

Centrifugal Air Compressor Troubleshooting Guide

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Centrifugal Compressor Fail to Start

Possible Causes	Correct Actions
Failure to clear shutdown or interlock devices	Correct shutdown or interlock condition that is indicated by control panel light.
No primary power to the starter	Check voltage to the starter. Check fuses.
No control panel power to the compressor control panel or starter	Check voltage to panel/starter. Check control transformer.
Loose or corroded connection or defective power cables	Check connections. Clean, tighten and replace as necessary.
Defective motor starter or starting circuit	Troubleshoot starter per manufacturer's recommendation.

Centrifugal Compressor Fail to Start Possible Causes and Correct Actions Table

Centrifugal Compressor Ineffective Prelube Pump

Possible Causes	Correct Actions
Improper adjustment of pre-lube pump relief valve	Adjust relief valve for correct pressure.
Pump not running	Troubleshoot pump starter. Check for proper voltage.
Defective motor	Repair or replace the motor.
Defective pump	Repair or replace the pump.
No seal air	Establish seal air.

Centrifugal Compressor Ineffective Prelube Pump Possible Causes and Correct Actions Table

Centrifugal Compressor High Oil Temperature

Possible Causes	Correct Actions
Low or no water flow to oil cooler	Establish correct water flow.
Higher water temperature than realized	Take necessary steps to lower the water supply temperature.
Improper temperature device setting	Calibrate instrument.
Dirty or plugged oil cooler on the waterside	Clean cooler tubes. Provide water strainers as necessary.

Centrifugal Compressor High Oil Temperature Possible Causes and Correct Actions Table

Centrifugal Compressor Low Oil Pressure

Possible Causes	Correct Actions
Improper adjustment of system pressure relief valve	Adjust system pressure relief valve for correct oil pressure.
Leaking or pinched oil line	Repair or replace the oil line.
Dirty oil filter	Replace with a clean filter.
Defective main oil pump	Repair or replace the main oil pump.

Centrifugal Compressor Low Oil Pressure Possible Causes and Correct Actions Table

Centrifugal Compressor High Air Temperature

Possible Causes	Correct Actions
Low or no water flow to air cooler	Establish correct water flow.
Higher water temperature than realized	Take necessary steps to lower the water supply temperature.
Improper temperature device setting	Calibrate device.
Dirty or plugged air cooler on water side	Clean water passages in cooler. Provide water strainers as necessary.

Centrifugal Compressor High Air Temperature Possible Causes and Correct Actions Table

Centrifugal Compressor Low Seal Air Pressure

Possible Causes	Correct Actions
Low instrument air pressure	Seek low instrument air advice below.
Improper adjustment of seal air pressure regulator	Adjust regulator to obtain correct seal air pressure.
Excessive bleed off valve adjustment	Reduce seal air flowing bleed off.
Worn seals	Replace seals.

Centrifugal Compressor Low Seal Air Pressure Possible Causes and Correct Actions Table

Centrifugal Compressor Low Instrument or Valve Operating Pressure

Possible Causes	Correct Actions
No supply pressure, pinched or leaking air lines	Establish instrument air supply pressure. Repair or replace air lines
Improper adjustment of air regulator	Adjust regulator to obtain correct instrument air pressure

Centrifugal Compressor Low Instrument or Valve Operating Pressure Possible Causes and Correct Actions Table

Centrifugal Compressor High Vibration

Possible Causes	Correct Actions
Low oil temperature	Allow warm-up period for oil .
Driver to compressor misalignment	Check and correct alignment.
Worn coupling or spacer	Lubricate. Replace coupling and/or spacer.
Rotor assembly unbalance due to foreign matter build up	Contact manufacturer directly for repair or replacement.
Rotor assembly unbalance due to damaged aero parts	Contact manufacturer directly for repair or replacement.
Induced vibration from driver	Balance motor rotor.

Centrifugal Compressor High Vibration Possible Causes and Correct Actions Table

Centrifugal Compressor Fail to Load

Possible Causes	Correct Actions
Mode selector switch in unload position	Turn selector switch to modulate or auto-dual operating mode.
Low set point on pressure controller	Adjust controller to desired operating pressure.
Bypass valve not closed or inlet valve not open	Correct improper operation of the inlet or bypass valve .

Centrifugal Compressor Fail to Load Possible Causes and Correct Actions Table

Centrifugal Compressor Low System Air Flow

Possible Causes	Correct Actions
Compressor not loaded	Seek failed to load advice above
Dirty inlet filter	Change filter elements.
Low surge	Seek continual surge advice below.
Greater demand than realized	Repair all air leaks . Turn off unnecessary demands.

Centrifugal Compressor Low System Air Flow Possible Causes and Correct Actions Table

Centrifugal Compressor Continual Surge

Possible Causes	Correct Actions
Discharge air block valve closed	Open block valve.
Improper calibration of surge sensor	Calibrate instrument. Insure surge sensor switch is not stuck.
Dirty inlet filter	Change filter elements.
Improper adjustment of throttle limit	Adjust throttle limit.
High inter stage air temperature	Establish correct water flow to air coolers.
Higher water temperature than realized	Reduce the cooling water temperature.
Worn or fouled aerodynamics parts	Contact manufacturer directly

Centrifugal Compressor Continual Surge Possible Causes and Correct Actions Table

Centrifugal Compressor Excessive Power Consumption

Possible Causes	Correct Actions
Lower ambient temperature than realized	Reduce compressor load.
Low primary voltage	Consult power company. Check power source.
Reduction in motor efficiency	Consult motor manufacturer
Excessive load	Reduce load

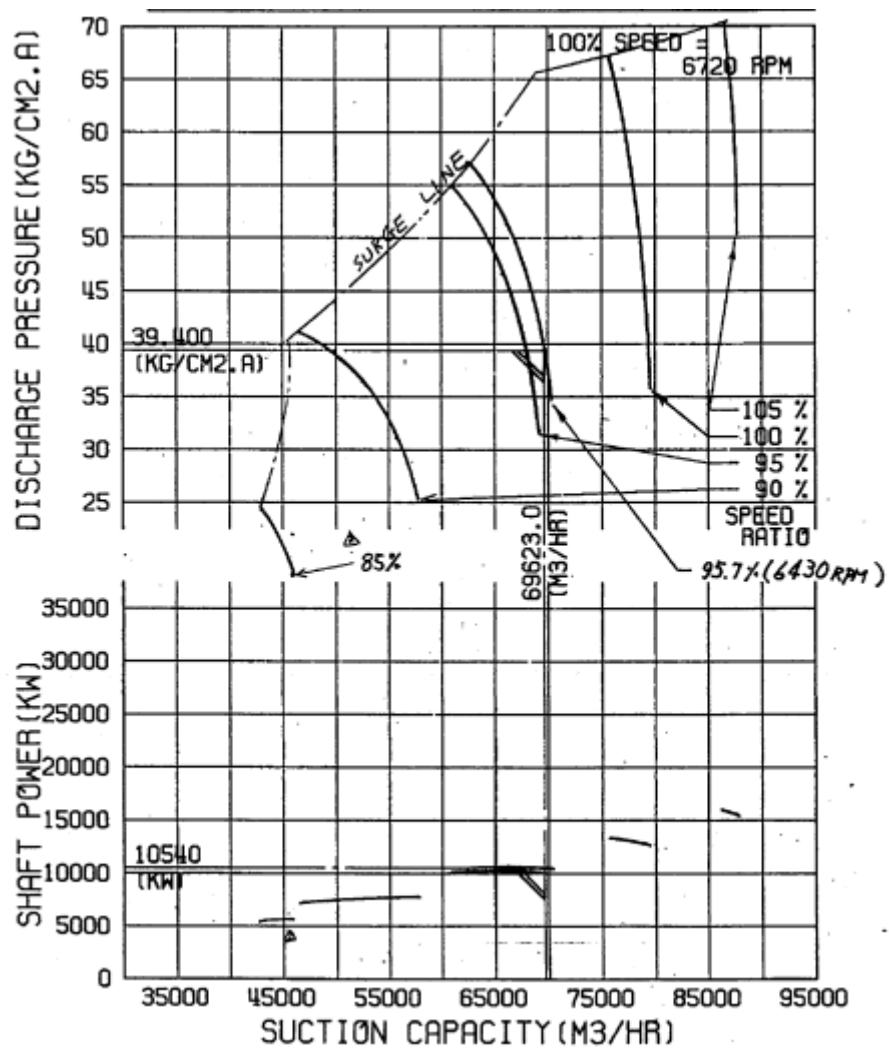
Centrifugal Compressor Excessive Power Consumption Possible Causes and Correct Actions
Table

Centrifugal Compressor High Drive Motor Amperage

Possible Causes	Correct Actions
Low primary voltage	Restore voltage to specification
High load	Reduce load

Centrifugal Compressor High Drive Motor Amperage Possible Causes and Correct Actions
Table

Optimal Compressor Usage Graph



the graph in 7_0.png* has a graph and the converted to a table:

Convert the graph into a formatted table. Each row in the table should represent a node, and the columns should include node properties (e.g., x-axis has suction capacity, y-axis has shaft power(kw) and also discharge pressure). The edges between nodes should also be captured in the table.

Node	Suction Capacity (m3/hr)	Shaft Power (kw)	Discharge Pressure (kg/cm2a)	
---	---	---	---	
1	35000	10540	39.400	
2	45000	15050	35.000	
3	55000	20000	30.000	
4	65000	25000	25.000	
5	75000	30000	20.000	
6	85000	35000	15.000	

Edges:

- 1 -> 2
- 2 -> 3
- 3 -> 4
- 4 -> 5
- 5 -> 6