BI016855
A6474X381
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Operation and Maintenance Manual

CM235 Continuous Miner

A6474X381 (Hydraulic with Water Cooling System)

Hydraulic

Main Flow - Primary Pressure Circuit

The main flow-primary pressure circuit is powered by the hydraulic pump. From the pump, oil enters a 10 micron by-passing pressure filter and continues to the main control valve, whose relief is set at 3,000 psi (204 bar). The main control valve operates all cylinder functions.

The auxiliary pressure circuit is powered by the hydraulic pump. Oil from both the primary and auxiliary circuits exits the main control valve and passes to the oil reservoir.

Fig. 5: Main flow-primary pressure circuit (pump running)

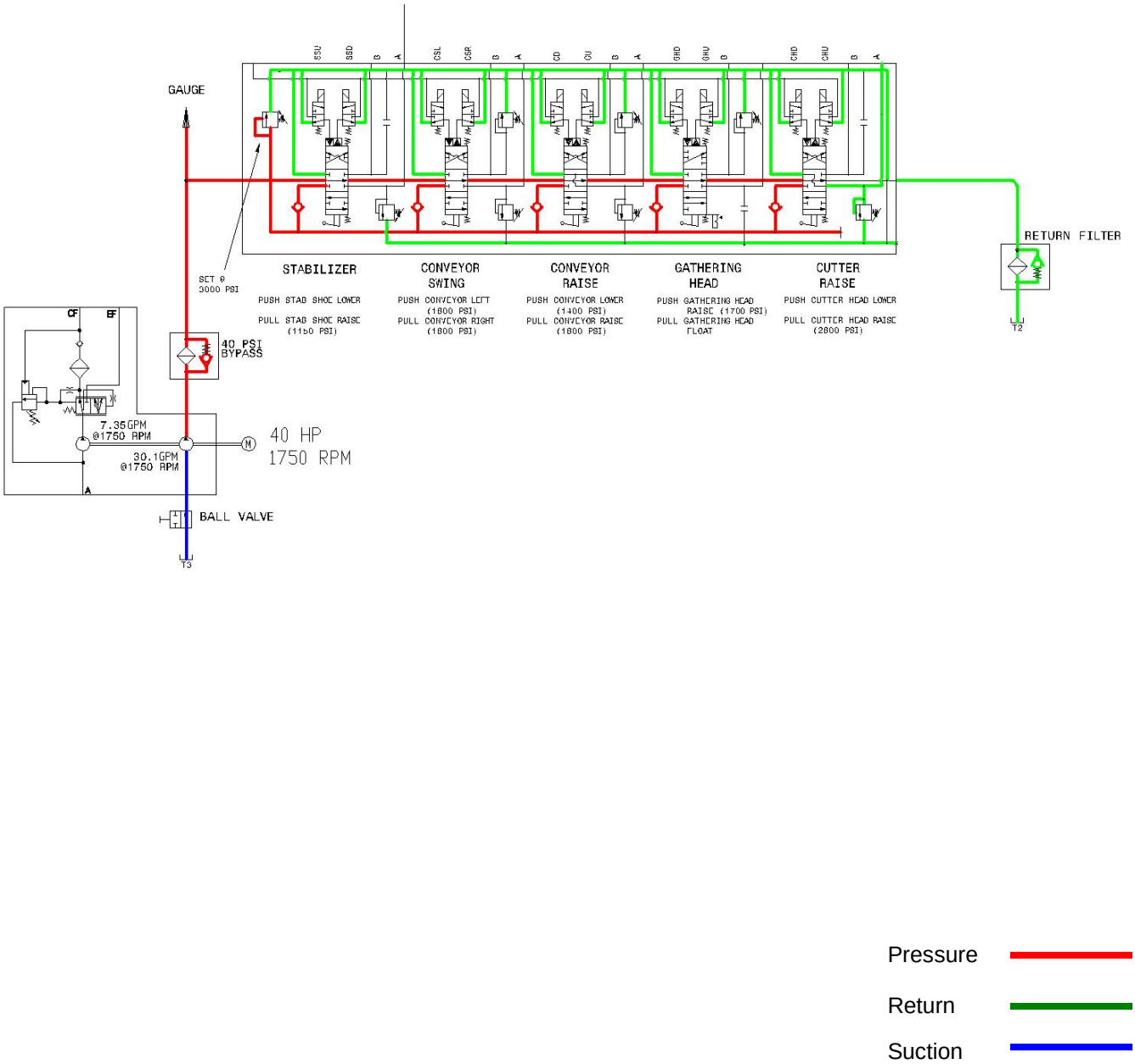
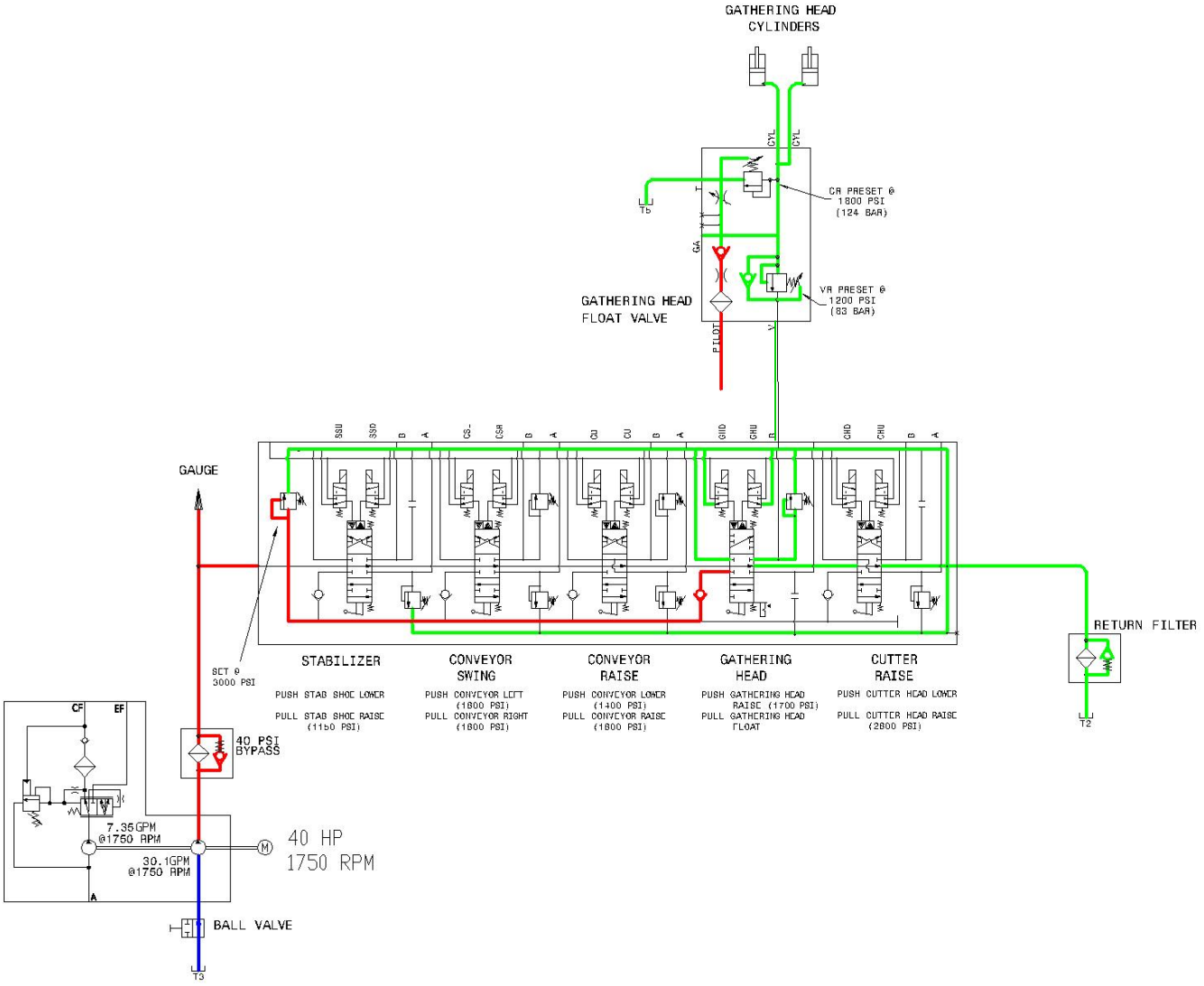


Fig. 15: Gathering head lower circuit



Dust Cooling Left and Right Hand Chassis Circuit

The dust-cooling circuit can be operated by manual or remote solenoid control (see Electrical section in this manual). When the dust-cooling solenoid coil is energized, it shifts a spool, allowing hydraulic oil to flow to the hydraulic pilot operated normally closed water valve. The hydraulic oil shifts a spool, allowing water to pass though it to the dust cooling circuit. For the hydraulic portion of this circuit, see the Hydraulic section of this manual.

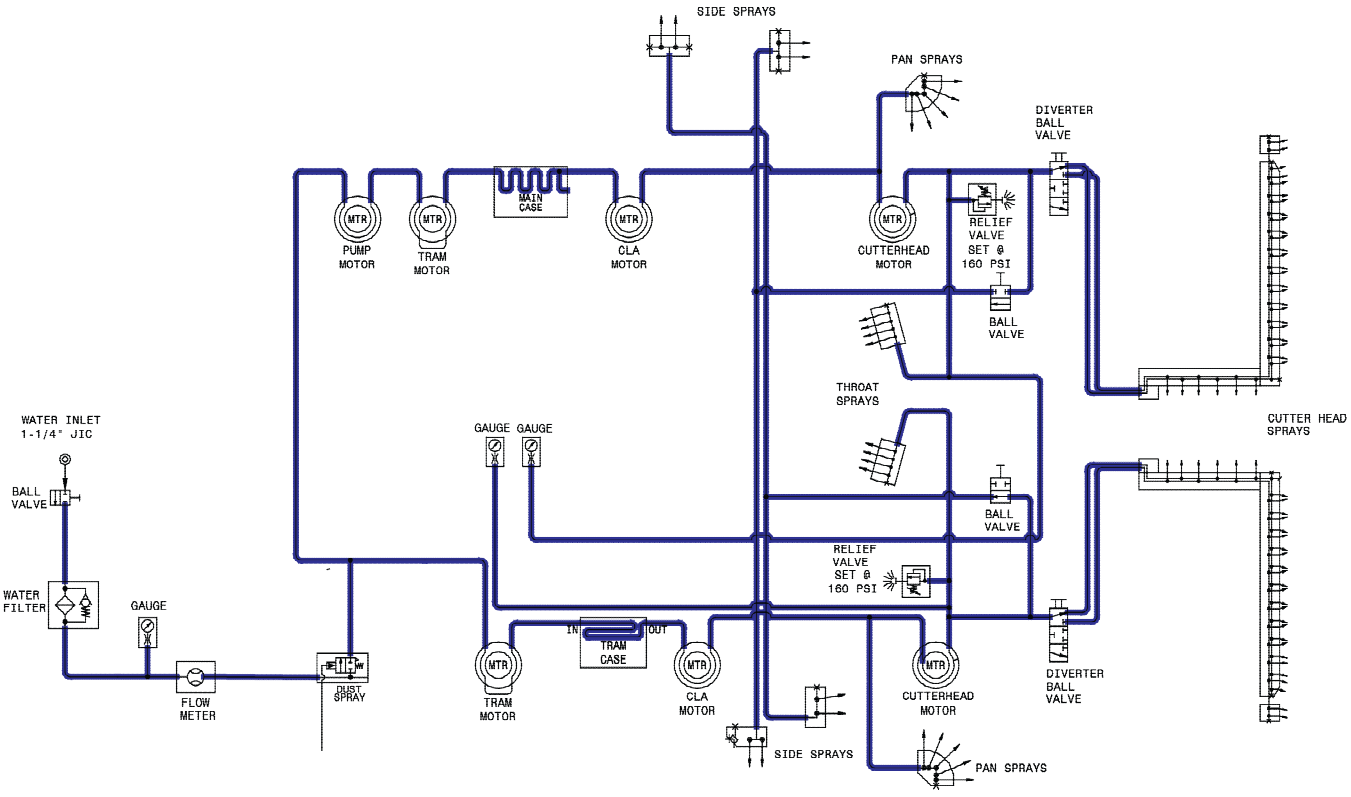
The dust-cooling valve can also be actuated by turning the manual valve handle.

The dust-cooling left and right hand chassis circuit (Fig. 25) continues from the dust cooling water supply circuit. From the dust-cooling pressure manifold, the water flows through the pump motor, the tram motor, main case, the gathering head motor, and the cutter head motor. Water branches off of the gathering head motor to the pan sprays and from the cutter head motor to the head spray, throat spray, side spray, and relief valve.

The throat spray manifold helps keep dust from flowing up the conveyor as the coal is being transported. There is an atmospheric relief located before the (optional) dust spray direction (left or right) diverter valve in case pressure builds up from clogged spray nozzles.

The dust-cooling circuit shown in Fig. 25 is typical for a miner containing bi-directional spray manifolds and side sprays. The circuit for your machine may vary depending on your dust plan and unique requirements. Always refer to the schematic in your parts book for your machine.

Fig. 25: Dust cooling left and right hand chassis circuit



Adjustment procedures

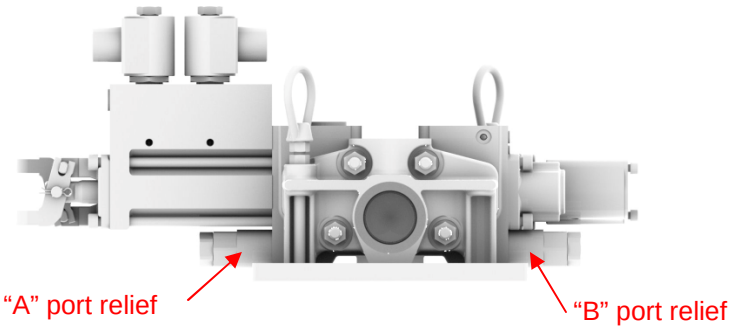
Conveyor Chain Take-Up Valve Replacement:

Set the pilot relief to 200 psi (14 bar), per step 4 of the Pilot/auxiliary pump circuit relief valve adjustments procedure, making sure the conveyor chain take-up needle valve is closed (turn clockwise to close).

Main Control Valve Working Port Relief Adjustment

Each valve bank section, with the exception of the gathering head, stabilizer shoe and cutter head, has two (2) working port reliefs (Fig 25). When the handle is pulled (spool in), oil is directed to the work port and relief closest to the handle; this is “A” port. When the handle is pushed in (spool out), oil is directed to the work port and relief farthest from the handle; this is ‘B” port.

Fig. 25: Main control valve Port reliefs



WARNING **Always allow cylinder functions to bottom out (stop moving) before adjusting any pressure. Pressure adjustments will only be accurate when the cylinder is in this condition.**

IMPORTANT **The main relief is set higher than the port reliefs and will only relieve if a spike occurs in the system or if the port relief does not function properly. This provides protection of the main pump section.**

DANGER **Do not adjust the main relief over 3,000 psi (207 bar). Destruction of the valve bank and the main pump could result.**

DANGER **Always be alert for any unintended machine movement.**

IMPORTANT **Reference the Hydraulic section in this chapter for individual circuit information. Always refer to the hydraulic schematic in your parts manual for your miner.**

WARNING **Two people are required to adjust pressure settings. One person will make the adjustments while the second person must remain at the machine stop at all times during the adjustment procedure. Failure to do so may result in serious injury or death.**

Table 7: Flow chart I for troubleshooting excessive noise

Pump Noisy		Motor Noisy		Relief/Counterbalance Valve Noisy	
Cause	**Remedy**	**Cause**	**Remedy**	**Cause**	**Remedy**
Cavitation	A	Coupling misaligned	C	Setting too low or too close to another valve setting	D
Air in fluid	B	Motor or coupling worn or damaged		Worn poppet and seat	E
Coupling misaligned	C				
Pump worn or damaged	E				

Remedies

A. Any or all of the following:

1. replace dirty filters
2. wash strainers in solvent compatible with system fluid
3. clean clogged inlet line
4. clean reservoir breather vent
5. change system fluid
6. change to proper pump drive motor speed
7. check fluid temperature

B. Any or all of the following:

1. tighten leaky inlet connections
2. fill reservoir to proper levels: with few exceptions, all return lines should be below fluid level in the reservoir
3. bleed air from system
4. replace pump shaft seal; also replace shaft if worn at seal journal

C. All of the following:

1. align unit
2. check condition of seals, bearings, and coupling

D. Install and/or adjust pressure gauge

E. Overhaul or replace defective parts