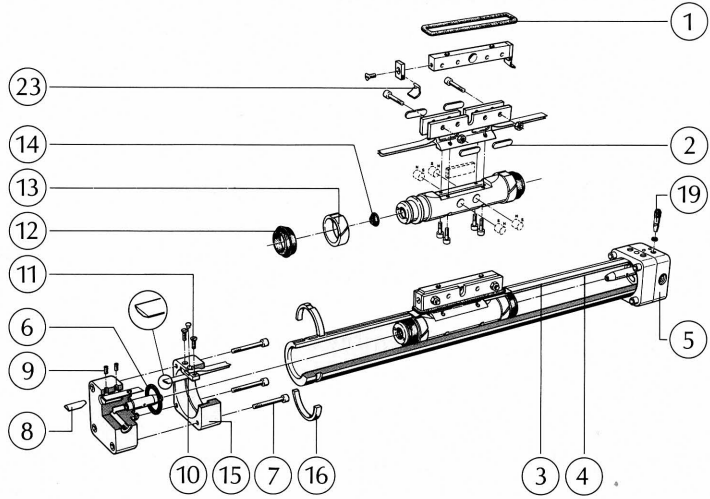


## Assembly Instructions

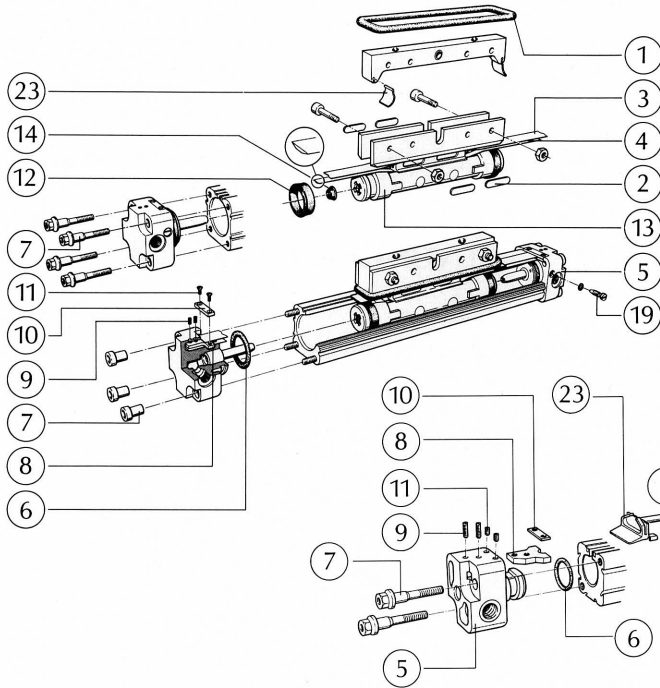
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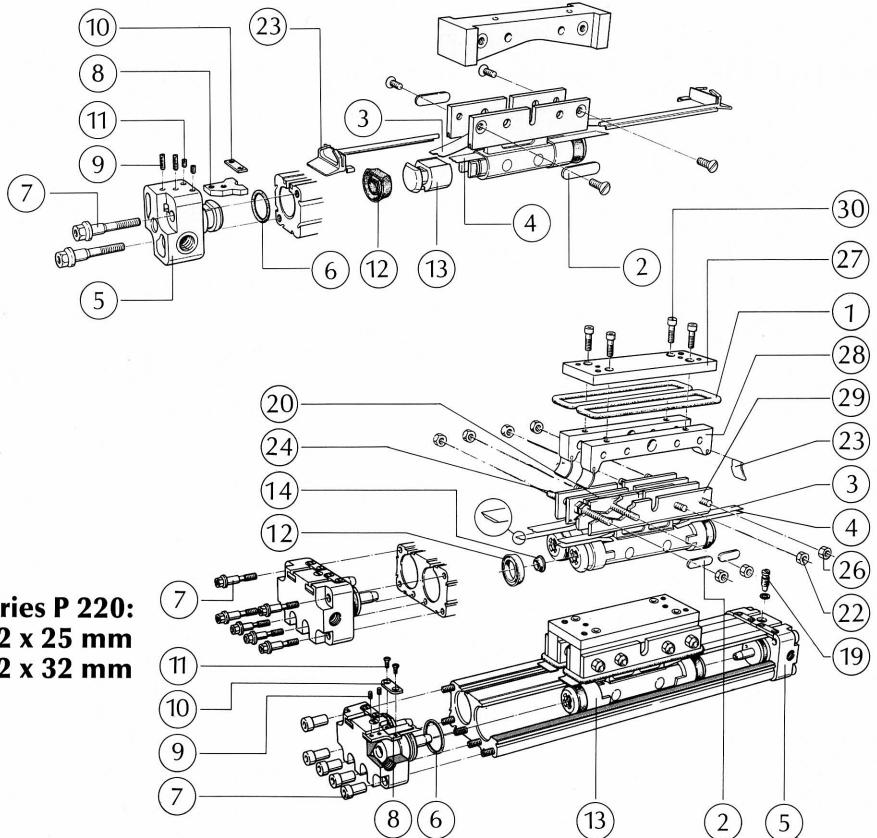
**Series P 120:**  
**Ø 40–80 mm**



**Series P 210:**  
**Ø 16–32 mm**



**Ø 10 mm**



**Series P 220:**  
 Ø 2 x 25 mm  
 Ø 2 x 32 mm

## Assembly Instructions P 120, P 210, P 220

Typified by ideally matched materials and fully developed design details, ORIGA cylinders have a very long operation life. However, the service life may be reduced by extreme loads and demanding environmental conditions, so that careful maintenance is recommended.

### Dismantling of the cylinder

Comply with local safety regulation:

1. Disconnect air + electrical supplies.
2. Remove cylinder.
3. **P 120** cylinders with VO-valves, to depressurise the cylinder carefully unscrew by 2 revolutions at both ends the vent plug on the base of end cap.
4. Remove piston mounting.
5. Remove outer band (3) by removing band locking screws (11) at each end.
6. Loosen inner band locking screws (9) at each end.
7. Remove screws/nuts/bolts (7) at each end.
8. Gently remove end caps, avoid tilting.
9. On **P 120**, push inboard cap rings (15). Remove locking rings (16) and slide cap ring off the barrel.
10. Slide out piston (13) + inner band (4). Caution with the band as the edges are sharp.

### Inspection

1. Clean and inspect all parts:
  - seals for wear,
  - band for nicks and dents,
  - tube for wear along the slot and damage to the bore.
2. Replace worn parts.

### Pre-Assembly

1. Apply ample ORIGA grease to seals and O-rings.
2. Lightly grease cylinder bore with ORIGA grease.
3. Ensure all bearing rings/ends (13), bearing strips (2), seals + O-rings are in position.

### Assembly

1. Insert inner band into the bore, washer facing the slot.
2. Draw sufficient band out to thread through the piston, slide piston into the bore and position mid-stroke.
 

Note: A short piece of old inner band can be used as a threading strip. Alternatively bend up the first 20 mm of band approx. 30°. This will assist the band to pass freely through the piston.
3. Pull inner band through until evenly positioned in the tube.
4. **P 120**: Fit cap rings (15) lock rings (16) outer bandlocks (10) fit end cap and tighten retaining screws.
5. Check that inner band washers visible through cap ring top centre hole.
6. Fit inner band locks (8).
7. Tighten inner band lock grub screws on one end only.
8. Insert small screwdriver through the cap ring top centre hole. Gently apply leverage to remove any slackness in the band. Release. Tighten grub screws.

### P 210 + P 220

9. Fit end caps.
10. Check inner band washer up to one end cap. Tighten locking screws.
11. At the opposite end use a small screwdriver, gently push the inner band washer towards the end cap. Release. Tighten locking screws.

### P 120, P 210, P 220

12. Check the inner band is laying smooth and that you have no sag.
 

Note: To check for tension, depress the band through the slot about 5 mm, ensure it springs back.
13. Fit outer band (**P 220** 2 off), piston mounting tighten locking screws on the mounting and then each end cap.
14. Fit yoke/mounting O-ring (1).
15. Fit connection plate and studs (20) and screws (24). Tighten nuts (22/26).

### Note:

- Ensure that both mountings are level to each other.

16. Fit mounting plate (27).

### P 120, P 210, P 220

Draw the piston over the full stroke to ensure there is no resistance to its movement.

### Cleaning of inner band

#### Use Eye Protection

During assembly dirt particles may lodge between the sealing band and the cylinder tube contact surfaces. These particles will cause leakages and must be removed.

1. Remove mounting and outer band.
2. Apply 2 bar pressure.
3. Insert ORIGA cleaning tool into the slot and depress where it is leaking. The expelled air blows-out any pieces of grime, if present.
4. When finished fit outer band and mounting.

### Note:

If the band is still leaking a full cylinder inspection is recommended.

Defect Diagnosis		
Defect	Cause	Correction
Cylinder hisses in stop position	Leakage at inner band due to dirt	Clean inner band with Cleaning tool at (max. 2 bar)
	Leakage at inner band due to abrasion	Replace inner band
	Leakage at end cap	Replace O-ring on end cap
	Leakage at piston	Replace piston seals
Cylinder runs unevenly	Insufficient lubrication	Relubricate
	Pistons seals worn out	Replace piston seals
Cylinder bumps in end position	Overload	Reduce overload or install hydraulic shock absorbers
	Incorrect setting of cushions screw	Reset
	Insufficient build-up of back pressure	Change control. With open air connections at the cylinder slow down outlet air.
	Cushion seal defect	Replace cushion seal

## Assembly Instructions P 140, P 240

Origa cylinders are designed and manufactured to high standards under strict quality control. However, for optimum life and performance periodic maintenance is recommended. Repair the basic cylinder as per P 120, P 210 assembly instructions.

### Removing the Brake

Observe local safety regulations, disconnect air and electric supply.

- 1) Ensure that with the P 140 where VOE/P valves are fitted that the cylinder is de-pressurised. Refer to P 120 VOE/P assembly instructions Item 1.
- 2) Disconnect air line at brake air connection.
- 3) Remove screws (1) and brake housing (2).
- 4) Remove screws (4) and retaining spring plate (3).
- 5) Do not remove brake piston (5) with a sharp tool, blow out with low air pressure connected to the air inlet of the brake housing. **Caution!** Carefully restrain the brake piston by hand as its removed.

### Inspection

- 1) Clean and inspect all plates for wear.
- 2) Replace worn parts.

### Pre-assembly

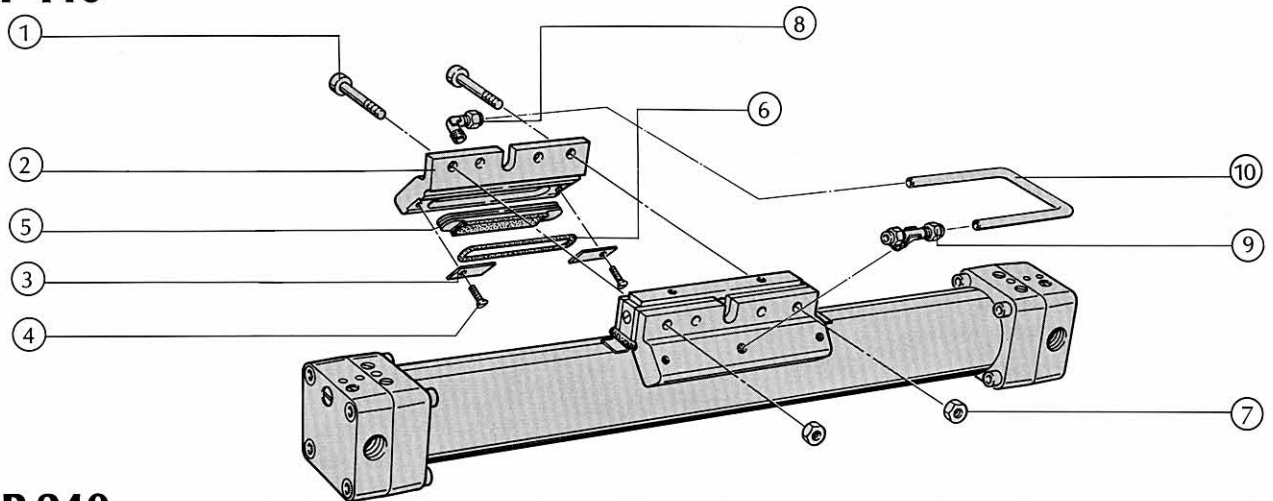
- 1) Lightly grease brake housing piston recess and brake piston 'O' ring (6) (Origa grease Ident 2773).

**Note:** Ensure brake lining is free from grease.

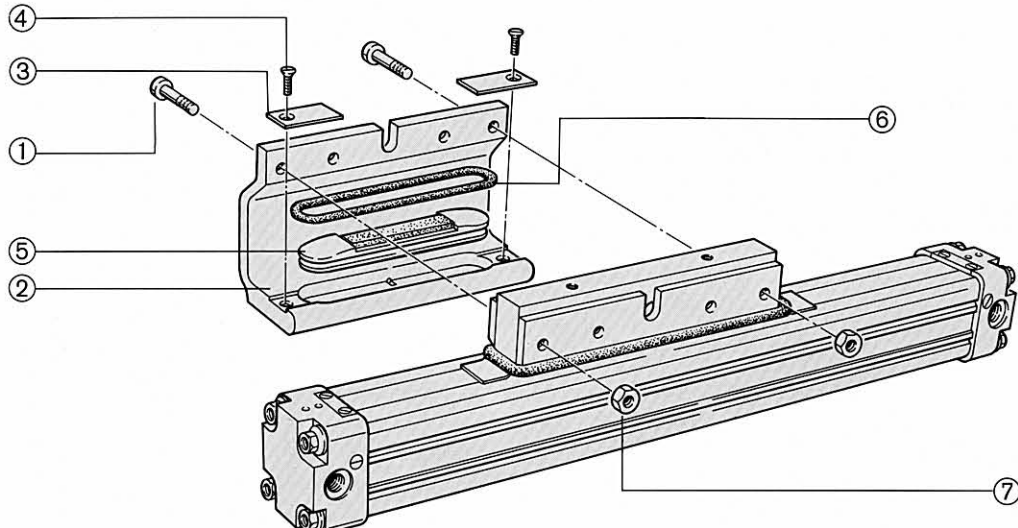
### Assembly

- 1) Fit 'O' ring (6) to brake piston (5).
- 2) Insert brake piston into brake housing (2).
- 3) Fit piston retaining spring plate (3) and tighten screws (4) (Screws to be assembled with low strength threadlock).
- 4) Fit brake housing to the cylinder ensuring the housing is parallel to the cylinder body.
- 5) Connect brake air connections.
- 6) Test, apply low pressure then high pressure (Max 8 Bar) and ensure no leaks.

### P 140



### P 240



## Assembly Instructions P 230, P 235

Origa cylinders are designed and manufactured to high standards under strict quality control.

However, for optimum life and performance periodic maintenance is recommended.

Repair the basic cylinder as per P 210 assembly instructions. We recommend that to remove or fit the guide system that the complete cylinder is removed from the machine or equipment.

Observe local safety regulations, disconnect air and electric supply.

### Dismantling

- 1) Remove link plate (1) by removing screws (14).
- 2) Slide guide carriage (15) off the guide (2).
- 3) Remove guide carriage end plates (3).
- 4) Remove scraper (4) felt pads (6) from end plates.
- 5) Remove guide bearing strips (5) and support strip (11).

### Inspection

- 1) Clean and inspect all parts.
  - Guide for wear
  - Bearing strips for wear
  - Scrapers and felt pads for wear
- 2) Replace worn parts.

### Note: Guide

Should the guide be worn or dented we recommend that the profile is replaced.

- 1) To remove the guide, loosen screw (8) and slide the guide out from the gripping jaws (9).
- 2) Fit replacement guide and tighten screws (8) screws need to be locked with low strength threadlock.

### Pre-assembly Guide Carriage

- 1) Fill hollow space of scraper with Origa grease (Ident 3125).
- 2) Soak felt pads with Origa grease.
- 3) Position scraper and felt pads into end plates (3).
- 4) Loosen adjusting screws (10).
- 5) Lightly grease guide bearing strips.

### Assembly

- 1) Fit 1st end plate complete to guide carriage (15) and tighten the screws (12).
- 2) Slide guide carriage onto guide.
- 3) Fit guide bearing strips and support strip into guide carriage. (The support strip to be positioned against the adjusting screws (10)).
- 4) Fit 2nd end plate complete to guide carriage and tighten the screws.
- 5) Tighten all 10 off adjusting screws (10) working outwards from the centre of the carriage. Ensuring you can move the carriage freely by hand over its full range. (Adjusting screws need to be locked with low strength thread lock).
- 6) Connect link plate to piston and tighten screws.
- 7) Draw guide carriage and piston over the full stroke ensuring there is no resistance to its movement.

Replace brake parts once the guide carriage is removed.

### Dismantling

- 1) Remove screws (19) and spring plate (20).
- 2) Do not remove brake piston (16) with a sharp tool, blow out with low air pressure connected to the air inlet of the brake handling. **Caution!** Carefully restrain the brake piston by hand as its removed.

### Inspection

- 1) Clean and inspect all parts for wear.
- 2) Replace worn parts.

### Pre-assembly

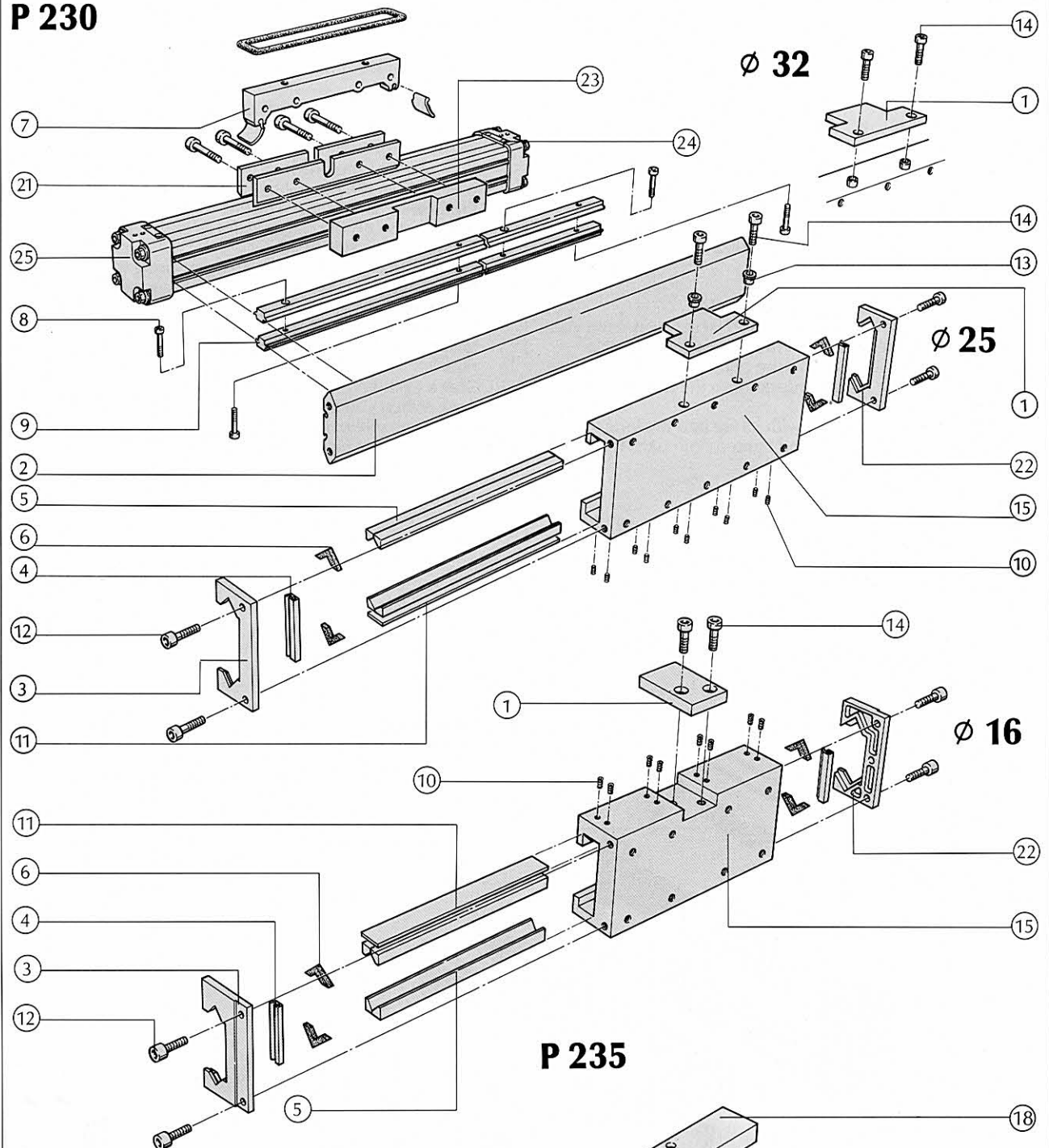
- 1) Lightly grease brake holding piston recess and brake piston 'O' ring (17) (Origa grease Ident 2773).

**Note:** Ensure brake lining is free from grease.

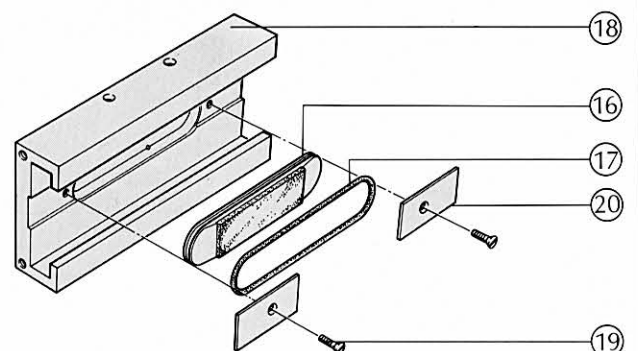
### Assembly

- 1) Fit 'O' ring (17) to brake piston (16).
- 2) Insert brake piston into guide carriage.
- 3) Fit piston retaining leaf springs (20) and tighten screws (19) (Screws to be assembled with low strength threadlock).
- 4) Test when guide carriage is fitted to guide, apply low pressure then. High pressure (Max 8 Bar) and ensure no leaks.

## P 230



## P 235



## Assembly instruction P 130

### General instructions

(for Assembly and dismantling of the cylinder, use assembly instructions P 120)

### Assembly of Guide rail

1. Place the clamping profile (27) with the groove downwards.
2. Insert Guide bars (26) into clamping rail.
3. Place support profile (28) with the screw countersinks upwards.
4. Screw unit together with screws (30/31) and locking washer (32).

### Assembly of the Guide rail on the cylinder

1. Position the cylinder with the piston facing away from you. The recess on the piston (21) must be facing upwards.
2. Place mounted guide rail on the cylinder in such a way that the lug of the profile engages into the longitudinal groove.
3. Position 'T' grooves profile with its lug into the longitudinal groove of the cylinder and tighten both parts together with screw (13) and washer (32).

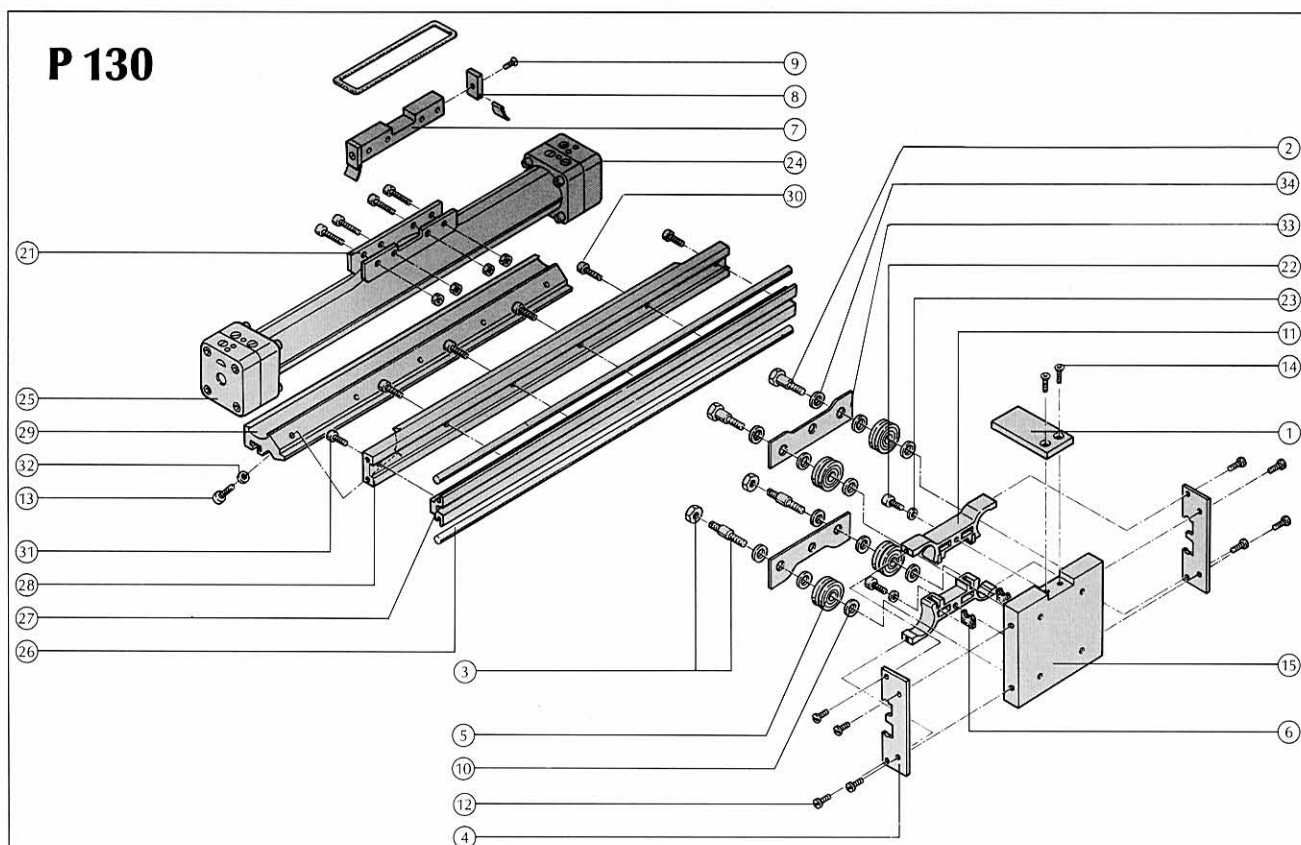
### Assembly of the carriage

1. Stick plate (33) to cover (11).
2. Soak felt pad (6) with grease and mount into cover plate. Refer to exploded drawing.
3. Place shims 10x6 (10), washers and rollers (5) in this sequence on the carriage (15).

4. Place shims 12x8 (34) in this sequence onto the rollers. Ensure that the groove in the carriage for the link plate (1) is situated on the same side. Mount this unit with the bolt (2) centrally. **Do not tighten bolt.**
5. Place shims 10x16 (10), plate with cover and additional shims 10x16 (10) in this sequence onto the rollers, position opposite the previous plate and cover. Fit eccentric bolt and nut (3). Do not tighten the nut. Turn the bolt until the bearing is at its open position.
6. Align covers on the carriage and fix with screw (22).
7. Tighten concentric bolts.
8. Mount carriage to the Guide bars ensuring that the position of the recess in the carriage corresponds to the recess on the piston.
9. Rotate each eccentric bolt until the free play is removed, taking care to induce only minimal preload. Tighten lock nuts.
10. Check each eccentric bearing for correct pre-load as follows. When you move the carriage the bearing must only just be capable of being stopped with the fingers.
11. Check free movement over the full length and adjust as necessary.
12. Lubricate scraper (4) at the sealing lip and fit with screws (12).
13. Connect link plate (1).

### Note:

– Bearings must not be over adjusted as this would reduce the life of the Guide.





## S-Powerslide maintenance instructions

**Repair the basic cylinder as per P 210 assembly instructions.**

### Slide system adjustment

Important:- Excessive pre-load must not be applied during the adjustment process.

All S-Powerslide components associated with the slide system are factory set prior to delivery and should not require adjustment. If however, play should occur requiring re-adjustment the following procedure should be followed:

1. Remove non-Powerslide components attached to carriage plate (1).
2. Remove one of the drive blocks (7) to free the carriage assembly.
3. Remove the complete carriage assembly from the slide (5).
4. Remove cap seals (4) and return carriage assembly to the slide.
5. Slacken eccentric bearing assembly fixing nuts (3) slightly using a socket.  
25 Dia Size 13mm  
32 Dia Size 17mm
6. Rotate each eccentric bearing assembly (3) using the special wrench until play is removed taking care to induce only minimal pre-load. Re-tighten fixing nuts whilst preventing the eccentric stud from rotating using the special wrench.

7. Check one of each pair of opposing bearing assemblies for correct pre-load by rotating the bearings between forefinger and thumb so that bearing skids against the slide. A degree of resistance should be felt, but the bearings should rotate without difficulty.

8. Remove carriage assembly from the slide and refit cap seals.

9. Return carriage assembly to the slide and adjust cap seals to just make contact with the slide until smearing of the lubricant is observed whilst operating.

NB: Excess adjustment will result in increased friction.

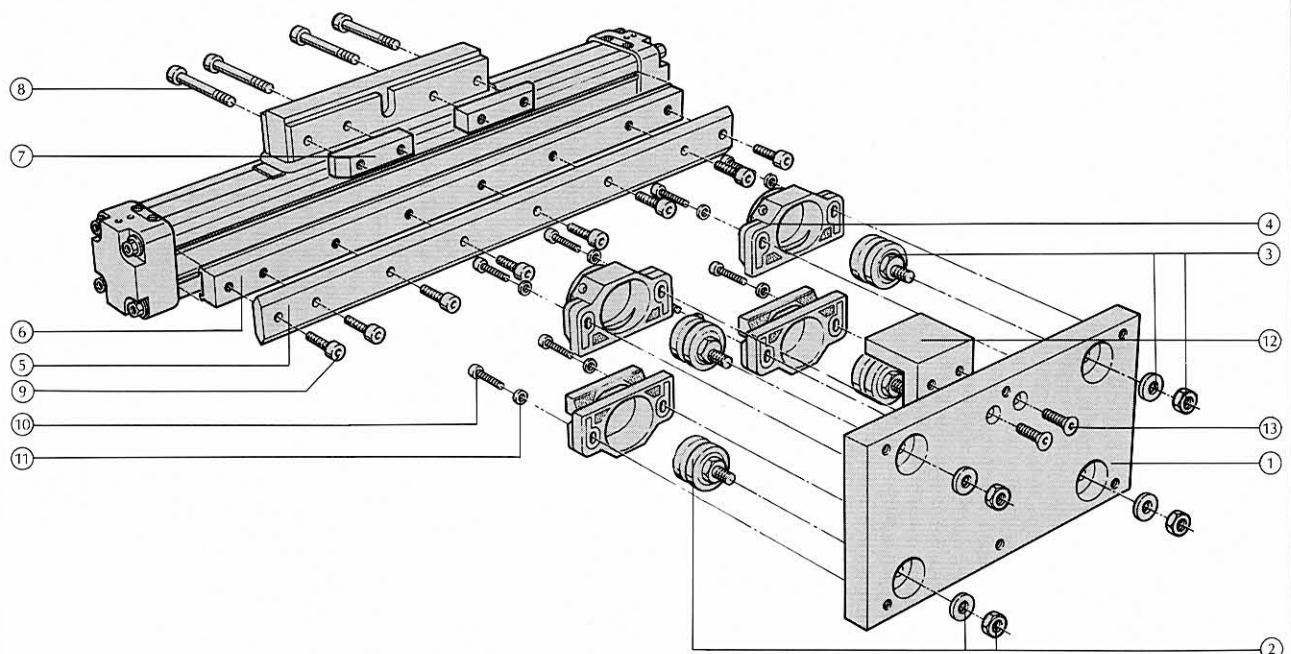
10. Replace drive block and adjust for no play condition against location bracket.

11. Re-lubricate cap seals according to "lubrication instructions".

Powerslide  
Part No  
S-PS 25/25  
S-PS 32/44

Special Wrench  
AT 25  
AT 34

### S-PS





## VOE/VOP Assembly Instructions diameters 25, 32 mm

Disconnect air and electric supply

### Dismantling

1. Remove screws **(58)**.
2. Remove piston block **(56/57)**.
3. Remove internal parts **(45, 47, 50,51,53)**.

### Inspection

1. Clean and inspect all parts.
2. Replace worn parts.

Lightly oil all internal parts before refitting.

1. Fit internal parts **(45,47,50,51,53)**.
2. Refit piston block **(56/57)** tighten screws **(58)**.

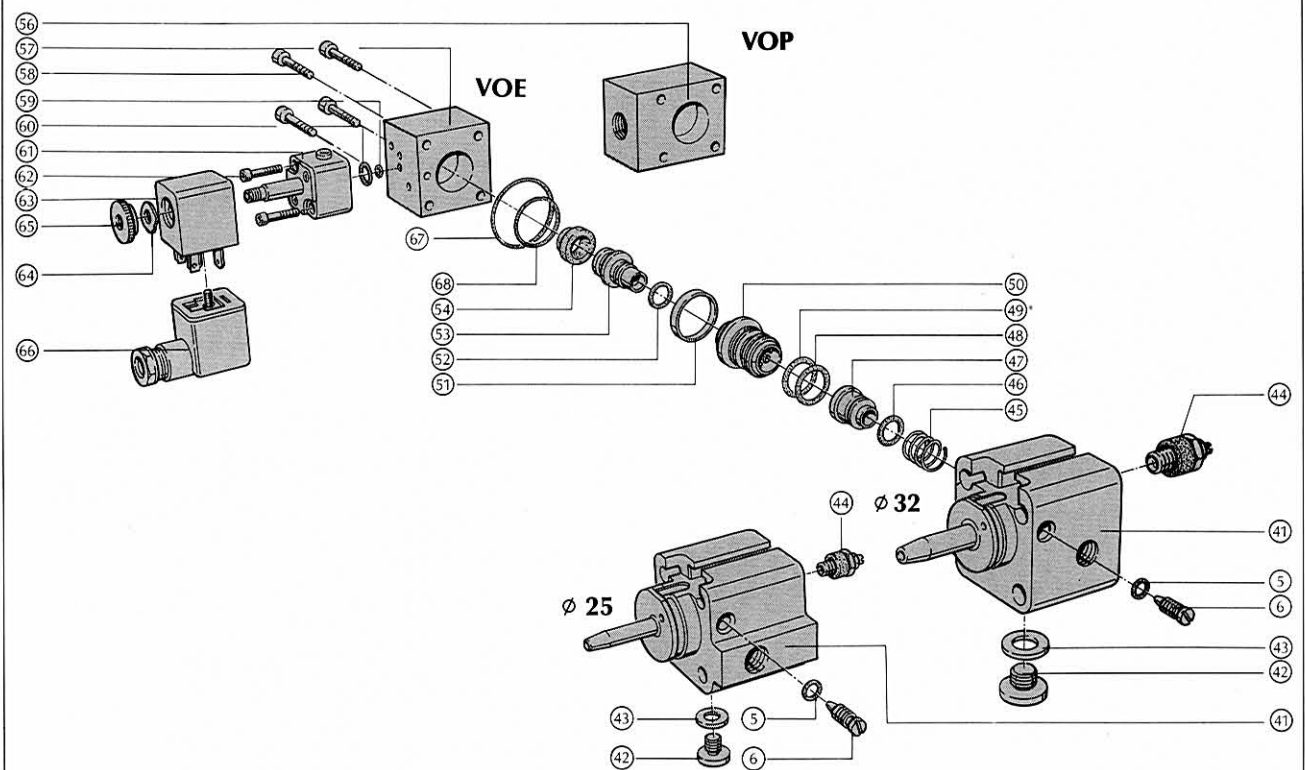
### Defect Diagnosis

Defect	Cause	Correction
Valve not changing over	Solenoid not working	Check voltage supply Replace solenoid
	Incorrect pilot air pressure	Increase pressure
	Solenoid spindle bent	Replace spindle
	Incorrect setting on manual override	Manual override Set to "O"
Valve sticking	Internal contamination	Clean internal parts
Continuous leak through exhaust ports	Seals worn	Replace seals
Continuous leak through solenoid spindle	Solenoid spindle bent	Replace spindle

## P 210, P 230, P 235, P 240, S-PS

Ø 25

Ø 32



## VOE/VOP Assembly Instructions diameters 40, 50, 63 mm

Disconnect air and electric supply

1. To de-pressurise the cylinder: – carefully unscrew the vent plug **(53)** by 2 revolutions so releasing pressurised air to atmosphere.

### Dismantling

1. Remove screws **(67)** **Caution:** – Light spring pressure will push the air inlet plate **(68)**. Remove air inlet plate.
2. Remove internal parts **(71–76)**.
3. Remove screw **(58)** – Remove plate **(56/57)**.
4. Remove internal parts **(82–84)**.

### Inspection

1. Clean and inspect all parts.
2. Ensure drillings are clear.
3. Replace worn parts.

### Assembly

Lightly oil all internal parts before re-fitting.

1. Fit internal parts **(82–84)**.
2. Refit plate **(56/57)** tighten screws..
3. Fit internal parts **(71–76)**.
4. Re-fit air inlet plate **(68)** and tighten screws.

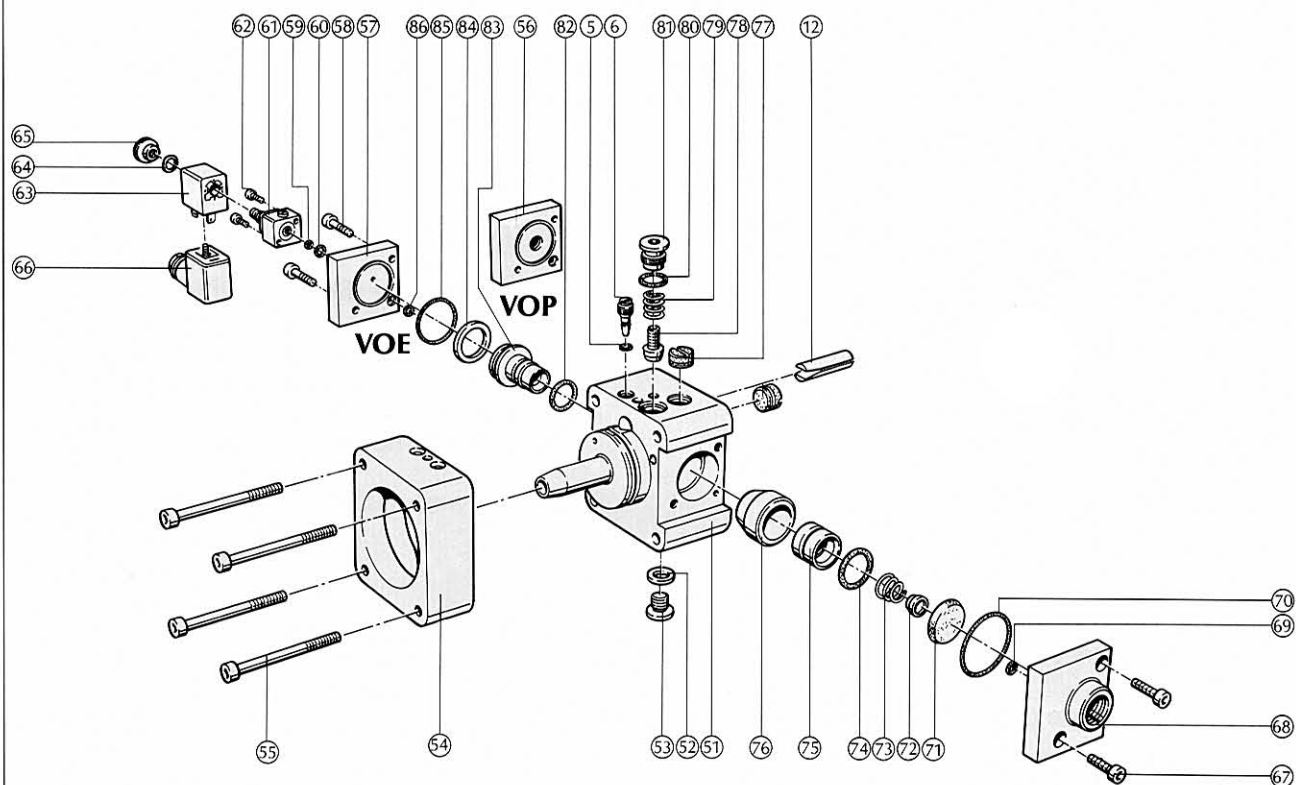
**Caution:** – Ensure the NRV membrane **(71)** is positioned correctly before refitting air inlet plate.

5. Re-tighten vent plug **(53)**.

Defect Diagnosis		
Defect	Cause	Correction
Valve not changing over	Solenoid not working	Check voltage supply Replace solenoid
	Incorrect pilot air pressure	Increase pressure
	Solenoid spindle bent	Replace spindle
	Incorrect setting on manual override	Manual override Set to "O"
Valve sticking	Internal contamination	Clean internal parts
Continuous leak through exhaust ports	Seals worn	Replace seals
Continuous leak through solenoid spindle	Solenoid spindle bent	Replace spindle

**P 120, P 140**

**Ø 40 – 63**



## VOE/VOP Assembly Instructions diameter 80 mm

Disconnect air and electrical supply.

1. To de-pressurise the cylinder: – carefully unscrew the vent plug **(53)** by 2 revolutions so releasing pressurised air to atmosphere.

### Dismantling

1. Remove screws **(67)**. **Caution:** – Light spring pressure will push the air inlet plate **(68)**. Remove air inlet plate.
2. Remove internal parts **(71-76)**.
3. Remove screws **(58)** – Remove plate **(56/57)**.
4. Remove internal parts **(82-84)**.

### Inspection

1. Clean and inspect all parts.
2. Ensure drillings are clear.
3. Replace worn parts.

### Assembly

Lightly oil all internal parts before re-fitting.

1. Fit internal parts **(82-84)**.
2. Re-fit plate **(56/57)** and tighten screws.
3. Fit internal parts **(71-76)**.
4. Re-fit air inlet plate **(68)** and tighten screws.

**Caution:** – The NRV Membrane **(71)** is attached by a screw to the air inlet plate **(68)**. Ensure when fitting the plate that the NRV membrane is positioned correctly.

5. Re-tighten vent plug **(53)**.

Defect Diagnosis		
Defect	Cause	Correction
Valve not changing over	Solenoid not working	Check voltage supply Replace solenoid
	Incorrect pilot air pressure	Increase pressure
	Solenoid spindle bent	Replace spindle
	Incorrect setting on manual override	Manual override Set to "O"
Valve sticking	Internal contamination	Clean internal parts
Continuous leak through exhaust ports	Seals worn	Replace seals
Continuous leak through solenoid spindle	Solenoid spindle bent	Replace spindle

**P 120, P 140**

**Ø 80**

