

**Self-made tool**

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Thrust piece

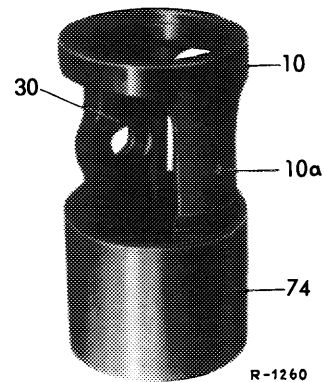
refer to illustrations, item 8, note

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**Power piston**

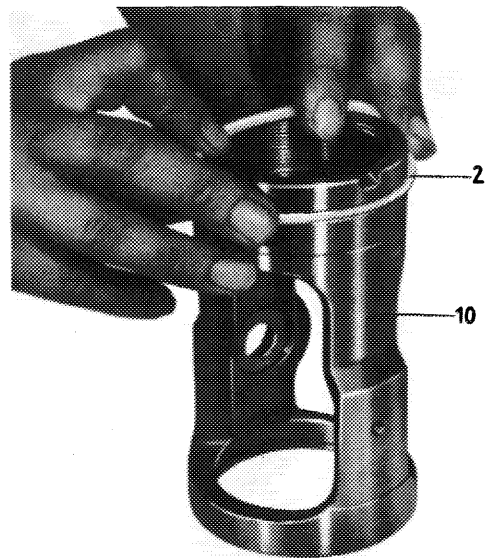
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1 Check ball socket (30) in power piston (10) for tight seat. Ball socket should be tightly seated, since it is pressed into power piston with overlap. Replace power piston, if ball socket is loose.



2 Check teflon ring (2) on power piston (10). Generally, the teflon ring is relatively wearproof. If badly worn or damaged, replace teflon ring.

**Note:** Prior to mounting teflon ring on power piston, place teflon ring into oil heated to approx. 80°C.



**Steering nut and axial-tapered ball bearing**

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3 Check inner and outer races of axial-tapered ball bearings for chatter marks and dents. If bearings are clearly damaged, press inner races from steering nut (5).

4 Remove ball guide tube with holding plate and locking plate from steering nut.

## Steering worm

5 Check ball circuit of steering worm. If the steering worm is worn, completely replace together with steering nut and pertinently selected balls. The same applies to the loss of several balls. For spare parts, only the steering nut with the tapered ball bearings, ball and steering worm are supplied as a complete unit.

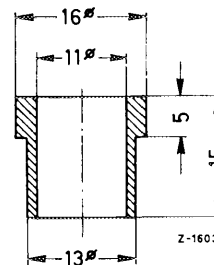
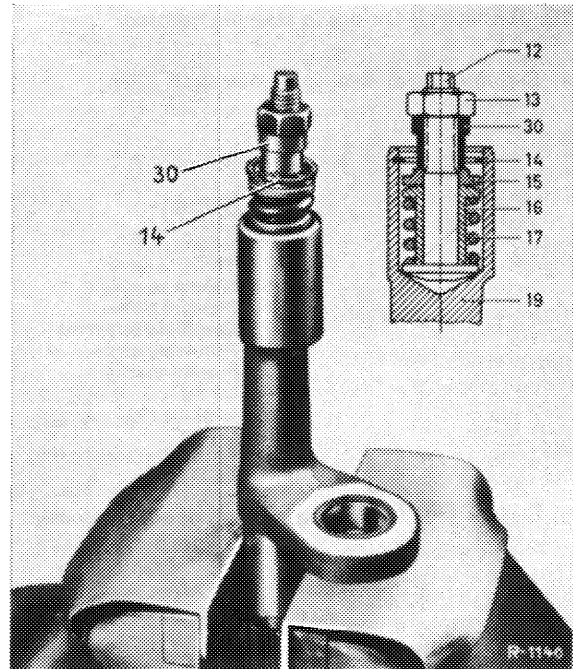
## Pitman shaft

6 Check pitman shaft for wear, distortion and damage. Check ball pin of pitman shaft arm for score marks, cracks and damage and for tight seat. If the pitman shaft is damaged or a ball pin is loose, replace pitman shaft.

7 Check pressure unit in pitman shaft (19), while placing thrust piece (30) on adjusting screw (12). Clamp pressure unit with hex nut (13), then remove locking ring (14), adjusting screw with thrust washer (15), pressure sleeve (16) and compression spring (17) from pitman shaft.

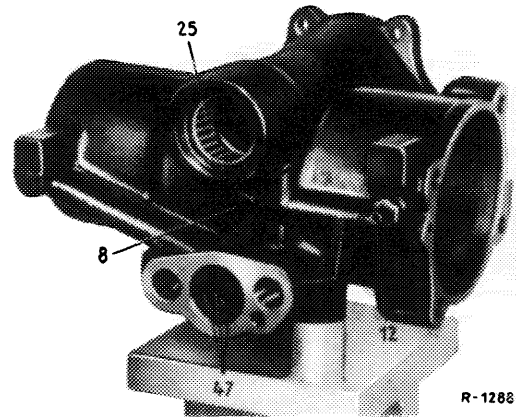
8 Insert adjusting screw (12) with compression spring (17), pressure sleeve (16) and thrust washer (15) into pitman shaft (19), then mount locking ring (14). Place thrust piece (30) on adjusting screw and screw down hex nut (13) to tension compression spring. Then insert locking ring into groove of pitman shaft. **Make sure that the locking ring is correctly seated.**

**Note:** The thrust piece is self-made according to specified dimensions.



## Steering housing

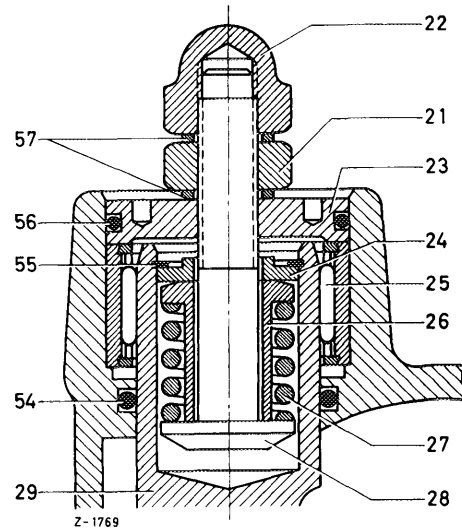
9 Check needle bearing (25) in steering housing for wear and pull out with a conventional puller, if required.



10 Replace all O-rings in steering housing.

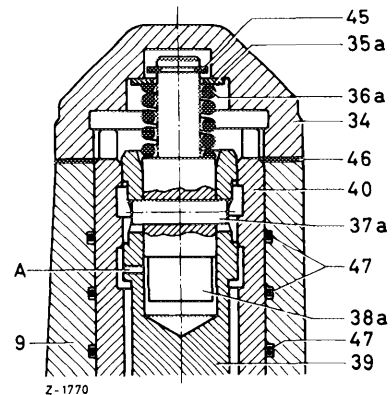
a) O-ring (54) for sealing pitman shaft (29).

- 21 Hex nut
- 22 Cap nut
- 23 Round nut
- 24 Thrust washer
- 25 Needle bearing
- 26 Pressure sleeve
- 27 Compression spring
- 28 Adjusting screw
- 29 Pitman shaft
- 54 O-ring
- 55 Locking ring
- 56 O-ring
- 57 Aluminum sealing ring



b) O-rings (47) for sealing bushing of control valve.

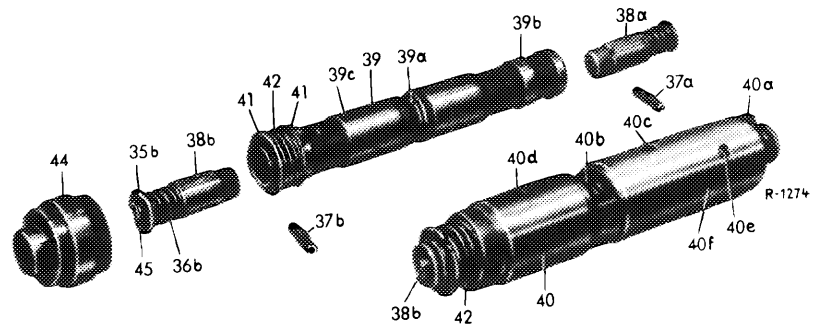
- 9 Steering housing
- 34 Upper housing cover
- 35a Upper thrust washer
- 36a Upper compression spring
- 37a Set pin
- 38a Upper reaction piston
- 39 Control valve
- 40 Bushing for control valve
- 45 Locking ring
- 46 Gasket
- 47 O-ring
- A Throttle bore



## Control valve with bushing and closing cover

11 Check control valve for easy operation in bushing.

**Note:** If valve is hard to move, completely remove control valve with bushing, since the control valve is lapped into bushing.

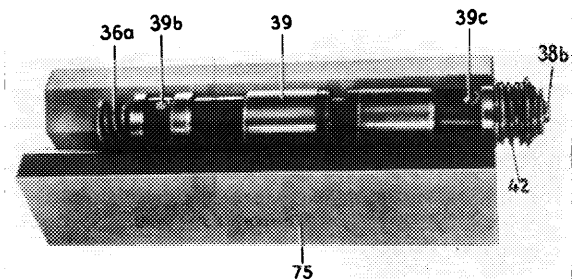


12 Check both reaction pistons (38a) and (38b) for easy operation in control valve.

- 35b Thrust washer
- 36b Compression spring on lower reaction piston
- 37a Set pin
- 37b Set pin
- 38a Upper reaction piston
- 38b Lower reaction piston
- 39 Control valve
- 39a Recess in control valve for straightedge of steering nut
- 39b Throttle bore to upper reaction chamber
- 39c Throttle bore to lower reaction chamber
- 40 Bushing for control valve
- 40a Centering lugs on bushing
- 40b Recess in bushing for straightedge of steering nut
- 40c Oil duct (pressure feed line at right of power piston)
- 40d Oil duct (oil return flow at right of power piston)
- 40e Oil duct (optionally pressure feed or oil return flow at left of power piston)
- 40f Oil channel (pressure feed line from power steering pump)
- 41 Thrust washer
- 42 Centering spring
- 44 Closing cover
- 45 Locking ring

13 If pistons are hard to move, disassemble control valve (39) and clean well. For this purpose, place control valve into a light alloy V-piece and knock out set pins (37a) and (37b). Then clean throttle bores (39b) and (39c) in control valve. During assembly, install set pins in such a manner that the opening of the set pins faces towards center of control valve. Also make sure that the reaction pistons are again installed into control valve the way they were installed before.

**Note:** Do not remove springs on reaction pin and control valve.

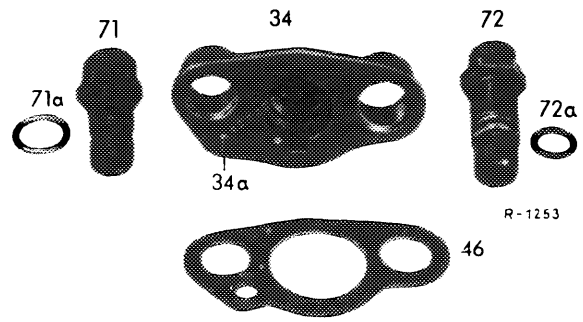


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## Upper housing cover

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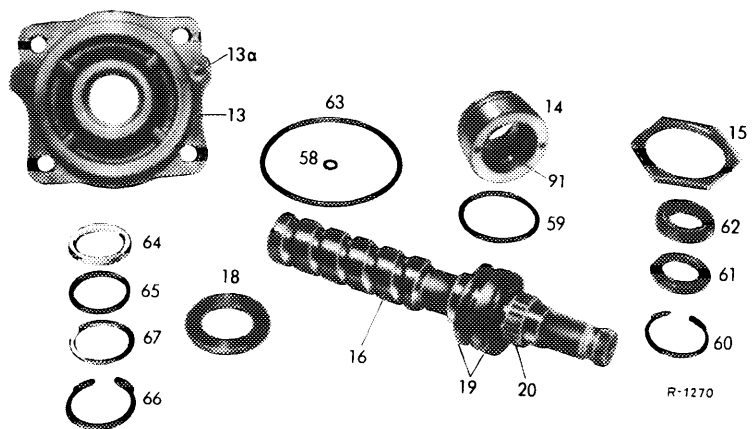
14 Check housing cover (34) for dents, since the upper reaction piston is supported against housing cover. Damping bore (34a) should not be clogged.



## Bearing cap and bearing insert

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- 13 Bearing cap
- 13a Oil duct
- 14 Bearing insert
- 15 Hex nut
- 16 Steering worm
- 18 Thrust washer
- 19 Longitudinal bearing
- 20 Needle bearing
- 58 O-ring
- 59 O-ring
- 60 Locking ring
- 61 Supporting ring with dust lip
- 62 Sealing ring
- 63 O-ring
- 64 Teflon-inside sealing ring
- 65 Supporting ring
- 66 Locking ring
- 67 Steel washer
- 91 Washer



15 Insert teflon ring (64) and supporting ring (65). Install steel washer (67), locking ring (66), making sure that the locking ring is correctly seated in groove of bearing cap.

16 Check running surface for needle bearing in bearing insert.

17 Check pressed-in washer (91) in bearing insert (14). Replace bearing insert, if washer is damaged or loose.

## Longitudinal bearing and needle bearing for steering worm

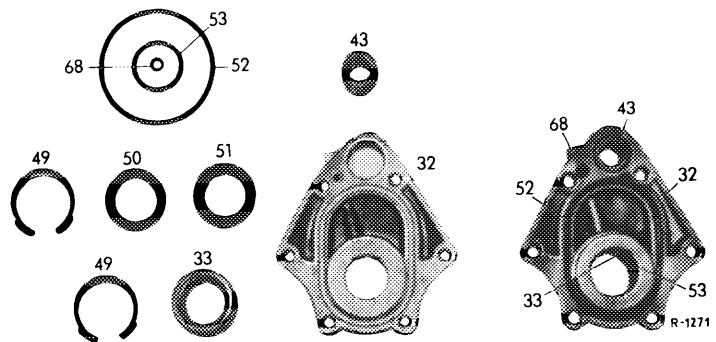
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18 Check longitudinal bearing (19) and thrust washer (18) for chatter marks. Check needle bearing (20).

## Lower housing cover

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- 32 Lower housing cover
- 33 Needle bearing
- 43 Compression spring
- 49 Locking ring
- 50 Sealing ring
- 51 Supporting ring with dust lip
- 52 O-ring
- 53 O-ring
- 68 O-ring



19 Check needle bearing (43) in housing cover (32).  
If needle bearing is damaged, replace complete housing cover with needle bearing.

**Note:** The needle bearing in cover casting cannot be replaced.

20 Press sealing ring (51) into housing cover (32).  
Insert supporting ring with dust lip (50) and locking ring (49). Fill intermediate space between the two sealing lips with grease.

**Note:** Use anti-friction bearing grease or chassis grease.

21 Clean bore in housing cover.

**Note:** The bore is in blind hole for compression spring and serves the purpose of letting splash water and condensate flow off.