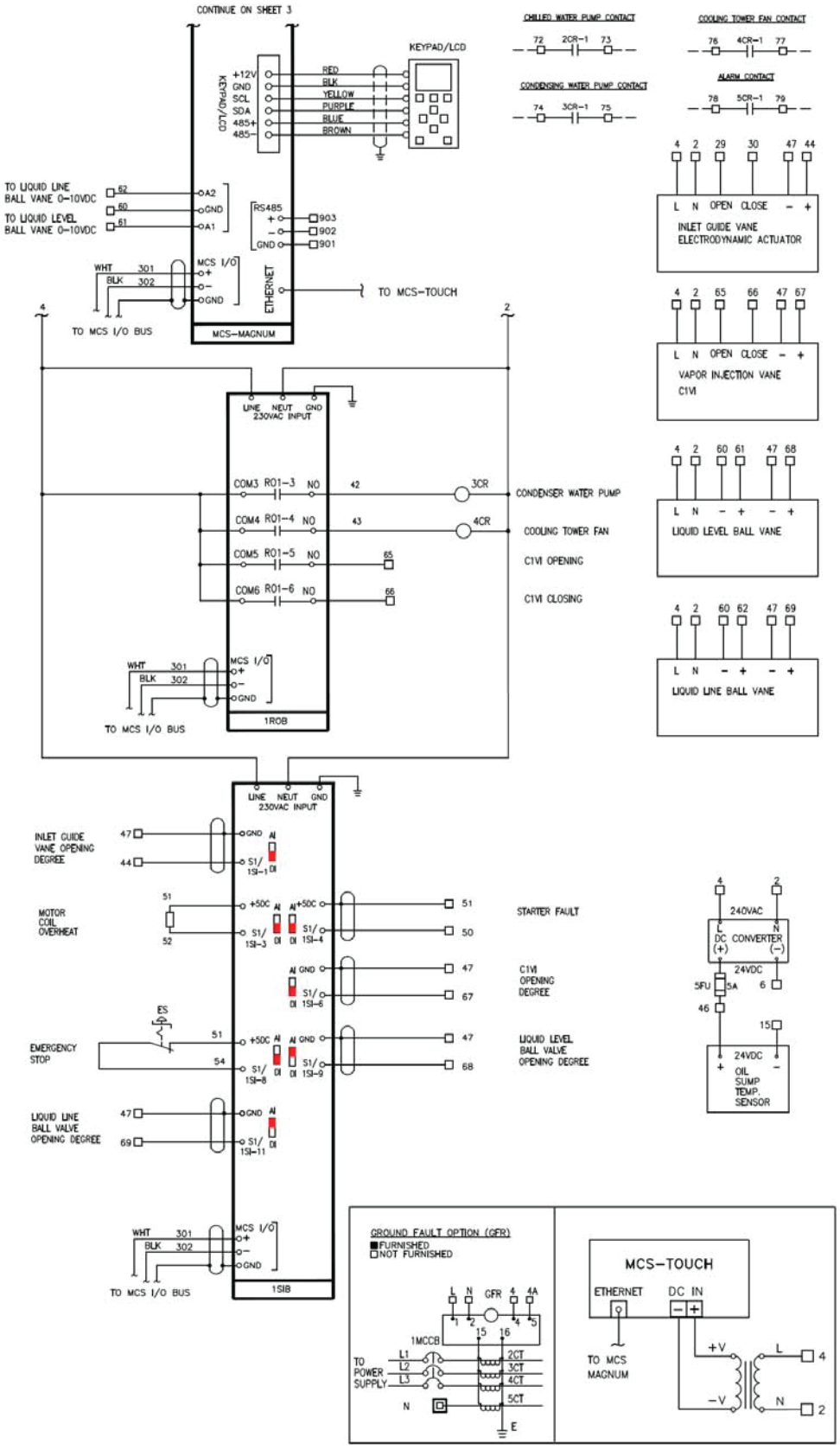
If anything is abnormal during the operation, referring to table below (Table 14.0), determine the causes and solve the problem in order to bring the machine back to normal condition.

If anything abnormal is found in or out of the list below, determine the causes and solve them as soon as possible. If any queries, please contact American Pro local office for assistance.

Table 14.0 Chiller Troubleshooting

Malfunction	Cause	Solution
Compressor cannot run	1. Power off (Interrupt) 2. Overload 3. Main Breaker failure 4. vessels low (high) pressure switch	1. Power on after check 2. Determine the cause of overload. 3. Check and replace. 4. Check and adjust the pressure settings.
Unduly Low evaporating pressure	1. Insufficient chilled water flow 2. Under load 3. Orifice clogged 4. The heat exchange efficiency of tube become worse because of pollution such as scale. 5. Insufficient refrigerant	1. Check the chilled water circuit and make the water flow reach its rated value. 2. Check the auto restart/stop temperatures 3. Clean the tube. 4. Charge the refrigerant to required volume
Unduly High condensing pressure	1. Insufficient cooling water flow 2. The cooling capacity of cooling tower decreases. 3. High condenser load because of the high cooling water temperature 4. Air trapped in system 5. The heat exchange efficiency of tube become worse because of pollution such as scale.	1. Check the cooling water circuit and make the water flow reach its rated value. 2. Inspect the cooling tower 3. Clean the tube
Low differential oil pressure	1. Oil filter blocked 2. The degree of oil pressure regulating valve (oil release valve) is opened more than required. 3. The pump out oil volume decreases. 4. Bearings worn out 5. Oil pressure sensor failure 6. Lubrication oil mixed with excessive refrigerant. (the oil pressure decreases due to foaming when startup)	1. Replace the oil filter 2. Turn down the oil pressure valve to bring up the oil pressure to rated pressure. 3. Inspect the pump 4. Change the bearings. 5. Check with oil pressure gauge and readjust the pressure sensor, replace it if necessary. 6. Launch oil heater after shutdown to maintain oil temperature. (Make sure the oil heater is well connected and the set value is correct)
High oil temperature	1. The cooling capacity of oil cooler decreased. 2. Insufficient refrigerant supplied to oil cooler because the refrigerant filter blocked. 3. Bearings worn out	1. Regulate the oil temperature adjusting valve 2. Clean the refrigerant filter or replace it 3. Repair or replace the bearings.
Chilled water cut off	1. Insufficient chilled water flow	1. Check the chilled water pump and chilled water circuit, bring up the water flow to rated value.
Main motor overload	1. Phase voltage unbalanced 2. Power supply voltage drop too much 3. Insufficient cooling refrigerant supplied to main motor	1. Balance the power supply phase voltage 2. Reduce the power supply voltage drop 3. Check and clean the refrigerant filter, turn up refrigerant regulating valve
High evaporating pressure	The temperature of chilled water increases due to unexpected load	Normal
low condensing pressure	1. Low inlet cooling water temperature 2. Big cooling water volume 3. Insufficient cooling capacity due to lack of the refrigerant in the cooler	1. No failure. But pay attention to the temperature difference between entering chilled and cooling water. 2. Check the pressure difference of cooling water inlet and outlet $\Delta h'$, and adjust it to rated value. 3. Recharge more refrigerant to the set volume

TYPICAL WIRING DIAGRAM

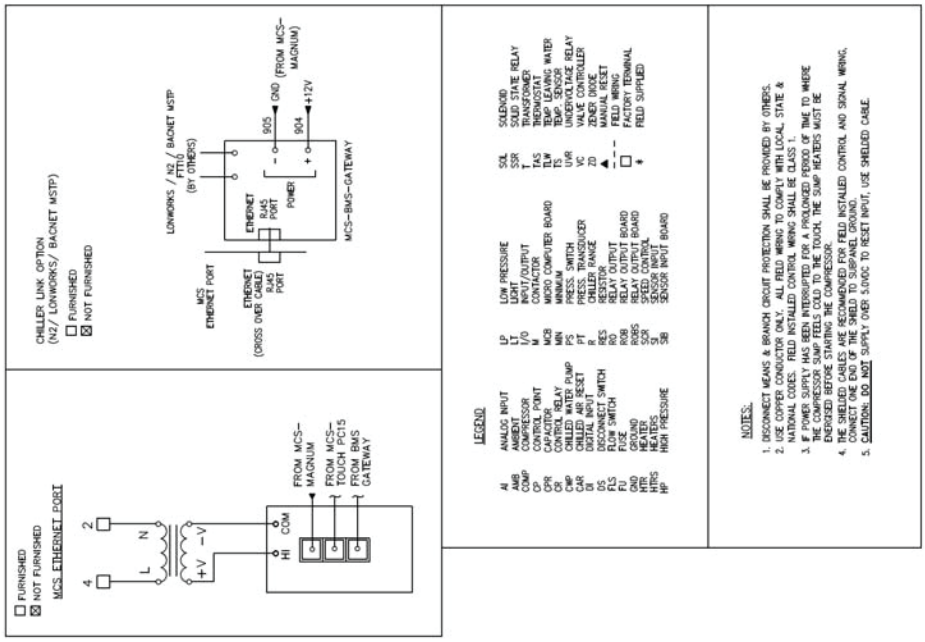


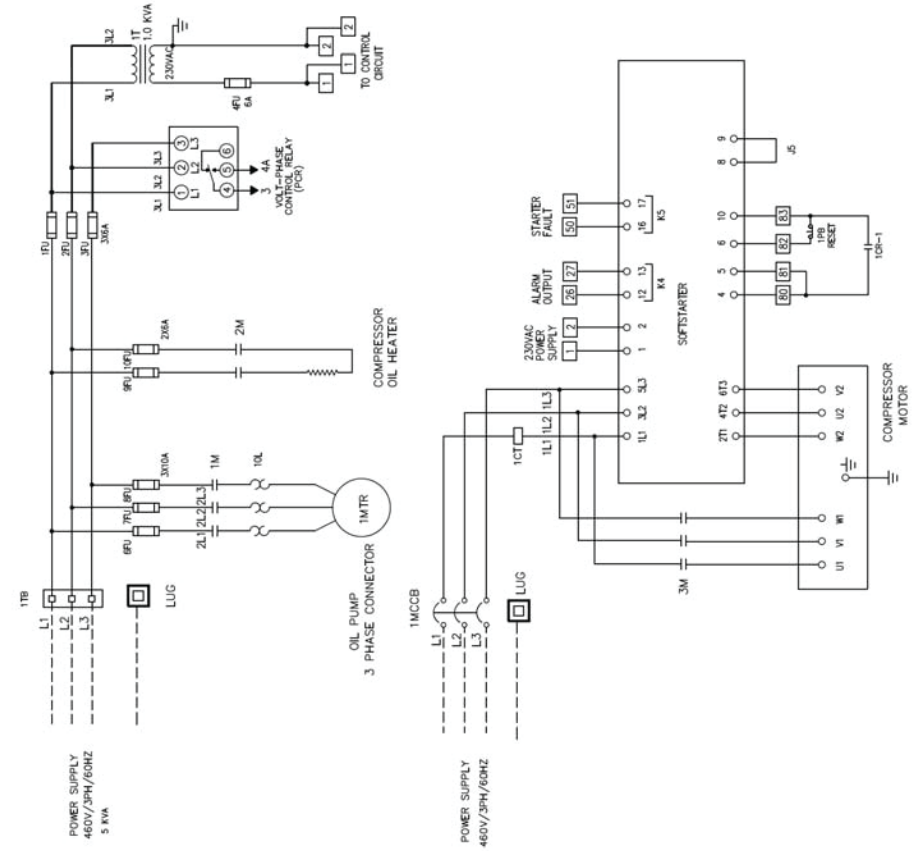
TROUBLESHOOTING GUIDE

Malfunction	Cause	Solution
Pressure inside the chiller decrease (increase) when stop	The refrigerant temperature is affected by room temperature	Normal
Oil level drops during operation	1. Since the oil is mixed with refrigerant, which evaporates and brings oil together to the compressor during startup. 2. Oil is charged too much and absorbed by the compressor though balance pipe on top of gear box. 3. Nozzle, one-way valve is blocked, the oil separated from the refrigerant cannot return to the sump.	1. Launch the oil heater during the chiller shut down to maintain the oil temperature. 2. Make sure the oil level is in the normal range, or drain out excessive oil. 3. Disassemble and clean the educator and one-way valve
Oil level rises during operation	Low oil temperature, the refrigerant is mixed into the oil.	Check the oil temperature during operation and adjust it to the set value through oil temperature regulating valve.
Oil level rises during shutdown	Low oil temperature and the refrigerant is mixed into the oil.	Make sure the oil heater work.
Oil pressure fluctuates	1. Compressor surge 2. Oil temperature regulating valve unstable.	1. Refer to "Compressor surge" item 2. Adjust the oil pressure regulating valve
Low oil supply pressure during startup and operation	1. Not enough open degree of oil pressure regulating valve 2. High viscosity of lubricant oil 3. Low oil temperature	1. Turn up the oil pressure regulating valve 2. Use specific oil brand from American Pro 3. Adjust the oil temperature regulating valve.
Compressor noise	1. The rotary parts touch the fixed parts 2. Bearings worn-out or burnout.	1. Disassemble and check 2. Disassemble and replace
Vibration increases.	1. The vibration-absorbing rubber aging 2. The rotator unbalanced 3. Bearings worn-out 4. The base is broken. 5. Main motor abnormal	1. Replace the vibration-absorbing rubber. 2. Check the rotator and do dynamic balance again. 3. Replace the bearings. 4. Repair the base. 5. Check the main motor, disassemble it if necessary.
Compressor surge	1. High condensing pressure 2. Low condensing pressure	1. Refer to high condensing pressure item 2. Refer to Low condensing pressure item
Unit surge when manual operation of guide vane	Guide vane is operated out of range under its specific condition	Adjust the guide vane open degree

TYPICAL WIRING DIAGRAM

15.1 SOFT STARTER





TYPICAL WIRING DIAGRAM