fig. 79

Prossiga com a montagem do pinhão na cobertura do redutor, procedendo conforme a seguir:
Pré-monte o anel interno do rolamento 40x90x23 no pinhão (pos. ①, Fig. 80) posicionando-o até a passagem.

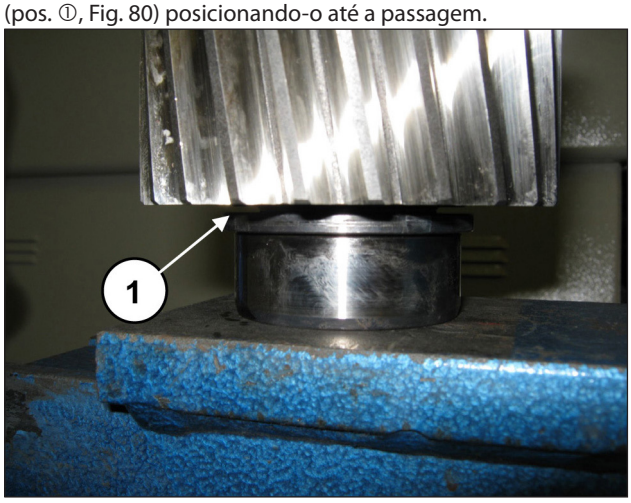


Fig. 80

Do outro lado do pinhão, pré-monte o rolamento 55x120x29 (pos. ①, Fig. 81) posicionando-o até a passagem, usando a ferramenta, cód. 27604800 (pos. ①, Fig. 82).

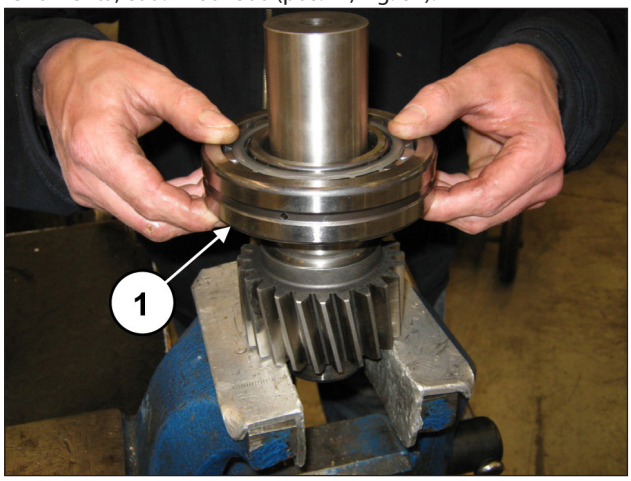


Fig. 81

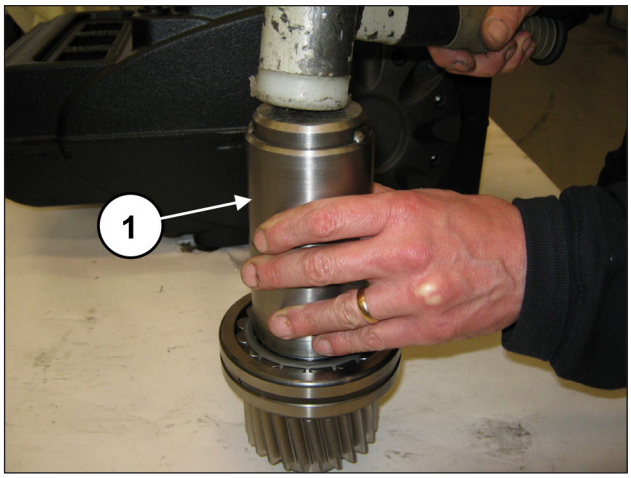


Fig. 82

Insira o anel de apoio do rolamento (pos. ①, Fig. 83) e posicione o anel elástico Ø55 (pos. ①, Fig. 84).

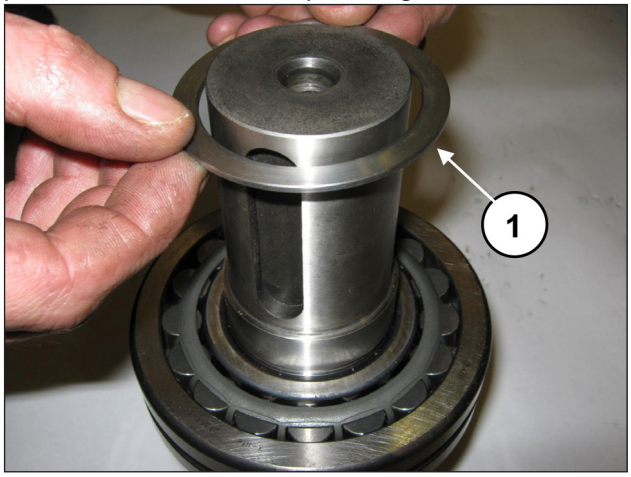


Fig. 83

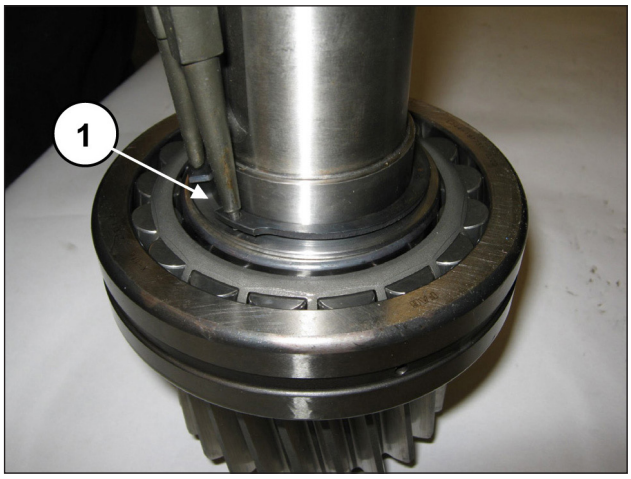


Fig. 84

Insira o pinhão pré-montado no interior do local especial na cobertura do redutor, mediante o uso de um mecanismo de percussão (pos. ①, Fig. 85).

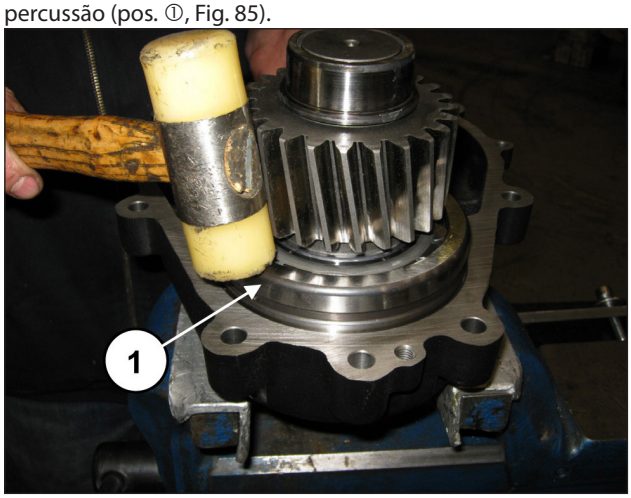


Fig. 85

Insira no local do anel elástico Ø120 (pos. ①, Fig. 86).

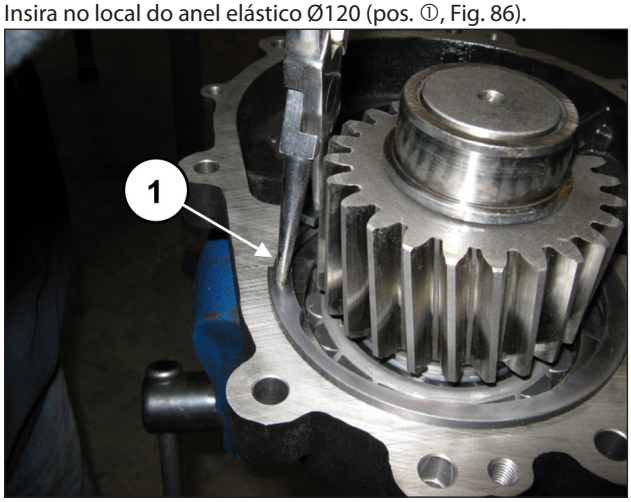


Fig. 86

Monte a cobertura do redutor, mediante o mecanismo de percussão (pos. ①, Fig. 87) e fixe-o, mediante sete parafusos M10x40 (pos. ①, Fig. 88).
Preste atenção para o correto acoplamento dos dois elementos do rolamento 40x90x23.
Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3.

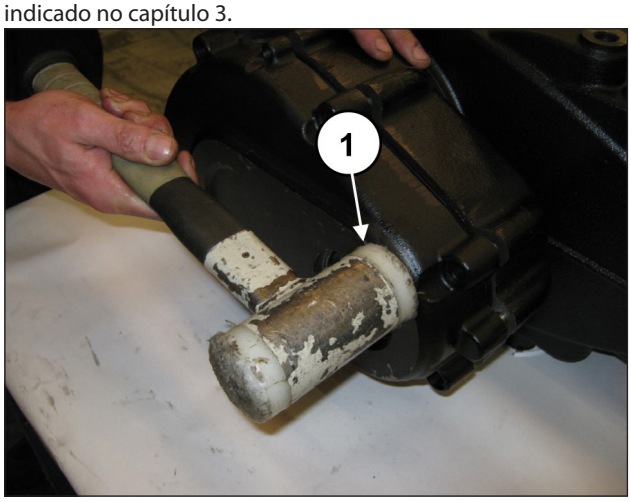


Fig. 87

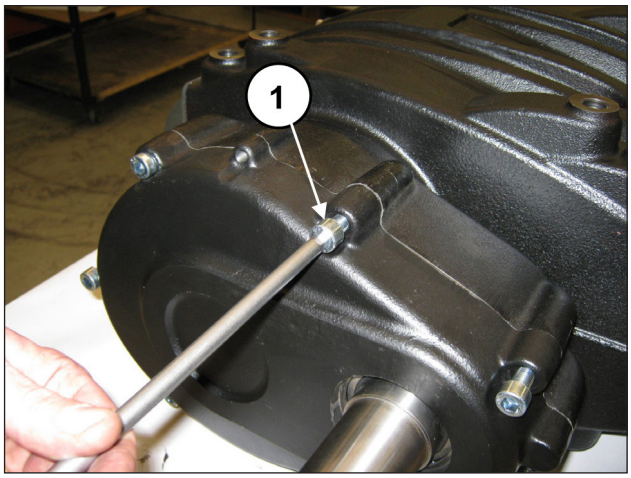


Fig. 88

Insira as vedações do óleo no interior da cobertura do redutor, mediante o uso da ferramenta, cod. 27605200 (pos. ①, Fig. 89). Antes de realizar a montagem das vedações do óleo, verifique as condições das bordas de vedação. Se a substituição for necessária, posicione o novo anel no fundo do buraco, conforme indicado na Fig. 90.

**Se o eixo apresentar um desgaste do diâmetro correspondente à borda da vedação para evitar a operação de retificação, pode-se posicionar o anel na segunda passagem, conforme indicado na Fig. 90.**

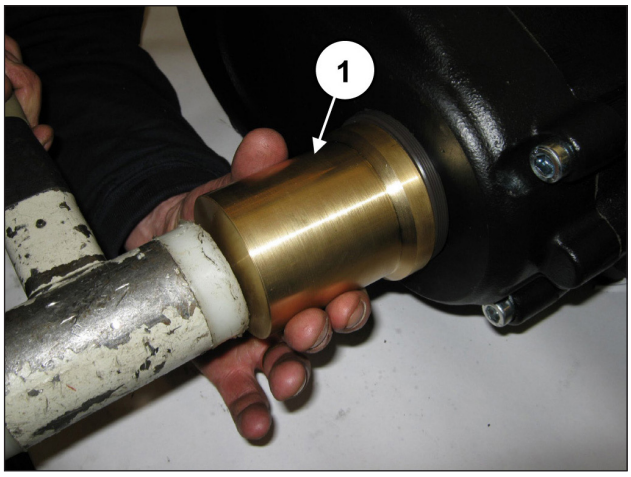


Fig. 89

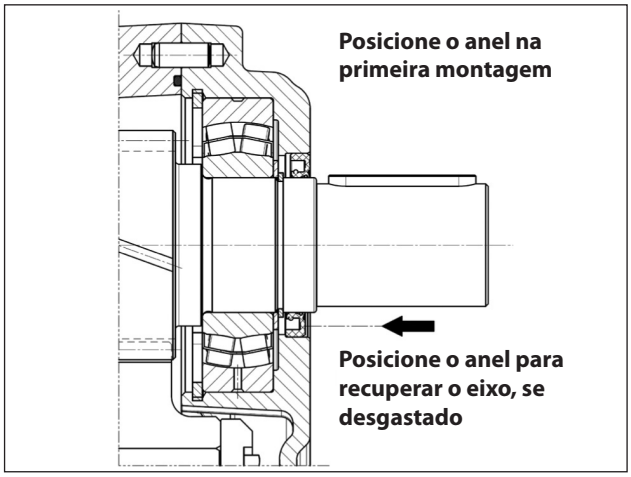


Fig. 90

**Para evitar danificar as vedações de óleo, preste particular atenção na inserção das vedações de óleo no pinhão.**

Aplique as coberturas de inspeção com o anel circular (pos. ①, Fig. 91) e aperte mediante 2+2 parafusos M6x14 (pos. ①, Fig. 92).
Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 CALIBRAGEM DO APERTO DOS PARAFUSOS.

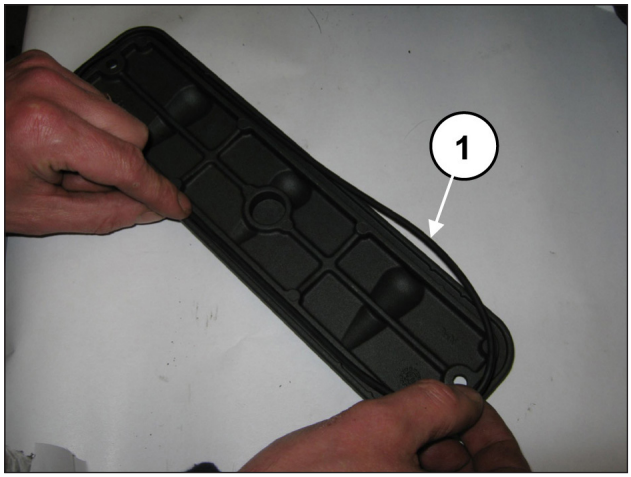


Fig. 91

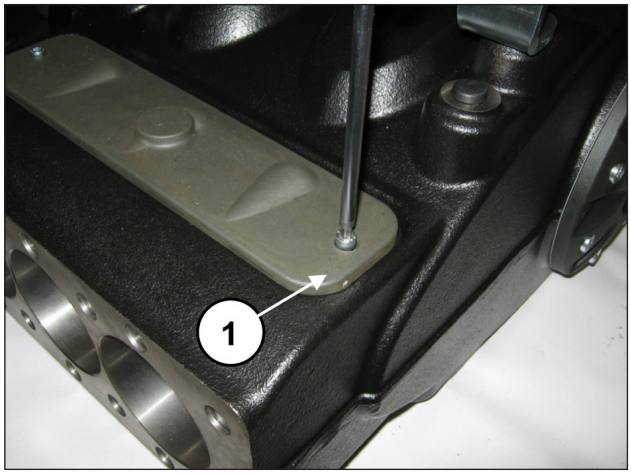


Fig. 92

Insira a lingueta 14x9x60 no pistão.
Aplique as tampas e os suportes de elevação mediante os parafusos especiais M16x30 (pos. ①, Fig. 93).
Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3 CALIBRAGEM DO APERTO DOS PARAFUSOS.

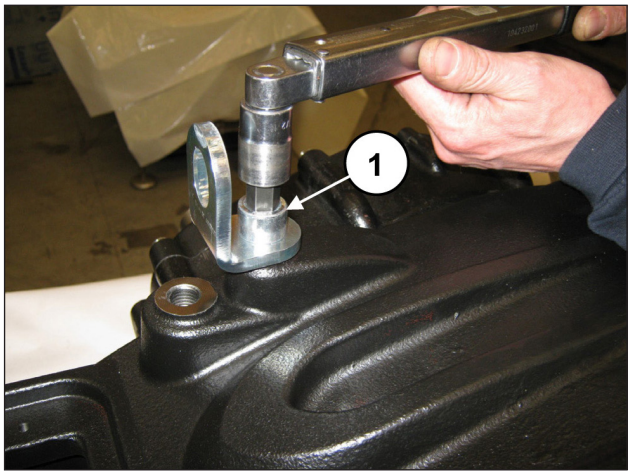


Fig. 93

Insira o óleo no carter, conforme indicado no ***Manual de uso e manutenção***, parág. 7.4.

### 2.1.3 Classes de aumento e diminuição previstos

| TABELA DE DIMINUIÇÃO PARA O EIXO DE MANIVELA E SEMI-ROLAMENTOS DA HASTE | | | |
|---|---|---|---|
| **Classe de recuperação (mm)** | **Código do semi-rolamento superior** | **Código do semi-rolamento inferior** | **Correção do diâmetro do pino do eixo (mm)** |
| 0.25 | 90928100 | 90928400 | Ø79.75 0/-0.02 Ra 0.4 Rt 3.5 |
| 0.50 | 90928200 | 90928500 | Ø79.50 0/-0.02 Ra 0.4 Rt 3.5 |

| TABELA DE AUMENTO PARA O CARTER DA BOMBA E GUIA DO PISTÃO | | |
|---|---|---|
| **Classe de recuperação (mm)** | **Código da guia do pistão** | **Correção do local do carter da bomba (mm)** |
| 1.00 | 73050543 | Ø71 H6 +0.019/0 Ra 0.8 Rt 6 |

## 2.2 REPARAÇÃO DA PARTE HIDRÁULICA

### 2.2.1 Desmontagem do cabeçote MW32 MW36 MW40 - grupos da válvula

O cabeçote precisa de uma manutenção preventiva, conforme indicado no ***Manual de uso e manutenção***.
As intervenções são limitadas à inspeção ou substituição da válvula, quando necessário.
Para a extração dos grupos da válvula, opere como mostra a seguir:
Solte os oito parafusos M16x55 da cobertura da válvula (pos. ①, Fig. 94), e remova a cobertura (pos. ①, Fig. 95).

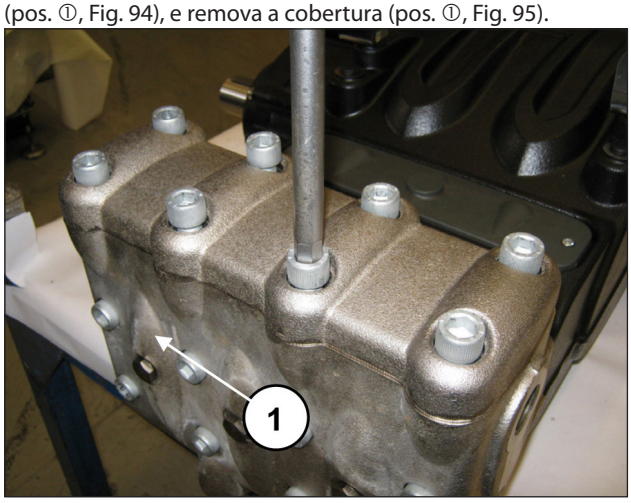


Fig. 94

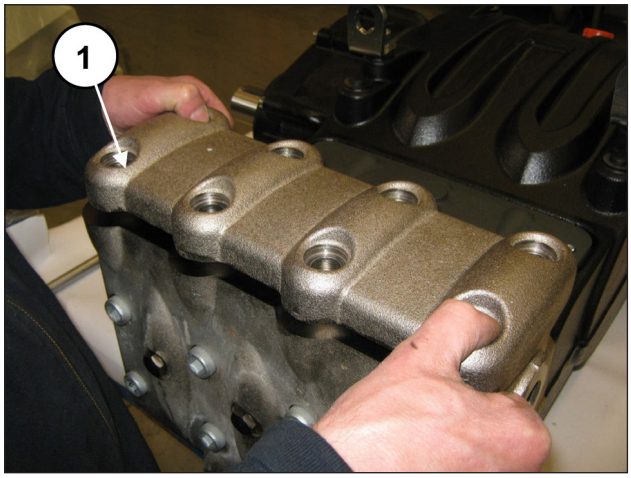


Fig. 95

Extraia a tampa da válvula com o uso de um extrator de mecanismo de percussão para aplicar o furo M10 da tampa da válvula (pos. ①, Fig. 96).

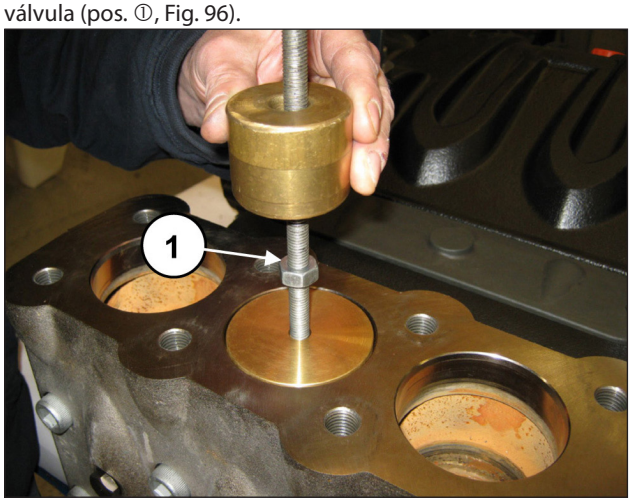


Fig. 96

Solte a mola (pos. ①, Fig. 97).

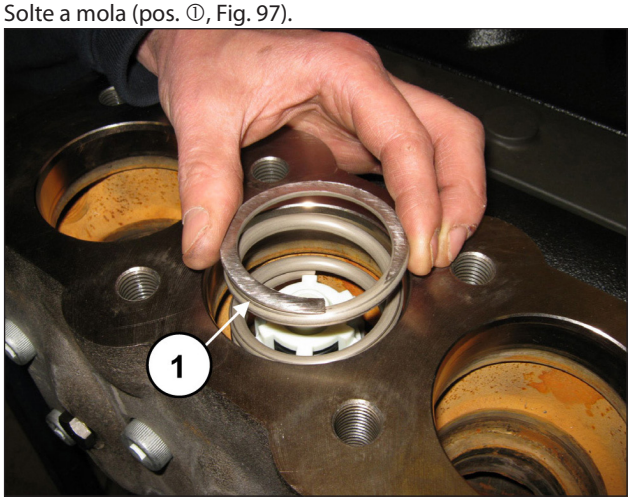


Fig. 97

Extraia o grupo da válvula de fluxo mediante o uso de um extrator de mecanismo de percussão (cód. 27516400) para aplicar no furo M10 do guia da válvula (pos. ①, Fig. 98).

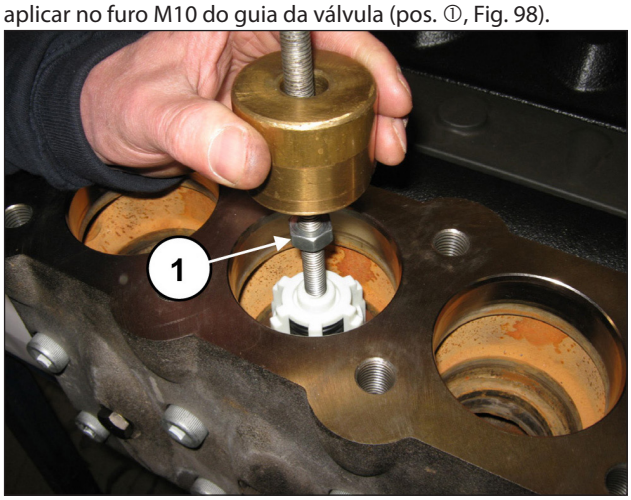


Fig. 98

Extraia o anel espaçador do local da válvula (pos. ①, Fig. 99).

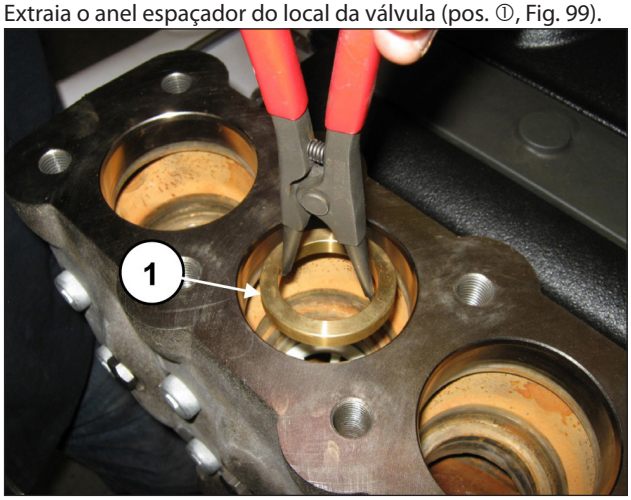


Fig. 99

Extraia o espaçador da guia da válvula, inserindo uma chave hexagonal de 8 mm no local especial e puxe a alavanca para facilitar a remoção (pos. ①, Fig. 100).

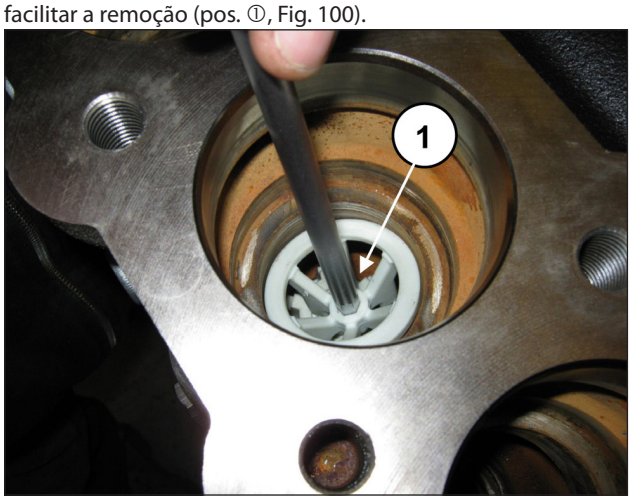


Fig. 100

Extraia o grupo da válvula de aspiração mediante o uso de um extrator de mecanismo de percussão (cód. 27516400) para aplicar no furo M10 do guia da válvula (pos. ①, Fig. 101).

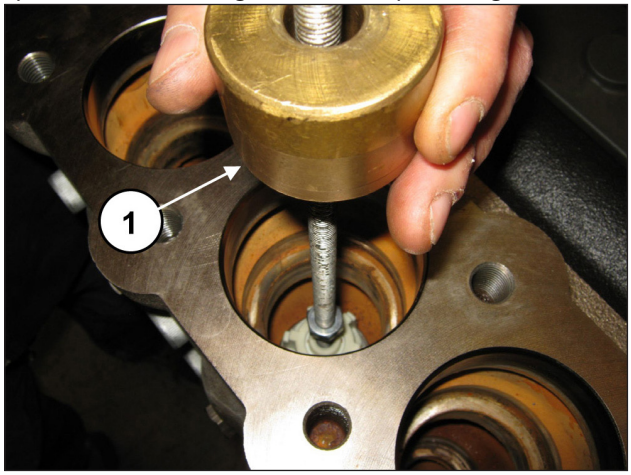


Fig. 101

**Se a extração do grupo da válvula de aspiração resultar particularmente difícil (por ex., para incrustação devido a uma inutilização prolngada da bomba) use a ferramenta do extrator, cód. 27516200 (pos. ①, Fig. 102) e atue conforme indicado.**

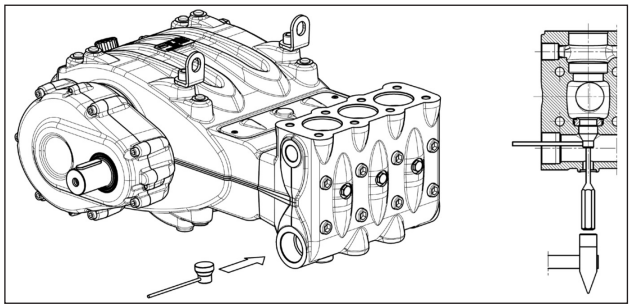

Fig. 102

Solte o dispositivo de abertura da válvula mediante chave de 30 mm (cód. ①, Fig. 103).

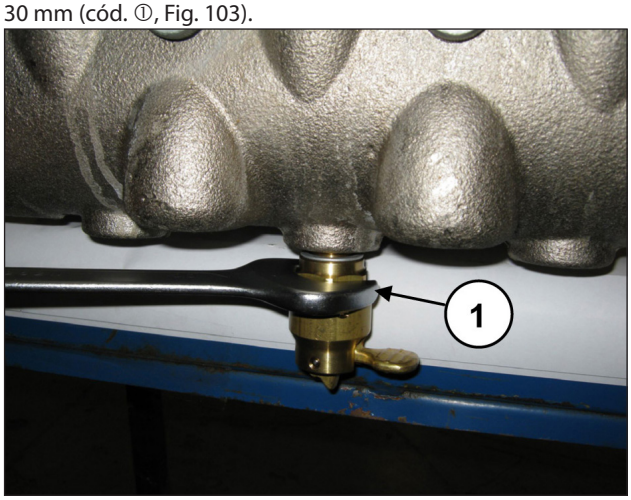


Fig. 103

Desmonte os grupos da válvula de aspiração e de fluxo, soltando um parafuso M10 de modo a pressionar na guia interna e extrair a guia da válvula do local da válvula (pos. ①, Fig. 104).

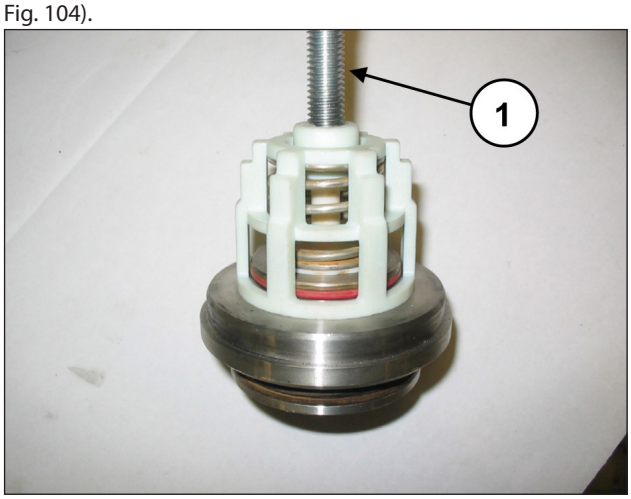


Fig. 104

Complete a desmontagem, retirando as tampas G 1/4" frontais do cabeçote.
Agora é possível retirar o cabeçote do carter, fornecendo o desaperto dos oito parafusos M16x180 (pos. ①, Fig. 105).
Durante a desmontagem do cabeçote, preste atenção especial para não bater os pistões (pos. ①, Fig. 106).

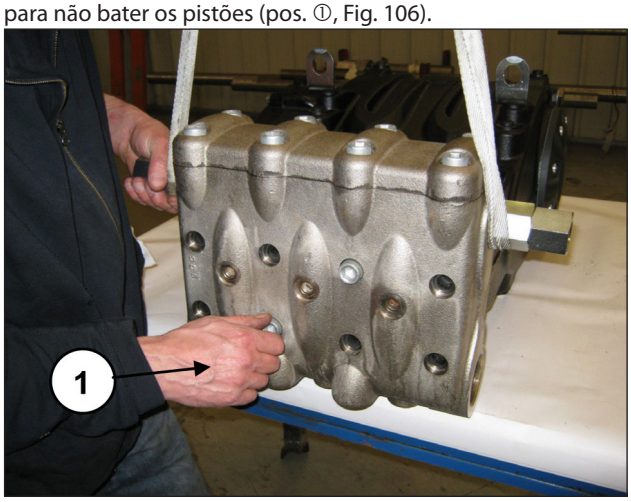


Fig. 105

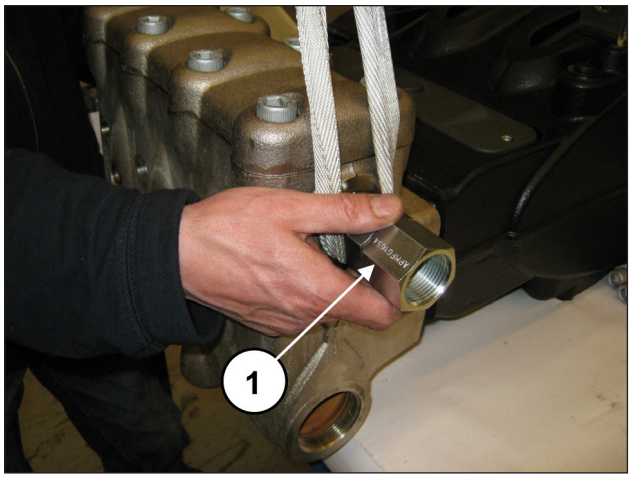


Fig. 106

### 2.2.2 Montagem do cabeçote MW32 MW36 MW40 - grupos da válvula

**Preste atenção especial ao estado de desgaste dos vários compoenntes e substitua-os, quando necessário.**
**A cada inspeção da válvula, substitua todos os anéis circulares, seja dos grupos ou das tampas da válvula.**

**Antes de reposicionar os grupos da válvula, limpe e enxugue perfeitamente as relativas ranhuras no cabeçote, indicadas pela seta (pos. ①, Fig. 107).**

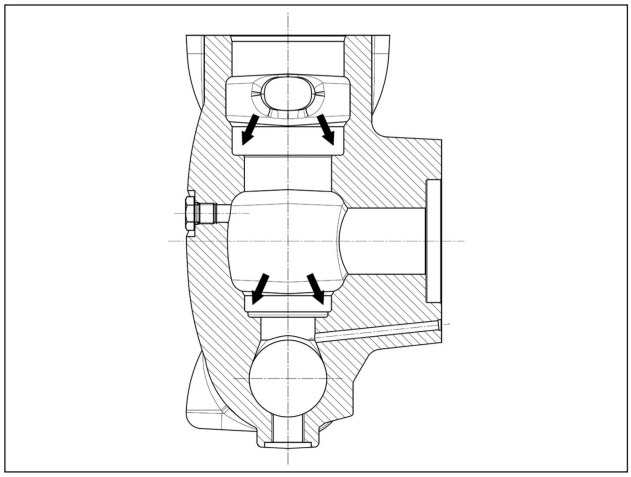

Fig. 107

Proceda com a remontagem, seguindo o procedimento inverso da remontagem indicada no parág. 2.2.1.

Monte os grupos da válvula de aspiração e de fluxo (Fig. 108 e Fig. 109) preste atenção para não inverter as molas anteriormente desmontadas.
Para facilitar a inserção da guia da válvula no local, pode-se usa um tubo que apoie nas placas horizontais da guia (Fig. 110) e use um mecanismo de percussão, agindo em toda a circunferência.

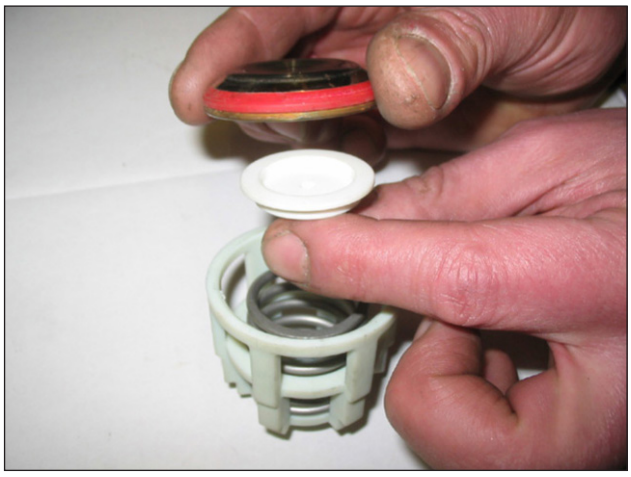

Fig. 108

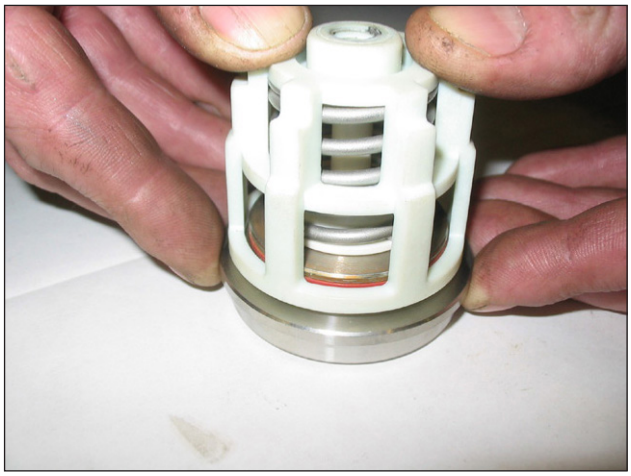

Fig. 109

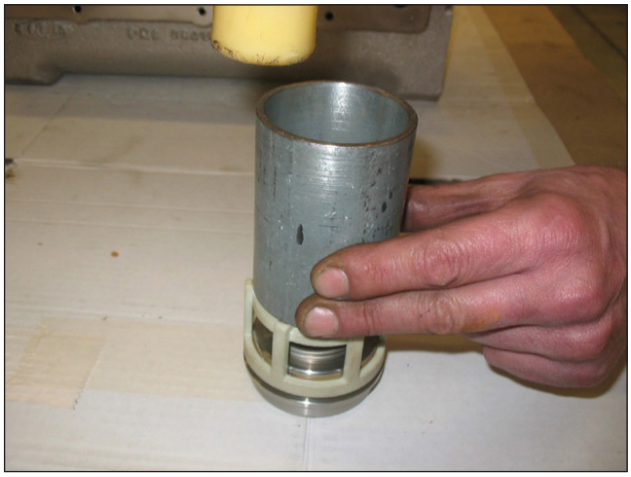

Fig. 110

**Proceda com a inserção dos grupos da válvula (aspiração e de fluxo) no cabeçote, prestando atenção à sequência correta da inserção dos anéis circulares e dos anéis de anti-extrusão.**

A sequência correta de montagem dos grupos da válvula no cabeçote é a seguinte:

Insira o anel anti-extrusão, pos. de explosão nº. 5 (pos. ①, Fig. 111).

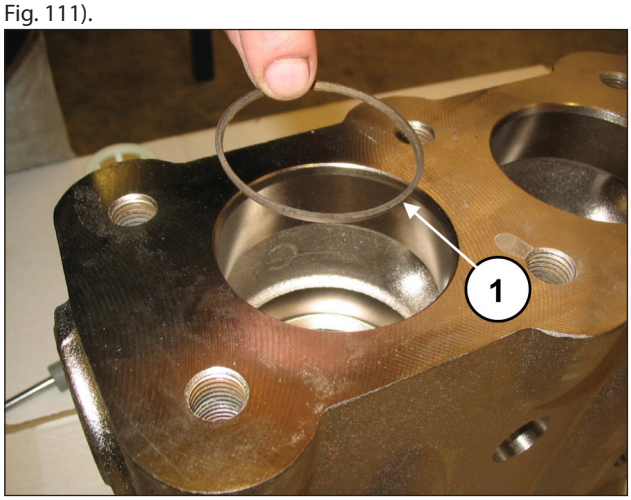


Fig. 111

Insira o anelo circular, pos. de explosão nº. 6 (pos. ①, Fig. 112).


Fig. 112

Verifique se o anel circular e o anel de anti-extrusão ficaram perfeitamente no local.
Insira o grupo da válvula de aspiração (pos. ①, Fig. 113) e sucessivamente o espaçador (pos. ①, Fig. 114).
O grupo da válvula completo deve ser inserido completamente no fundo e apresentar-se como na pos. ①, Fig. 114.

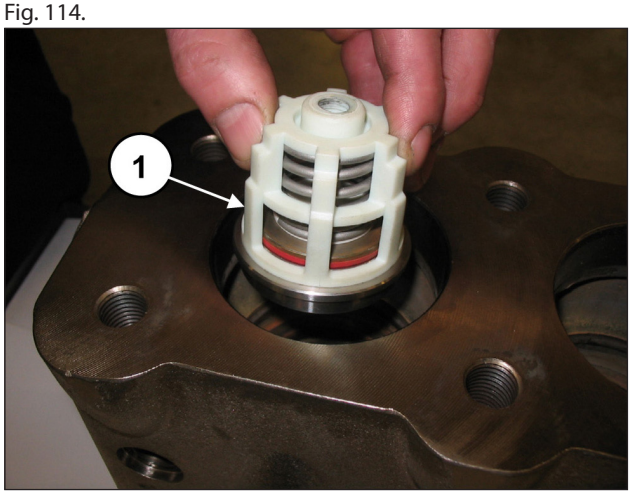


Fig. 113

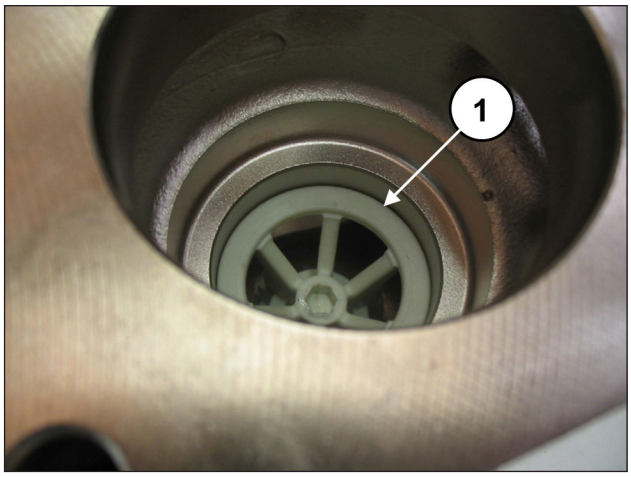


Fig. 114

Insira o anel espaçador no local da válvula (pos. ①, Fig. 115), em apoio nos espaçadores (pos. ①, Fig. 116).

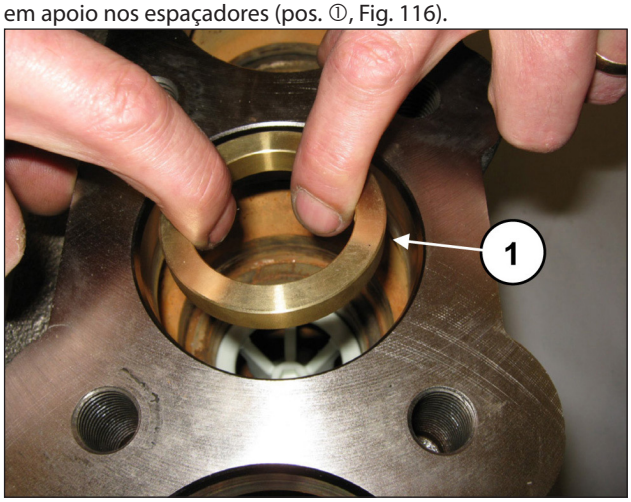


Fig. 115

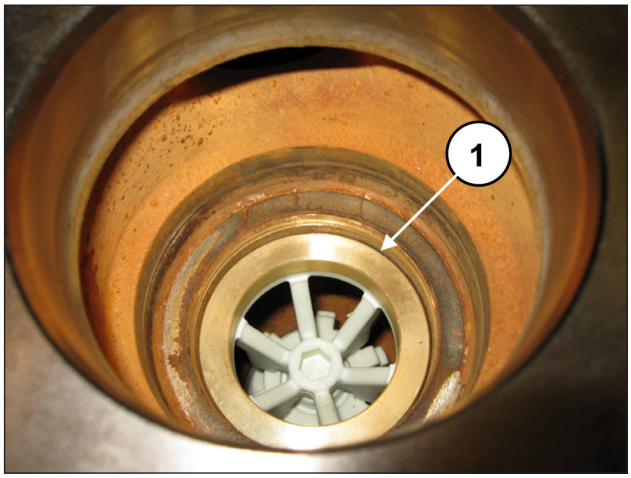


Fig. 116

Monte o anel circular, pos. de explosão nº. 6 (pos. ①, Fig. 117), e o anel anti-extrusão, pos. de explosão nº.16 (pos. ②, Fig. 117) sobre o local da válvula de fluxo.

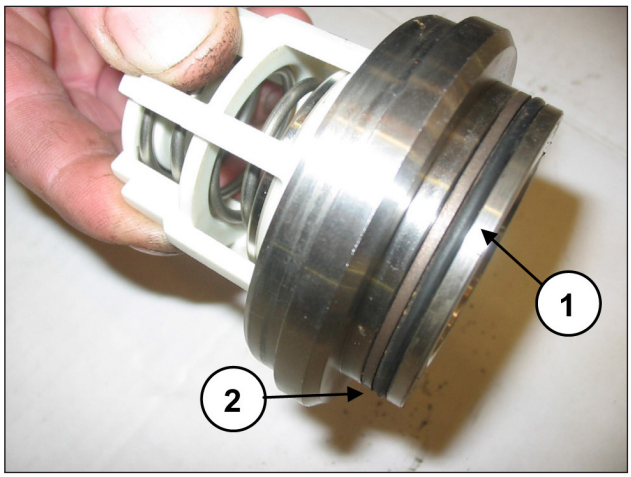


Fig. 117

Insira o grupo da válvula de fluxo (pos. ①, Fig. 118). O grupo da válvula deve ser inserido completamente no fundo e apresentar-se como na pos. ①, Fig. 119.

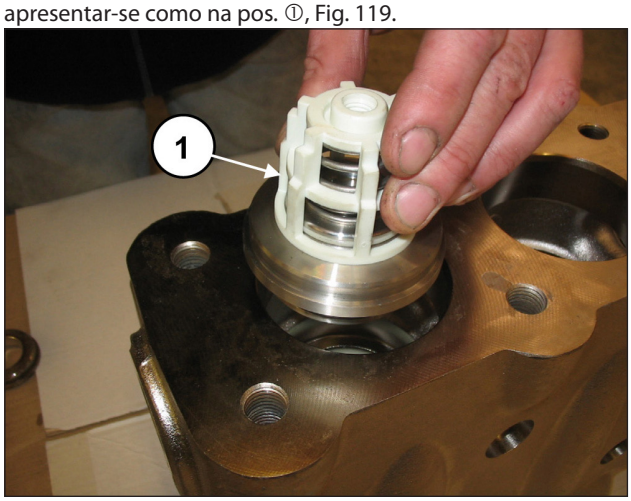


Fig. 118

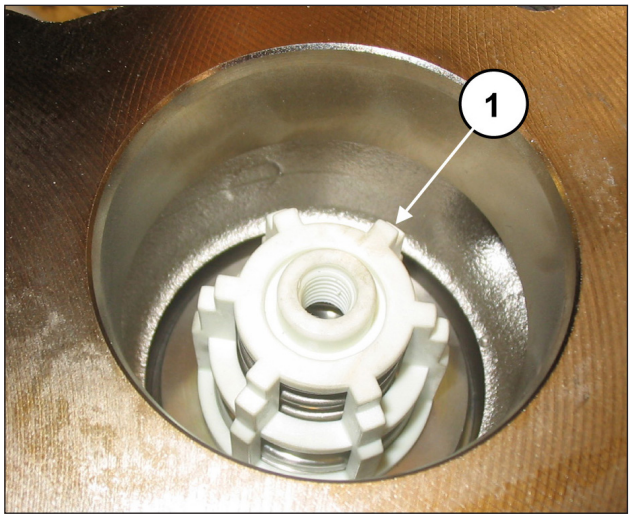


Fig. 119

Insira o anel anti-extrusão, pos. de explosão nº. 18 (pos. ①, Fig. 120).

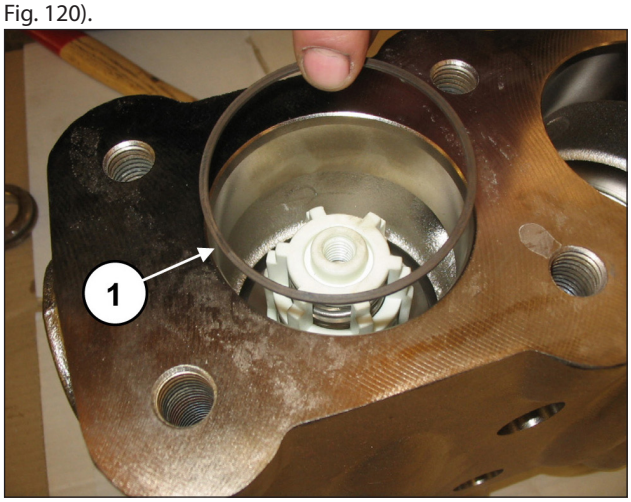


Fig. 120

Insira o anelo circular, pos. de explosão nº. 19 (pos. ①, Fig. 121).

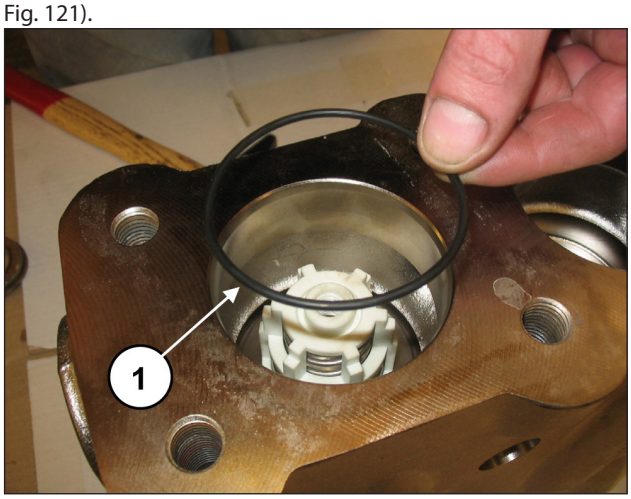


Fig. 121

**Preste atenção especial na inserção do anel circular indicado na pos. ①, Fig. 122. Aconselha-se o uso da ferramenta cod. 27516000, para evitar que o anel circular possa ser cortado durante a inserção.**

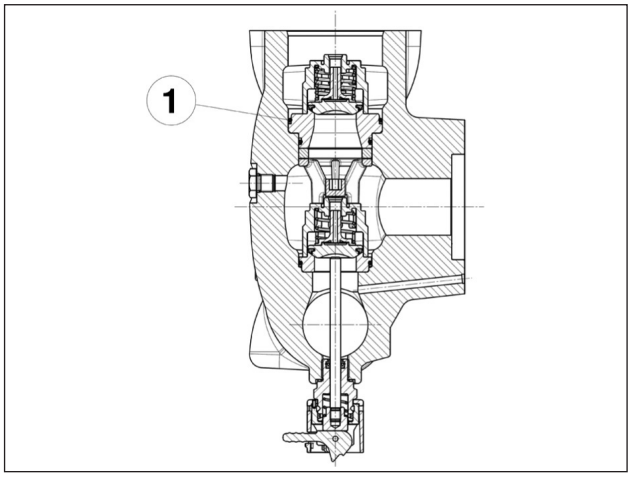


Fig. 122

Insira o anel do local da válvula (pos. ①, Fig. 123) e a mola (pos. ①, Fig. 124).

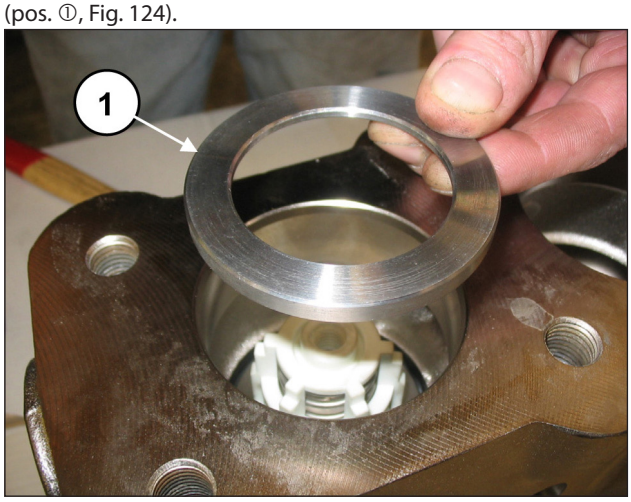


Fig. 123

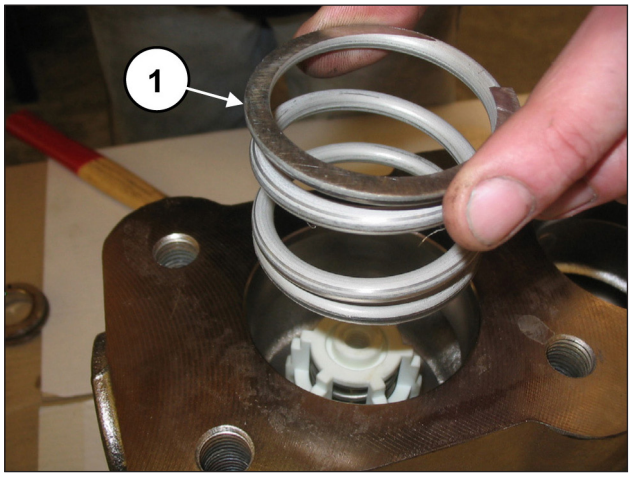


Fig. 124

Monte o anel circular, pos. de explosão nº. 19 (pos. ①, Fig. 125) e o anel anti-extrusão, pos. de explosão n.º23 (pos. ②, Fig. 125) na tampa da válvula de fluxo.

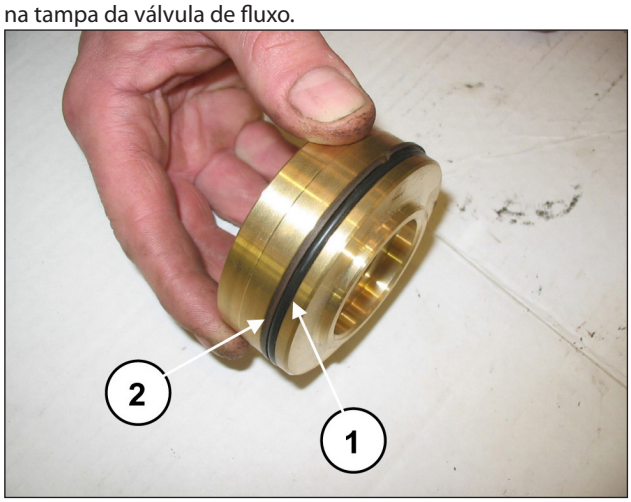


Fig. 125

Insira a tampa da válvula completa com o anel circular e anéis anti-extrusão.

Depois de ter terminado com a montagem dos grupos da válvula e da tampa da válvula, aplique a cobertura da válvula (pos. ①, Fig. 126) e solte os oito parafusos M16x55 (pos. ①, Fig. 127).

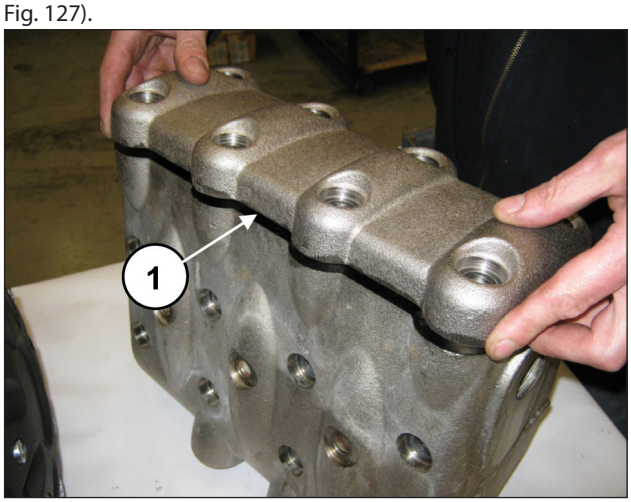


Fig. 126

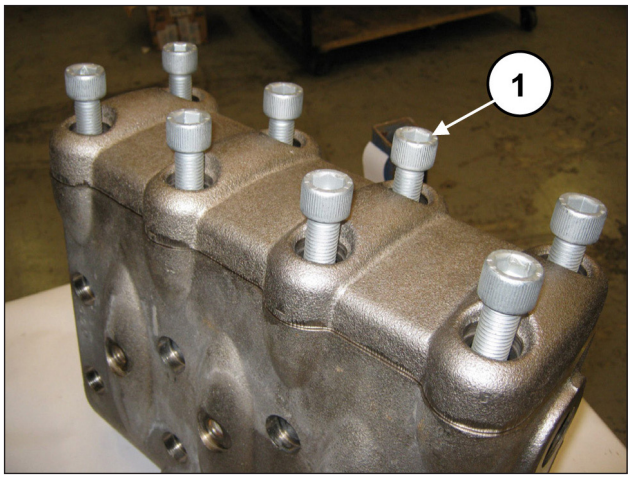


Fig. 127

Aplique os seis anéis circulares frontais do carter da bomba (pos. ①, Fig. 128).

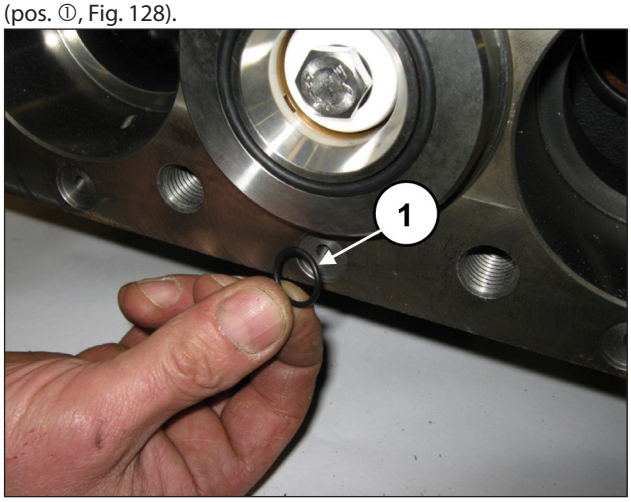


Fig. 128

Monte o cabeçote no carter da bomba (pos. ①, Fig. 129), prestando atenção para não bater nos pistões e solte os oito parafusos M16x180 (pos. ①, Fig. 130).

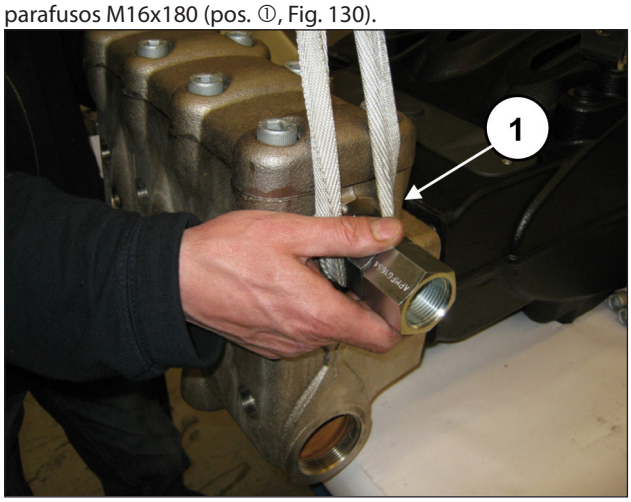


Fig. 129

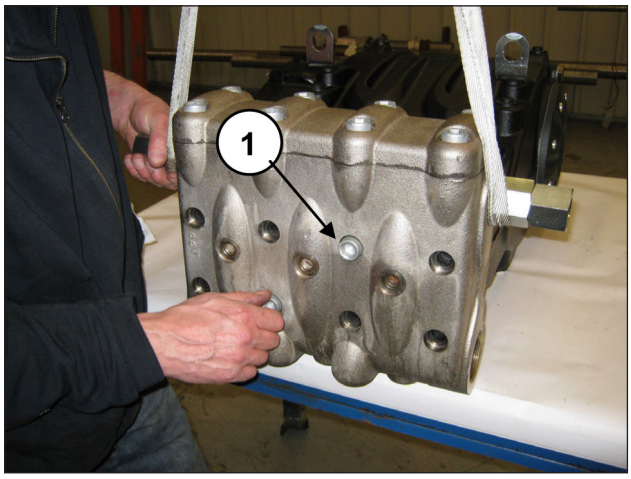


Fig. 130

Proceda com a calibragem dos parafusos M16x180 com chave dinamométrica, conforme indicado no capítulo 3.

**Aperte os oito parafusos M16x180, começando dos quatro parafusos internos de modo transversal, para depois prosseguir com os quatro parafusos externos, sempre apertando de modo transversal.**

Calibre os parafusos M16x55 da cobertura com chave dinamométrica, conforme indicado no capítulo 3.
Aplique os dispositivos de abertura da válvula (pos. ①, Fig. 131) e solte-os mediante a chave de 30 mm (pos. ①, Fig. 132).

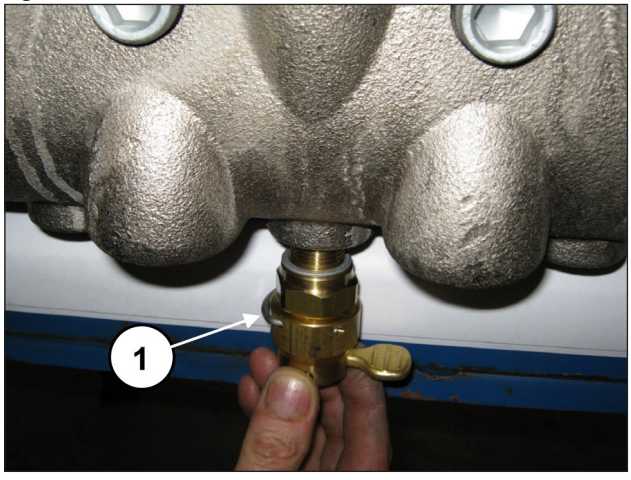


Fig. 131

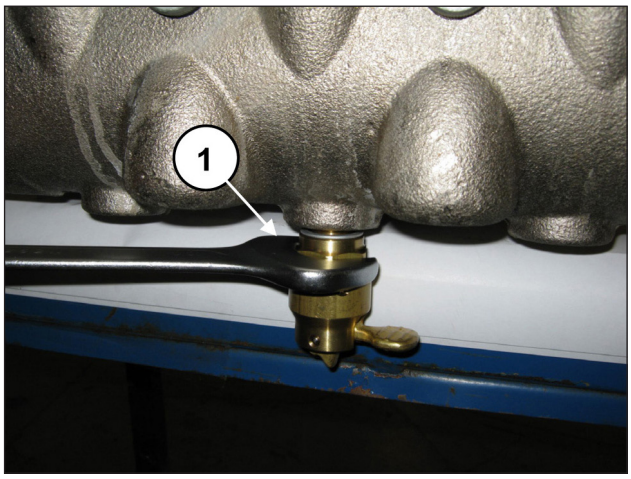


Fig. 132

Aplique as tampas G1/4" frontais do cabeçote com os anéis circulares relativos.
Proceda com a calibragem das tampas G1/4" com a chave dinamométrica, conforme indicado no capítulo 3.

### 2.2.3 Desmontagem do cabeçote MW45 MW50 MW55 - grupos da válvula

O cabeçote precisa de uma manutenção preventiva, conforme indicado no ***Manual de uso e manutenção***.
As intervenções são limitadas à inspeção ou substituição da válvula, quando necessário.
Para a extração dos grupos da válvula, opere como mostra a seguir:
Solte os oito parafusos M16x45 da cobertura da válvula de fluxo (pos. ①, Fig. 133), e remova a cobertura (pos. ①, Fig. 134).

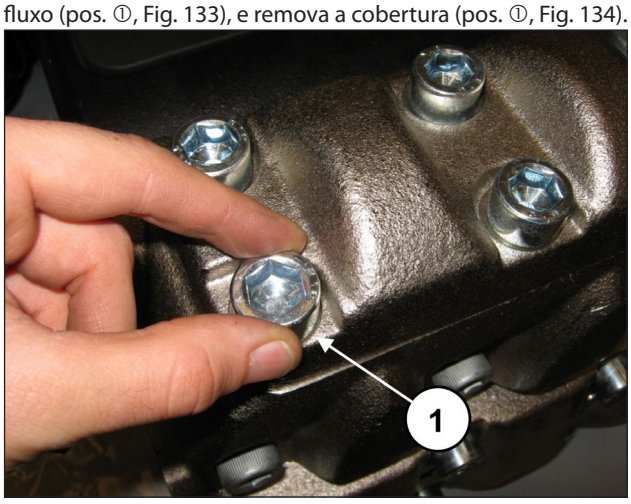


Fig. 133

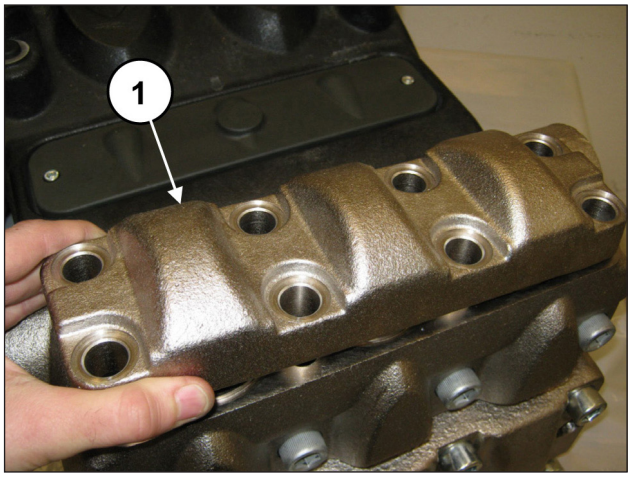


Fig. 134

Extraia o grupo da válvula de fluxo mediante o uso de um extrator de mecanismo de percussão (cód. 27516400) para aplicar no furo M10 do guia da válvula (pos. ①, Fig. 135).

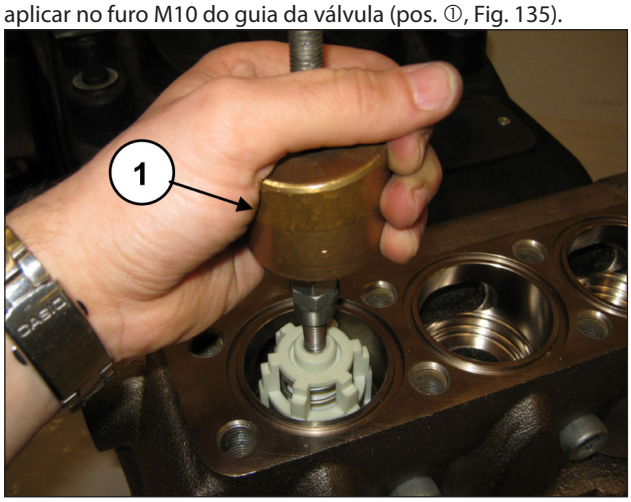


Fig. 135

Solte os oito parafusos M16x45 da cobertura da válvula de aspiração (pos. ①, Fig. 136), e remova a cobertura (pos. ①, Fig. 137).

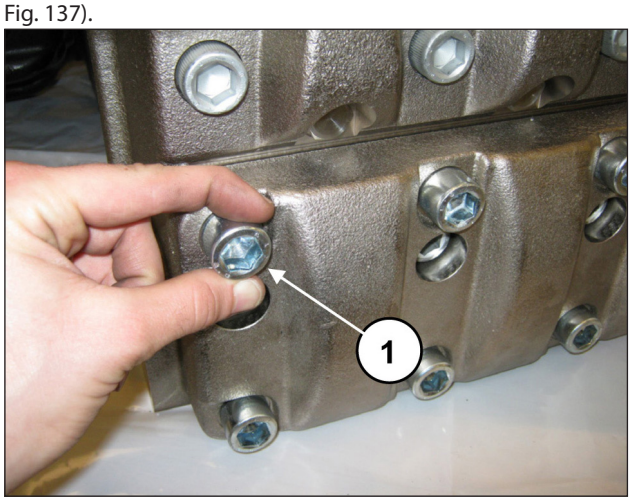


Fig. 136

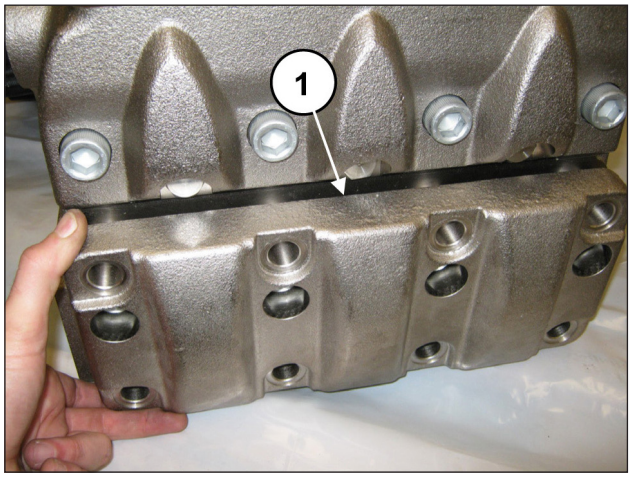


Fig. 137

Extraia o grupo da válvula de aspiração mediante o uso de um extrator de mecanismo de percussão (cód. 27516400) para aplicar no furo M10 do guia da válvula (pos. ①, Fig. 138).


Fig. 138

Solte o dispositivo de abertura da válvula mediante chave de 30 mm (cód. ①, Fig. 139).

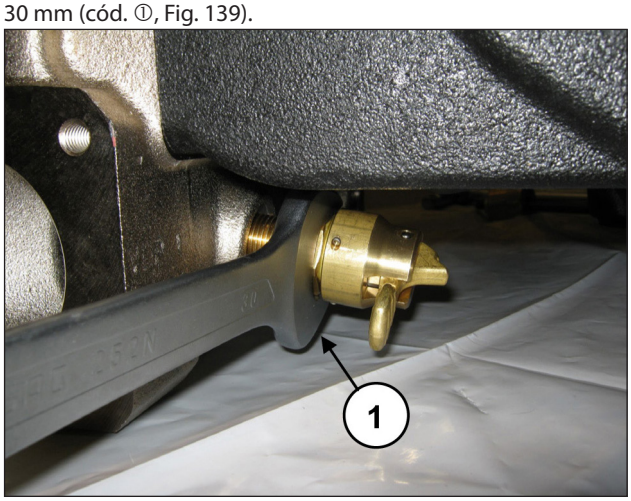


Fig. 139

Desmonte os grupos da válvula de aspiração e de fluxo, soltando um parafuso M10 de modo a pressionar na guia interna e extrair a guia da válvula do local da válvula (pos. ①, Fig. 140).

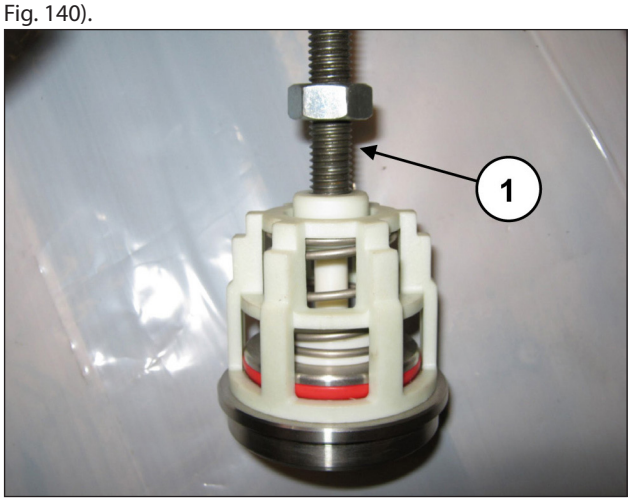


Fig. 140

Complete a desmontagem, removendo as tampas G1/4" frontais e as tampas G1/2" na parte inferior do cabeçote.

Agora é possível remover o cabeçote do carter da bomba, proporcionando o desaperto dos oito parafusos M16x150 (pos. ①, Fig. 141).
Durante a desmontagem do cabeçote, preste atenção especial para não bater os pistões (Fig. 142).

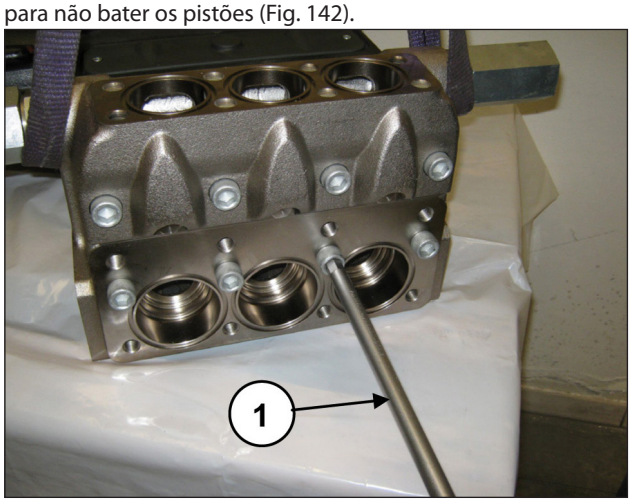


Fig. 141

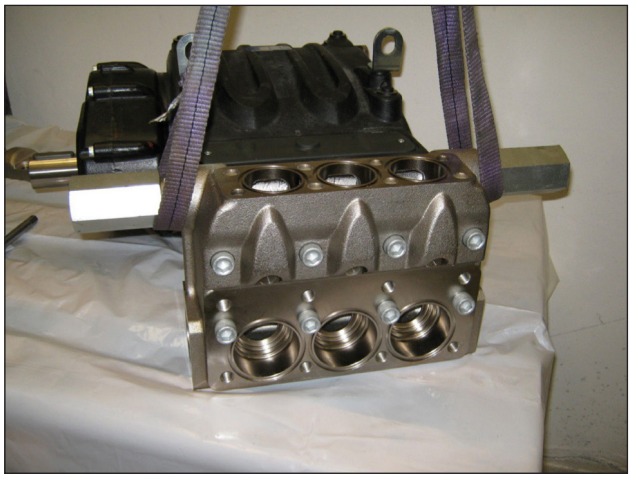

Fig. 142

### 2.2.4 Montagem do cabeçote MW45 MW50 MW55 - grupos das válvulas

**Preste atenção especial ao estado de desgaste dos vários compoenntes e substitua-os, quando necessário.**
**A cada inspeção da válvula, substitua todos os anéis circulares, seja dos grupos ou das tampas da válvula.**

**Antes de reposicionar os grupos da válvula, limpe e enxugue perfeitamente as relativas ranhuras no cabeçote, indicadas pela seta (pos. ①, Fig. 143).**

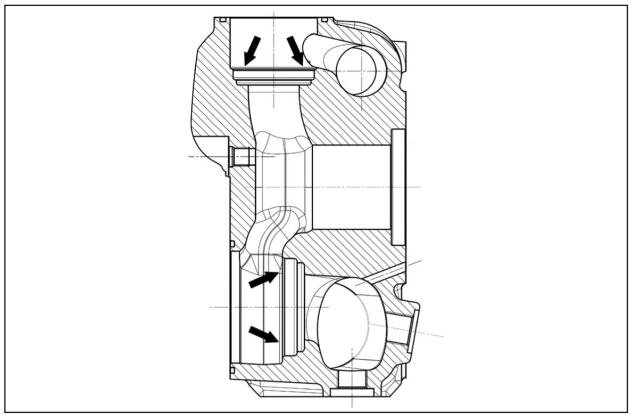

Fig. 143

Proceda com a remontagem, seguindo o procedimento inverso da remontagem indicada no parág. 2.2.3.
Monte os grupos da válvula de aspiração e de fluxo (Fig. 144 e Fig. 145).
Para facilitar a inserção da guia da válvula no local, pode-se usar um tubo que apoie as placas horizontais da guia (Fig. 146) e usar um mecanismo de percussão, agindo em toda a circunferência

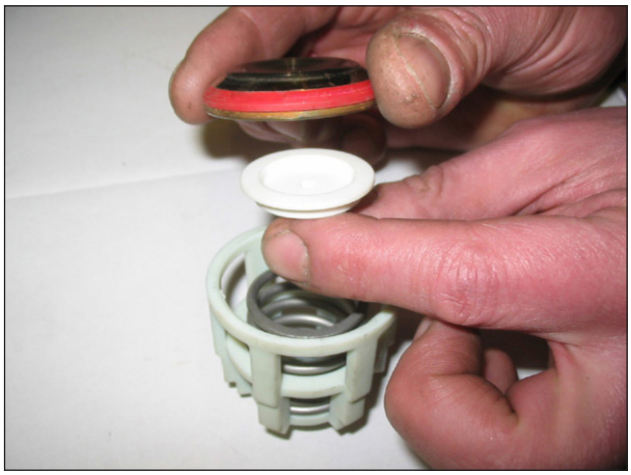

Fig. 144

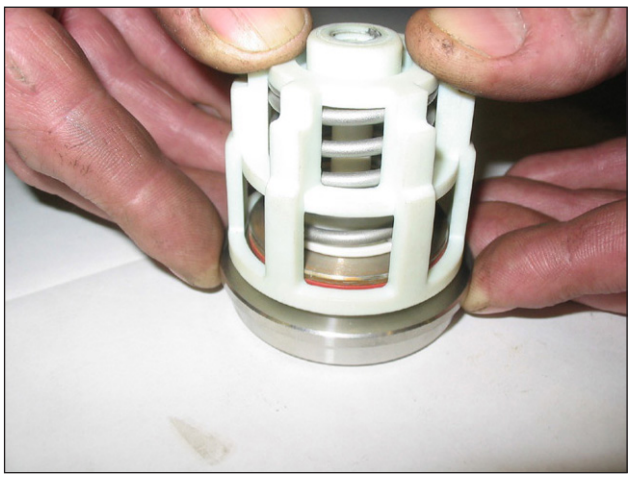

Fig. 145

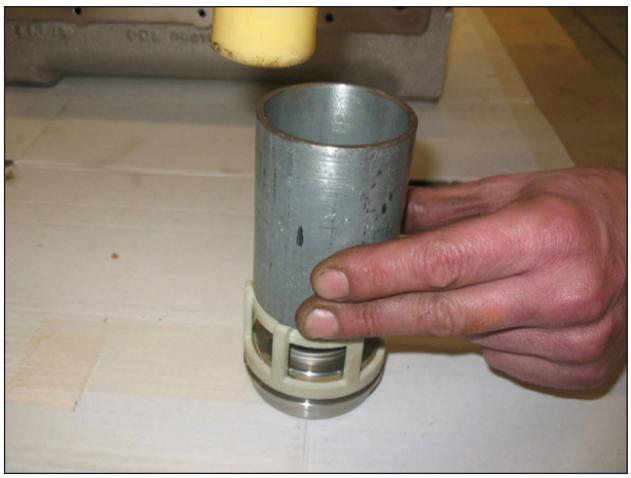

Fig. 146

**Proceda com a inserção dos grupos da válvula (aspiração e de fluxo) no cabeçote, prestando atenção à sequência correta da inserção dos anéis circulares e dos anéis de anti-extrusão.**

A sequência correta de montagem dos grupos da válvula no cabeçote é a seguinte:

Na aspiração, insira o anel de anti-extrusão, pos. de explosão nº.6 (pos. ①, Fig. 147).

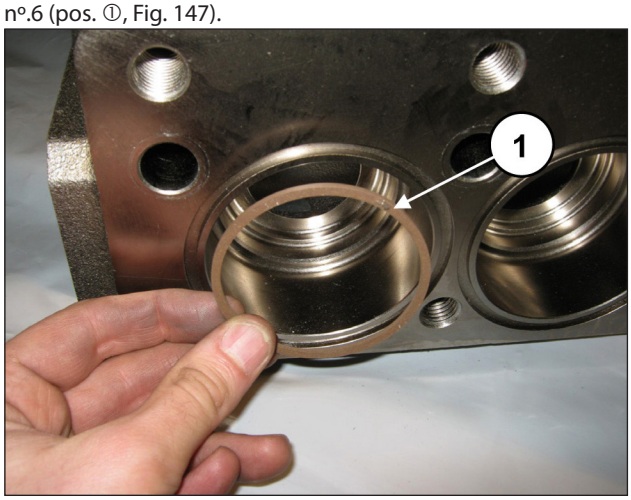


Fig. 147

Insira o anelo circular, pos. de explosão nº. 7 (pos. ①, Fig. 148).

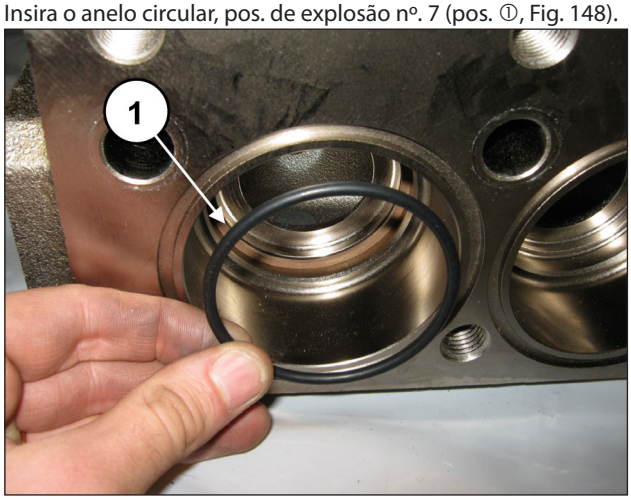


Fig. 148

Verifique se o anel circular e o anel de anti-extrusão ficaram perfeitamente no local.
Insira o grupo da válvula de aspiração (pos. ①, Fig. 149).
O grupo da válvula completo deve ser inserido completamente no fundo e apresentar-se como na pos. ①, Fig. 150.

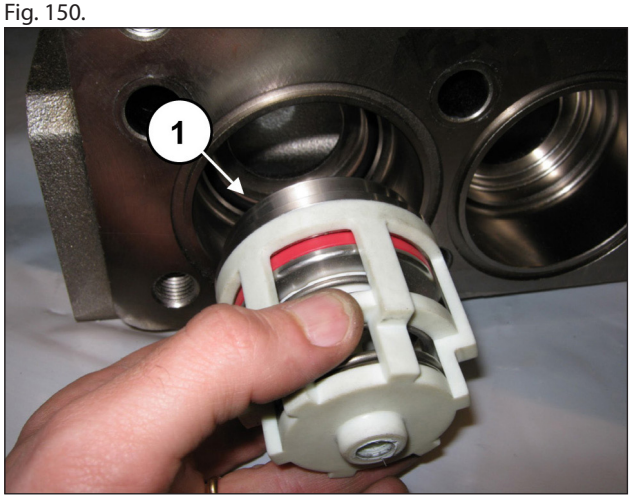


Fig. 149

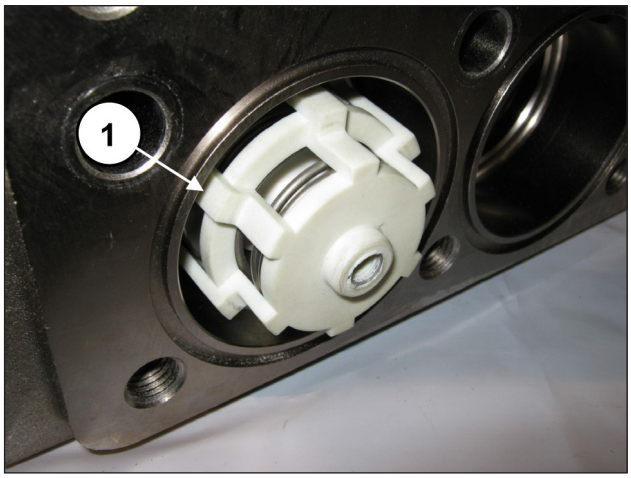


Fig. 150

Aplique o anel circular frontal na válvula de aspiração (pos. ①, Fig. 151).

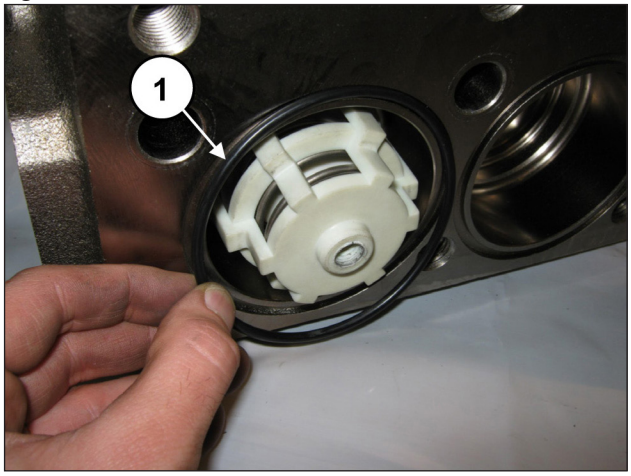


Fig. 151

Depois de ter terminado a montagem dos grupos da válvula de aspiração, aplique a cobertura da válvula de aspiração (pos. ①, Fig. 152) e aperte os oito parafusos M16x45 (pos. ①, Fig. 153).

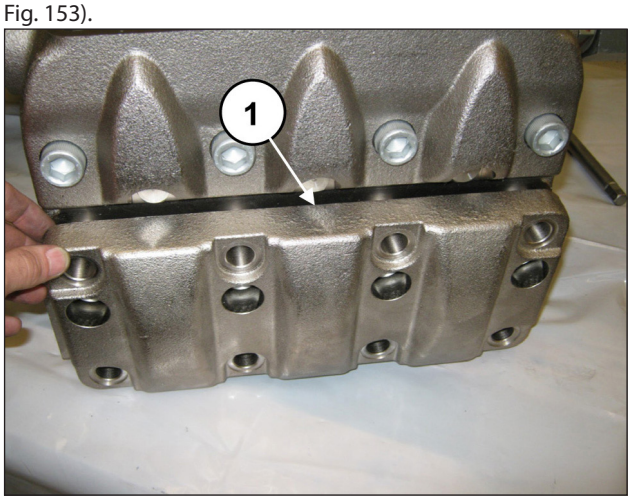


Fig. 152

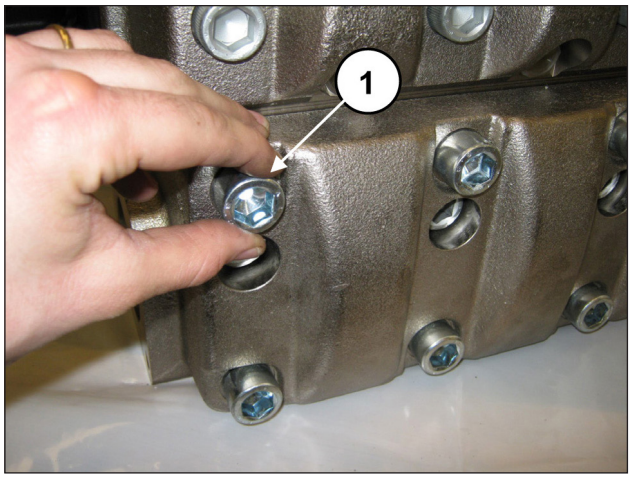


Fig. 153

Prossiga com a montagem dos grupos da válvula de fluxo:
Insira o anel anti-extrusão, pos. de explosão nº. 23 (pos. ①, Fig. 154).

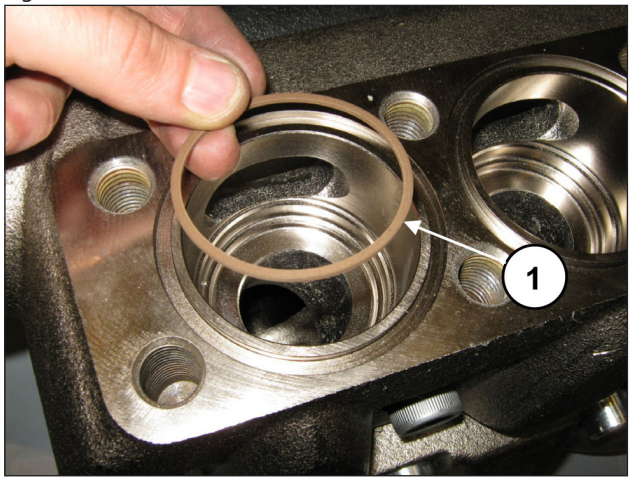


Fig. 154

Insira o anelo circular, pos. de explosão nº. 24 (pos. ①, Fig. 155).

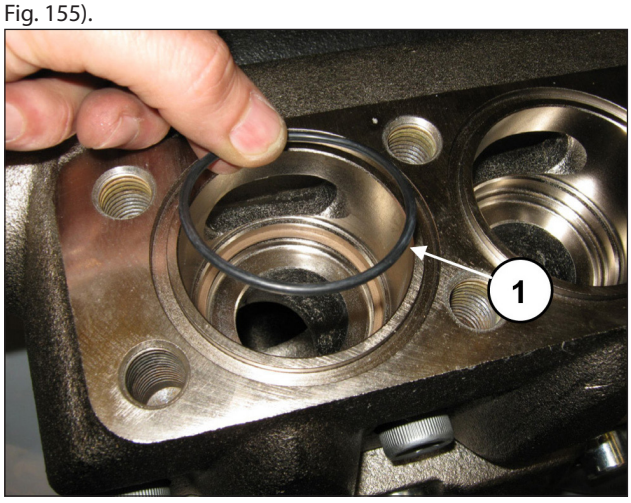


Fig. 155

Verifique se o anel circular e o anel de anti-extrusão ficaram perfeitamente no local.

Insira o grupo da válvula de fluxo (pos. ①, Fig. 156).
O grupo da válvula completo deve ser inserido completamente no fundo e apresentar-se como na pos. ①, Fig. 157.

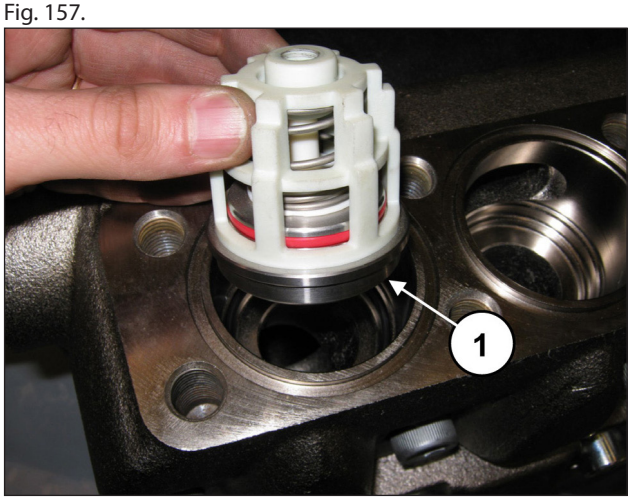


Fig. 156

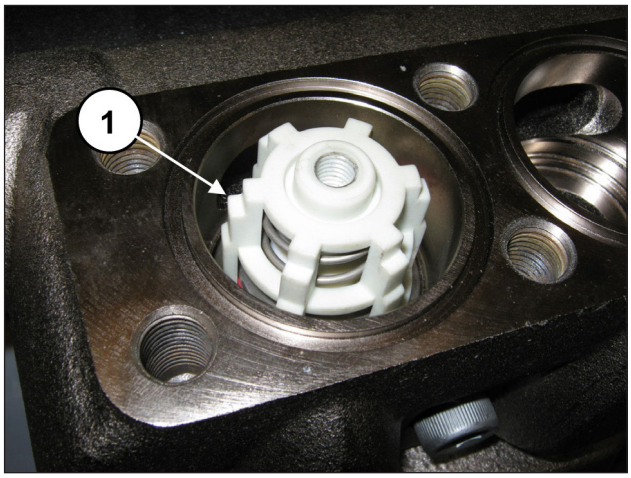


Fig. 157

Aplique o anel circular frontal na válvula de fluxo (pos. ①, Fig. 158).

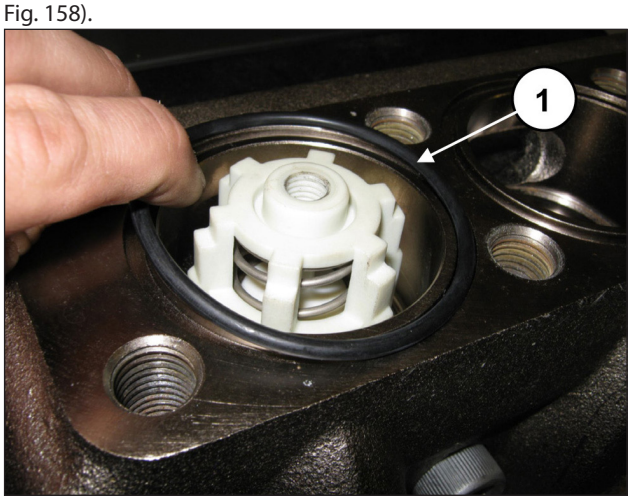


Fig. 158

Depois de ter terminado com a montagem dos grupos da válvula de fluxo, aplique a cobertura da válvula de fluxo (pos. ①, Fig. 159) e aperte os oito parafusos M16x45 (pos. ①, Fig. 160).

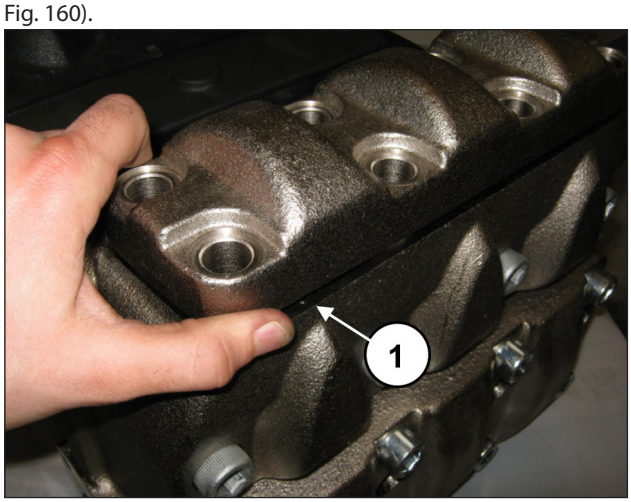


Fig. 159

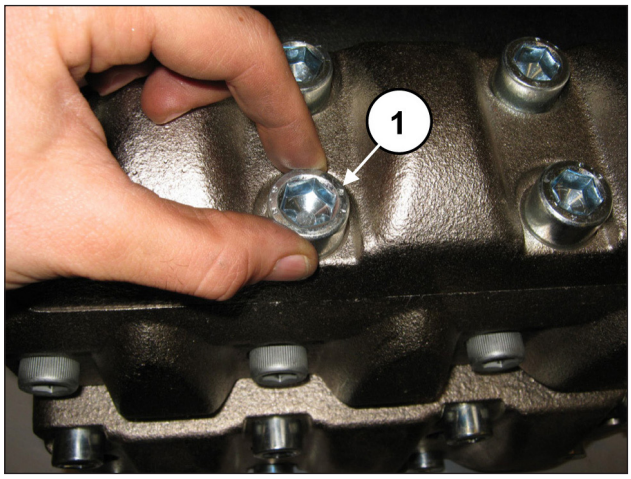


Fig. 160

Aplique os seis anéis circulares frontais do carter da bomba (pos. ①, Fig. 161).

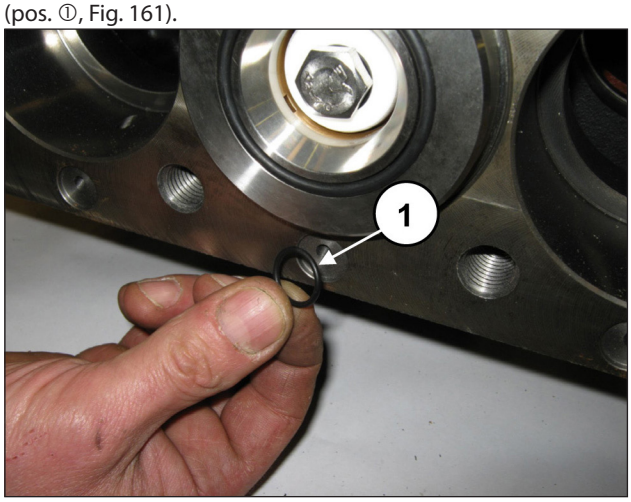


Fig. 161

Monte o cabeçote no carter da bomba (pos. ①, Fig. 162), prestando atenção para não bater os pistões e soltar os oito parafusos M16x150 (pos. ①, Fig. 163).

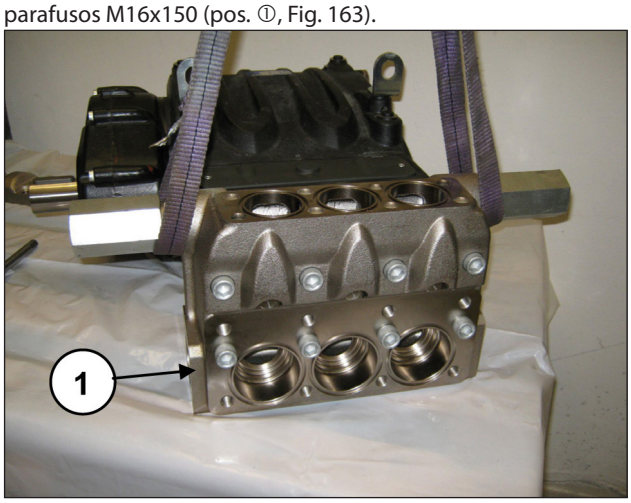


Fig. 162

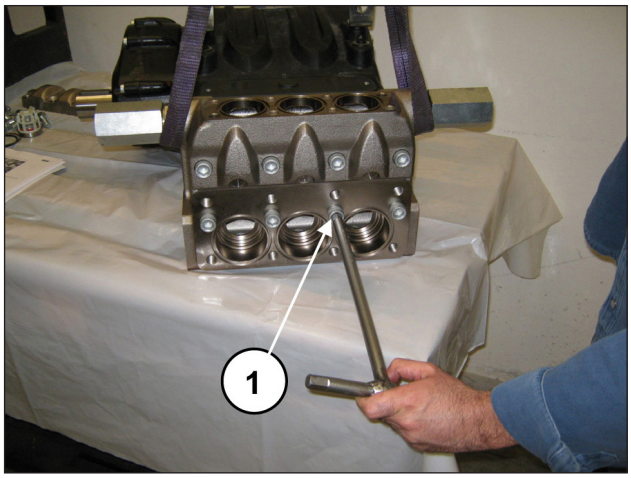


Fig. 163

Proceda com a calibragem dos parafusos M16x150 com chave dinamométrica, conforme indicado no capítulo 3.

**Aperte os oito parafusos M16x150, a partir dos quatro parafusos internos, de forma transversal, para em seguida, prosseguir com os quatro parafusos externos, sempre apertando de modo transversal**

Calibre os parafusos M16x45 das coberturas de aspiração e de fluxo com chave dinamométrica, conforme indicado no capítulo 3, CALIBRAGEM DE APERTO DOS PARAFUSOS. Aplique os dispositivos de abertura da válvula (pos. ①, Fig. 164) e solte-os mediante a chave de 30 mm (pos. ①, Fig. 165).

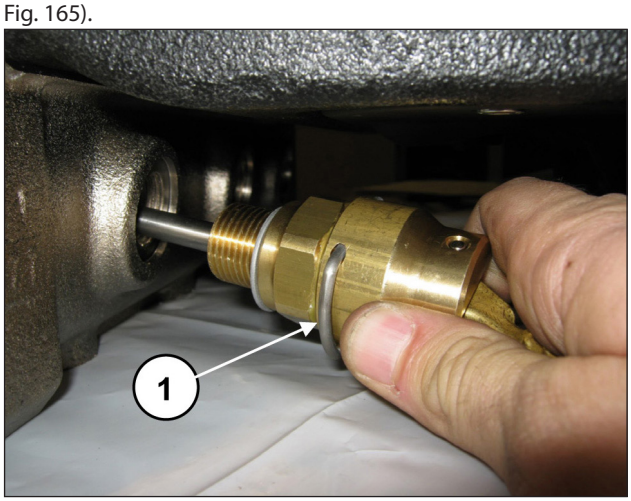


Fig. 164

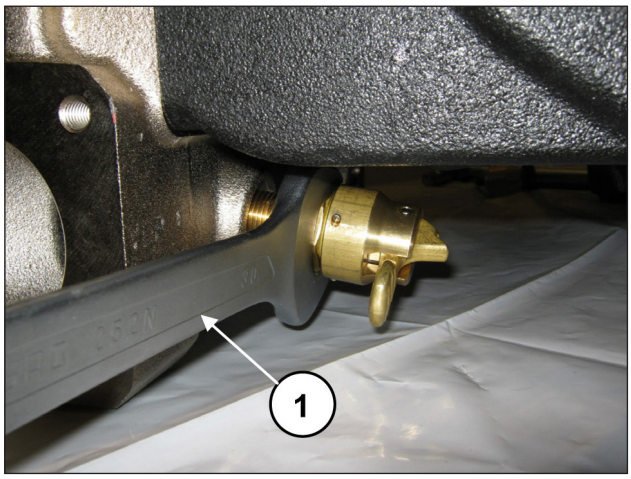


Fig. 165

Aplique as tampas G1/2" na parte inferior do cabeçote com as relativas arruelas.
Proceda com a calibragem das tampas G1/2" com a chave dinamométrica, conforme indicado no capítulo 3.
Aplique as tampas G1/4" frontais do cabeçote com os anéis circulares relativos.
Proceda com a calibragem das tampas G1/4" com a chave dinamométrica, conforme indicado no capítulo 3.

### 2.2.5 Desmontagem do grupo do pistão - suportes - vedação

O grupo do pistão precisa de uma verificação periódica conforme indicado na tabela de manutenção preventiva do ***Manual de uso e manutenção***.
As intervenções são limitadas a apenas o controle visual de eventuais drenagens do furo, presente na cobertura de inspeção inferior. Se for apresentado anomalias/oscilações no manômetro de fluxo ou gotejamento do furo de drenagem, será necessário proceder com o controle e eventual substituição do pacote de vedação.
Para a extração dos grupos de pistão, opere como a seguir:
Para acessar o grupo do pistão, é necessário soltar os parafusos M16x180 (para MW32-MW36-MW40) ou os parafusos M16x150 (para MW45-MW50-MW55) e desmontar o cabeçote.

**Retire o cabeçote com a máxima atenção para evitar bater os pistões.**

Providencie a desmontagem dos pistões, soltando os parafusos de fixação (pos. ①, Fig. 166).
Retire o pistão do suporte de vedação e verifique se a superfície do mesmo não apresenta arranhões, sinais de desgaste ou de cavitação.

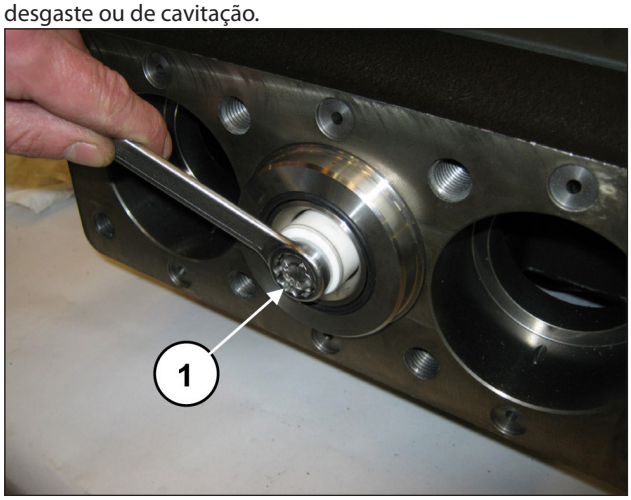


Fig. 166

Remova a cobertura de inspeção superior, soltando os dois parafusos de fixação (pos. ①, Fig. 167).

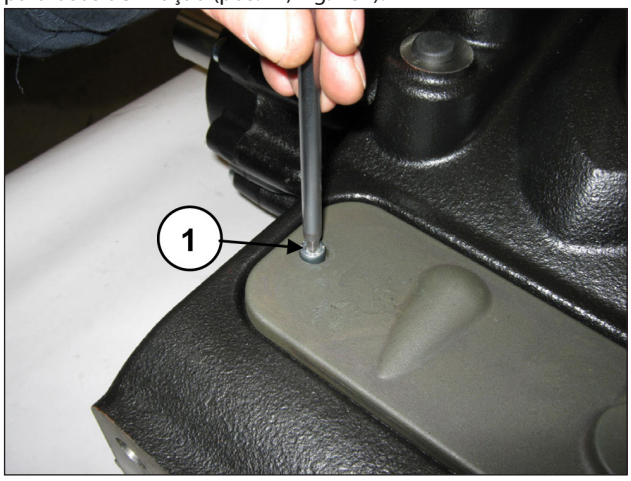


Fig. 167

Gire manualmente o eixo, de modo a trazer os três pistões na posição de ponto morto superior.
Insira a ferramenta do tampão cód. 27632500 entre a guia do pistão e o pistão (pos. ①, Fig. 168).

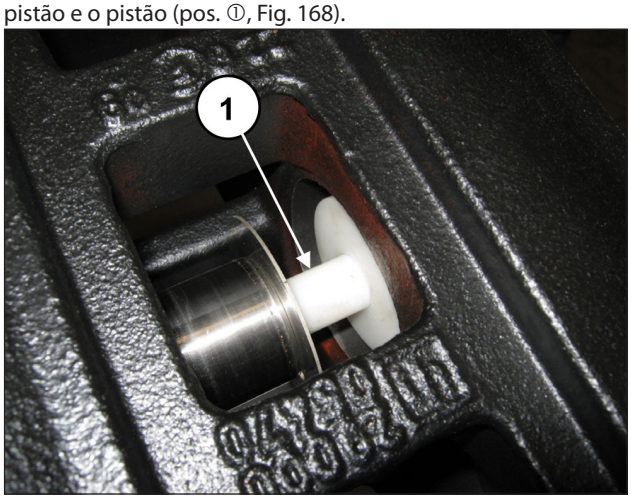


Fig. 168

Gire o eixo para fazer avançar o guia do pistão, de modo que o tampão, avançando, possa ejetar o suporte de vedação e todo o grupo do pistão (pos. ①, Fig. 169).

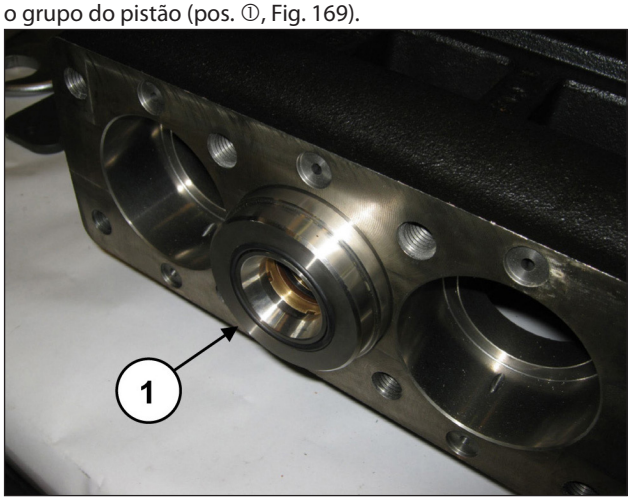


Fig. 169

Extraia o grupo de suporte das vedações e a ferramenta do tampão.

Remora o anel circular de fundo do suporte do forro, se não permanecer no interior do carter da bomba (pos. ①, Fig. 170).


Fig. 170

Puxe os anéis de proteção contra respingos das guias dos pistões (pos. ①, Fig. 171).

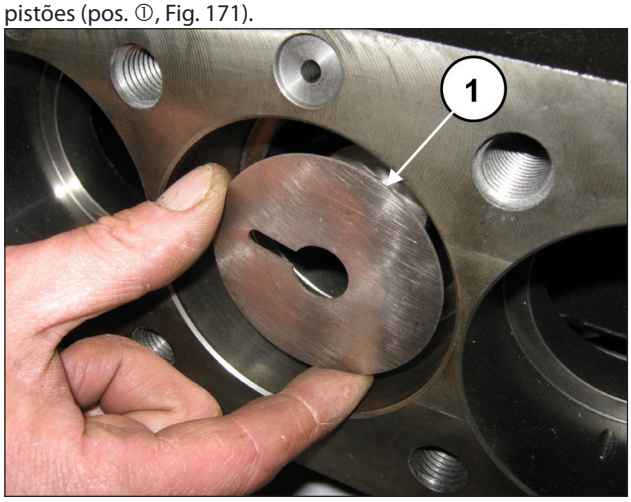


Fig. 171

Separe o suporte das vedações da camisa (pos. ①, Fig. 172), para acessar as vedações de pressão (pos. ①, Fig. 173).

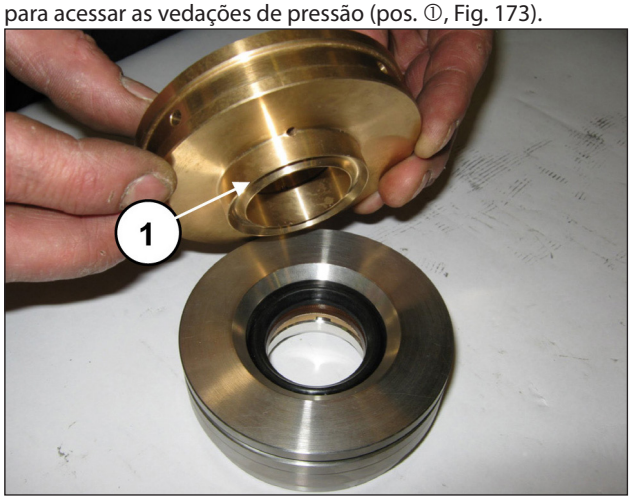


Fig. 172

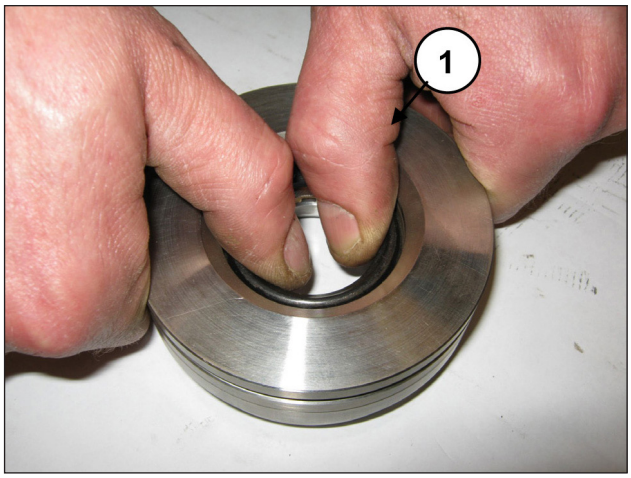


Fig. 173

Para remover o forro de baixa pressão, é necessário usar um medidor de espessura ou uma ferramenta que não danifique o local do suporte do forro (pos. ①, Fig. 174).

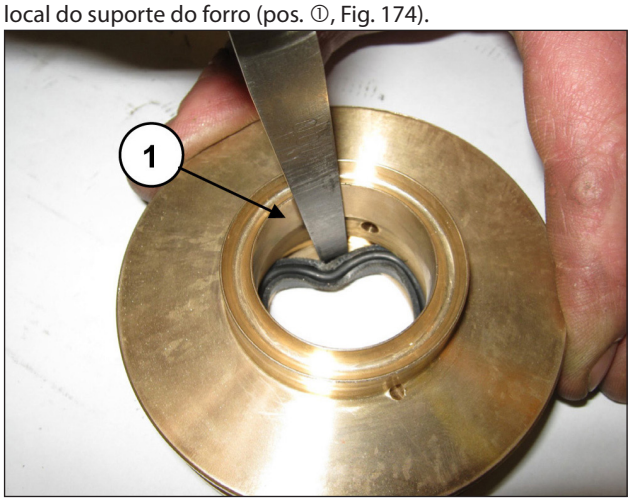


Fig. 174

### 2.2.6 Montagem do grupo do pistão - suportes - vedação

Proceda com a remontagem, seguindo o procedimento inverso da remontagem indicada no parág. 2.2.5.

**Substitua as vedações de pressão, umedecendo as bordas com lubrificante de silicone (sem borrifar), prestando muita atenção para não danificá-las durante a inserção na camisa.**

**A cada desmontagem, os forros de pressão devem ser sempre substituídas juntas com todos os anéis circulares.**

Insira os forros de baixa pressão no suporte do forro (pos. ①, Fig. 175) prestando atenção para o sentido da montagem, que fornece a borda de vedação para a frente (na direção do cabeçote).

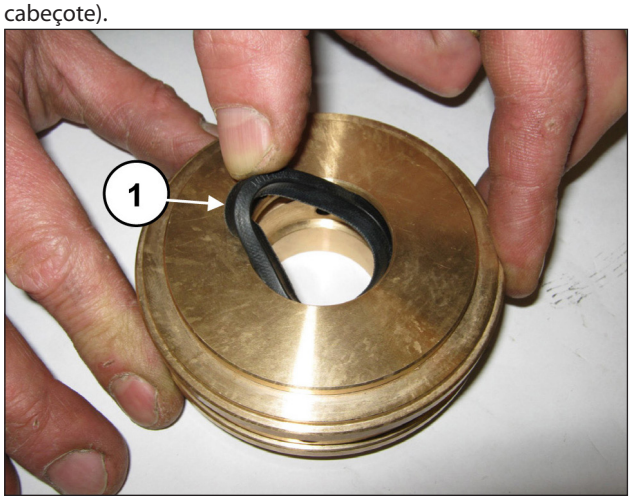


Fig. 175

Monte o anel do cabeçote (pos. ①, Fig. 176), o forro de alta pressão (pos. ①, Fig. 177) e o anel restop (pos. ①, Fig. 178).

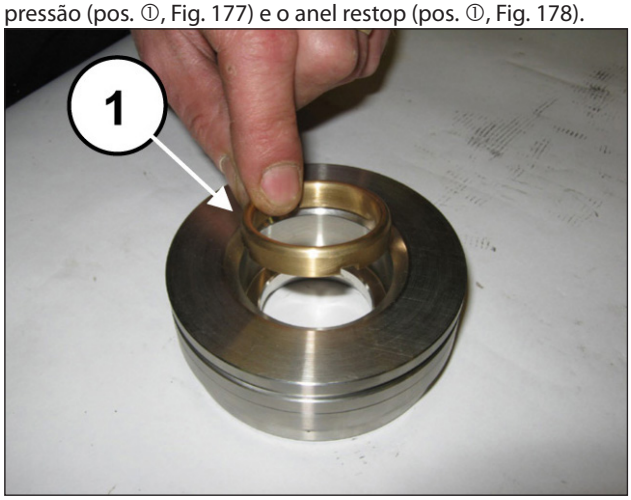


Fig. 176

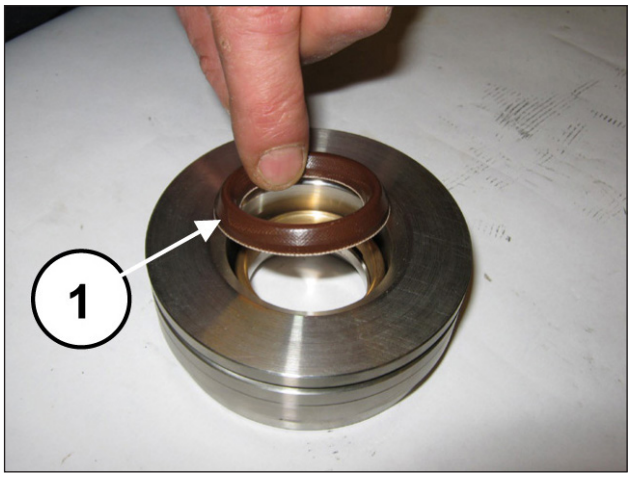


Fig. 177

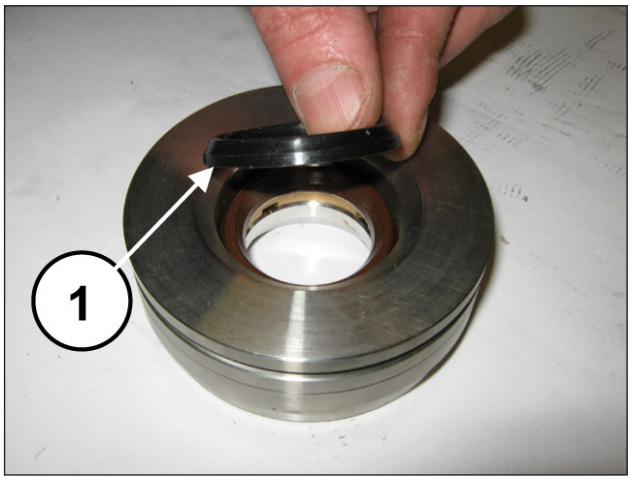


Fig. 178

Junte o suporte do forro à camisa (pos. ①, Fig. 179).

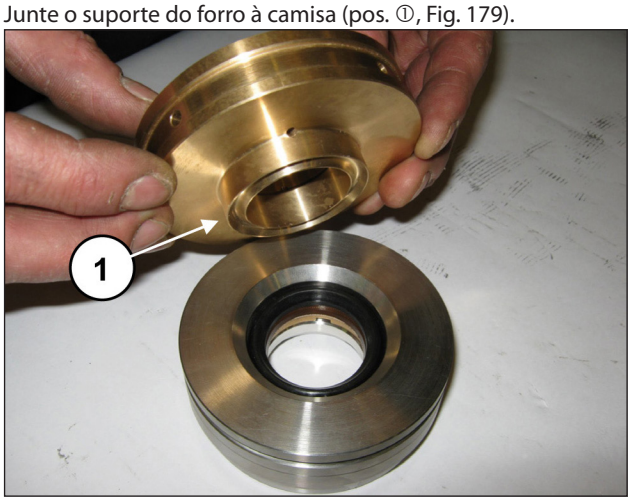


Fig. 179

Posicione a proteção contra respingos na ranhura da guia do pistão (pos. ①, Fig. 180).

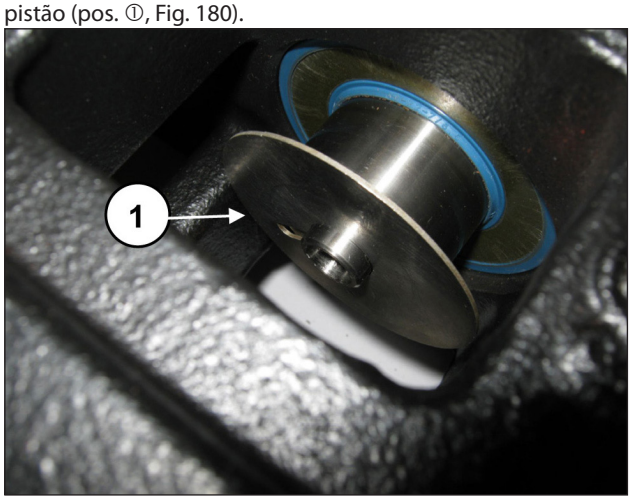


Fig. 180

Insira a arruela Ø10x18x0.9 no parafuso de fixação do pistão (pos. ①, Fig. 181).

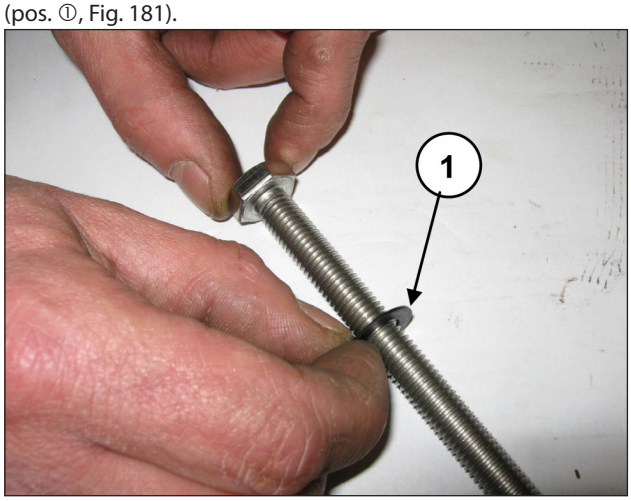


Fig. 181

Monte os pistões nas respectivas guias (pos. ①, Fig. 182) e fixe-as, conforme a pos. ①, Fig. 183.

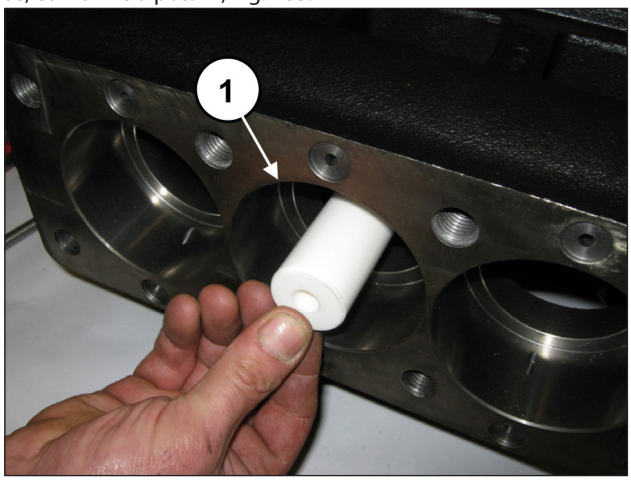


Fig. 182

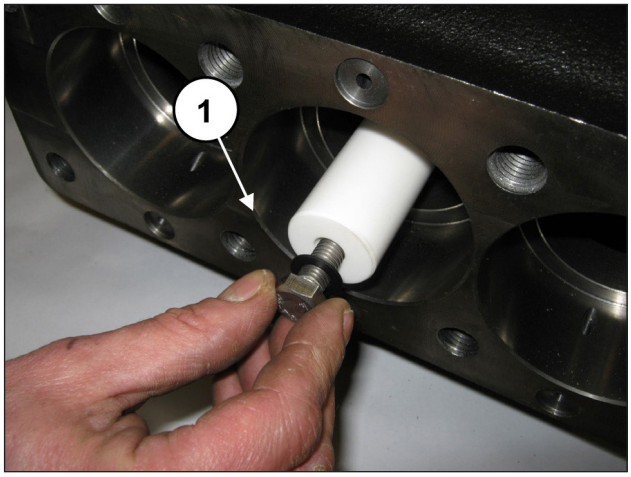


Fig. 183

Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3.
Insira o anel circular no interior do carter da bomba (pos. ①, Fig. 184) e em seguida, o bloco da camisa - suporte do forro (completo pelo mesmo anel circular), anteriormente montado até a passagem (pos. ①, Fig. 185).

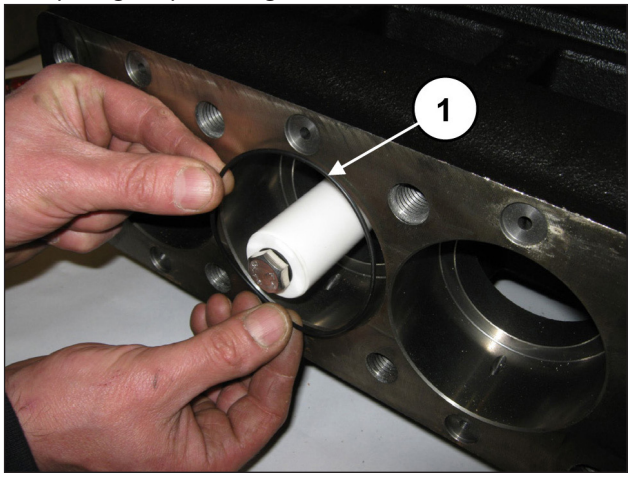


Fig. 184

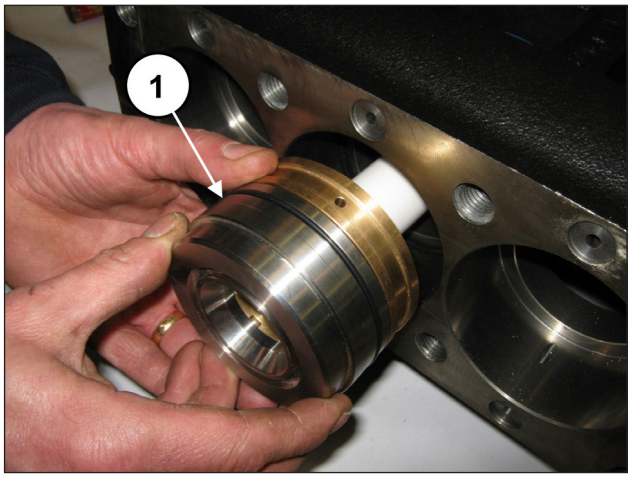


Fig. 185

Certifique-se de que o bloco da camisa - suporte chegue a se posicionar no fundo do local (pos. ①, Fig. 186).

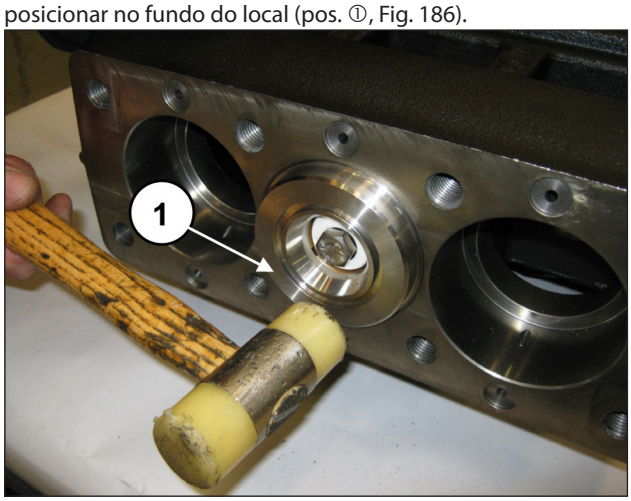


Fig. 186

Monte o anel circular frontal da camisa (pos. ①, Fig. 187) e o anel circular do furo de recirculação (pos. ①, Fig. 188).

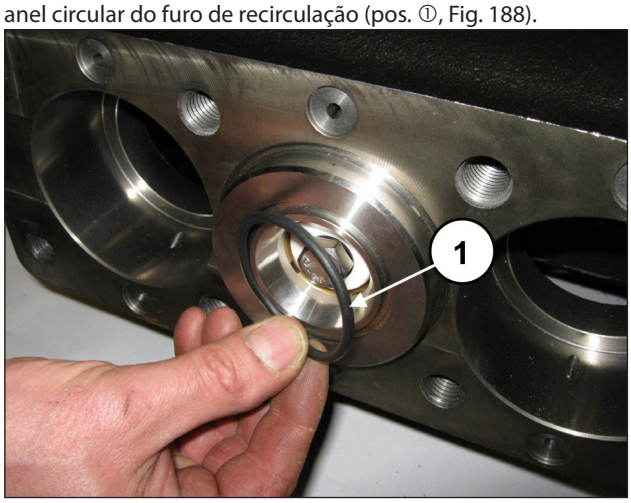


Fig. 187

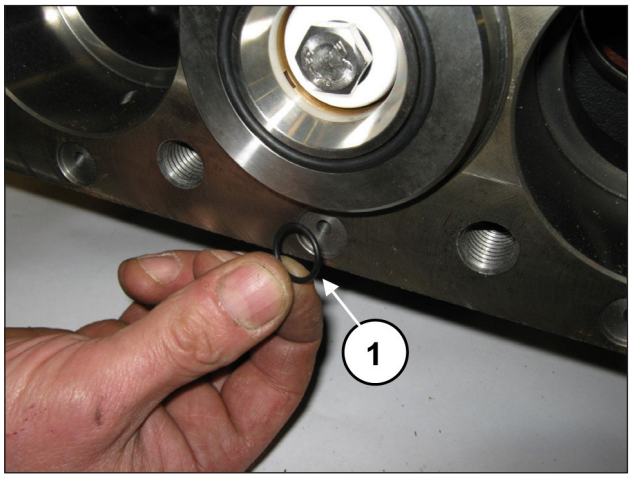


Fig. 188

Nas coberturas de inspeção, insira o anel circular (pos. ①, Fig. 189) e monte as coberturas mediante o uso de 2+2 parafusos M6x14 (pos. ①, Fig. 190).

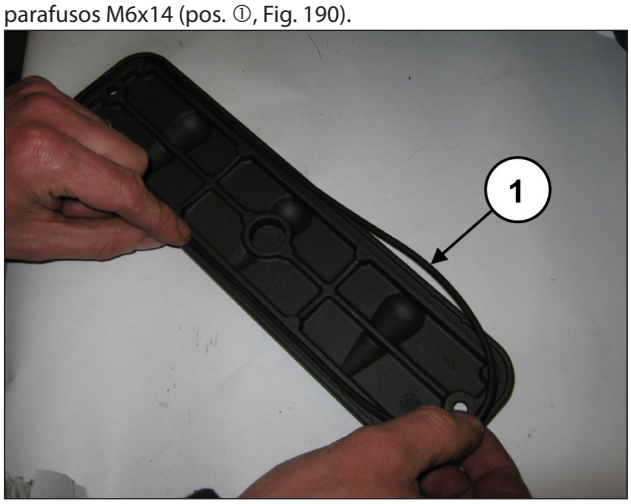


Fig. 189

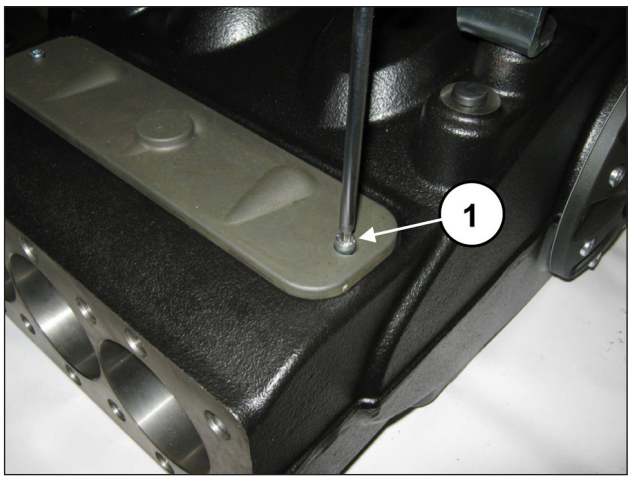


Fig. 190

Calibre os parafusos com chave dinamométrica, conforme indicado no capítulo 3.

## 3 CALIBRAGEM DO APERTO DOS PARAFUSOS

O aperto dos parafusos é para ser executado exclusivamente com chave dinamométrica.

| Descrição | Posição de explosão | Torque de aperto Nm |
|---|---|---|
| Parafuso M10x30 da cobertura do carter | 89 H.P. - 91 L.P. | 45 |
| Tampa G1/2x13 do carter | 91 H.P. - 93 L.P. | 40 |
| Parafuso M16x30 do suporte de elevação | 51 H.P. - 53 L.P. | 200 |
| Parafuso M10x40 da cobertura do redutor | 81 H.P. - 83 L.P. | 45 |
| Parafuso M10x25 de fixação da coroa | 76 H.P. - 78 L.P. | 45 |
| Parafuso M10x40 da caixa do redutor | 81 H.P. - 83 L.P. | 45 |
| Parafuso M6x14 das coberturas superior e inferior | 60 H.P. - 62 L.P. | 10 |
| Parafuso M10x30 da cobertura do rolamento | 89 H.P. - 91 L.P. | 45 |
| Parafuso M10x1.5x80 do aperto da haste | 53 H.P. - 55 L.P. | 65* |
| Parafuso M6x20 da guia do pistão | 47 H.P. - 49 L.P. | 10 |
| Parafuso M10x140 de fixação do pistão | 28 H.P. - 18 L.P. | 40 |
| Parafuso M16x55 de cobertura da válvula HP | 24 | 333 |
| Parafuso M16x45 da cobertura da válvula LP | 19 | 333 |
| Tampa G1/2" do cabeçote LP | 4 | 40 |
| Tampa G1/4"x13 do cabeçote | 100 H.P. - 21 L.P. | 40 |
| Parafuso M16x180 do cabeçote HP | 26 | 333** |
| Parafuso M16x150 do cabeçote LP | 43 | 333** |
| Dispositivo de abertura da válvula | 2 | 40 |

* Alcance o torque de aperto, apertando os parafusos simultaneamente

** Aperte os parafusos a partir dos quatro parafusos internos, de forma transversal, em seguida, continue com os quatro parafusos externos, sempre apertando de modo transversal.

## 4 FERRAMENTAS PARA A REPARAÇÃO

A manutenção da bomba pode ser realizada através de ferramentas simples para a desmontagem e remontagem dos componentes. As seguintes ferramentas estão disponíveis:

**Para a montagem:**

| | |
|---|---|
| Eixo (bloqueio da haste) | cód. 27566200 |
| Rolamento no eixo de manivela | cód. 27604700 |
| Rolamento do pinhão na caixa do redutor | cód. 27604900 |
| Rolamento do eixo de manivela na caixa do redutor | cód. 27605000 |
| Rolamento do eixo de manivela na cobertura do rolamento | cód. 27605000 |
| Vedações do óleo da guia do pistão | cód. 27605300 |
| Rolamento no pinhão | cód. 27604800 |
| Vedações do óleo do pinhão | cód. 27605200 |
| Anel circular do local da válvula de fluxo MW32-MW36-MW40 | cód. 27516000 |

**Para a desmontagem:**

| | |
|---|---|
| Vedações do óleo da guia do pistão | cód. 27918500 |
| Eixo (bloqueio da haste) | cód. 27566200 |
| Grupo da válvula de aspiração e de fluxo | cód. 27516400 |
| Local da válvula de aspiração MW32-MW36-MW40 | cód. 27516200 |
| Bloco da camisa + suporte das vedações | cód. 27632500 |

# 5 VERSÕES ESPECIAIS

A seguir estão relacionadas as indicações relativas à reparação das versões especiais. Onde não estiver especificado de forma diferente, consulte o que for relacionado anteriormente para a bomba MW versão padrão.

- Bombas MWN - MWF: para a reparação estão sujeitas as indicações relativas à bomba MW padrão.
- Bombas MWR - MWNR: para a reparação estão sujeitas as indicações relativas à bomba MW padrão, excluindo as vedações de pressão, em que ocorre seguir o parágrafo específico.

## 5.1 BOMBA VERSÃO MWR - MWNR

### 5.1.1 Desmontagem do grupo - suportes - vedação

Separe o suporte de vedação da camisa, retire o anel para a mola e o anel raspador (pos. ①②, Fig. 191) para acessar as vedações de pressão (pos. ①, Fig. 192).

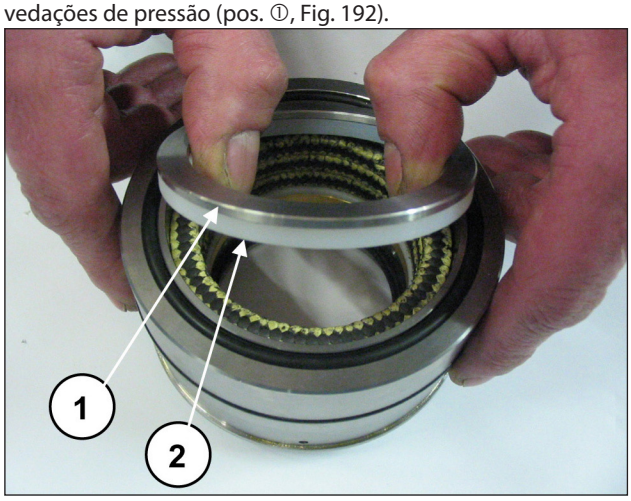


Fig. 191

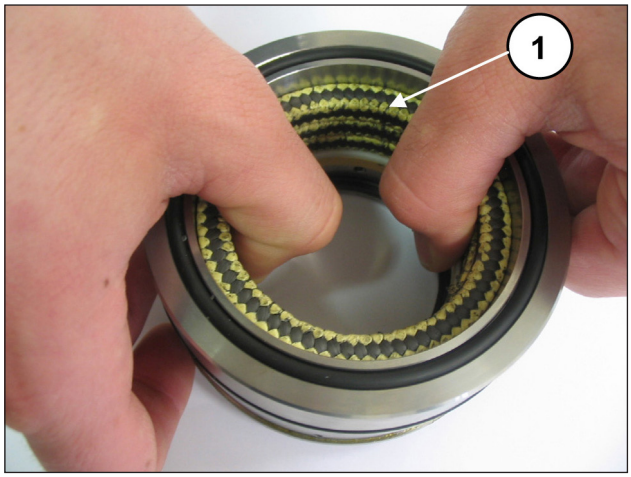


Fig. 192

Para remover o forro de baixa pressão, é necessário usar um medidor de espessura ou uma ferramenta que não danifique o local do suporte do forro (pos. ①, Fig. 193).


Fig. 193

### 5.1.2 Montagem do grupo dos suportes - vedação

Proceda com a remontagem, seguindo o procedimento inverso da remontagem indicada no parág. 2.2.3.

**Substitua as vedações de pressão, umedecendo as bordas com lubrificante de silicone (sem borrifar), prestando muita atenção para não danificá-las durante a inserção na camisa.**

**A cada desmontagem, os forros de pressão devem ser sempre substituídas juntas com todos os anéis circulares.**

Insira o forro de baixa pressão no suporte da embalagem (pos. ①, Fig. 194), prestando atenção ao sentido de montagem que fornece a borda de vedação para frente (em direção ao cabeçote) e o anel circular (pos. ②, Fig. 122).

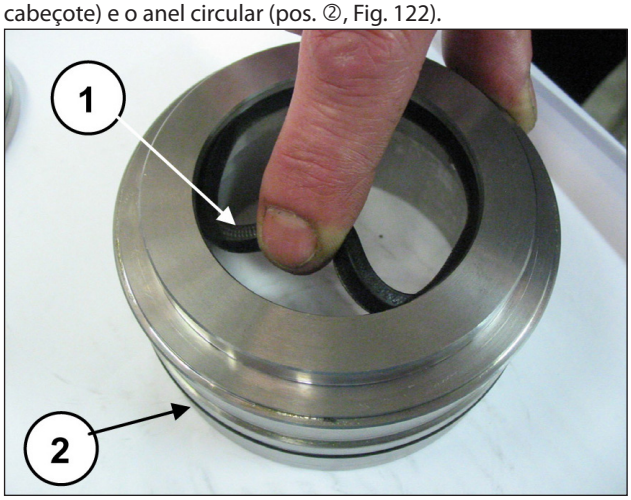


Fig. 194

Monte o anel de suporte e o anel de anti-extrusão (pos. ①②, Fig. 195), e as três embalagens, prestando atenção para que os entalhes estejam localizados a 120° de um para outro (pos. ①, Fig. 196), o anel raspador da embalagem e o anel para mola (pos. ①②, Fig. 197).

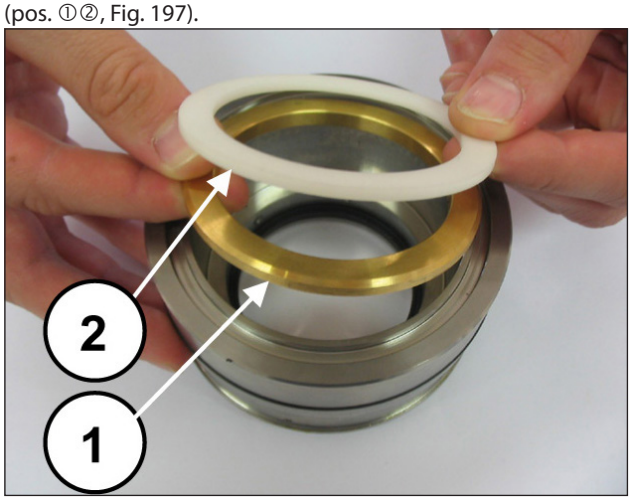


Fig. 195

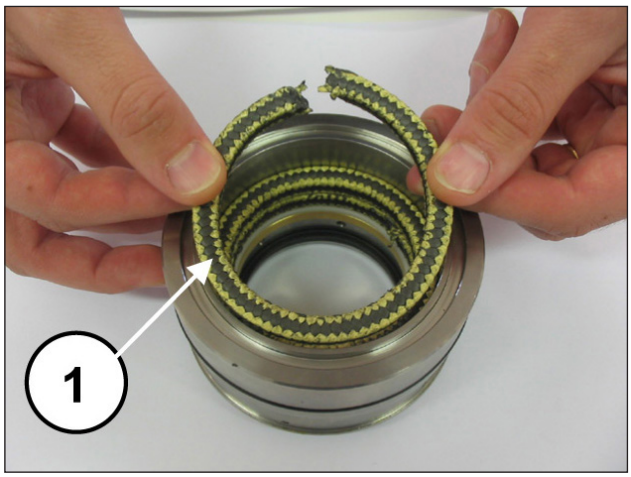


Fig. 196

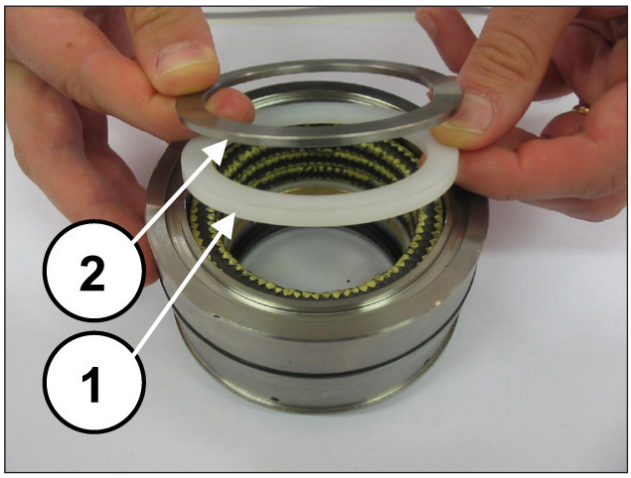


Fig. 197

Monte agora sobre o anel do cabeçote do anel circular (pos. ①, Fig. 198) e posicione-o no local sobre o cabeçote.


Fig. 198

## 6 RECUPERAÇÃO DO CABEÇOTE DA BOMBA

Se o cabeçote apresentar no interior das câmeras dos pistões sinais evidentes de cavitação, devido a uma alimentação incorreta da bomba, é possível recuperar o cabeçote danificado evitando a sua substituição.

Para a recuperação do cabeçote, realize os trabalhos indicados na Fig. 199 para MW 32-36-40 e versões MWF-MWR, na Fig. 200 para MW 45-50-55 e versões MWF-MWR:

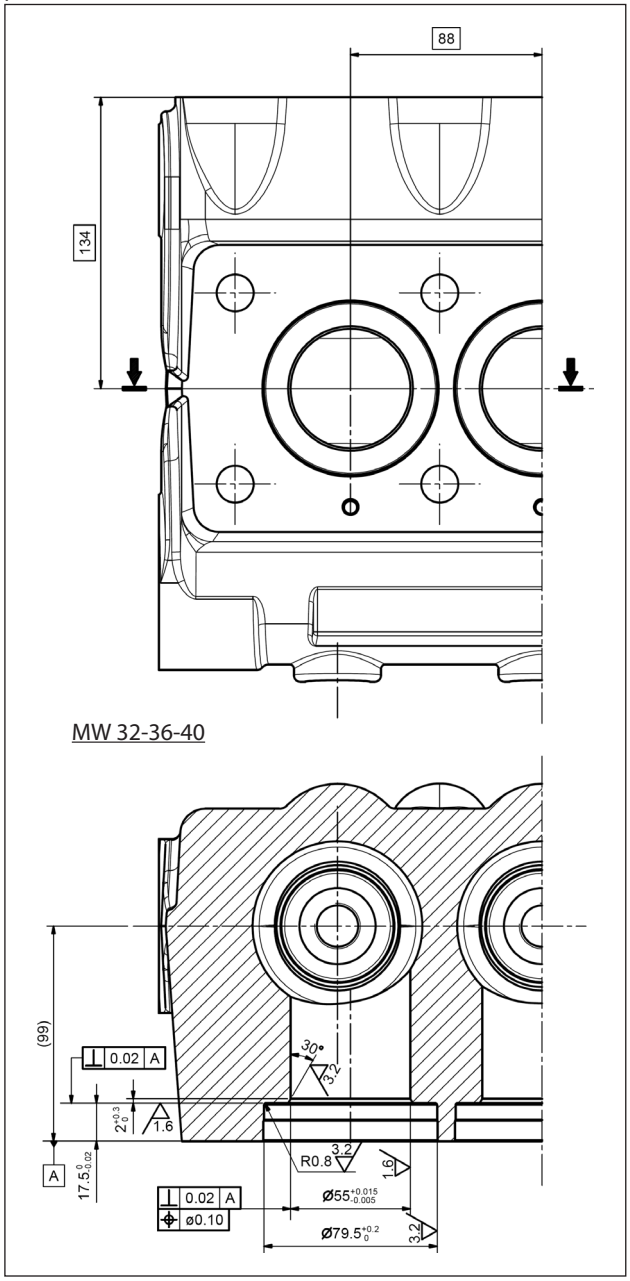


Fig. 199

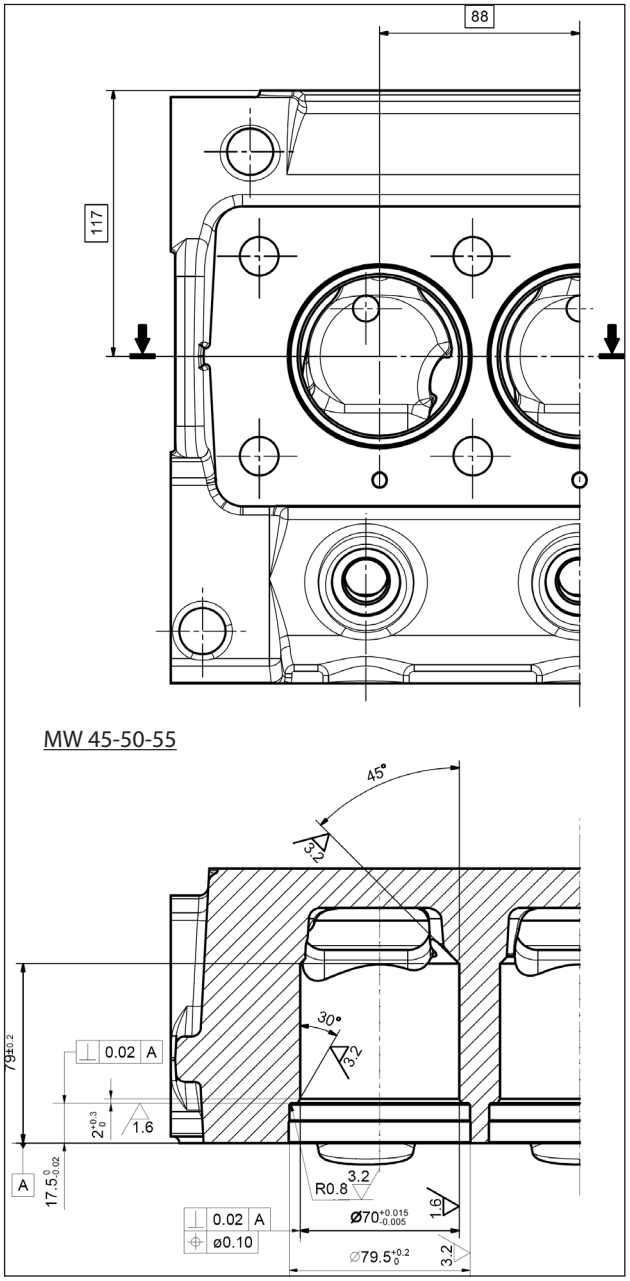


Fig. 200

**MW 32-36-40 e versões MWF-MWR (Fig. 201)**

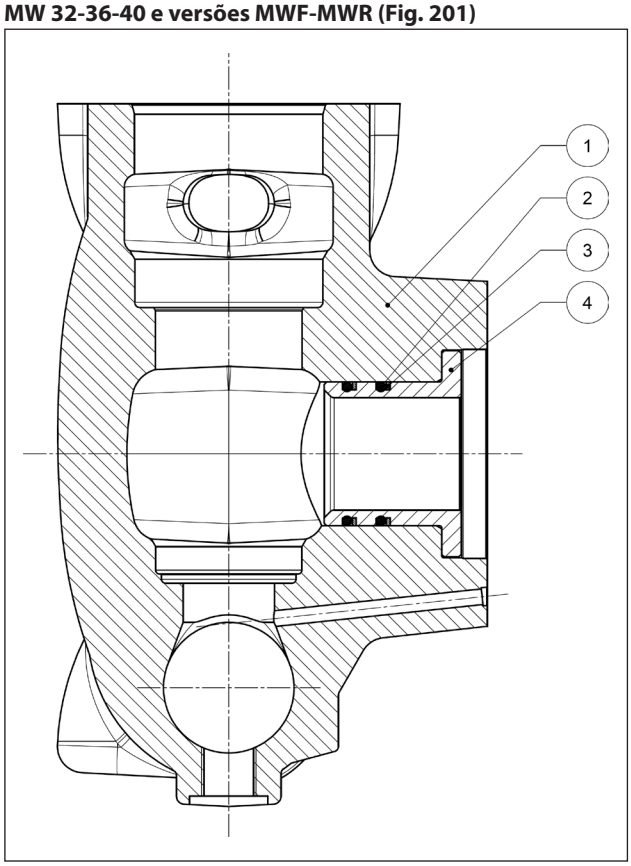


Fig. 201

① Cabeçote MW HP - cód. 73120015 - quantidade 1
② Anel circular - cód. 90408000 - quantidade 6
③ Anel de anti-extrusão - cód. 90523800 - quantidade 6
④ Bucha MW HP - cód. 73215956 - quantidade 3

**MW 45-50-55 e versões MWF-MWR (Fig. 202)**

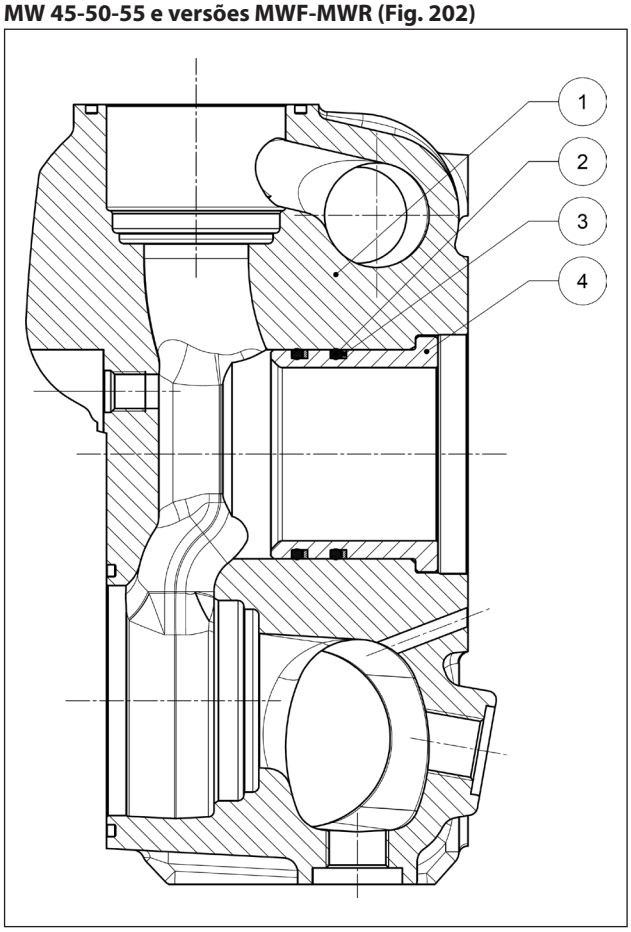


Fig. 202

① Cabeçote MW LP - cód. 73120115 - quantidade 1
② Anel circular - cód. 90411500 - quantidade 6
③ Anel de anti-extrusão - cód. 90527400 - quantidade 6
④ Bucha MW LP - cód. 73216056 - quantidade 3

## 7 SUBSTITUIÇÃO DA BUCHA DO PÉ DA HASTE

Realize a perfuração a frio da bucha e o processamento sucessivo, prestanto atenção às dimensões e tolerâncias dos elementos subjacentes Fig. 203.

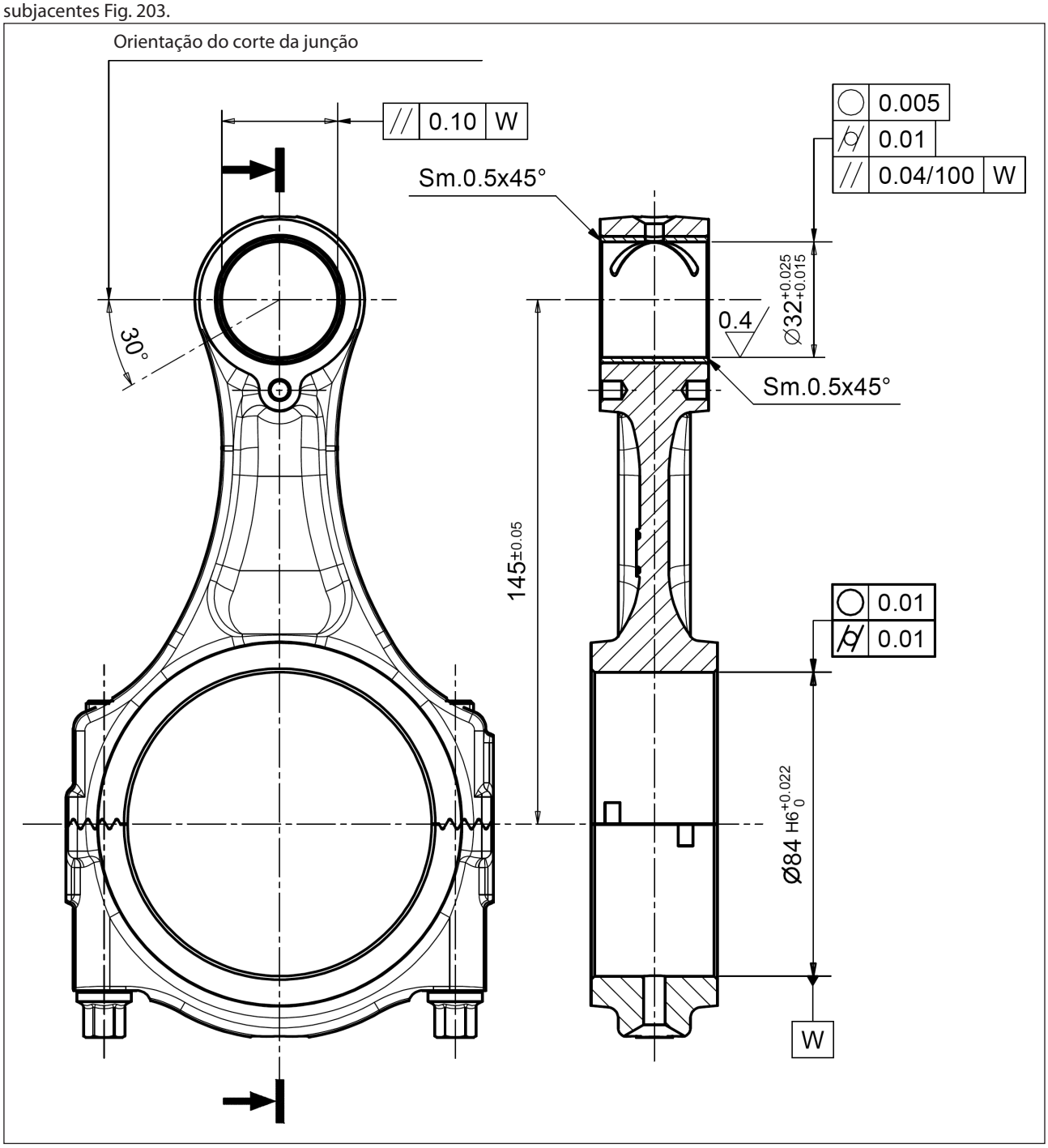


Fig. 203

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