3072 517 M1

Workshop Handbook

66C, 66D turbo

HYDRAULIC SYSTEM

KOMATSU

Workshop Handbook

Hydraulic System 66 C

3072 517 M1

HANOMAG

PREFACE and EXPLANATIONS

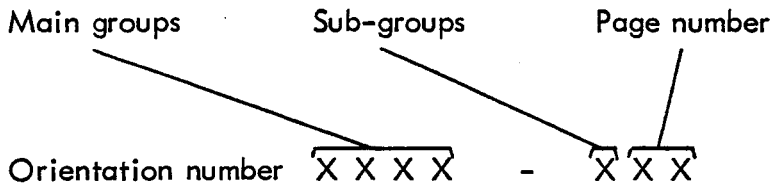
This manual should assist the skilled construction machine mechanic when carrying out repairs and adjustments on MF construction machines. The procedures are written in such a style that the dismantling and assembling of the components can be carried out successfully and without difficulty.

To assist in the locating of specific test-repair operations, working description etc. this manual is divided into main and sub-groups. This also applies to all types of service manuals.

At the top right hand corner of every page next to the section heading a series of numbers (orientation number) are to be found. These numbers follow in numerical sequence throughout the book.

The section heading applies either to the construction machine type, assembly or component for which the text and illustrations are valid.

Orientation number:



The main group numbers refer to either main assemblies, groups of main assemblies, sub-assemblies or components.

Example: Group 1700 - Steering (mechanical steering, assisted steering, hydro-steering, steering unit)

The sub-group numbers classify the descriptions and details as follows:

0 - General

1 - Functional description

2 - Fault diagnosis and possible remedies

3 - Tests and adjustments

4 - Strip and rebuild

5 - Technical data

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66 C *turbo* 66 D *turbo*

Group 2200

HYDRAULIC SYSTEM

Group 1700

STEERING SYSTEM

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Loader hydraulics

A two-stage system where the outputs of the loader pump and switch pump are controlled dependent on system load.
The system is remote controlled via a servo control system.

Steering hydraulics

Articulated steering system with ZF hydro-steering column assembly and two steering cylinders.
Constant oil supply by the steering and switch pumps over the complete engine speed range. With the engine stopped, oil supply to steering system maintained by the ZF emergency steering pump.

Summary of pump outputs and system pressures (see Fig. M 304)

1 Switch pump : HAMWORTHY
Output 155 ltr/min at 2200 rpm

2 Steering pump : HAMWORTHY
Output 91.5 ltr/min at 2200 rpm

3 Loader pump : HAMWORTHY
Output 290 ltr/min at 2200 rpm

4 Servo pump: HAMWORTHY
Output 53.5 ltr/min at 2200 rpm

5 Emergency steering pump: ZF
Output dependent on travel speed of machine, however, at a speed approaching 20 km/h = 50 ltr constant

6b	Oil filter by-pass valve	1.5 bar
7d	Unloading (regulating) valve	140 bar
8a	Steering pressure relief valve	180 bar
8f	Emergency steering circuit relief valve	100 bar
10a	Oil cooler by-pass valve	3.5 bar
12	Servo control pressure holding valve	$26^{+}_{-}0.5$ bar (24 bar min. engine idling)
14a	Loader hydraulics pressure relief valve	$180^{+}5$ bar
14f	Service line relief valves (shock valves) bucket dump, crowd and loader lift circuits	320 bar
14h	Pressure reducing valve for reducing static pressure	15^{+1} bar
14i	Emergency lowering pressure relief valve	35^{+2} bar

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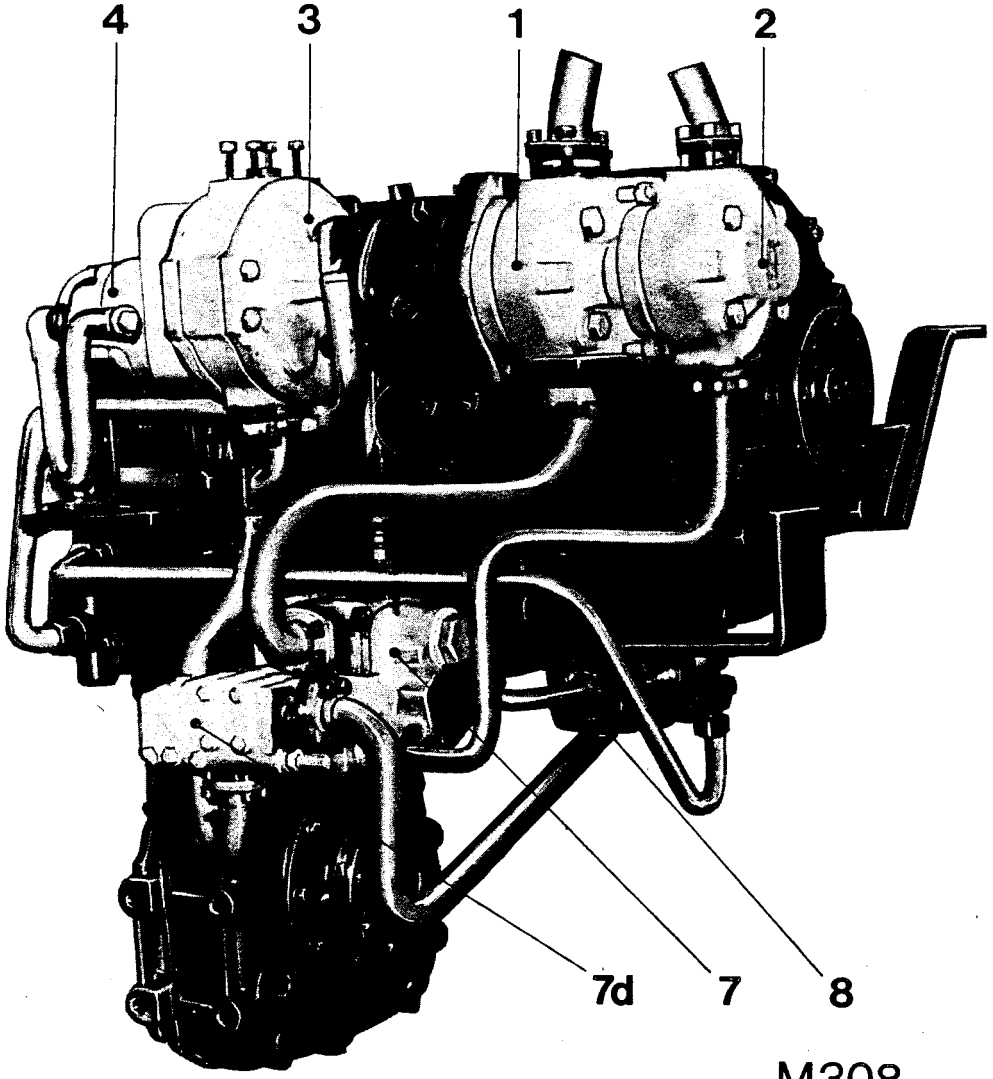
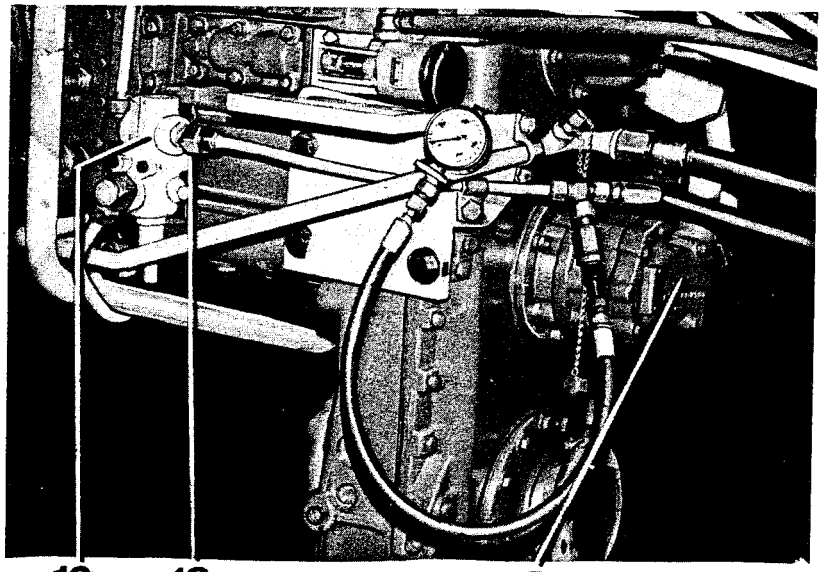
Arrangement of the hydraulic components mounted on the transmission assembly

Fig. M 308	1	Switch pump
	2	Steering pump
	3	Loader pump
	4	Servo pump
	7	Demand / regulating valve
	7d	Unloading (regulating) valve
	8	Steering valve block
Fig. M 309	5	Emergency steering pump
	12	Servo circuit pressure holding valve
	18	Check valve



M308



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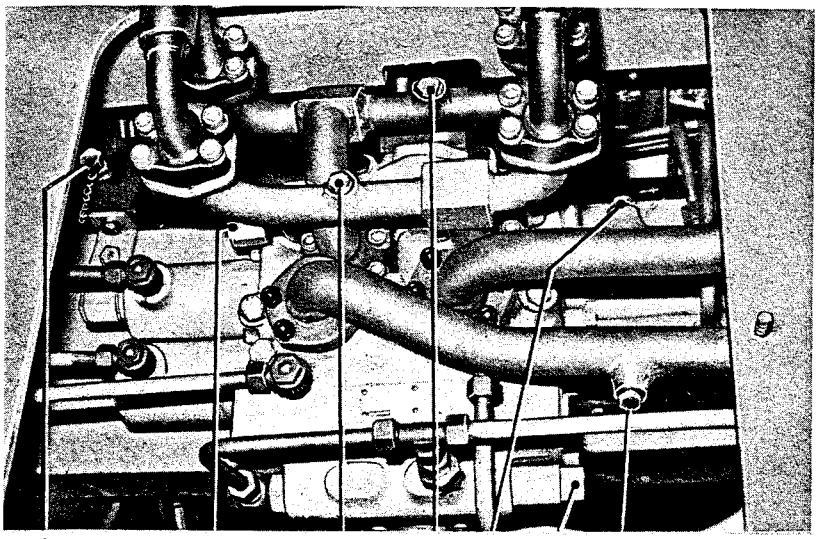
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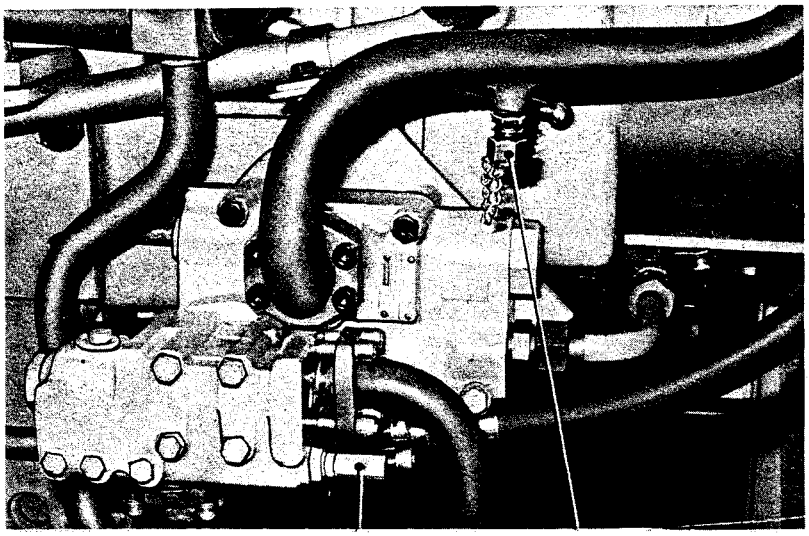
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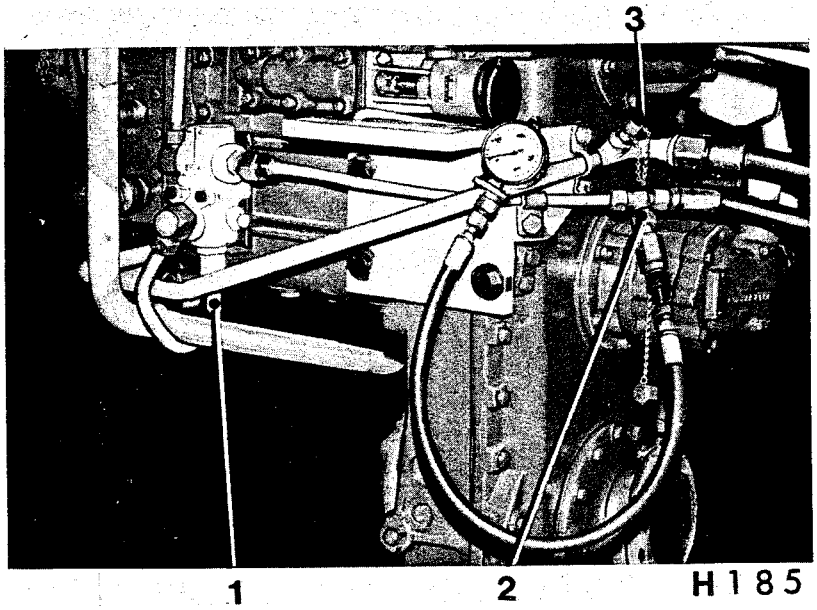
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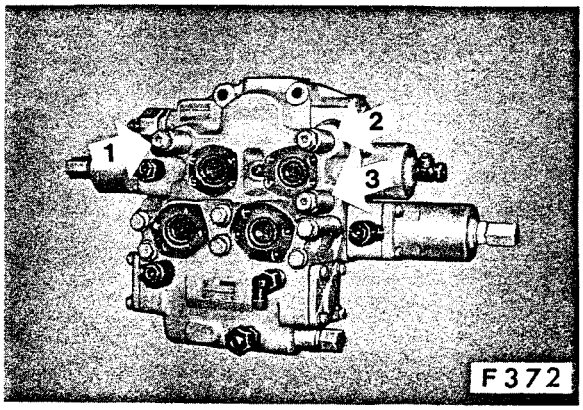
CONTROL VALVE

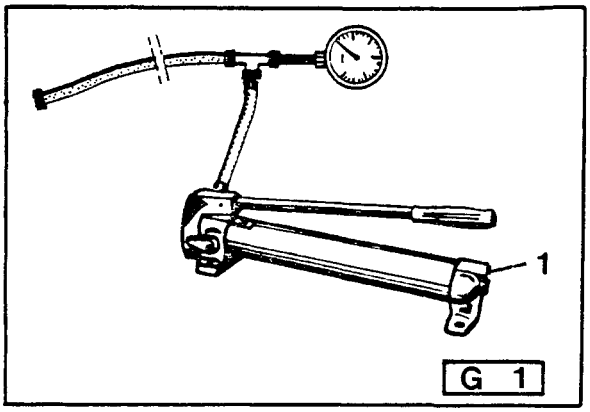
Secondary pressure relief valve (shock valve), testing

Fig. F 372
1 = Valve for bucket tip-in
2 = Valve for bucket dump out
3 = Valve for loader arm lift



Test instruction 1:

Fig. G 1
Testing with the simple to operate OTC-hand pump, type Y-21-1 incorporating a pressure relief valve of 700 bar (10 150 psi) and a pressure gauge of 0 - 400 bar (5800 psi). Other available hand pumps, e. g. track pin press, can also be used.



Connecting the hand pump:

Fig. E 230
Support the loader arms and dump out the bucket.
Depressurize the system.

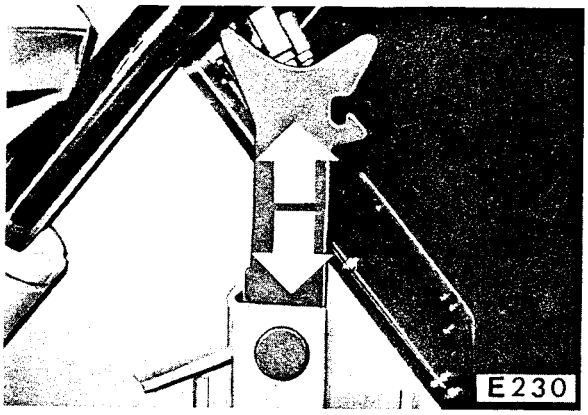
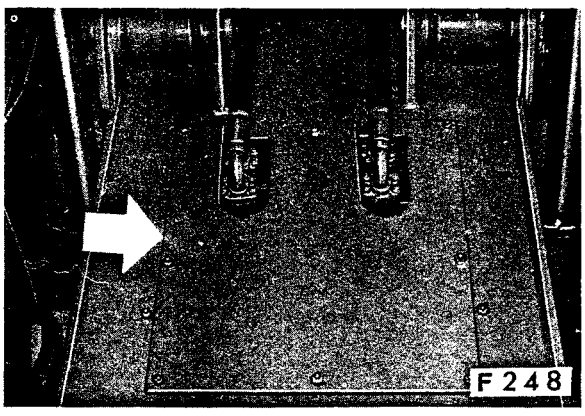
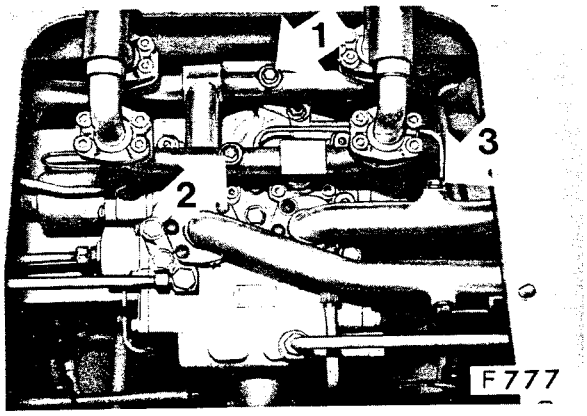
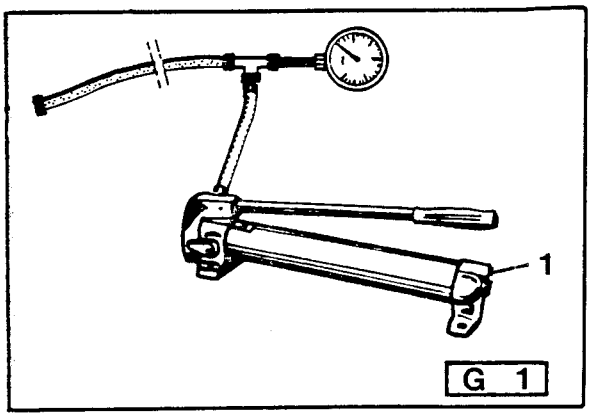


Fig. F 248
Remove the cover plate.







CONTROL VALVE

Fig. F 777
According to which valve is to be tested, connect the pressure gauge together with the hand pump to the test point.

Test points: 1 = bucket tip-in
2 = bucket dump out
3 = loader arm lift

Filling the hand pump:

Before commencing the test process the hand pump is filled as follows:

With the pump connected and in the "RELEASE" position, screw out the closing screw plug (1) at the rear of the pump. With the engine running at idling speed, carefully operate the hydraulic circuit in question until oil flows out of the screw plug bore (1). Select the "PUMP" position on the pump and replace and tighten the plug screw . The pump is now full.

Note: The pump can also be filled by hand with hydraulic oil via the screw plug bore (1).

Testing process:

The hand pump must remain in the "PUMP" position . This is every important, otherwise the pump can be damaged. The hydraulic circuit in question is now operated against the "crowd" stops. Next, shift the control lever into "NEUTRAL" and stop the engine.

By using the hand pump, oil can now be pumped into the system circuit that is to be tested until the shock valve opens. Read off the gauge pressure.

Finally re-support the loader arms and depressurize the system.

Only now should the hand pump be switched to the "RELEASE" position and disconnected.

CONTROL VALVE

Adjusting lifting and lowering pressure

Fig. F 769
Disconnect the pilot control line pipe (20) and block the union (21) using the closing plug (A) (special tool).

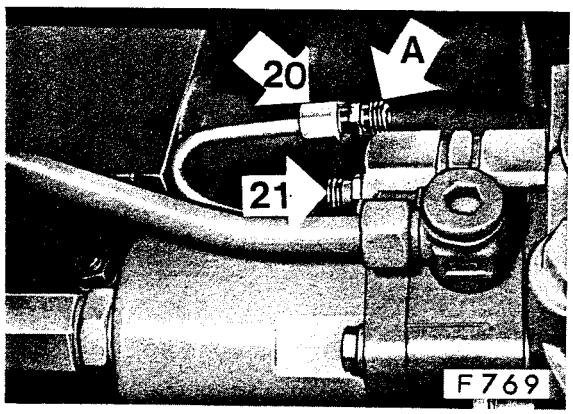
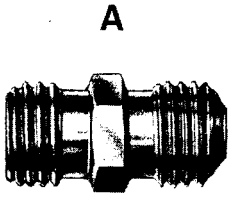


Fig. F 773

A = Special tool - closing plug
(Supplied in special tool set, Part. No. 2975 116 - M 91)



F 773

Figs. F 770, F 378 and F 379
Using the special tools (B and C), hold the threaded sleeve (11) tight, unscrew the adaptor nut (1) and loosen the lock nut (3).

Note: When unscrewing the adaptor nut and lock nut, ensure that the threaded sleeve (11) is not screwed out, as this will result in the valve cone (10) being forced out of its guide by the valve spring (9) and falling into the control valve housing!

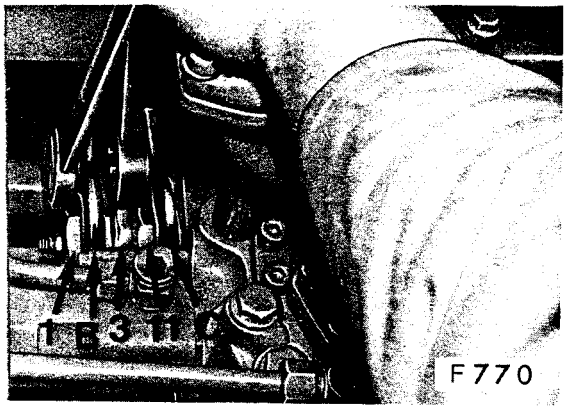
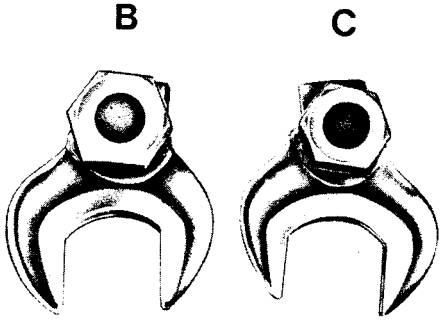
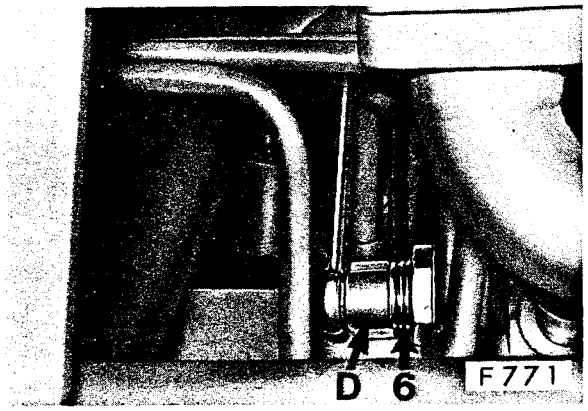


Fig. F 774
Special tools (B and C)
Used in conjunction with 2 straight ring spanners.
(Supplied in special tool set, Part No. 2975 116 - M 91).

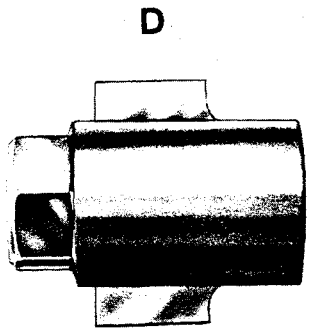


F 774

CONTROL VALVE



Figs. F 771, F 378 and F 379
Using the special tool (D) screw in as far as possible the adjusting sleeve (6). The stop nut (7) will now abut the housing.



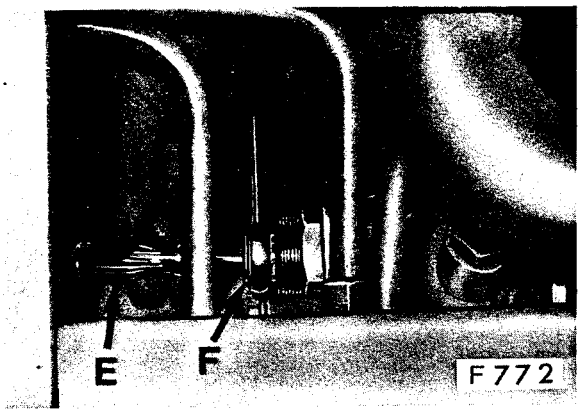
F 775

Fig. F 775
Special tool (D) for adjusting sleeve. (Supplied in special tool set, Part No. 2975 116 M 91).

Start the engine.

With the loader arms against the crowd stop (lower) the pressure should be 180 - 185 bar (2610 - 2682 psi).

Adjusting the pressure:

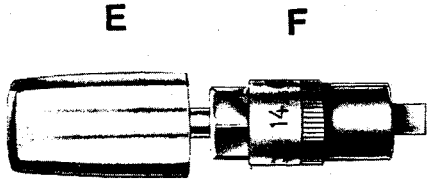


Figs. F 772, F 378 and F 379
With the screwdriver (E), hold the valve piston (8) tight and loosen the lock nut (5) with the special socket (F).

By screwing in the valve piston (8) the pressure will be increased, by screwing out, the pressure will be reduced.

Note: During this process the adjusting sleeve (6) should not be allowed to turn !

After adjustment tighten the lock nut (5).



F 776

Fig. F 776
Special tool: Screwdriver (E) and special socket (F).
(Supplied in special tool set, Part No. 2975 116 M 91).

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