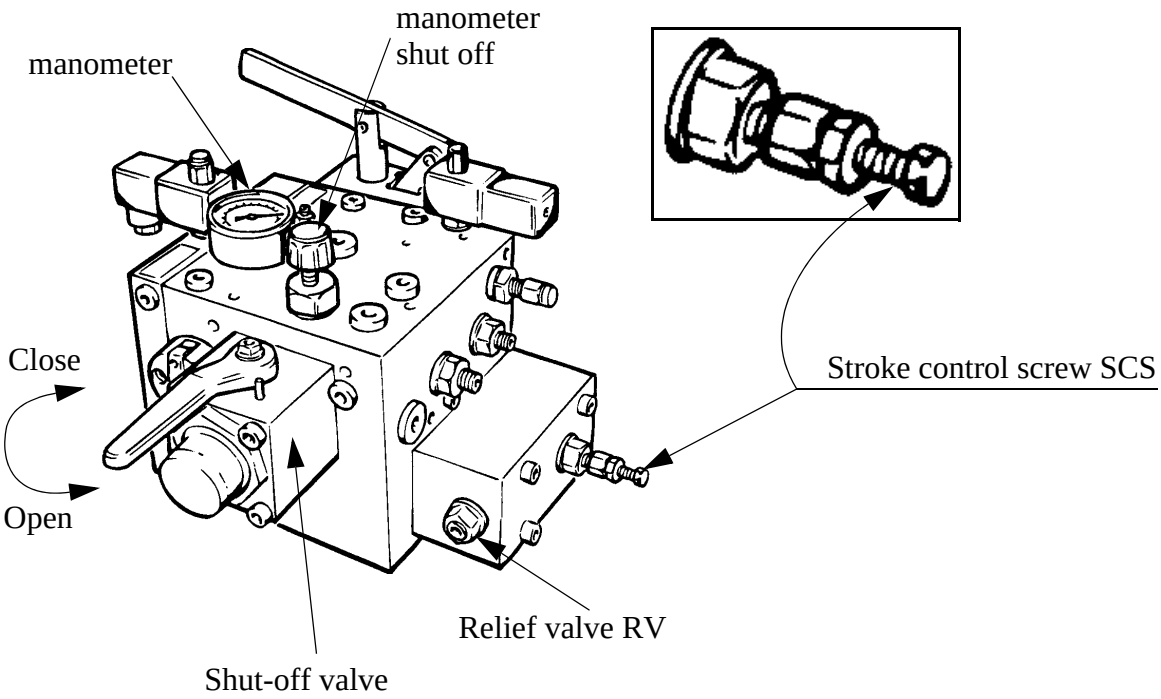
INSTRUCTION FOR HYDRONIC 300 ADJUSTMENT

NOTE: open the manometershut off valve only during the adjustment of the Hydronic valve. During the normal lift work the manometer shut off valve must be closed.

By-pass pressure

The by-pass pressure is adjusted at the factory. It is readjusted only if start delay time needs adjustment. The by-pass flow pressure must be equal or slightly less than empty car static pressure. Too low by-pass pressure causes extra delay during up start or a little car sink before up start.



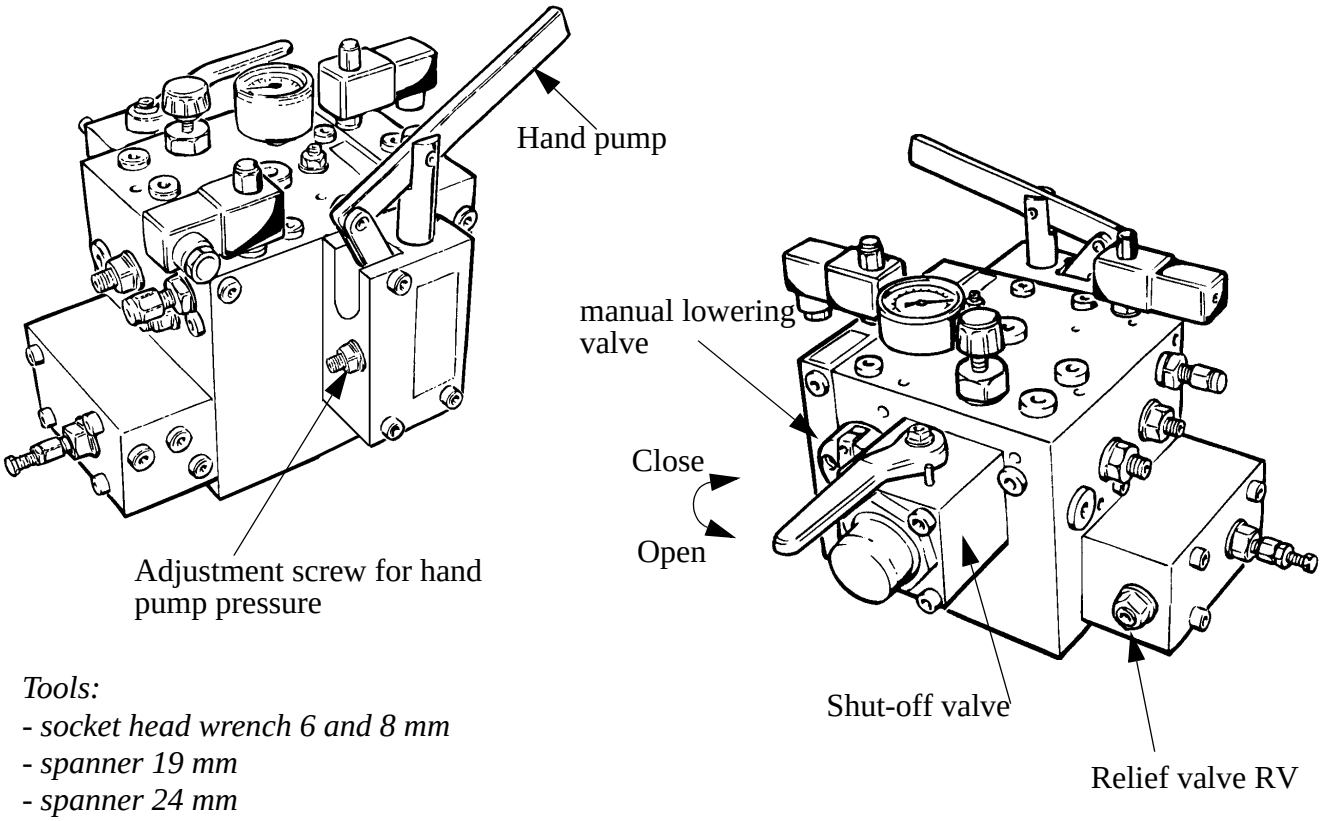
Tools:
- socket head wrench 5 and 6 mm
- spanner 10 mm 13 mm 19 mm

Adjustment of by-pass pressure:

- Close the shut-off valve.
- Open the relief valve (RV) so much that there is no spring force.
- Start the elevator for up travel.
- Adjust the stroke control screw (SCS) until the manometer indicates about the min static pressure with empty car. (turning the screw clockwise increases the by-pass pressure)
- secure the adjustment with the lock nut.
- Adjust the over pressure.

Over pressure

The over pressure (140% of the max static pressure) is adjusted at the factory. It is readjusted only, if the relief valve (RV) has been repaired or if its adjustment has been altered for some reason.
Max. working pressure = car with full load, travelling up (dynamic pressure).



Tools:
- socket head wrench 6 and 8 mm
- spanner 19 mm
- spanner 24 mm

Adjustment of over pressure:

Relief valve RV

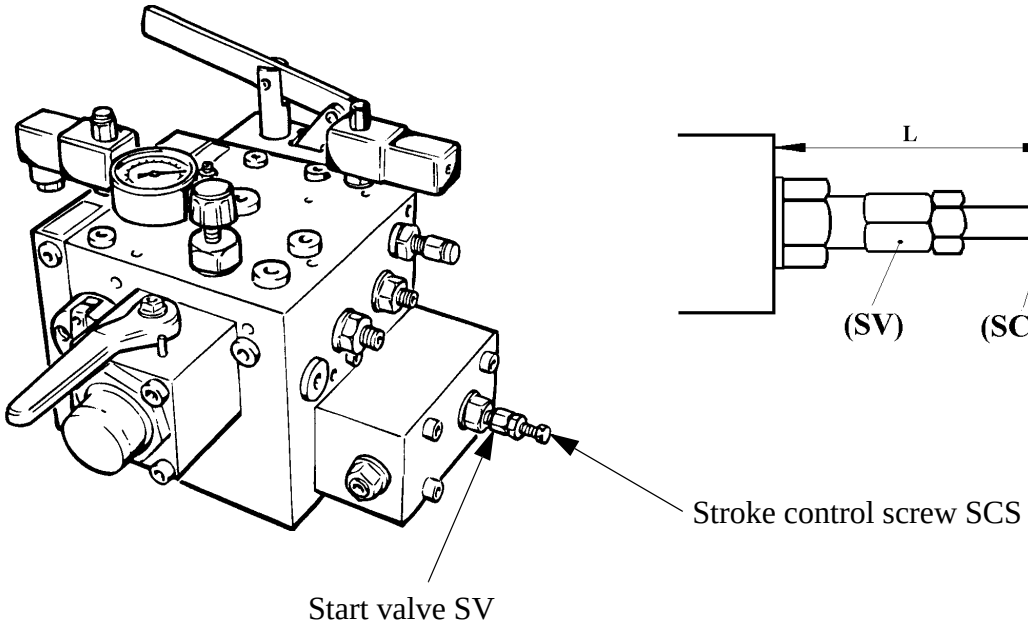
- Close the shut-off valve.
- Start the elevator for up travel.
- Turn the adjustment screw of the relief valve (RV) until the manometer shows the correct pressure (140% of the max. static pressure).
- Lock the adjustment with lock nut.

Hand pump

- Close the shut-off valve.
- Pump up the pressure with the hand pump and read the value from the manometer.
- Adjust the hand pump pressure screw if the value is less than the over pressure (the value must not exceed 2.3 times the full load static pressure).
- Lock the adjustment with lock nut.

Acceleration up

The start valve (SV) spring force must be adjusted so that the elevator has a comfortable acceleration.



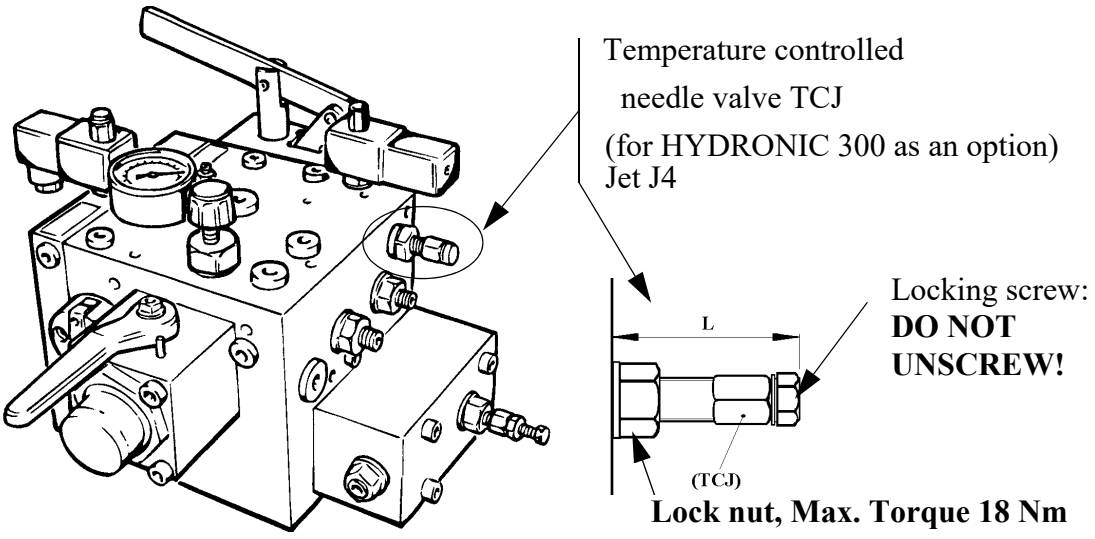
Tools:
- spanner 5 mm, 10 mm, 13 mm, 19 mm

Adjustment of acceleration up:

- Measure the length L of the stroke control screw (SCS) (see picture).
- Start the elevator to up-direction and observe the acceleration.
- Turn the black adjusting screw of the start valve (SV) **anti-clockwise**, if the acceleration is too hard, or **clockwise** if the acceleration is too slow.
- Lock the adjustment with lock nut.
- Re-adjust the stroke control screw (SCS) to the measured length L.
- Listen and make sure that the by-pass flow is completely stopped within 2.5....3 seconds.
  (If not, increase the acceleration up. Also check the by-pass pressure)

Deceleration up and down

Deceleration is controlled with TCJ, which with J4 forms a needle valve.



Tools:
- Spanner 13 mm e 19 mm

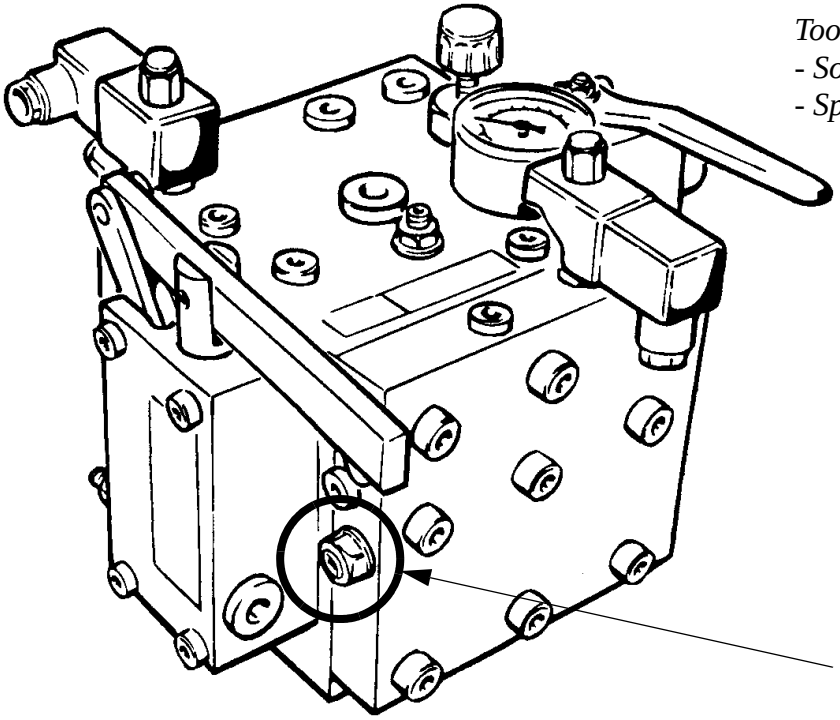
Reference dimension L: 40 mm

Adjustment of deceleration:

- Drive the elevator in up-direction and observe the deceleration and charge-over to the levelling speed.
- Turn the adjustment screw of TCJ **clockwise** to get a smoother deceleration and **anti-clockwise** for harder deceleration.
  (Attention: turn only 1/6 of a turn at a time; screwing the needle valve too far inwards can destroy the valve).
- Lock the adjustment with lock nut, **MAX. TORQUE 18 Nm**.

Nominal speed down

The adjustment of the pressure difference (DV2) for nominal speed in down-direction must be always. (Normally, the elevator speed has to be equal in both up and down direction).



Tools:
- Socket head wrench 6 mm
- Spanner 19 mm

Pressure difference valve DV2

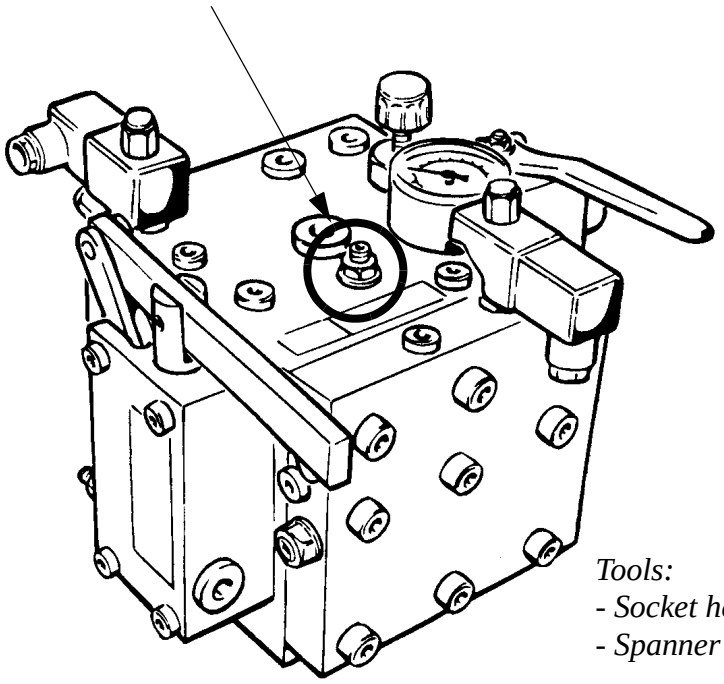
Adjustment of nominal speed down:

- Drive the elevator in up-direction and measure the elevator speed with a tachometer or a clock (stop-watch).
- Drive the elevator in down-direction and measure the speed as in up-direction. Compare the results.
- Turn the adjustment screw of the pressure difference valve **clockwise** for speed increase or **anti-clockwise** for speed decrease.
- Lock the adjustment with the lock nut.

Levelling speed

The levelling speed valve (LSV), which is common for the levelling speeds in both up- and down-direction, is pre-adjusted at the factory. therefore, only a fine-adjustment is carried out at the site.
The levelling speed must be adjusted so that the final stop is comfortable. As too low levelling speed can cause vibrations (stick-slip effect).

Levelling speed valve LSV



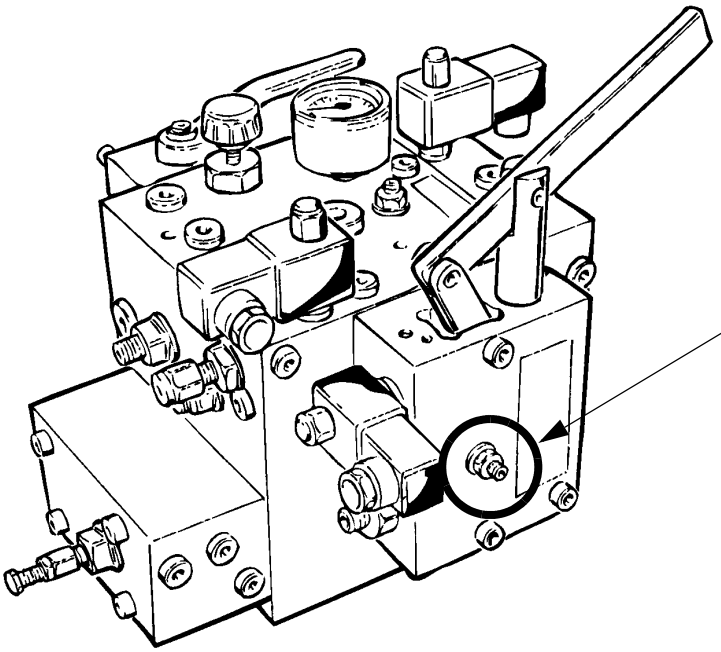
Tools:
- Socket head wrench 4 mm
- Spanner 13 mm

Adjustment of levelling speed:

- Turn the adjusting screw of the levelling speed valve **anti-clockwise** in order to gain a higher speed or **clockwise** for a lower speed.
- Check the levelling or **clockwise** for a lower speed.
- Lock the adjustment with the lock nut.

Service speed (only valid for HYDRONIC 300S)

The service speed valve (SSV), which is common for the service speeds in both up- and down-direction, is preadjusted in factory.
the service speed must not exceed 0,63 m/s.



Tools:
- Socket head wrench 5 mm
- Spanner 13 mm

Adjustment of service speed:

- Turn the adjustment screw of the service speed valve (SSV) **anti-clockwise** in order to gain a higher speed or **clockwise** to reduce the speed.
- Check the service speed in both directions.
- Secure the adjustment with the lock nut.

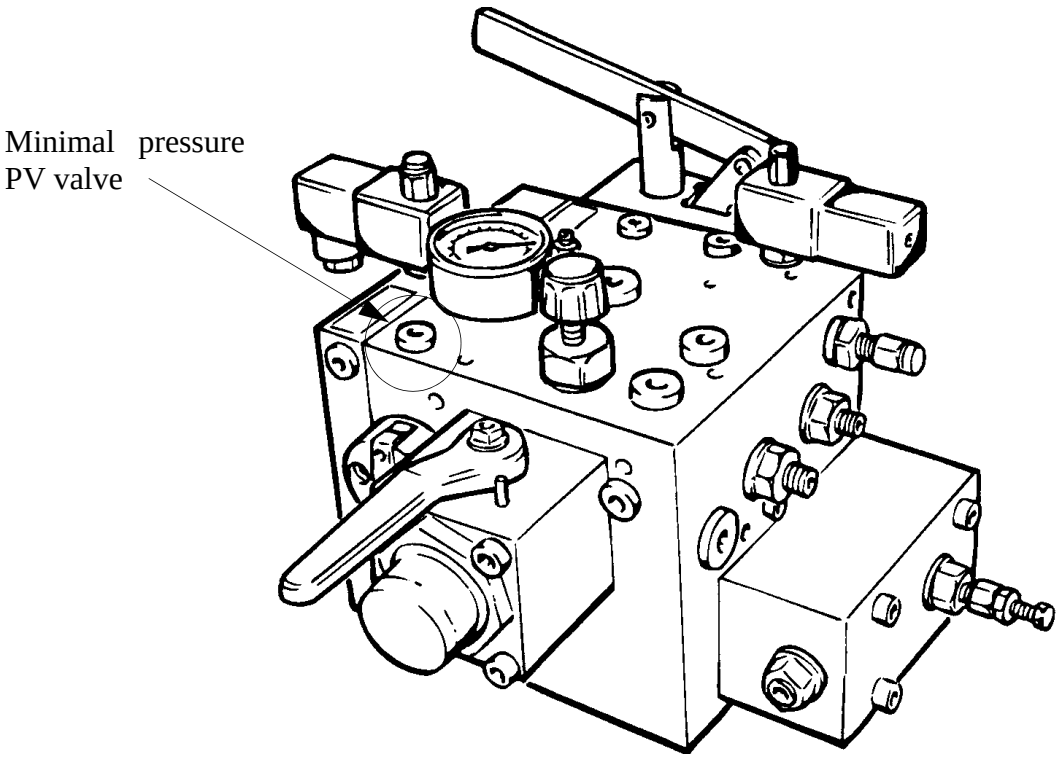
N.B. : Service speed is obtained only activating 12:S pilot valve

Adjustment of minimal pressure PV valve

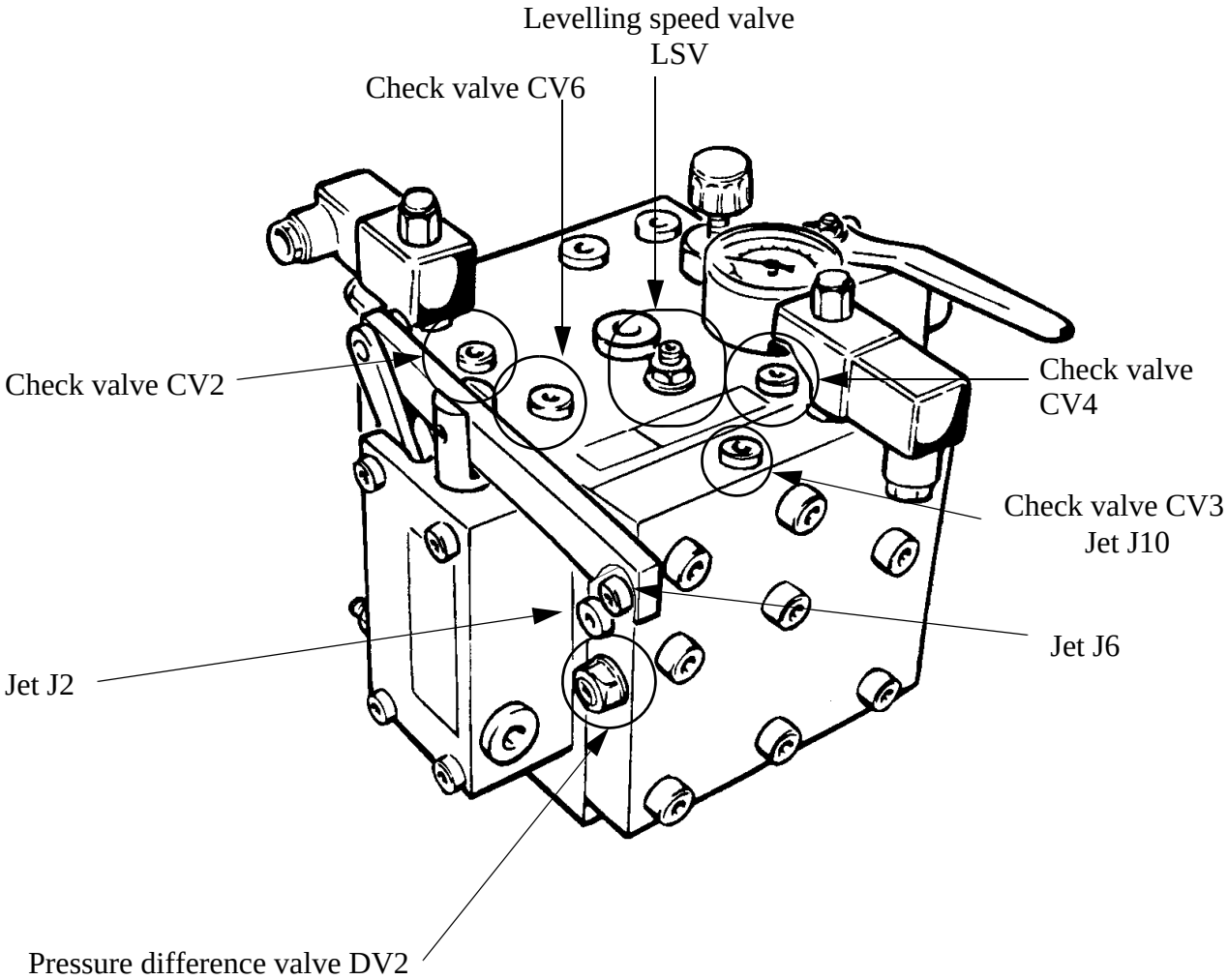
The minimal pressure PV valve keeps a minimum amoount of pressure in the hydraulic system, even when there is no load on the ram. This is achieved to avoid the ropes to get slack and come out of the pulley if the parachute devices on the car sling are activated or if the car lies on the shaft bottom springs. The PV valve is adjusted in the factory for a minimal pressure of about 10 bar.
If the hydraulic system is operated with a static pressure below the min. static pressure in operative conditions (i.e. during the assembly of the elevator), a tuning of the PV adjustment could be necessary to perform down travel.

Follow the procedure here below to modify the PV adjustment:

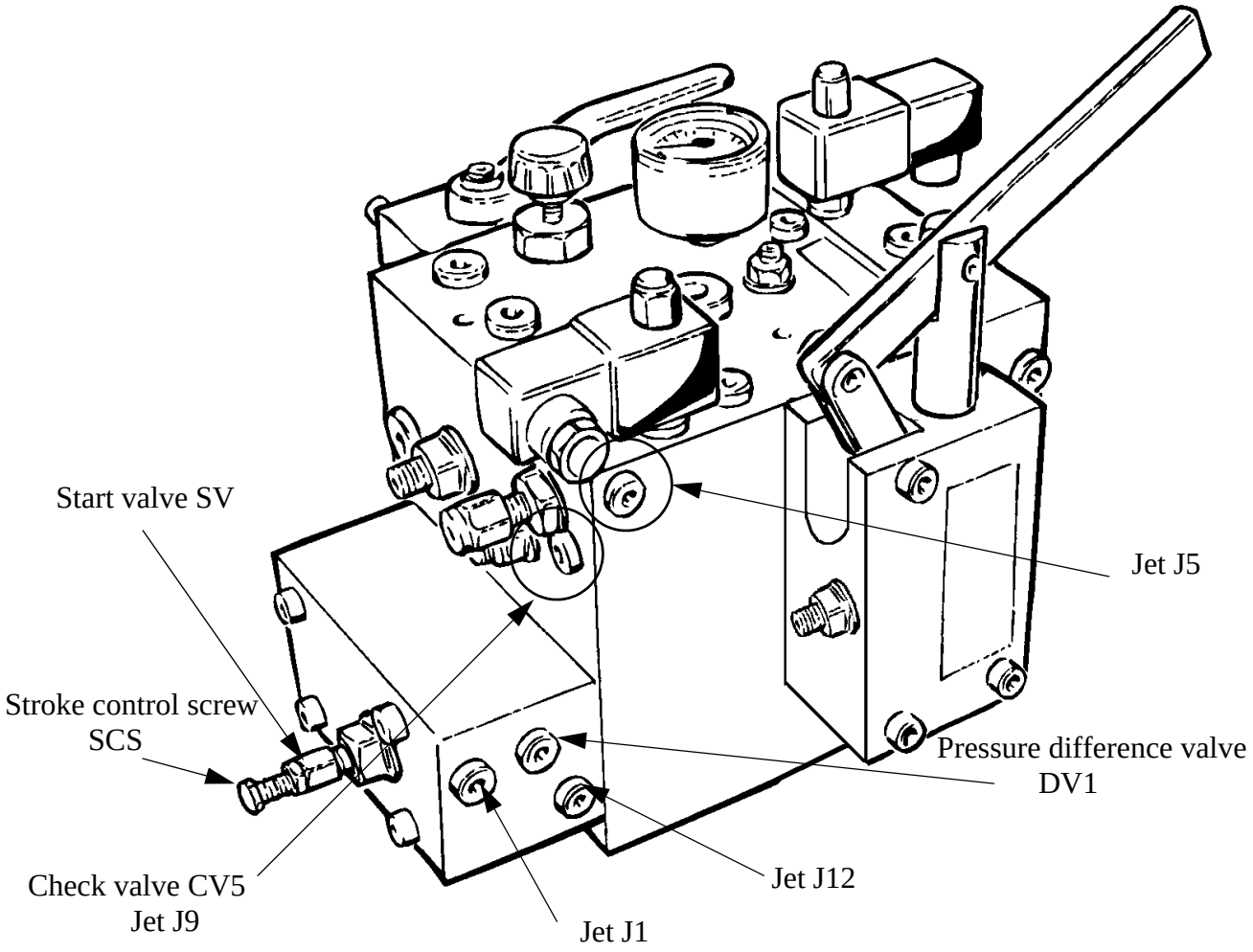
- Close the shut off valve and relief the static pressure with the manual lowering lever.
- Take away the sealing cap over the PV valve with a socket head wrench.
- Use a screwdriver to turn the adjustment grain: screw in for an higher min. pressure, screw out for a lower min. pressure.
- If the min. pressure is still too high, unscrew completely the adjustment grain and take away the spring below it.
- Put again the sealing cap in its original position, taking care that the rubber sealing is in contact with the valve body.
- Open the shut off valve and perform a trial car run.



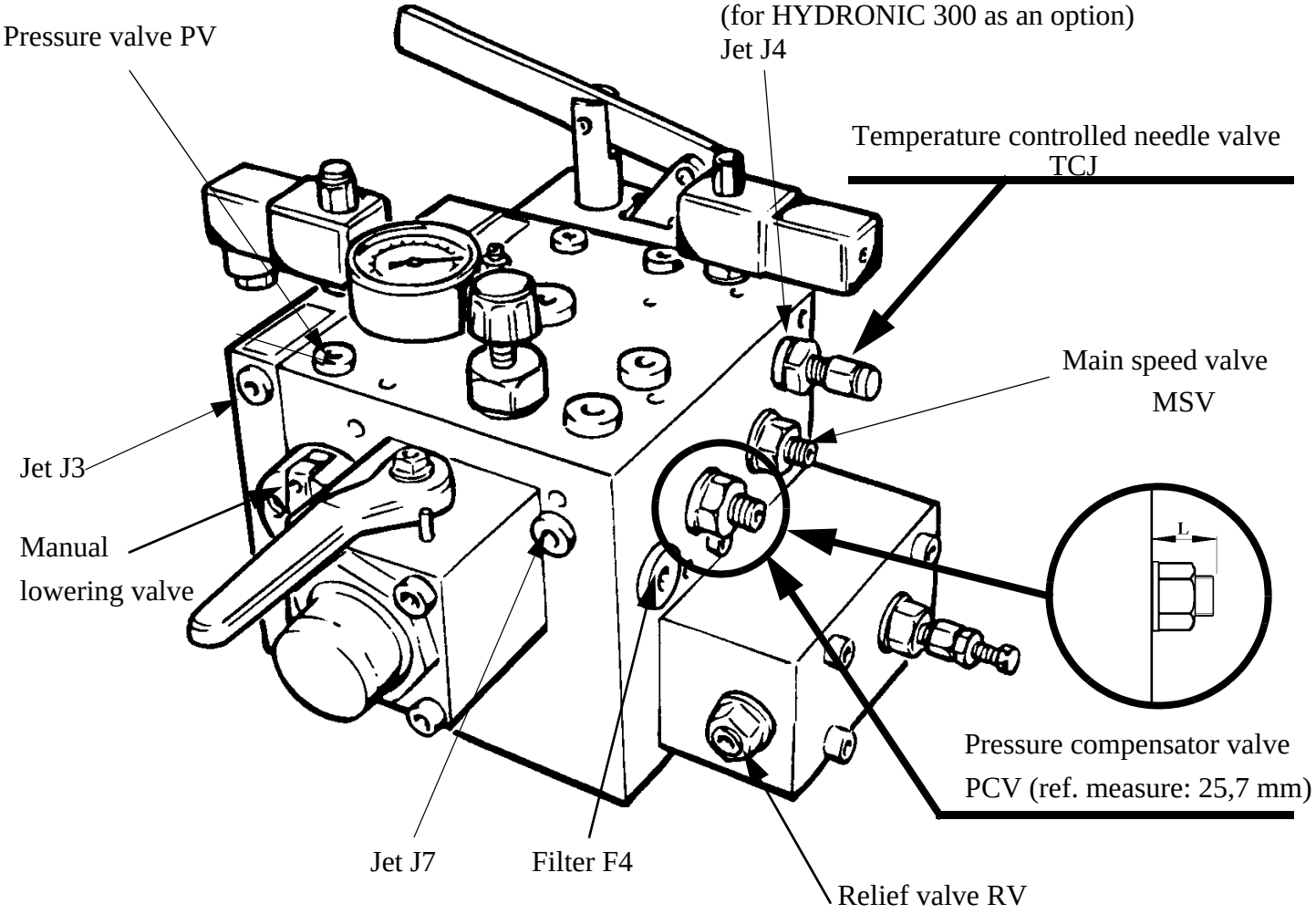
Valve details



Jet J2	0,8 mm for all pump sizes. Placed under the plug
Jet J6	0,6 mm for all pump sizes. Placed under the plug
Jet J10	0,8 for all pump sizes. Placed under the plug
Check valve CV2	Placed under the plug
Check valve CV3	Placed under the Jet J10
Check valve CV4	Placed under the plug
Check valve CV6	Placed under the plug
Pressure difference valve DV2	Adjustment screw for elevator speed down
Levelling speed valve LSV	Adjustment screw for levelling speed

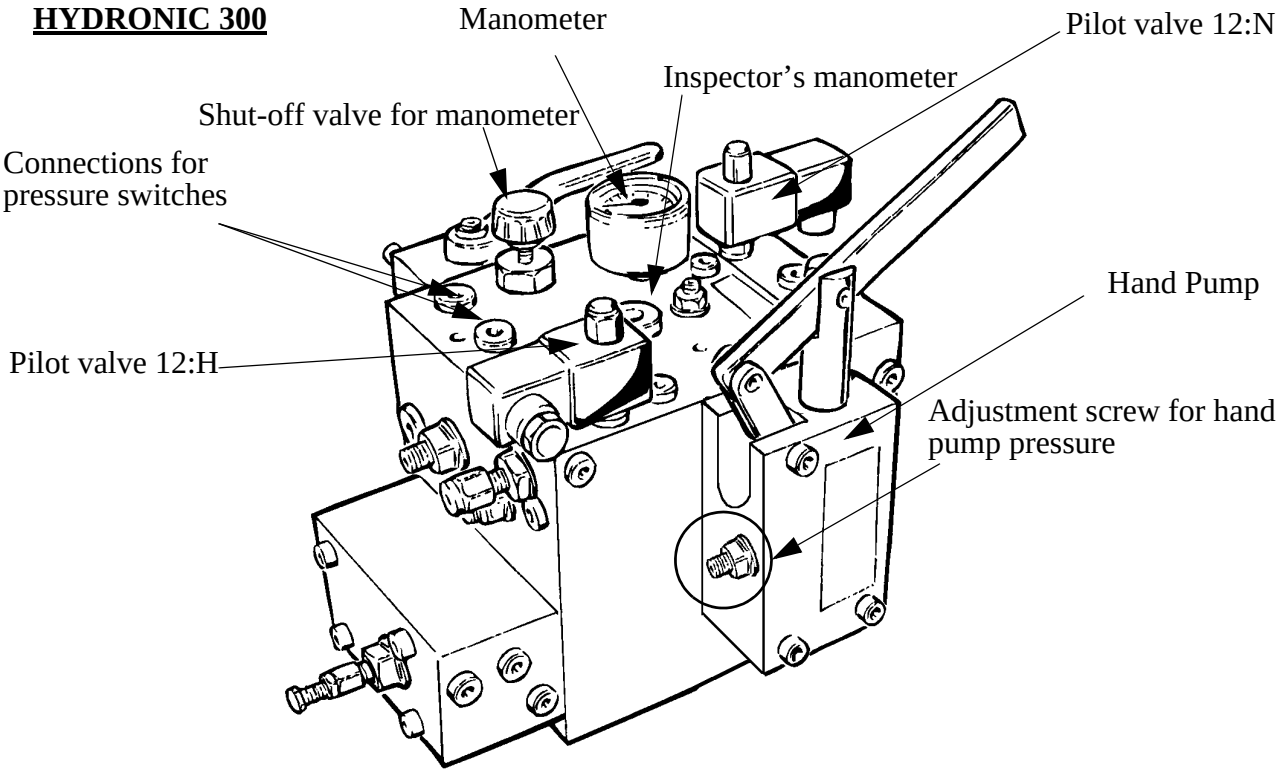


Jet J1	0,8 mm for pump size from 50 to145 l/min, 0,7 mm for larger pumps. Placed under the plug.
Jet J5	0,8 mm only for pump size from 96 l/min (G02 and G03 sizes). Placed under the plug. No used for pump size from 50 to 76 l/min. Only when reduction of acceleration downwards is required.
Jet J9	1,0 mm for all pump sizes. Placed under the plug
Jet J12	0,6 mm for all pump sizes. Placed under the plug
Check valve CV5	Placed under the Jet J9
Stroke control screw SCS	For adjusting of the by-pass pressure. preadjusted at the factory.
Start valve SV	Acceleration upwards is adjusted by means of the adjusting screw. Carried out the site.

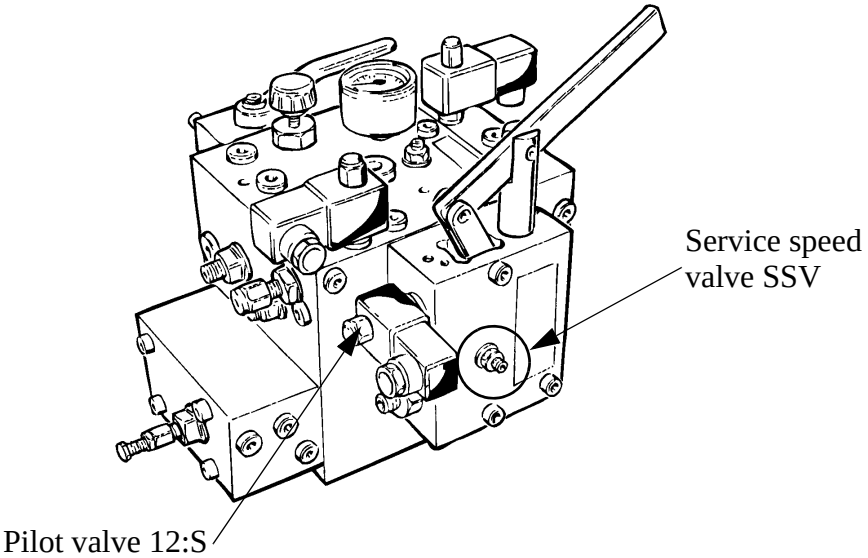


Jet J3	0.8 mm for all pump sizes. Placed under the plug.
Jet J4	1,0 mm for all pump size. Placed under TCJ. 0,8 mm for pump sizes up to 145 l/min, 0,7 for 172 up to 270 l/min without TCJ. Placed under the plug.
Jet J7	0,8 mm for all pump size. Placed under the plug.
Pressure valve PV	The valve spring has to be removed when unloaded cylinder is lowered. Placed under the plug.
Temperature controlled needle valve TCJ	Adjusting screw for acceleration down and deceleration up and down. To be adjusted at site.
Main speed valve MSV	The screw is adjusted to the correct value at the factory and should not required any adjustment at site.
Relief valve RV	The screw is adjusted to the correct pressure. at the factory and should not normally required any adjustment at site
Pressure compensator valve PCV	For testing the rupture valve. The screw is adjusted to the correct value at the factory and should not require any adjustment at site.

HYDRONIC 300



HYDRONIC 300 S



Pilot valve 12:H	Pilot valve for speed in up and down travel
Pilot valve 12:N	Pilot valve for down travel
Pilot valve 12:S	Pilot valve for service drive
Service speed valve SSV	Adjusting screw for service speed in up and down travel

MSV and PCV spool valves setup

The setup of these valves is done by the manufacturer during the power unit test; they don't require any further regulation. The following instructions are given only to check out and correct unwanted manipulations.

Spool valve PCV

The setup for this spool valve is the same for all the power unit: the reference measure is 25.7 mm from H300 body. **PCV vlve must be tuned only for the ruppture valve operative test; after the test, adjust the valve to the original position.**

Spool valve MSV

This spool valve is regulated as follows:
Take away the locking nut and screw the regulation screw inward until it stops (it stands out from the H300 body for about 8 mm) then unscrew it out for the measure indicated in table 1. which is function of power unit oil flow.
The final dimension L is the sum of the (about) 8 mm, plus the measure indicated in table 1. Lock the screw with the locking nut: be careful not to rotate the screw while tightening the nut! Check again the dimension L after tightening the locking nut.

Table 1

Pump flow (L/min) 50 Hz (60 Hz)	Measure (mm)
50 (70)	7.5 (9)
70 (96)	9 (11)
96 (115)	11 (12)
115 (125)	12 (13)
125 (145)	13 (15)
145 (172)	15 (10,5)
172 (210)	10,5 (12)
210 (270)	12 (15)
270 (only 50 Hz for H300)	15 (-)