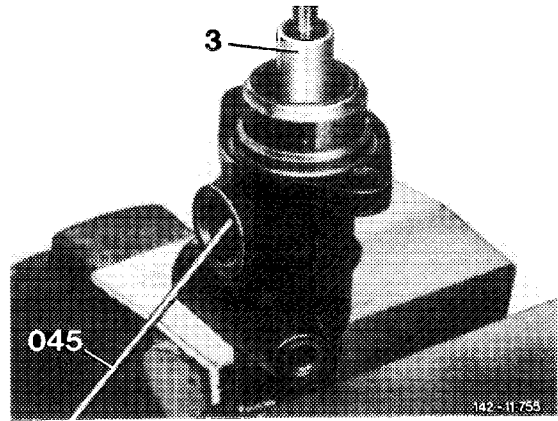
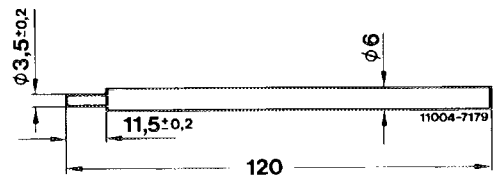


17 Push piston (3) in until the second collar of the push rod piston is behind the filler hole. Then insert assembly pin (045) into filler hole up to stop. Make sure that the push rod piston is not damaged.

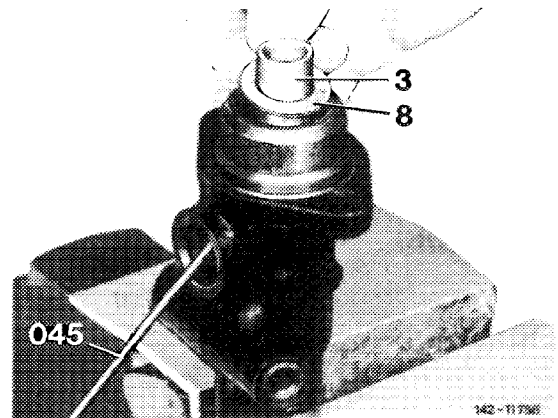


Note: The assembly pin (045) serves as a stop and must be self-made from steel according to the dimension shown in illustration.

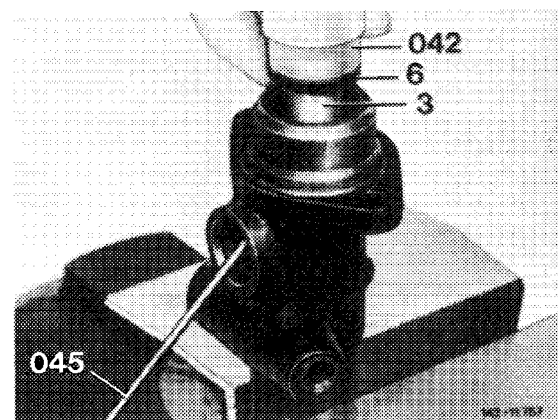


18 Place stop washer (8) on piston (3).

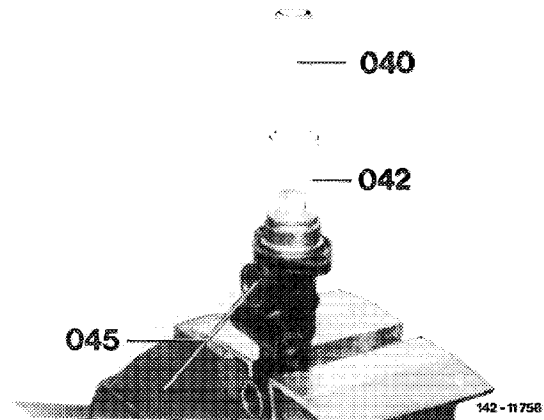
19 Slightly coat stem of piston (3) with silicone grease.



20 Coat secondary sleeve (6) with silicone grease, then mount on stem of piston with sealing lip facing piston, hold in place and insert assembly sleeve (042) over sleeve up to stop.



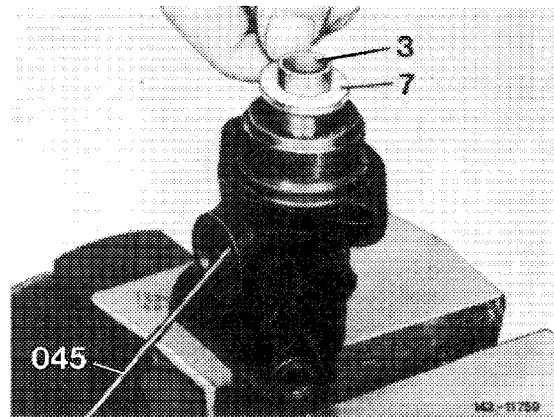
21 Slip assembly sleeve (042) with secondary sleeve (6) into housing bore. Push secondary sleeve down with blunt part of assembly sleeve (040). First pull assembly sleeve (042) up by height of sleeve, then remove both sleeves.



22 Insert intermediate ring (7) into housing, making sure that the bore in intermediate ring faces leak hole (A) in housing and push inwards with sleeve (040).

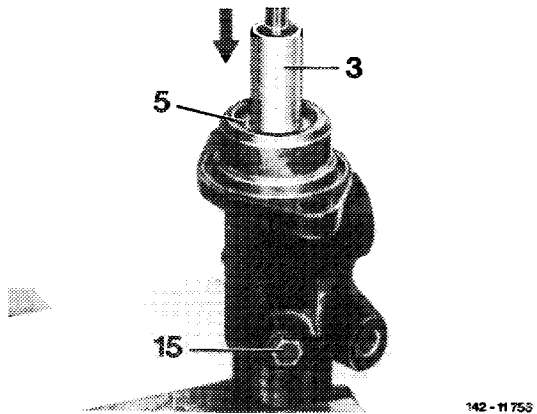
23 Install vacuum sleeve (6) as described in item 20 and 21.

24 Mount stop washer (8) as described in item 18.

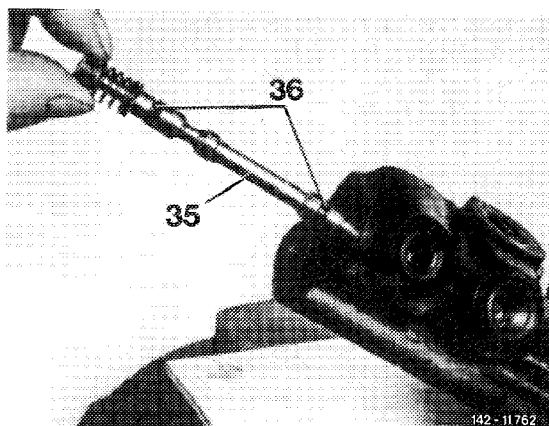


25 Insert locking ring (5), making sure that the ring is correctly seated in groove of housing.

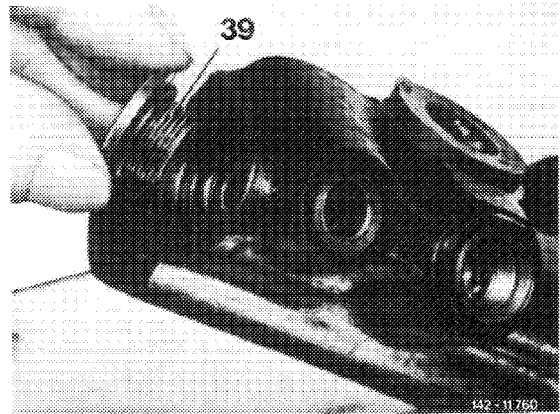
Then push piston downward and pull out assembly pin.



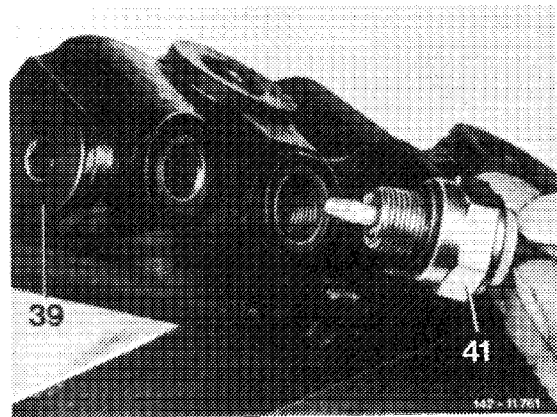
26 On tandem main cylinder with pressure difference warning indicator, slip control piston (35) into housing. Make sure that the ring sleeves (36) are not damaged.



27 Screw-in closing plug (39) and tighten to 15–30 Nm.



28 Screw switch (41) into housing and tighten to 15–20 Nm.

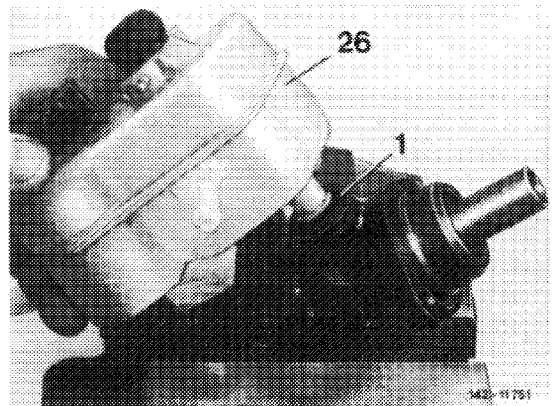


Mounting expansion tank

29 Insert strainer into container and screw-on closing cover.

30 Slightly coat container plug (1) with brake cylinder paste and push into housing.

31 Insert expansion tank (26) first into housing by means of a pipe connection, turn by 180° and push second pipe connection into housing. Watch out for perfect seat.



C. Tandem main cylinder with central valve (grey cast iron)

Data

		Pushrod circuit		Floating circuit
		up to July 1983	as of July 1983	
Diameter	Inch	15/16	1	3/4
	mm	23.81	25.40	19.05
Housing bore dia.		<u>23.81</u>	<u>25.40</u>	<u>19.05</u>
		23.86	25.45	19.10
Wear limit		23.92	25.51	19.16
Permissible out-of-round of bore		0.03		
Piston dia.		<u>23.77</u>	<u>25.36</u>	<u>19.01</u>
		23.72	25.33	18.96
Wear limit		23.66	25.25	18.90
Piston clearance		0.02–0.15		
Stroke		15		17

Lubricant

Silicone grease

Brake cylinder paste

Self-made tool

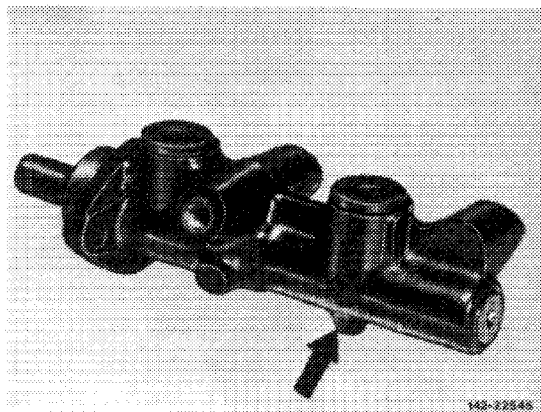
Assembly pin (steel)

refer to Fig. item 14 and
Note item 15

Note

The tandem main cylinder with central valve has no stop screw. As an additional characteristic there is a rise (elevation) on housing (arrow).

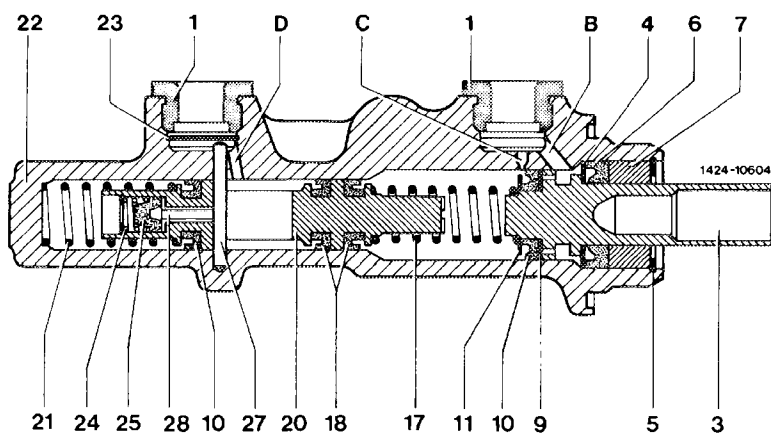
During reconditioning, make sure that the repair kit and the housing are made by the same manufacturer.



142-22846

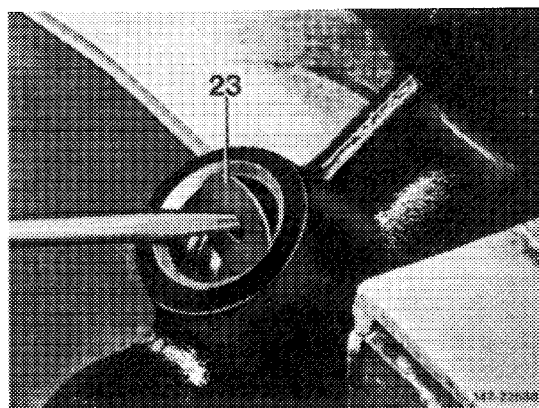
Tandem main cylinder with central valve

- 1 Container plug
- 3 Piston (pushrod circuit)
- 4 Stop washer
- 5 Locking ring
- 6 Secondary sleeve
- 7 Plastic bushing
- 9 Filling disk
- 10 Primary sleeve
- 11 Supporting ring
- 17 Compression spring
- 18 Parting sleeve
- 20 Piston (floating circuit)
- 21 Compression spring
- 22 Housing
- 23 Washer
- 24 Valve spring
- 25 Valve seal
- 27 Cylindrical pin
- 28 Valve pin
- B Filling hole
- C Compensating bore
- D Filling and compensating bore

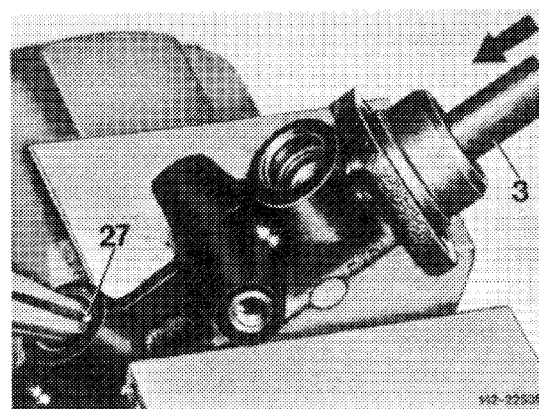


Disassembly

- 1 Pull expansion tank and container plug out of tandem main cylinder.
- 2 Remove disk (23) from container connecting bore for floating circuit.

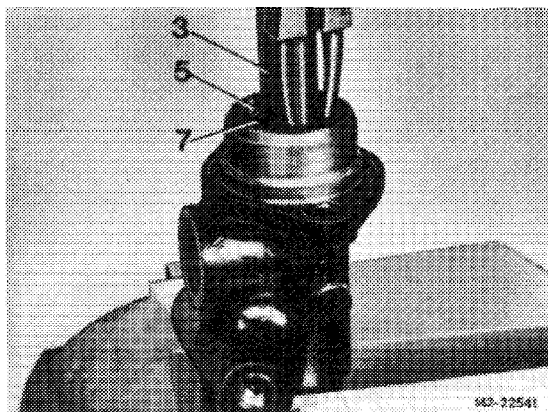


- 3 Push piston (3) slightly inward by means of a mandrel and pull cylindrical pin (27) out of housing by means of suitable pliers.



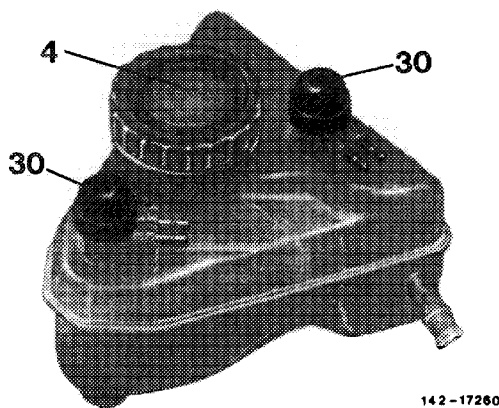
4 Take locking ring (5) out of housing. Then remove piston (3) together with plastic bushing (7), secondary sleeve (6) and stop washer (4) out of housing.

5 Knock out complete piston for floating circuit by means of light blows with housing against a wooden support.



6 Unscrew closing cap (4) and remove strainer.

Note: The contact insert (30) cannot be removed.



Checking

7 Clean all parts thoroughly in spirit of alcohol. Make sure that all the residue is flushed out of housing and expansion tank.

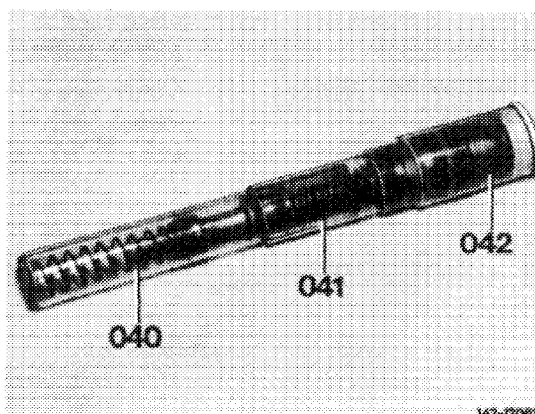
8 Check bore in housing for score marks and rust. Slight rust spots can be removed with polishing cloth.

Scored or more heavily rusted housings should not be refinished. In such a case, completely replace tandem main cylinder.

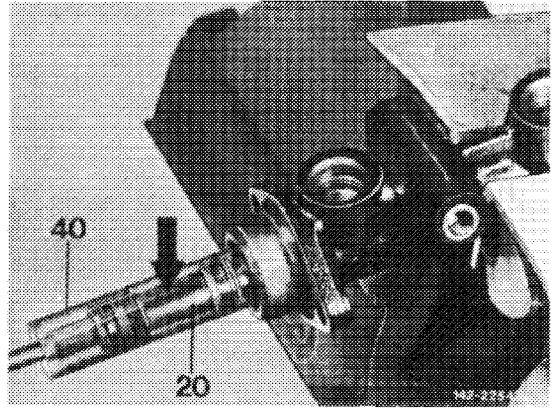
Assembly

9 Rub bore of housing lightly with brake cylinder paste.

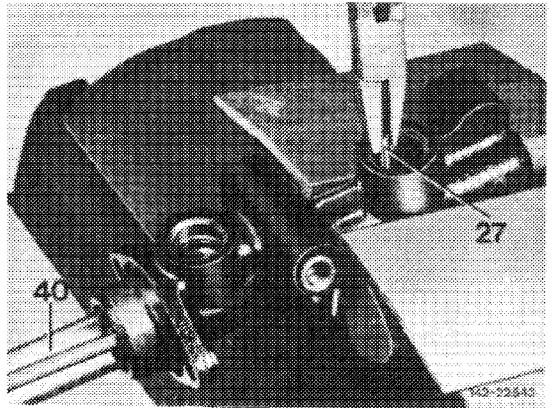
10 Remove secondary sleeve, plastic bushing, stop washer, cylindrical pin, sealing ring and silicone bag out of assembly sleeve.



11 Clamp housing slightly tilted with bore in downward direction. Remove assembly sleeve (40) together with floating piston (19.05 dia.) from assembly sleeve (41) for pushrod piston (23.81 or 25.40 dia.). Insert assembly sleeve (40) into housing and slide piston into housing up to stop by means of a mandrel. Make sure that the guide slot in piston (refer to arrow) is accurately in alignment with bore for cylindrical pin.

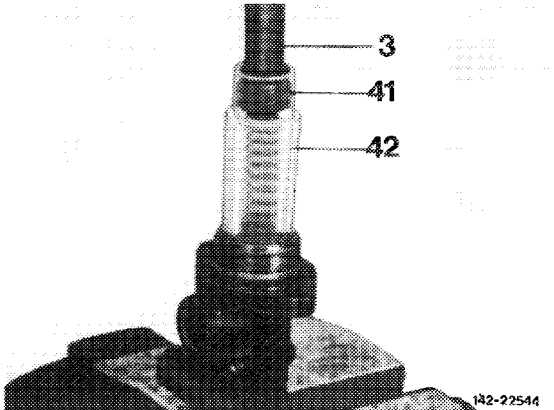


12 Hold piston in place with mandrel. Slip cylindrical pin (27) with chamfer first into bore up to stop. Cylindrical pin should project only 2–3 mm. Remove mandrel and assembly sleeve (40).



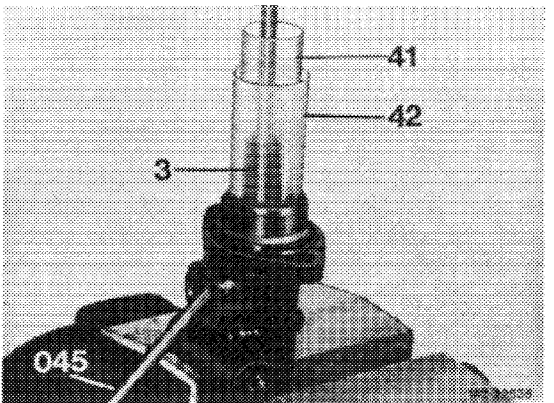
13 Clamp tandem main cylinder in such a manner that the cylindrical bore points in upward direction.

Slide assembly sleeve (42) on assembly sleeve (41) until both sleeve ends are in alignment. Insert both sleeves with pushrod piston (3) into housing and slide pushrod piston (3) into housing by means of a mandrel.

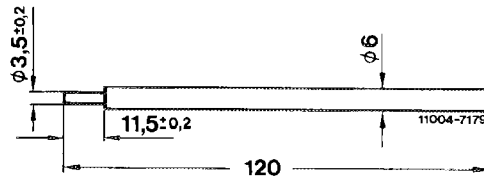


14 Push-in piston (3) until the second collar of the pushrod piston is behind the filling hole. Then insert assembly pin (045) into filling hole up to stop. Make sure that the pushrod piston is not damaged.

15 Remove both assembly sleeves (41 and 42).

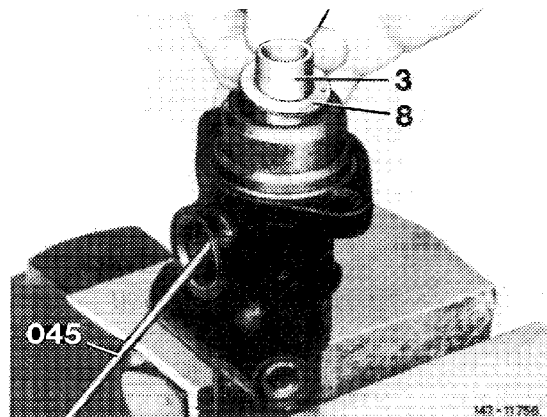


Note: The assembly pin (045) serves as a stop and is self-made of steel according to the specified dimensions.

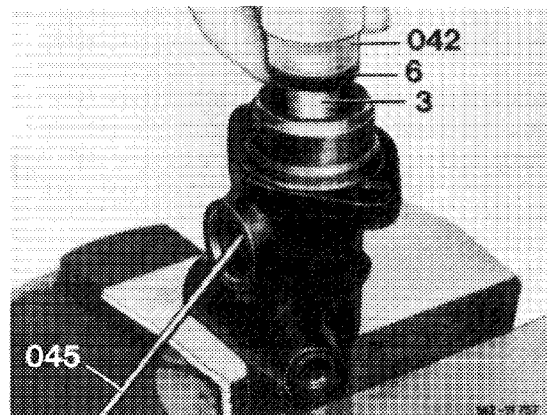


16 Place stop washer (8) on piston (3).

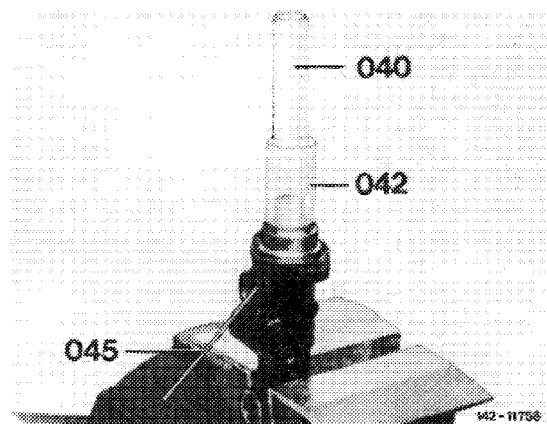
17 Coat stem of piston (3) lightly with silicone grease.



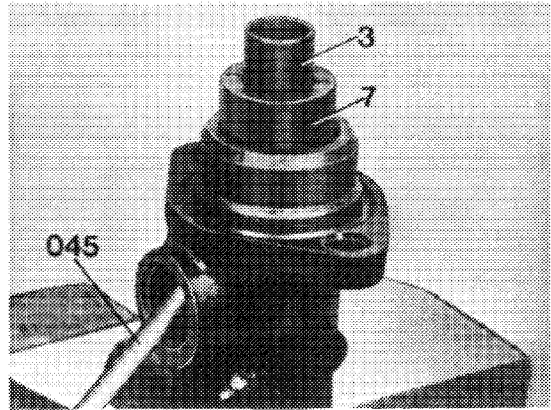
18 Coat secondary sleeve (6) with silicone grease, then mount on shaft with sealing lip facing piston, hold in place and insert assembly sleeve (042) over sleeve up to stop.



19 Slide assembly sleeve (042) with secondary sleeve (6) into bore of housing. Push secondary sleeve down by means of blunt part of assembly sleeve (040). Pull up assembly sleeve (042) first by height of sleeve and then remove both sleeves.

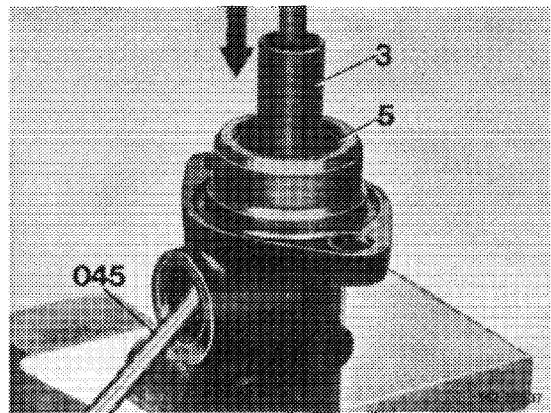


20 Insert plastic bushing (7) into housing.

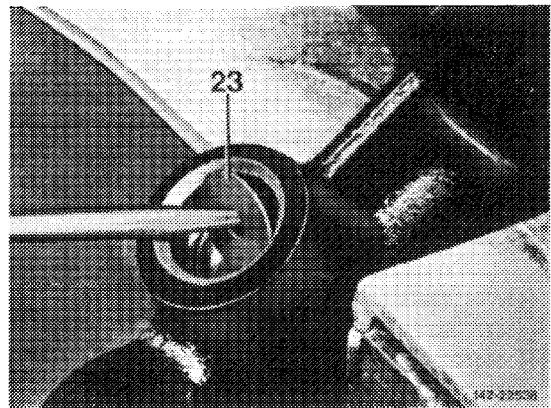


21 Insert locking ring (5) making sure that the ring is correctly seated in groove of housing.

Then push piston downwards and pull out assembly pin.



22 Insert washer (23) into container connecting bore for floating circuit.

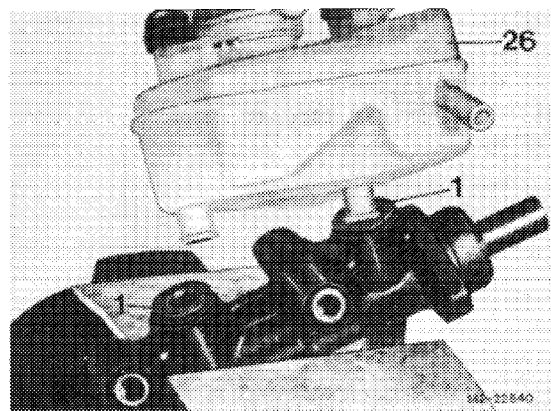


Mounting expansion tank

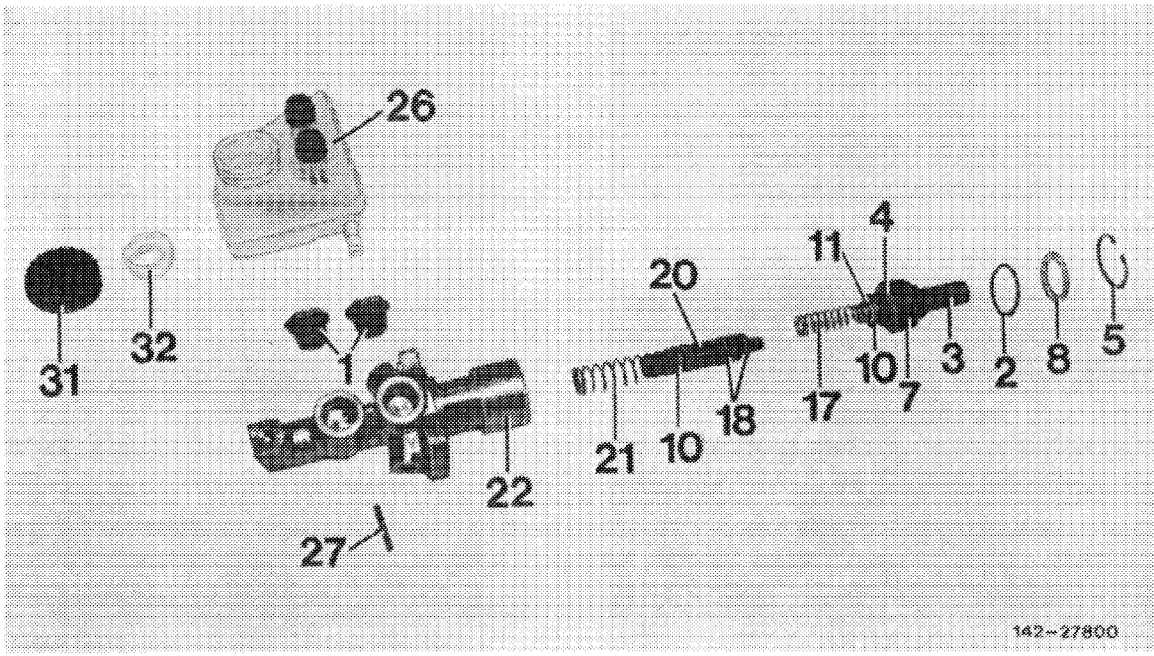
23 Insert strainer into container and screw on closing cap.

24 Lightly coat container plug (1) with brake cylinder paste and force into housing.

25 Insert expansion tank (26) first with a pipe connection into housing, turn by 180° and force second pipe connection into housing. Make sure that the components are well-seated.



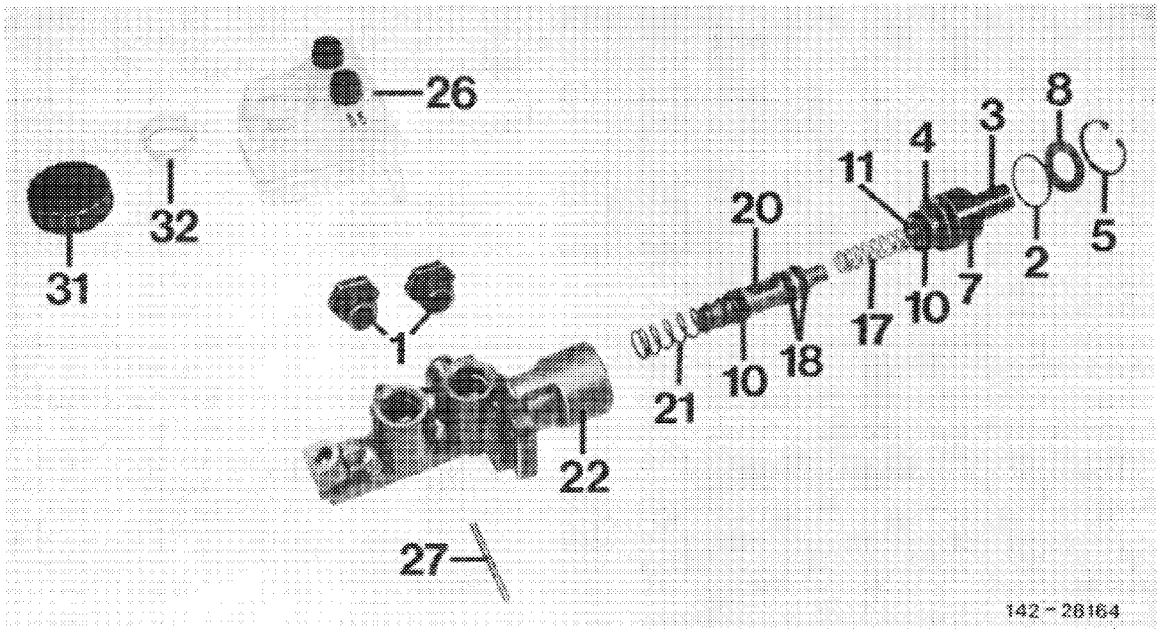
D. Tandem main cylinder with central valve (light alloy) starting September 1985



142-27800

Girling tandem main cylinder

1	Container plug	
2	O-ring	Replace
3	Piston (pushrod circuit)	Replace
4	Stop washer	
5	Locking ring	Make sure of good seat
7	Bushing	Replace
8	Stop washer	
10	Primary sleeve	Replace
11	Supporting ring	
17	Compression spring	Replace
18	Parting sleeve	Replace
20	Piston (floating circuit)	Replace
21	Compression spring	Replace
22	Housing	Watch out for score marks
26	Expansion tank	Clean
27	Cylindrical pin	
31	Cap	
32	Strainer	Clean



142 - 20164

Teves tandem main cylinder

1	Container plug	
2	O-ring	Replace
3	Piston (pushrod circuit)	Replace
4	Stop washer	
5	Locking ring	Make sure of good seat
7	Bushing	Replace
8	Stop washer	
10	Primary sleeve	Replace
11	Supporting ring	
17	Compression spring	Replace
18	Parting sleeve	Replace
20	Piston (floating circuit)	Replace
21	Compression spring	Replace
22	Housing	Watch out for score marks
26	Expansion tank	Clean
27	Cylindrical pin	
31	Cap	
32	Strainer	Clean

Data

		Pushrod circuit	Floating circuit
Diameter	Inch	1	3/4
	mm	25.40	19.05
Housing bore dia.		<u>25.40</u>	<u>19.05</u>
		25.45	19.10
Wear limit		25.51	19.16
Permissible out-of-round of bore		0.03	
Piston dia.		<u>25.36</u>	<u>19.01</u>
		25.33	18.96
Wear limit		25.25	18.90
Piston clearance		0.02–0.15	
Stroke		15	17

Lubricant

Silicone grease

Brake cylinder paste

Self-made tool

Assembly pin (steel)

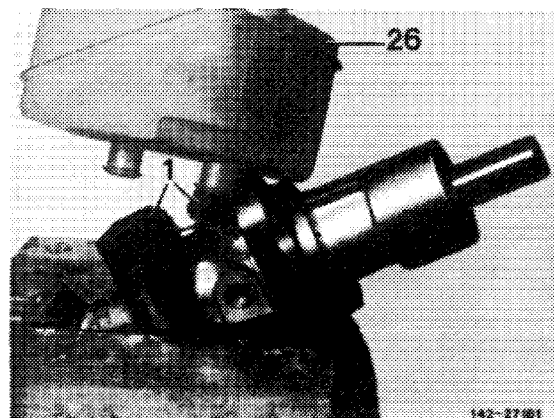
refer to Fig. item 14 and
Note item 15

Note

Repair kits and housings of different manufacturers can be optionally employed.

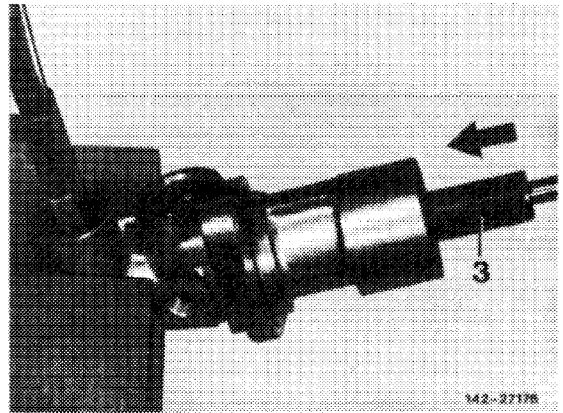
Disassembly

1 Pull expansion tank and then container plug out of tandem main cylinder.



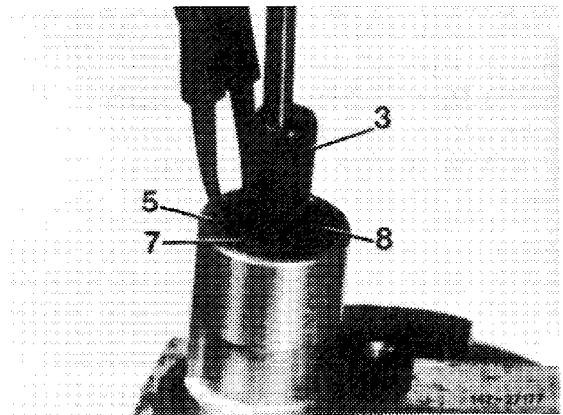
143-2701

2 Push piston (3) slightly inwards by means of a mandrel and pull cylindrical pin (27) out of housing by means of suitable pliers.



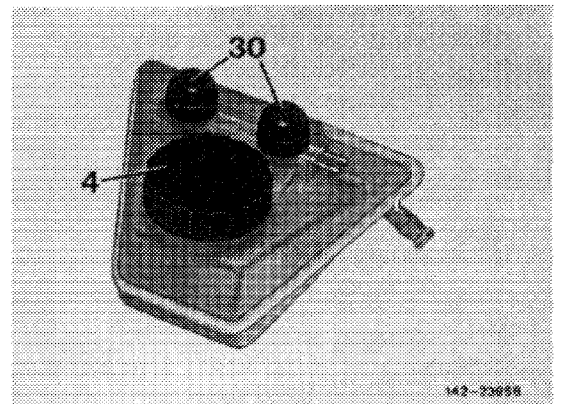
3 Remove locking ring (5) out of housing, then remove piston (3) together with secondary seal pack out of housing.

4 Knock out complete piston for floating circuit by means of light blows with housing against a wooden base.



5 Unscrew closing cap (4) and remove strainer.

Note: The contact insert (30) cannot be removed.



Checking

6 Clean all parts thoroughly with new brake fluid, making sure that all residue from housing and expansion tank is flushed out.

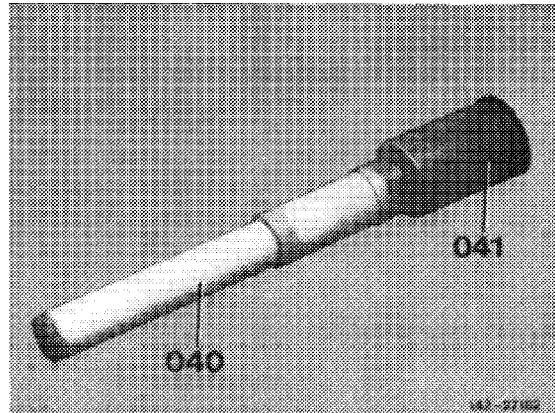
7 Check bore in housing for score marks and damage.

Do not refinish scored or damaged housings.

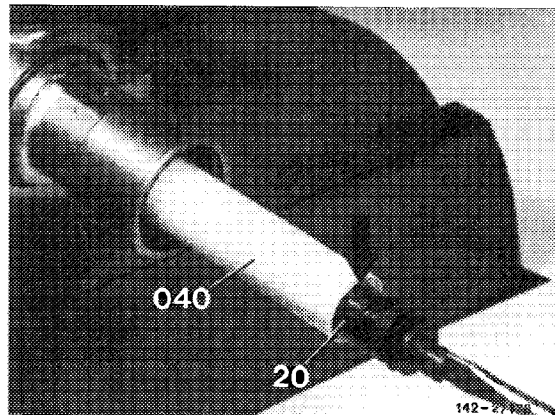
Assembly

8 Coat bore of housing lightly with brake cylinder paste.

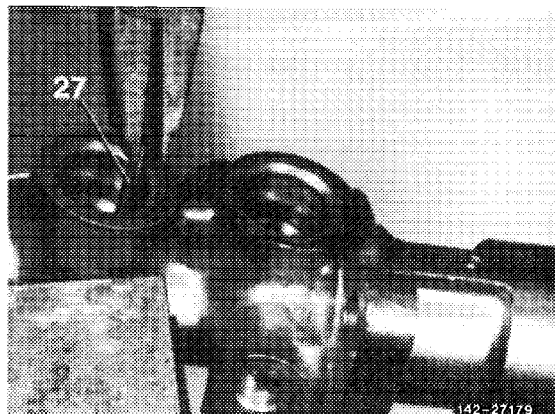
9 Separate packing sleeves. Remove secondary seal pack and piston for pushrod circuit from sleeve (041).



10 Clamp housing slightly tilted with bore in downward direction. Push sleeve (040) including floating piston by means of a screwdriver up to stop into housing. Make sure that the guide slot in piston (refer to arrow) is vertical. The piston position can be corrected by means of a screwdriver.

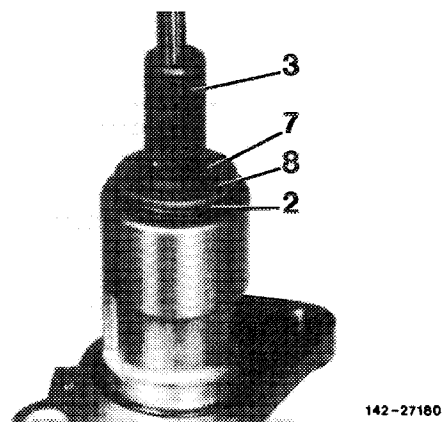


11 Hold piston in place with mandrel. Slip cylindrical pin (27) with chamfer first into bore up to stop. The cylindrical pin should project no more than 2–3 mm. Remove mandrel and sleeve.

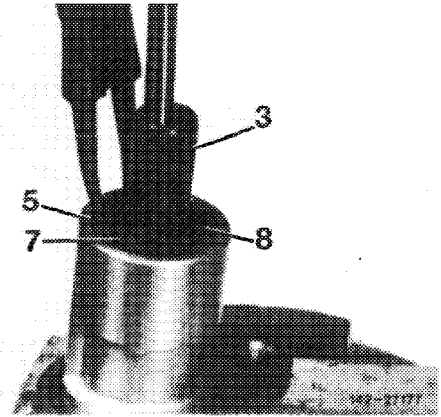


12 Clamp tandem main cylinder in such a manner that the cylinder bore is pointing in upward direction.

13 Introduce secondary seal pack together with pushrod piston into cylinder housing and push down with mandrel.



14 Hold piston in place and mount locking ring (5). Make sure that the ring is correctly located in groove of housing.



Mounting expansion tank

15 Clamp tandem main cylinder horizontally. Insert strainer into container and screw on closing cap.

16 Coat container plug (1) lightly with brake cylinder paste and force into housing.

17 Insert expansion tank (26) first with a pipe connection into housing, turn by 180° and force second pipe connection into housing. Make sure that components are well-seated.

