MT PRODUCT INFORMATION
HEAT EXCHANGER PROTECTION MODIFICATION

DOCUMENT	**COOLER PROTECTION MODIFICATION**
MACHINE/ GROUP	**ALL SIMBA MACHINES**
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Background

Heat exchanger failures are becoming increasingly common due to mine water pressure spikes and corrosion. These failures are resulting in major damage to hydraulic systems due to water ingress and contamination.

The modification explained in this document removes the heat exchange from the pressurised water circuit by regulating flow to the unit. This is achieved by draining cooling flow to atmosphere that would have been directed through the water circuit.

The design change ensures the heat exchange is not subjected to excessive, or spiking water pressure. If internal corrosion eventually causes failure, the oil pressure remains greater than the water pressure within the unit and therefore prevents water ingress into the hydraulic circuit.

As shown in the schematic attached, excess cooling flow is diverted through the Y174 Cooling Shunt valve which is regulated by hydraulic oil temp and machine load. Valve 16 (Flushing) is energised when drilling is activated to provide addition cooling to ensure an optimal oil temperature range of 55 - 65 degrees to be maintained.

Required items for install

Bill of Materials - to support the modification

Part Number	Name	QTY
MT3217 9996 01	SOLENOID VALVE	1
MT8202 0311 29	BALL VALVE	2

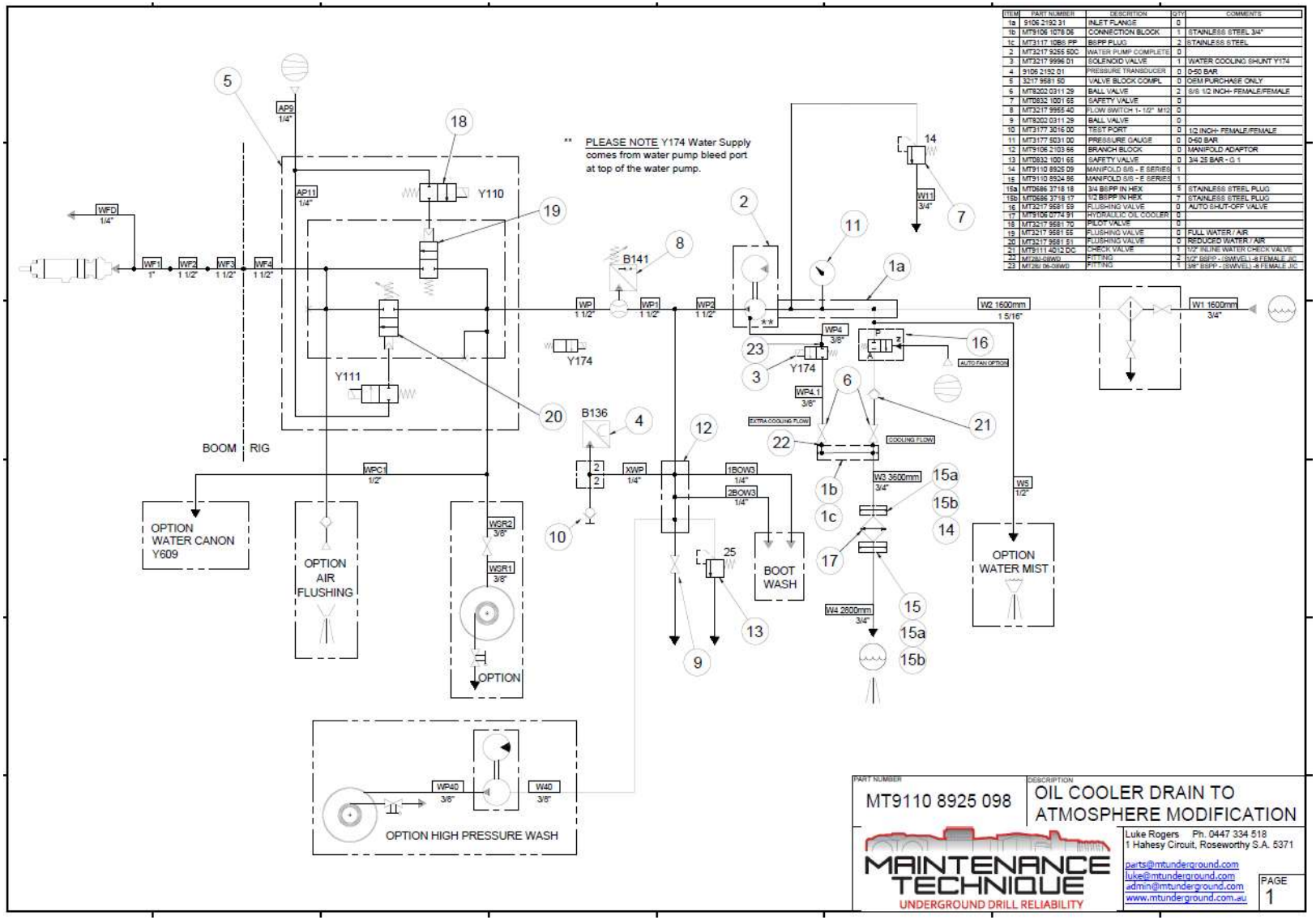
- MT Heat Exchanger Modification kit: **MT9110 8925 098**
- -6 hose (with -8 fittings) to connect pre and post water to the supply manifold.
- -20 hose and JIC fittings, 2 x 1 ½ BSPP to -20 JIC adapter for connecting the hose reel to the water pump inlet.
- -12 hose and fittings to supply water from the manifold to the cooler and from the cooler to the ground.
- Spanner roll.
- Anti-seize for all threads.

MT3177 5031 00	PRESSURE GAUGE	1
MT9111 4012 DC	CHECK VALVE	1
MT9106 1458 538	DIN PLUG SINGLE	1
MT1217 1251 004	CABLE Y PIECE	1
MT1211 1221 010	SIGNAL CABLE 1M	1

Safe Work Instructions

1. Mount the manifold 1B to the spare bracket next to the water pump.
2. Attach the shunt valve to the top bleed port on the water pump.
3. Connect 2 flow controls to the manifold.
4. Connect the base cooling flow control using -6 hose to the pump inlet manifold, pre water pump. Set for minimal flow. Install the Check valve 21 as per schematic.
5. Connect the second flow control to the cooling shunt and adjust for additional water cooling (post water pump).
6. Install the Stainless Steel manifolds (14 &15) and plugs to the cooler inlet and outlet.
7. Run a -12 hose from the manifold 1B to the cooler inlet.
8. Run the water outlet from the cooler directly to the ground with -12 hose.
9. Part 16 (option) is fitted if site require cooling to shut down on machine stop (preventing constant water flow onto ground over shift change etc).
10. Review and check against Schematic for MT9110 8925 098 (Modification Kit)
11. RCS cooling parameters
    - Cooling @ 55deg (shunt opens for additional cooling +/- 2 degrees)
        - Warning @ 65 deg
        - Shut Down @ 75 Deg

Schematic



ITEM	PART NUMBER	DESCRITION	QTY	COMMENTS
1a	9106 2192 31	INLET FLANGE	0	
1b	MT9106 1078 06	CONNECTION BLOCK	1	STAINLESS STEEL 3/4"
1c	MT3117 1086 PP	BSPP PLUG	2	STAINLESS STEEL
2	MT3217 9255 50C	WATER PUMP COMPLETE	0	
3	MT3217 9996 01	SOLENOID VALVE	1	WATER COOLING SHUNT Y174
4	9106 2192 01	PRESSURE TRANSDUCER	0	0-50 BAR
5	3217 9581 50	VALVE BLOCK COMPL	0	OEM PURCHASE ONLY
6	MT8202 0311 29	BALL VALVE	2	S/S 1/2 INCH- FEMALE/FEMALE
7	MT0832 1001 65	SAFETY VALVE	0	
8	MT3217 9965 40	FLOW SWITCH 1- 1/2" M12	0	
9	MT8202 0311 29	BALL VALVE	0	
10	MT3177 3016 00	TEST PORT	0	1/2 INCH- FEMALE/FEMALE
11	MT3177 9031 00	PRESSURE GAUGE	0	0-60 BAR
12	MT9106 2103 66	BRANCH BLOCK	0	MANIFOLD ADAPTOR
13	MT0832 1001 65	SAFETY VALVE	0	3/4 25 BAR - G 1
14	MT9110 8925 09	MANIFOLD S/S - F SERIES	1	
15	MT9110 8924 96	MANIFOLD S/S - F SERIES	1	
15a	MT0686 3718 18	3/4 BSPP IN HEX	5	STAINLESS STEEL PLUG
15b	MT0686 3718 17	1/2 BSPP IN HEX	7	STAINLESS STEEL PLUG
16	MT3217 9581 69	FLUSHING VALVE	0	AUTO SHUT-OFF VALVE
17	MT9106 0774 91	HYDRAULIC OIL COOLER	0	
18	MT3217 9581 70	PILOT VALVE	0	
19	MT3217 9581 55	FLUSHING VALVE	0	FULL WATER / AIR
20	MT3217 9581 61	FLUSHING VALVE	0	REDUCED WATER / AIR
21	MT9111 4012 DC	CHECK VALVE	1	1/2" INLINE WATER CHECK VALVE
22	MT28U 08WD	FITTING	2	1/2" BSPP - (SWIVEL) -8 FEMALE JIC
23	MT28U 06-08WD	FITTING	1	3/8" BSPP - (SWIVEL) -8 FEMALE JIC