MTS FSE MODULAR TRAINING

Grip Supply

November 24, 2015 Rev A

be certain.

Grip Supply Models

- Available in many different configurations
- When grip pressure required is up to 20.7 MPa (3000 PSI) maximum and there is a HPU available then use a grip control that is connected to the system HPU.
- When grip pressure required is up to 69 MPa (10000 PSI) maximum with a HPU use either a standalone grip supply with built in pump and intensifiers or a grip supply connected to HPU with intensifiers to increase pressure.
- When HPU is not available such as with EM load frame then use a standalone grip supply with built in pump.

Grip Supply Models

Model	Maximum Pressure	Power
685.22	20.7 MPa (3000 PSI)	Internal Pump / Electric Motor
685.10	69 MPa (10000 PSI)	Internal Pump / Electric Motor with intensifiers
685.60	45 MPa (6500 PSI)	System HPU / Pressure intensifier
685.60	69 MPa (10000 PSI)	System HPU / Pressure intensifier
685.60*	69 MPa (10000 PSI)	Air over oil intensifier
685.53	20.7 MPa (3000 PSI)	Load Frame Mounted / System HPU
685.53	69 MPa (10000 PSI)	Load Frame Mounted / System HPU with intensifiers
Landmark	20.7 MPa (3000 PSI) Optional 69 MPa (10000 PSI)	Load Frame Mounted / System HPU Optional Intensifiers

*The 685.60 air over oil intensifier is no longer in production.

Standalone Grip Supply

- The 685.10 and 685.22 standalone grip supplies have an internal electric motor and pump to provide high pressure oil.

- This uses a single phase motor available in configurations for all worldwide locations.

  - 115 VAC 60 Hz
  - 100-115 VAC 50 Hz
  - 208-230 VAC 60 Hz
  - 200-240 VAC 50 Hz

Load Frame Mounted

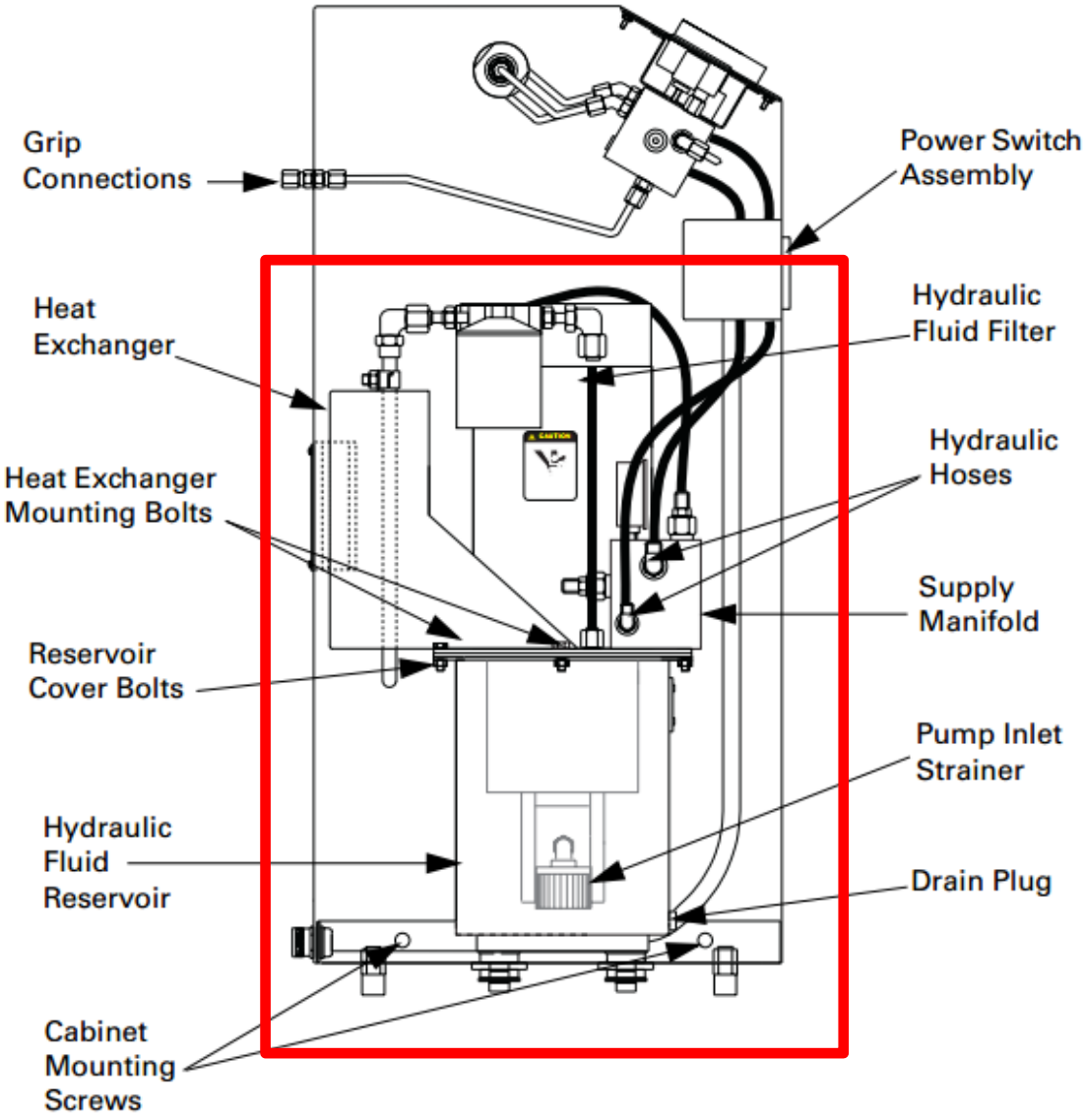
- The 685.53 is a load frame mounted grip control.
- This uses the system HPU
- This is available in both a 20.7 MPa (3000 PSI) version and a 69 MPa (10000 PSI) version.
- The 69 MPa (10000 PSI) version uses pressure intensifiers mounted in the load frame to increase the HPU pressure

Hydraulic Circuit

- All of the grip supplies and grip controls operate in a comparable manner
- All of these contain similar controls and functions
  - Main pressure relief to control grip pressure
  - Secondary pressure relief to prevent an overpressure condition
  - Flow rate needle valve to control the rate of grip opening and closing
  - Pressure gage for the grip pressure

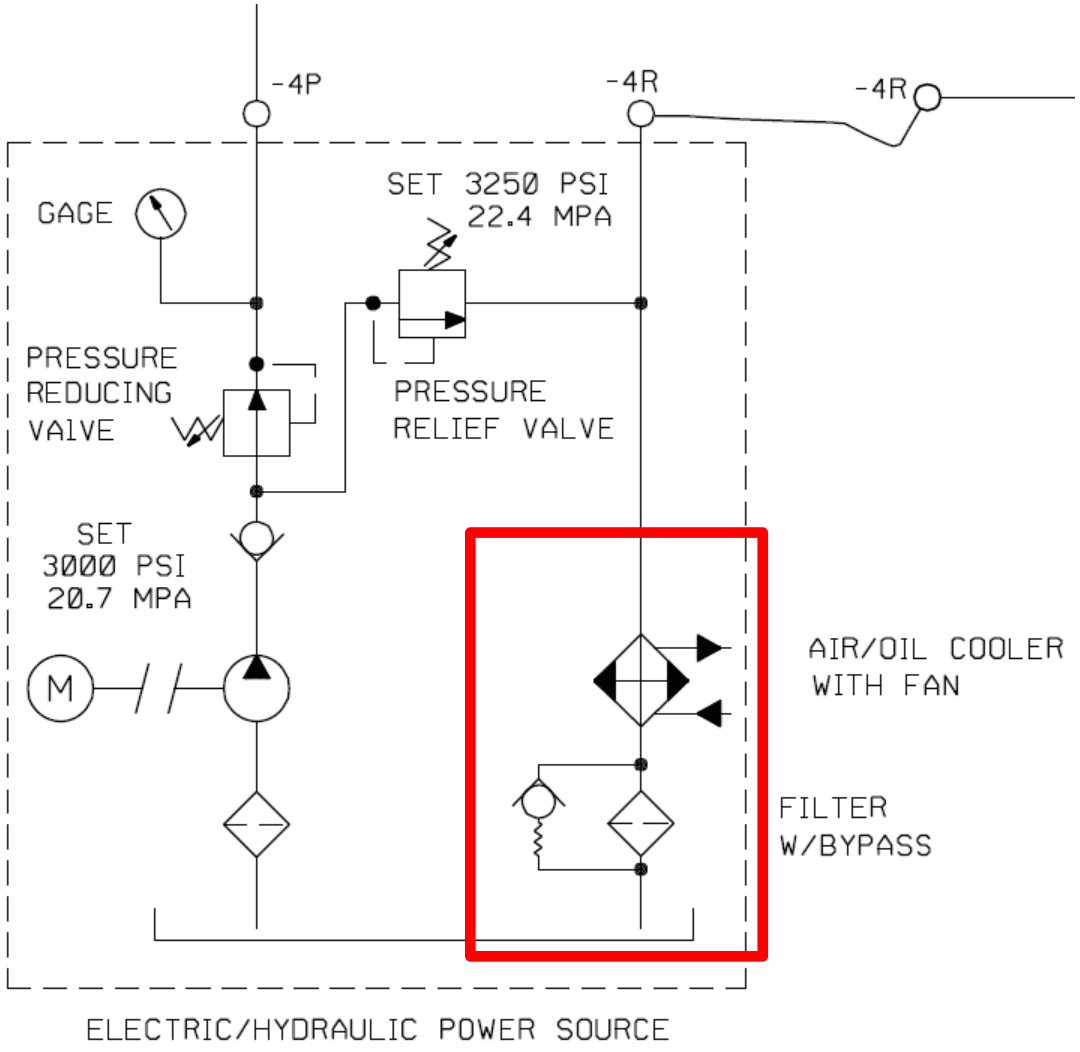
Internal Hydraulic Pump

- Both the 685.22 and the 685.10 use the same internal hydraulic pump as a pressure source.
- The power unit has an electric motor, pump submerged in the reservoir, heat exchanger, and oil filter.



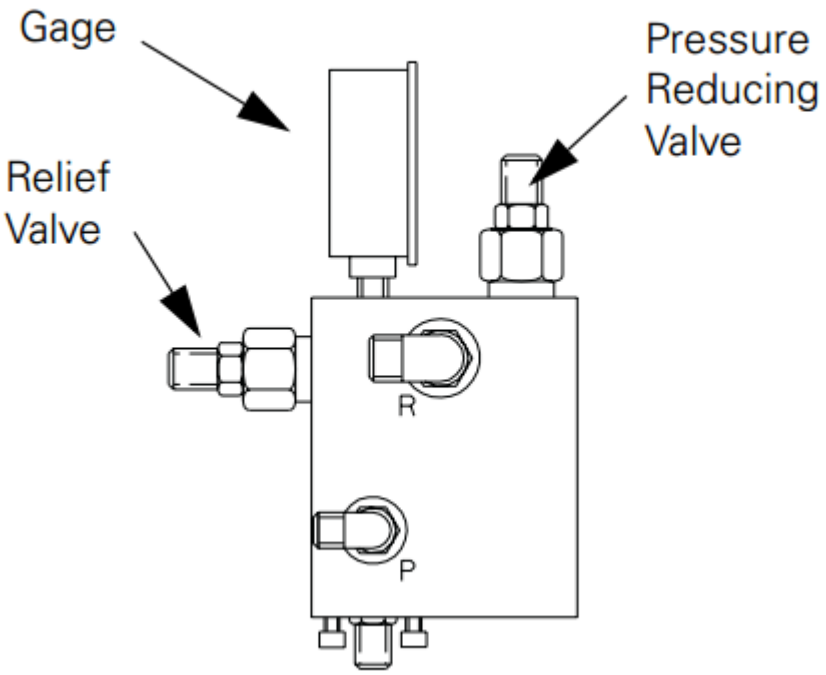
Internal Hydraulic Pump

- The pump is fixed volume capable of generating 20.7 MPa (3000 PSI).
- There is an air cooled heat exchanger with a fan.
- These power units contain a spin on return oil filter.



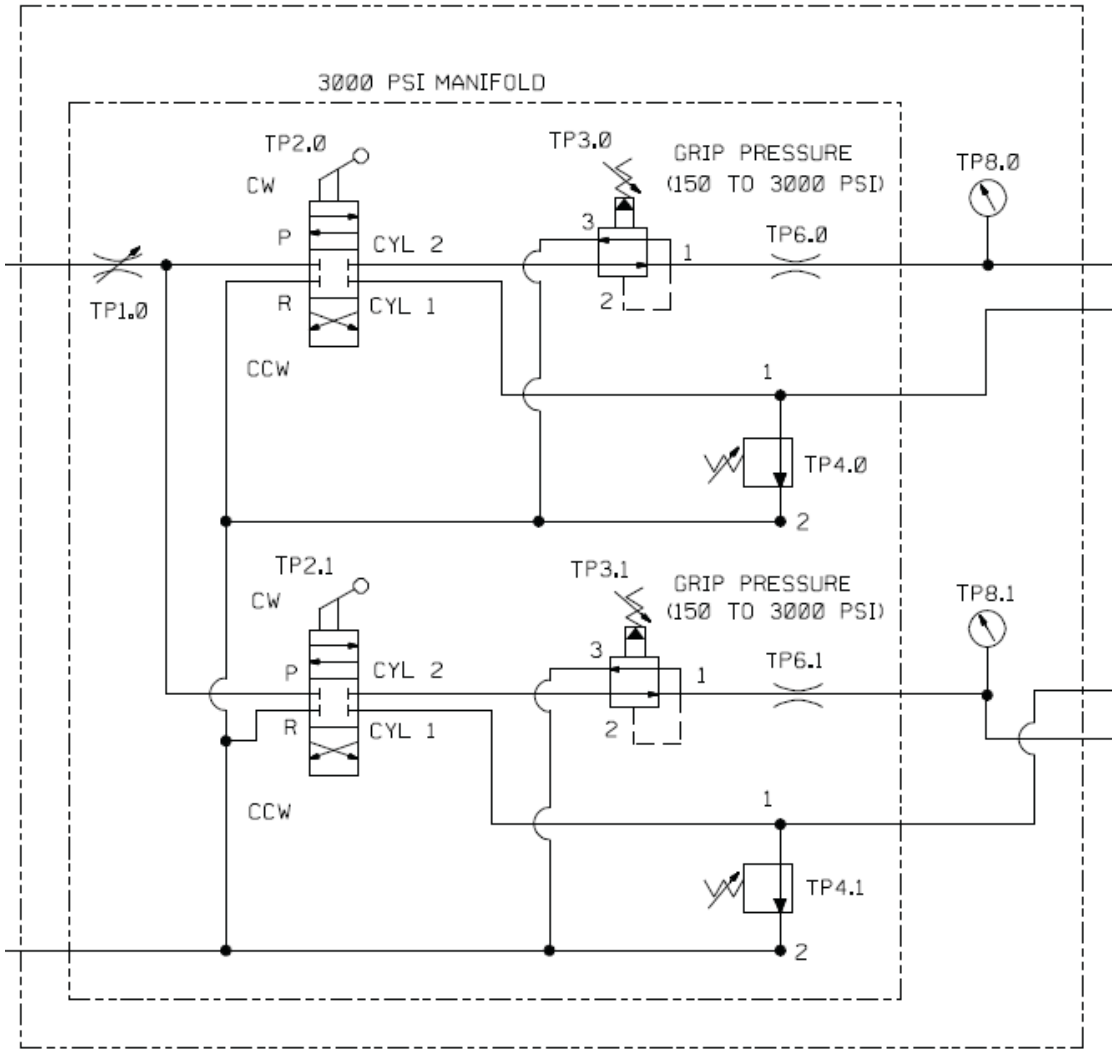
Internal Hydraulic Pump

- Pressure is adjusted with a pressure reducing valve to 20.7 MPa (3000 PSI) output.
- There is a secondary pressure relief valve factory adjusted for 22.4 MPa (3250 PSI) to prevent an overpressure condition.



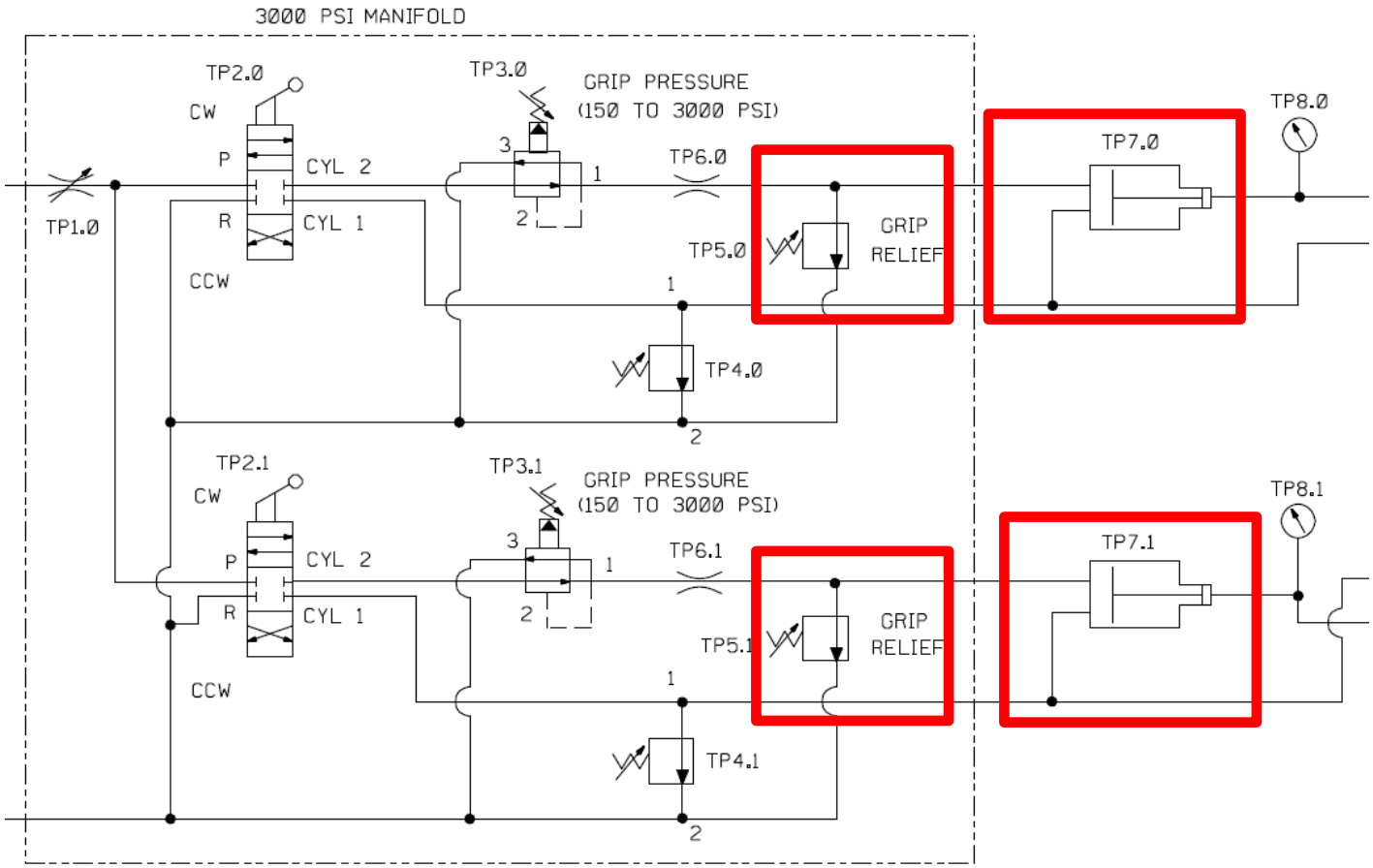
Control Manifold – 3000 PSI Model

- The control manifold has the grip controls, grip pressure, and grip rate adjustments.
- A similar manifold is used for both the 3000 PSI and the 10000 PSI version.



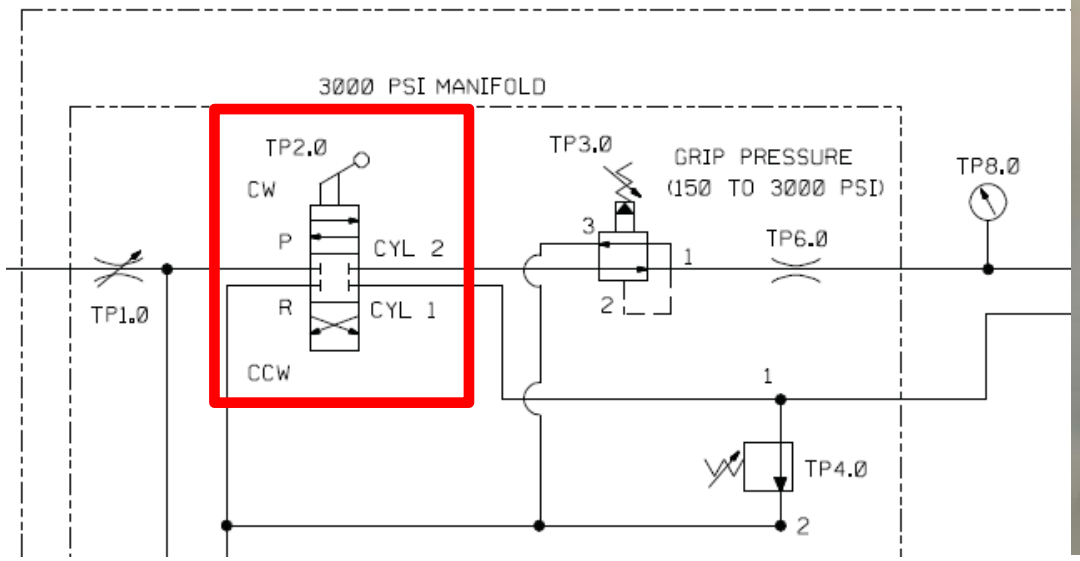
Control Manifold – 10000 PSI Model

- The 10000 PSI version has a secondary relief valve.
- There are pressure intensifiers to increase the pressure from 3000 PSI to 10000 PSI



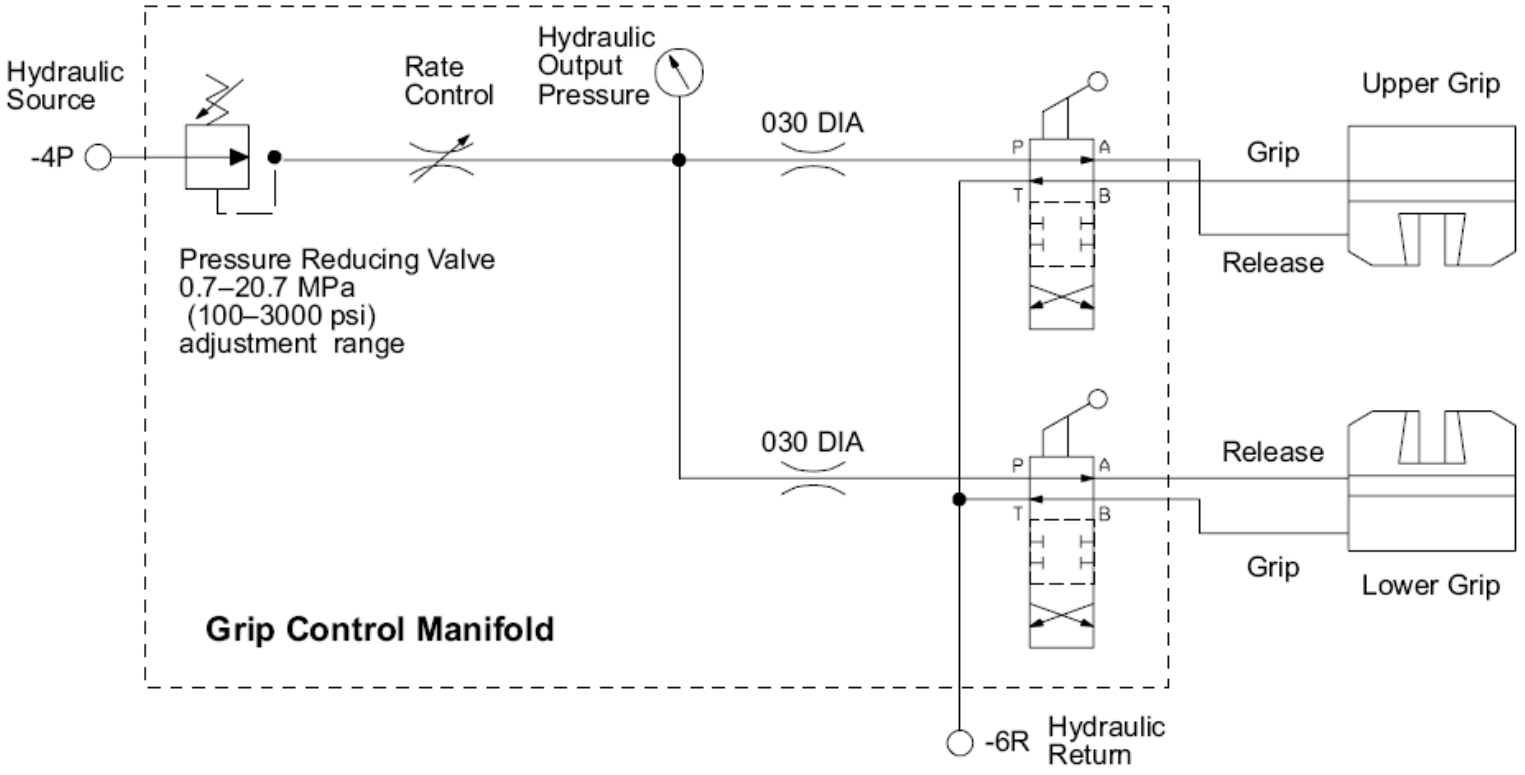
Control Manifold - Operation

- To grip a specimen pressure is connected to the grip port and return is connected to the release port.
- To un-grip a specimen pressure is connected to the release port and return is connected to the grip port.



Control Manifold – Load Frame Mount

- The 685.53 mounts in a load frame and uses the system HPU.
- This has a pressure reducing valve and a rate needle valve.

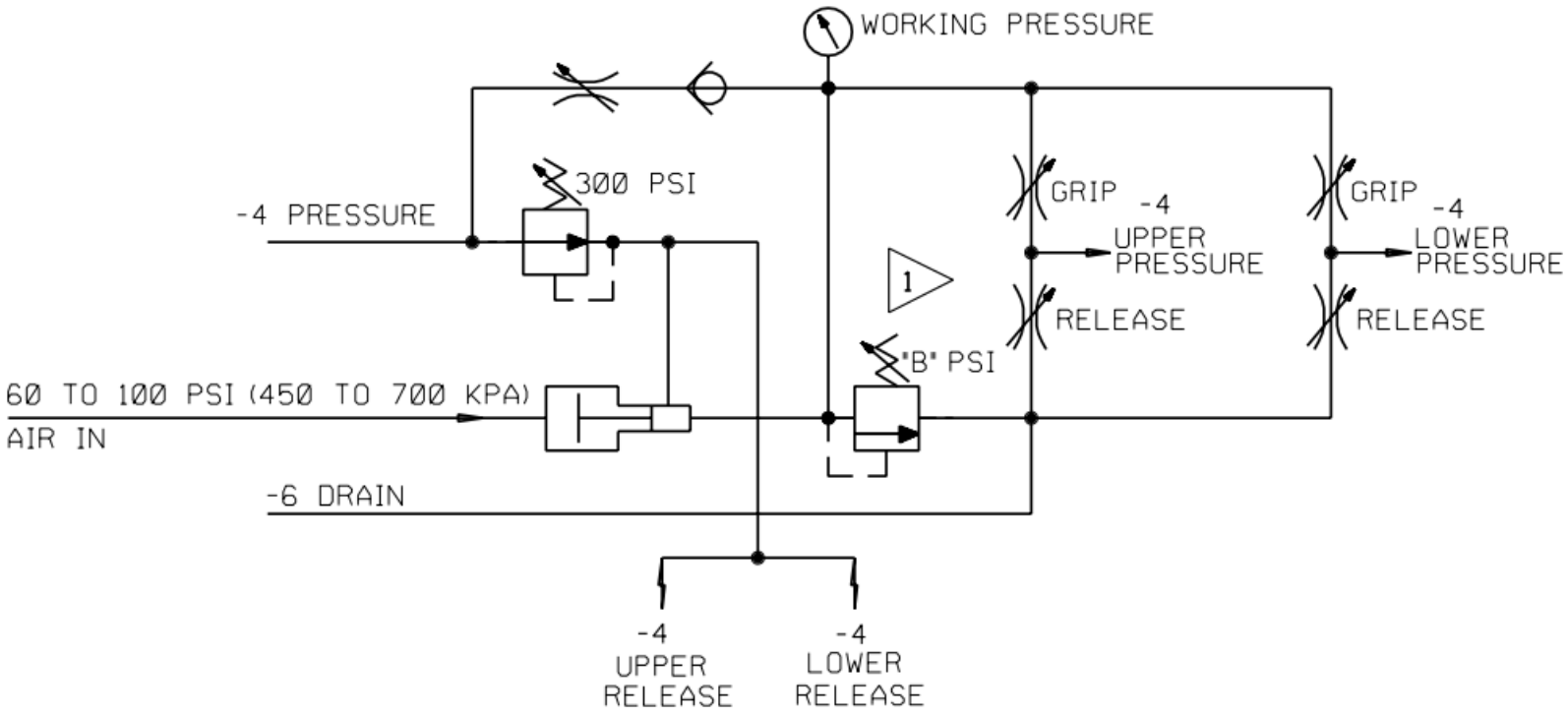


685.60 Legacy Air over Oil Grip Supply

- The legacy air over oil grip supply is no longer in production.
- Several versions were available which could develop up to 10000 PSI.

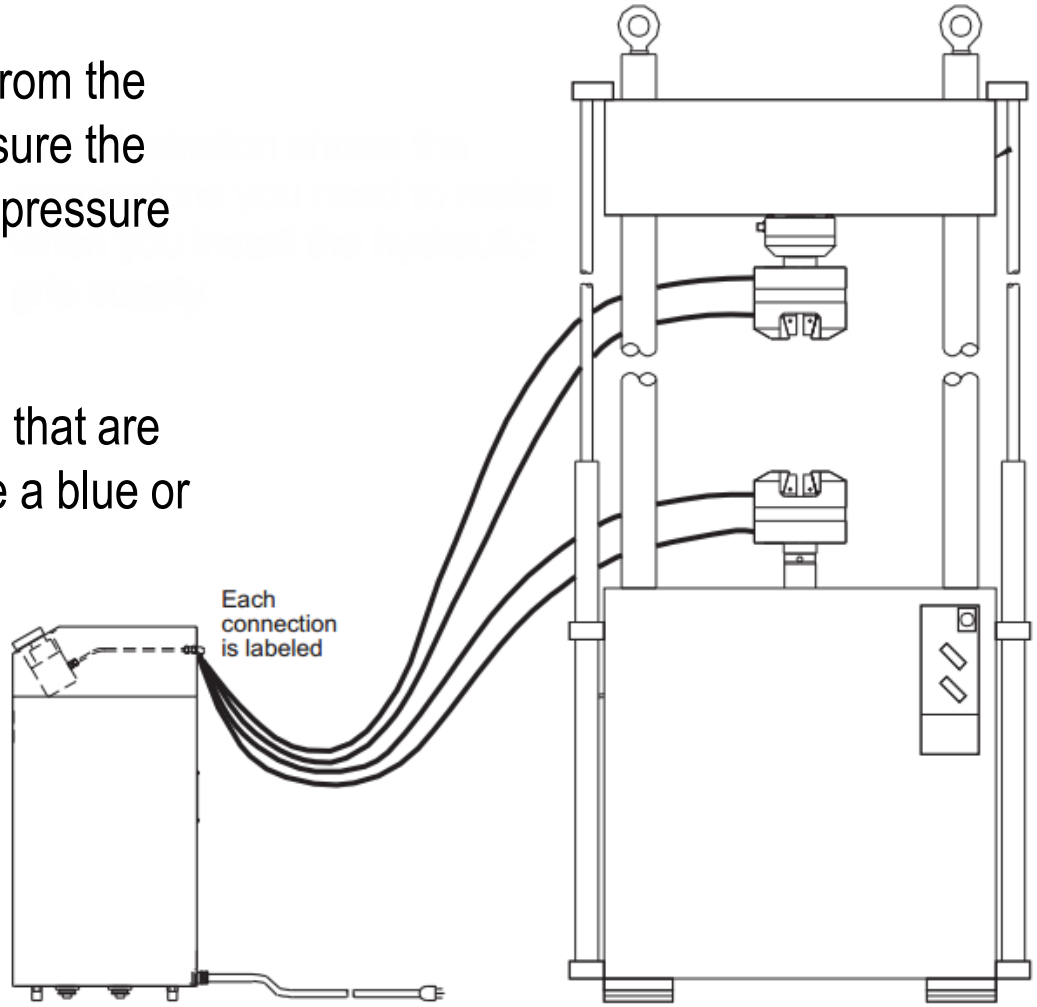
685.60 Legacy Air over Oil Grip Supply

- This was connected to the system HPU and used shop air which drove an intensifier to create high pressure oil for the grips.
- Drawings can be located by searching Finder for part number 511377.



Installation - Hoses

- When installing the hoses from the grip supply to the grips be sure the hoses and grips match the pressure rating of the grip supply.
- 69 MPa (10000 PSI) hoses that are used by MTS typically have a blue or orange sheathing.

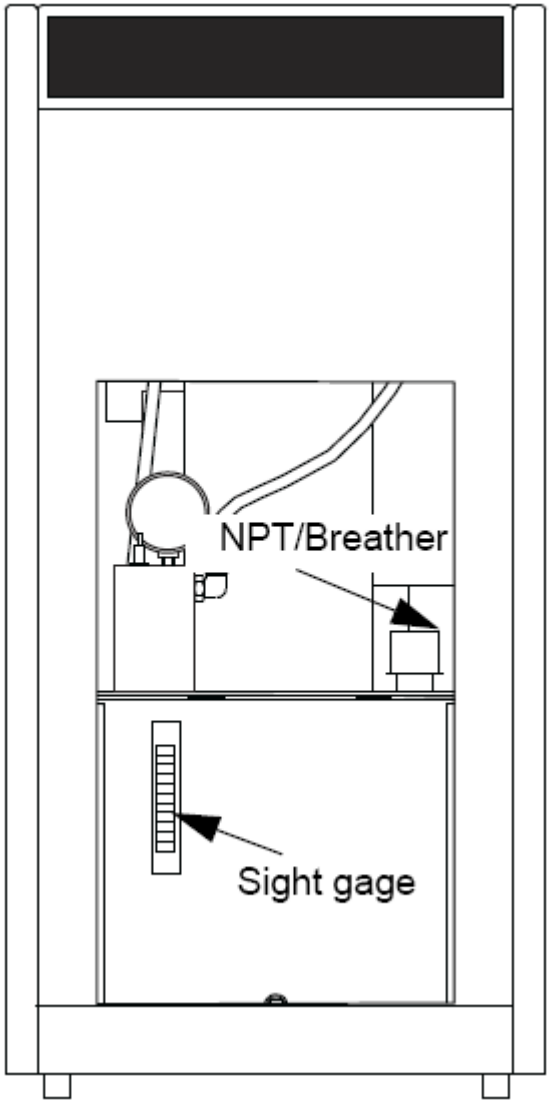


Installation - Hoses

- There are 4 hoses to be installed to the grips.
- Both the lower and upper grips have a grip and release port.
  - Ensure power is off and pressure at zero before connecting hoses.
  - Connect hoses with the correct pressure rating between all 4 locations.

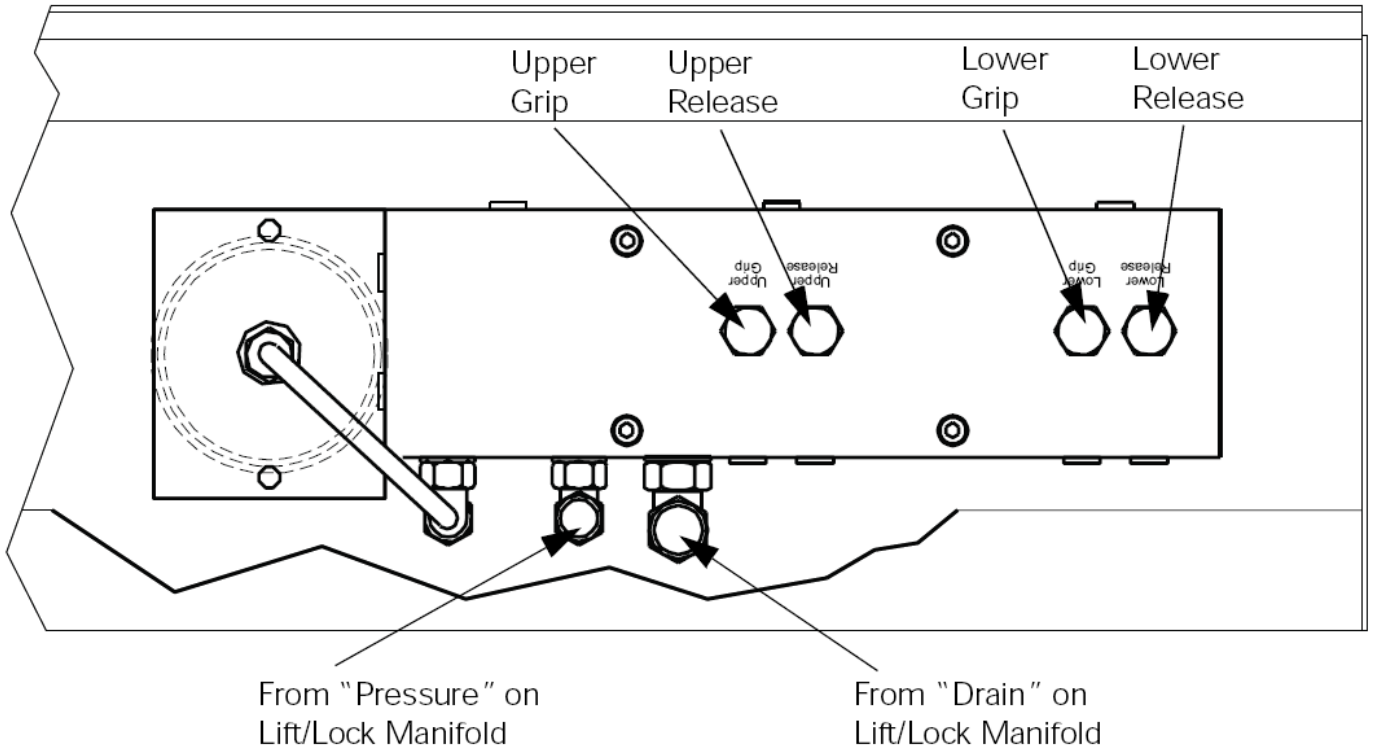
Installation – Hydraulic Pump

- The reservoir breather is replaced with a plug for shipping purposes.
  - Remove the plug from the breather hole.
- If the oil is below the “high” mark add oil through the hole in the reservoir for the breather.
  - Use only Mobil 525 SHC oil
  - An additional gallon is shipped with every grip supply
- Install the breather.
  - This can be found inside the grip supply taped to the manifold.



Installation – 685.53

- The grip control manifold will typically arrive installed in the load frame.
  - These are used with legacy load frames such as the 318 and 322.
- Installation of grip hoses is similar to stand alone grip supplies.



Grip Pressure Adjustment

- The grip pressure required for each test varies based on several items.
  - The type of grips
  - Specimens to be tested
  - The test type to be performed
  - The grip supply type

- For information on how to select the proper grip pressure see the appropriate grip manuals.

Maintenance Schedule

» Below is the 685 grip supply maintenance schedule.

MAINTENANCE	INTERVAL*
Check fluid level and replenish as required	Daily
Inspect hoses for wear or leaks	Daily
Check fluid quality/condition and replace if necessary	Every 3 months
Clean the heat exchanger	Every 6 months
Replace fluid filter element	Every 6 months
Clean fluid/air cooler fins	Every 6 months
Replace hydraulic fluid†	Yearly or sooner if poor condition is noted
Clean pump inlet strainer	Whenever replacing fluid

Standalone Grip Supply Oil

- The grip supply uses Mobil 525 SHC oil.
  - This oil is selected for its ability to work well in a wide temperature range including grips which are installed in a chamber with either very cold or very hot ambient air.
- The supply has a spin on oil filter
- Should be changed every 6 months of operation

Replace the fluid filter element whenever replacing the hydraulic fluid, or every six months. The filter is located behind the left side door (see “Component Identification”).

The fluid filter uses a spin-on filter and may require a strap-type wrench for removal. The MTS part number for the filter element is 114963-11. Use a drip pan and rags to catch and wipe up fluid spilled during this procedure.

Grip Supply Oil Filter Change

1. Turn the power switch to the **Off** position.
2. Remove the left side of the chassis (see "Removing the Side Panels") to access the filter.
3. Remove the filter element. Discard the old filter element and any fluid it contains.
4. Wipe off the bottom seal surface of the filter head.
5. Apply clean hydraulic fluid (Mobil 525 SHC) to the seal on the new filter element.
6. Screw on the new filter element and tighten it (hand-tight) only.
7. Turn the power switch to the **On** position.
8. Check for fluid leaks around the top of the filter element. If leaking, the element may be tightened one additional quarter turn (you may need to use a strap wrench).