

Refrigeration System

FAULT DIAGNOSIS AND TROUBLESHOOTING

FLOW CHART

Invotech Scroll Technologies Co., Ltd

No.5 Yingtong Road, Changshu, Suzhou

Tel:+86(512)5290 5990 Fax:+86(512)5290 5996

www.invotech.cn

scroll@invotech.cn

Preface

As we know, refrigeration system is a complicated system since it contains the process of two phase conversion and heat exchange. Each parameter will affect the running of the system. As the heart of the system, the compressor will suffer final damage if one or several parameters are abnormal. For this reason, it is necessary to add various protections to the system, such as discharge line thermostat and pressure switches, etc.

Please keep in mind that running parameters must be detected and recorded before troubleshooting, so as to analyse and understand what happened and find out the root cause. The parameters include voltage, current, suction pressure, discharge pressure, suction temperature, discharge temperature and so on.

The following chart could be as the reference of the troubleshooting in field.

Disclaimer: This troubleshooting guide is intended to provide general solutions for common issues. However, due to the complexity and diversity of technical problems, we cannot guarantee that it will solve all issues. We are not liable for any direct or indirect losses, data loss and system failures, etc. that may arise from using this guide. By using this guide, you understand and accept the risks involved and assume the corresponding consequences on your own.

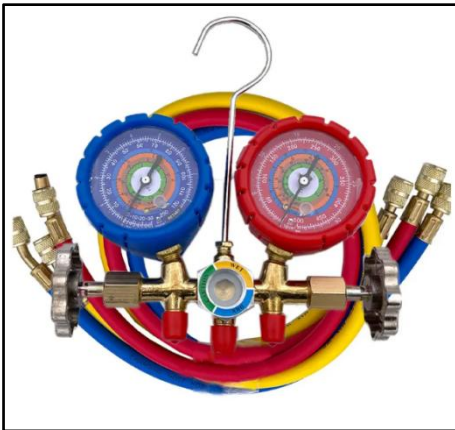
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1. Essential Tools

- A. Manifold Gage - Measure pressure and charge refrigerant or oil.
- B. Thermometer - Measure temperature.
- C. Clamp Multimeter - Measure voltage, current and resistance.
- D. Electronic Leak Detector - Leak detect.

Other common useful tools - Ratchet Wheel Wrench , etc.



A



B



C



D

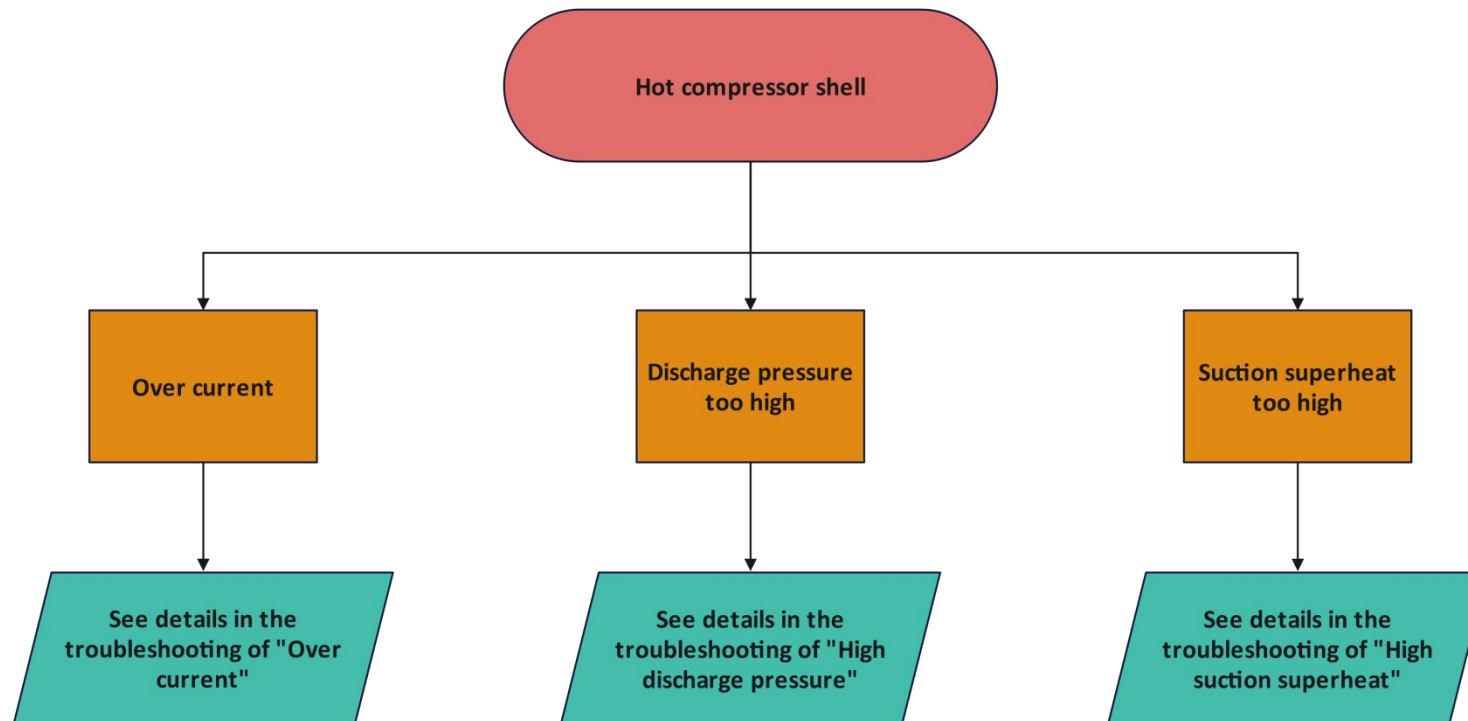
2. Common Symptoms in Fixed (Fixed Speed Compressors without EVI)

- Hot compressor shell
- Low suction superheat
- High suction superheat
- Low discharge superheat
- High discharge superheat
- Low suction pressure
- High suction pressure
- Low discharge pressure
- High discharge pressure
- Fierce oil foaming during start
- Fierce oil foaming during compressor running
- Oil level too low in compressor crankcase
- Abnormal noise
- Compressor frequent start and stop
- Poor cooling or heating
- Over current
- Compressor start failure

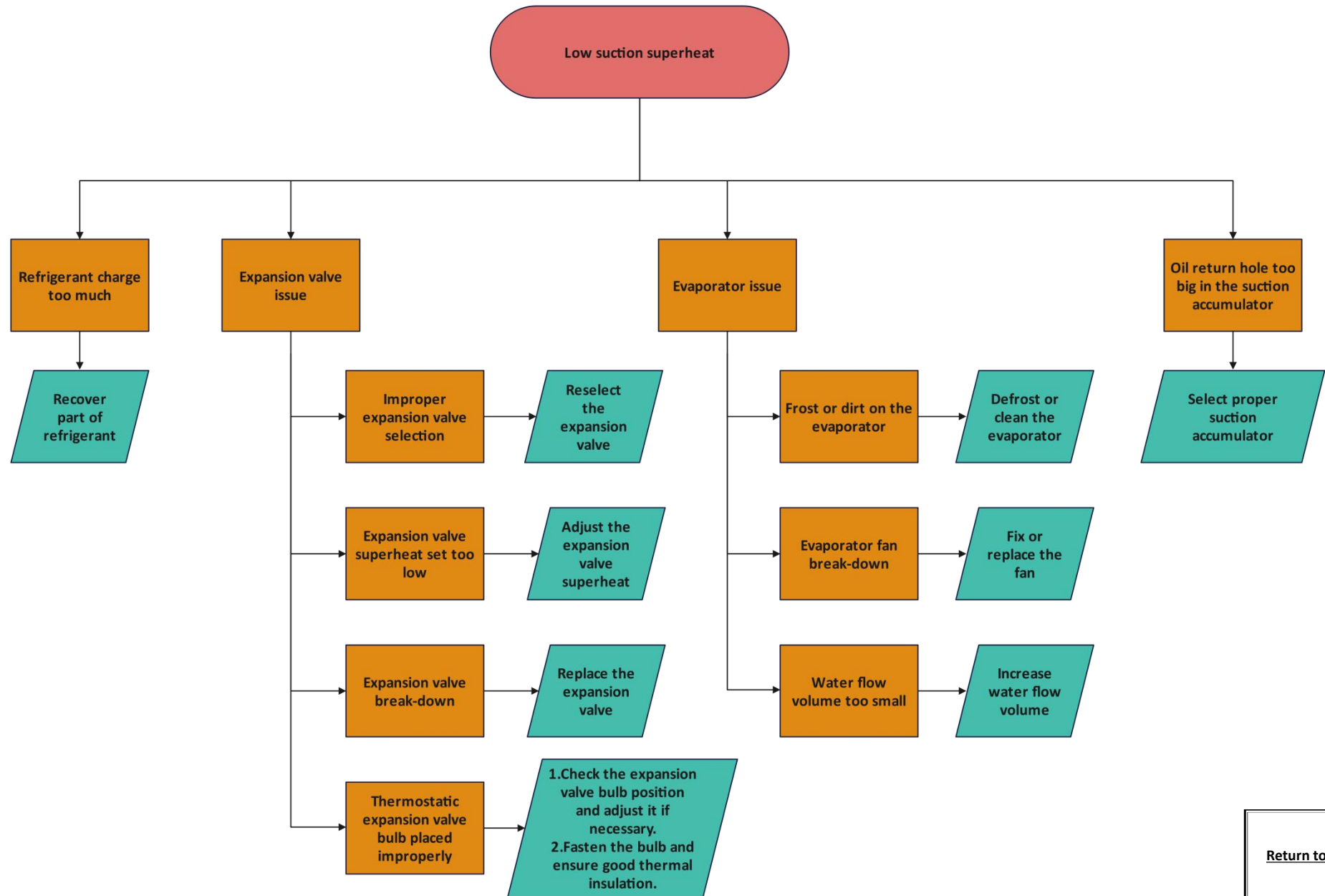
3. Fault Diagnosis and Troubleshooting Flow Chart

Failure**Possible Causes****Actions**

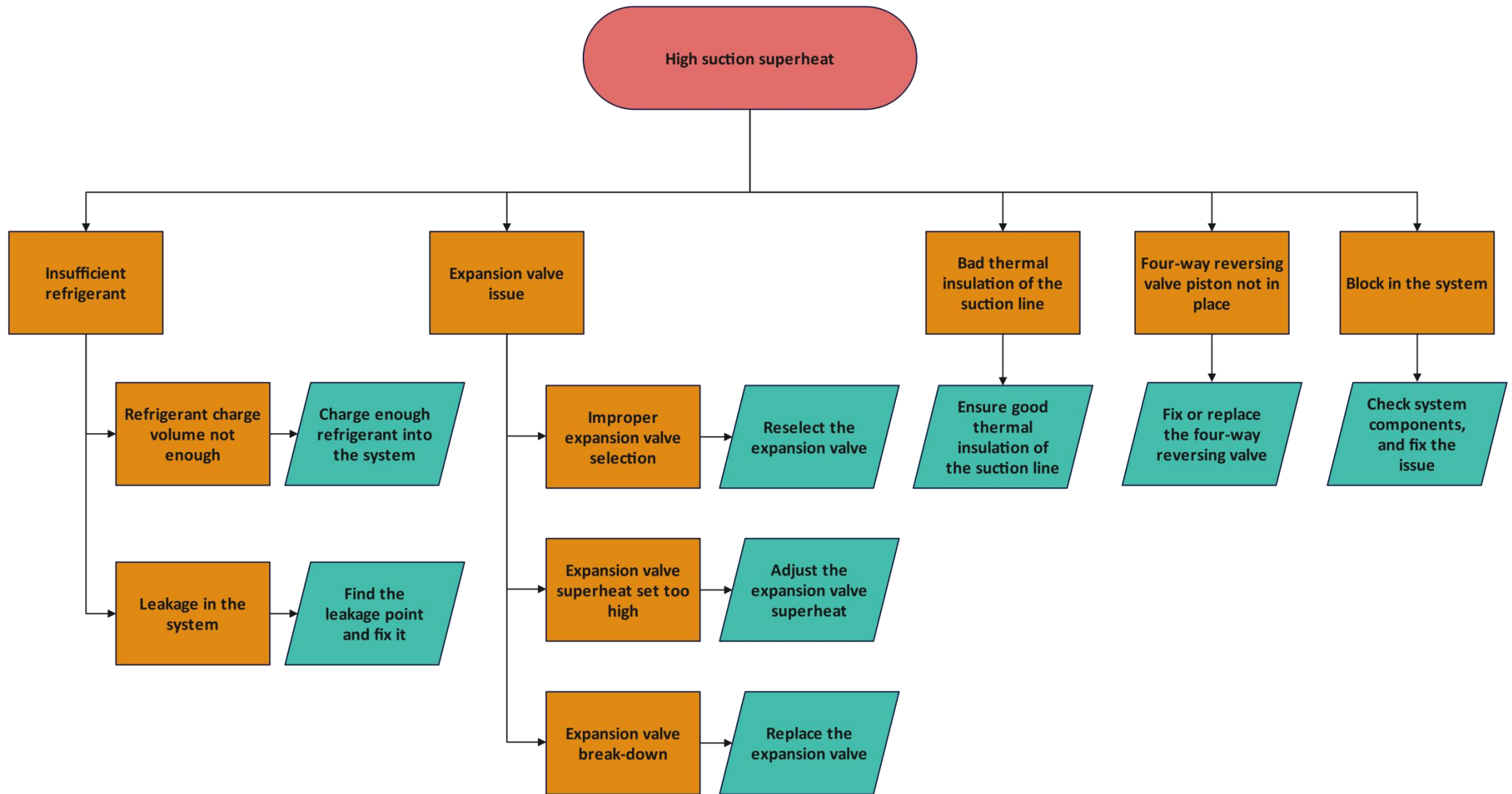
1) Hot compressor shell

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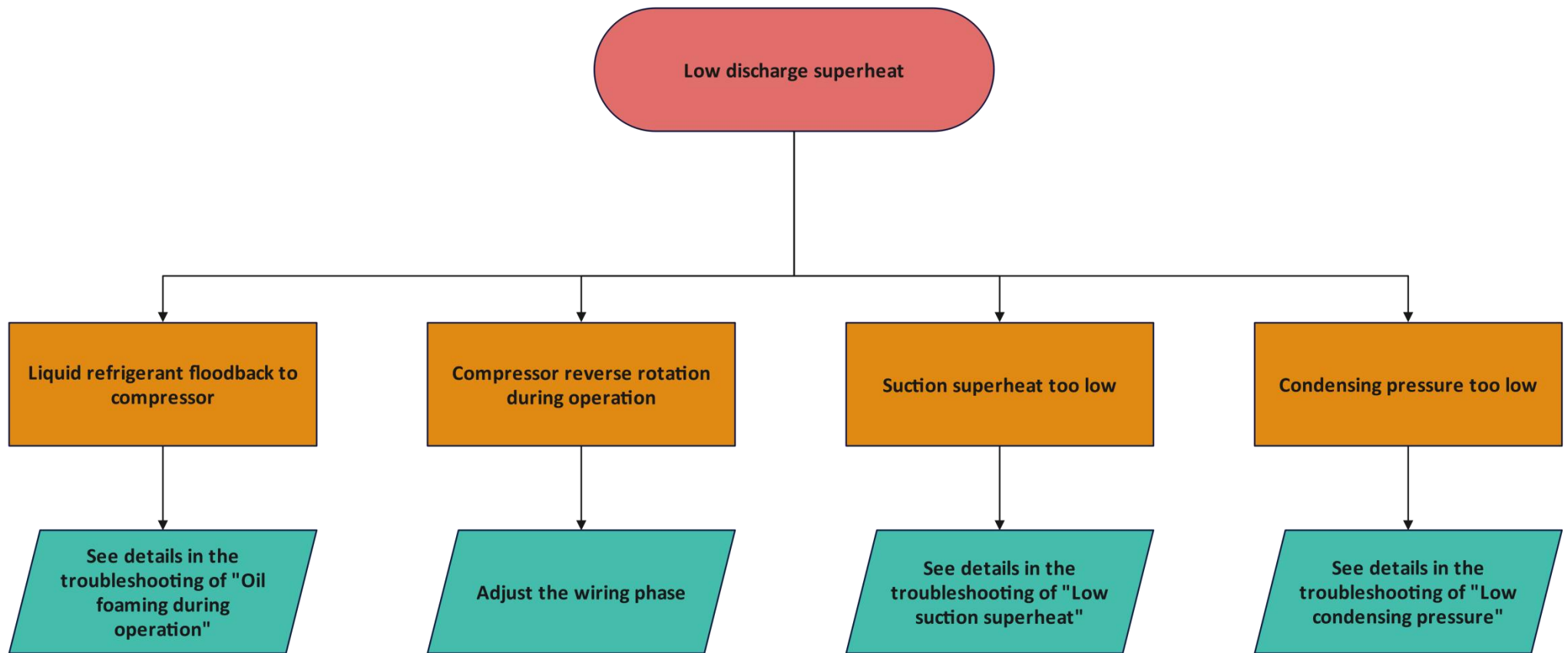
2) Low suction superheat

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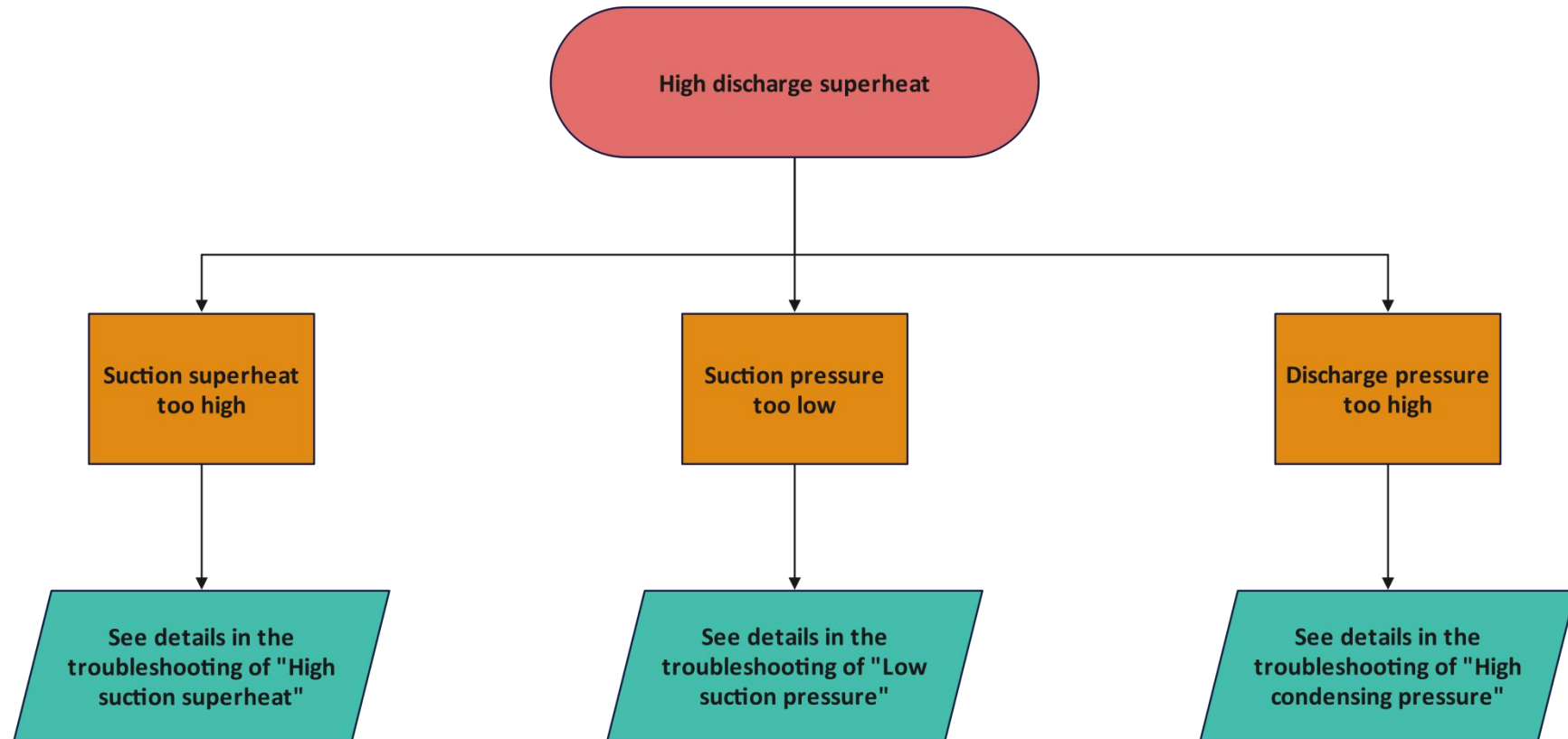
3) High suction superheat

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4) Low discharge superheat

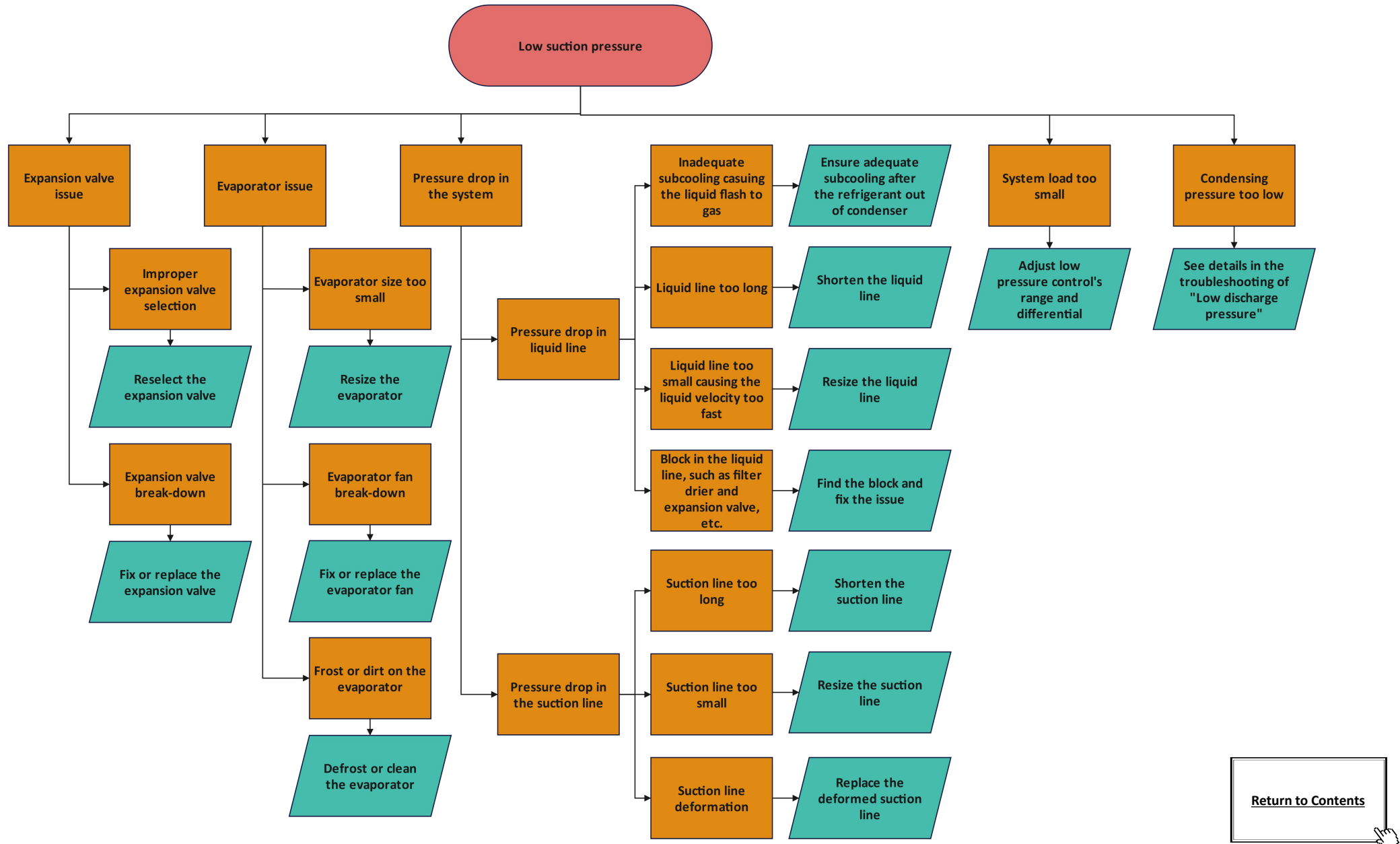
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5) High discharge superheat

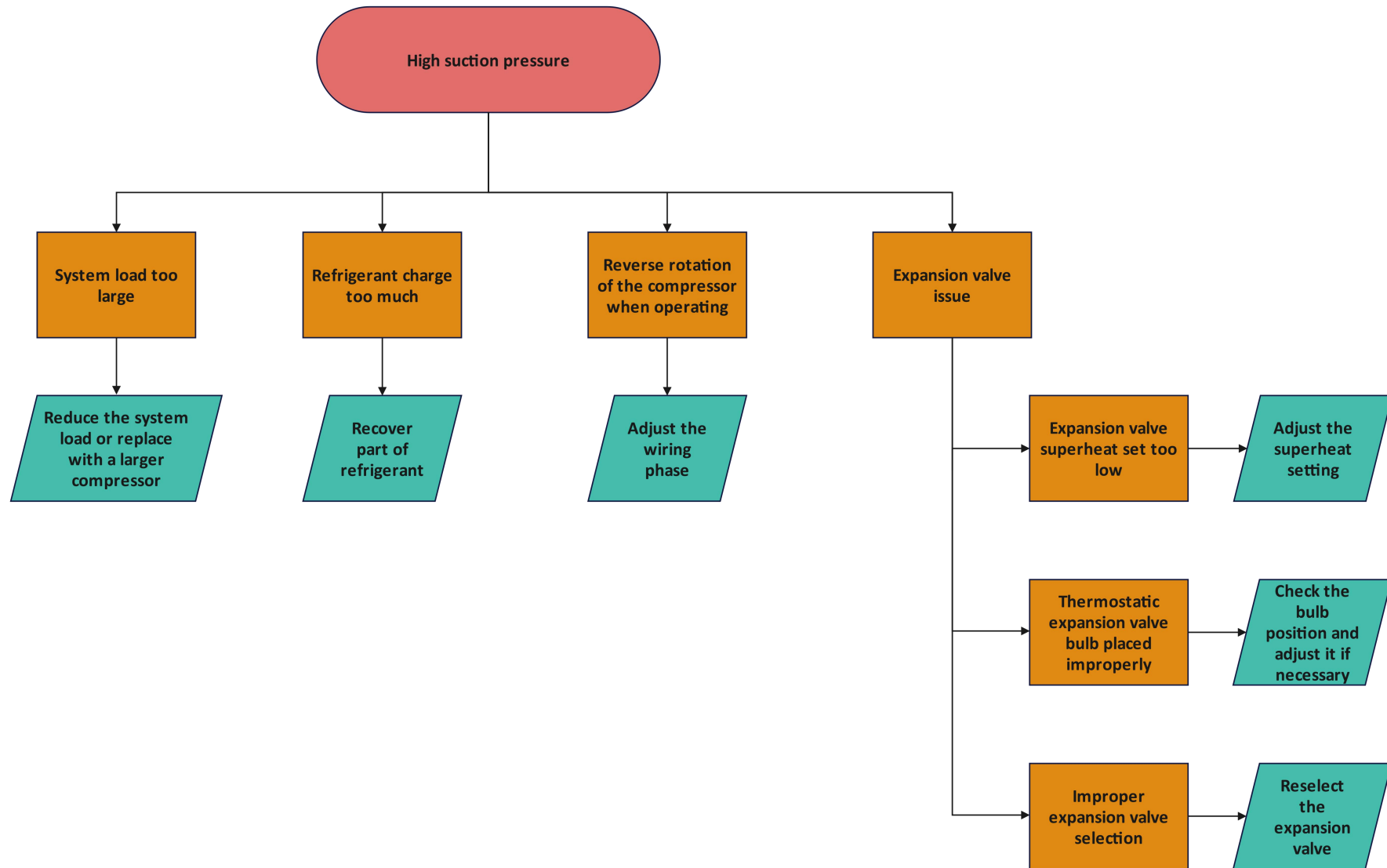


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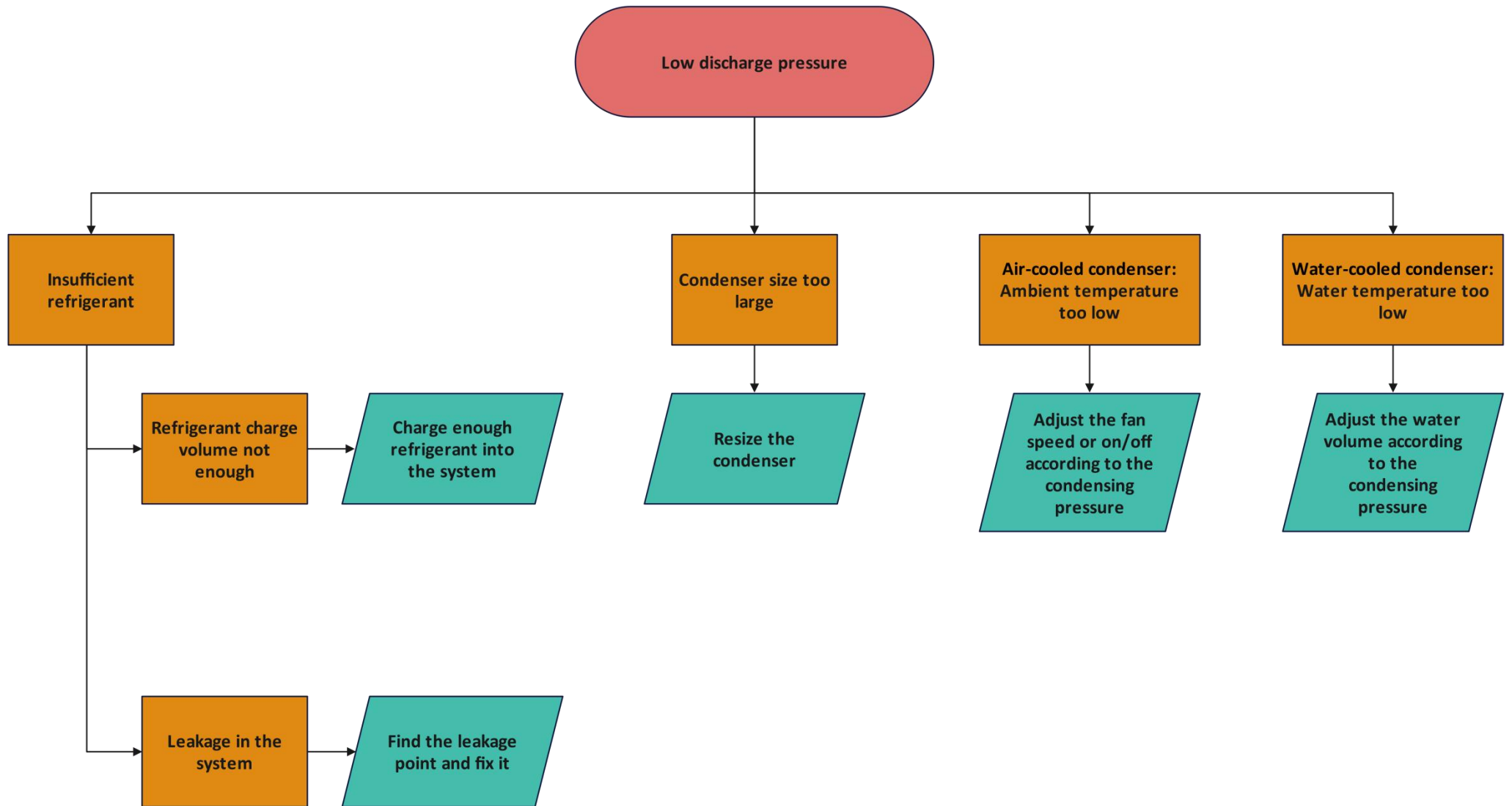
6) Low suction pressure



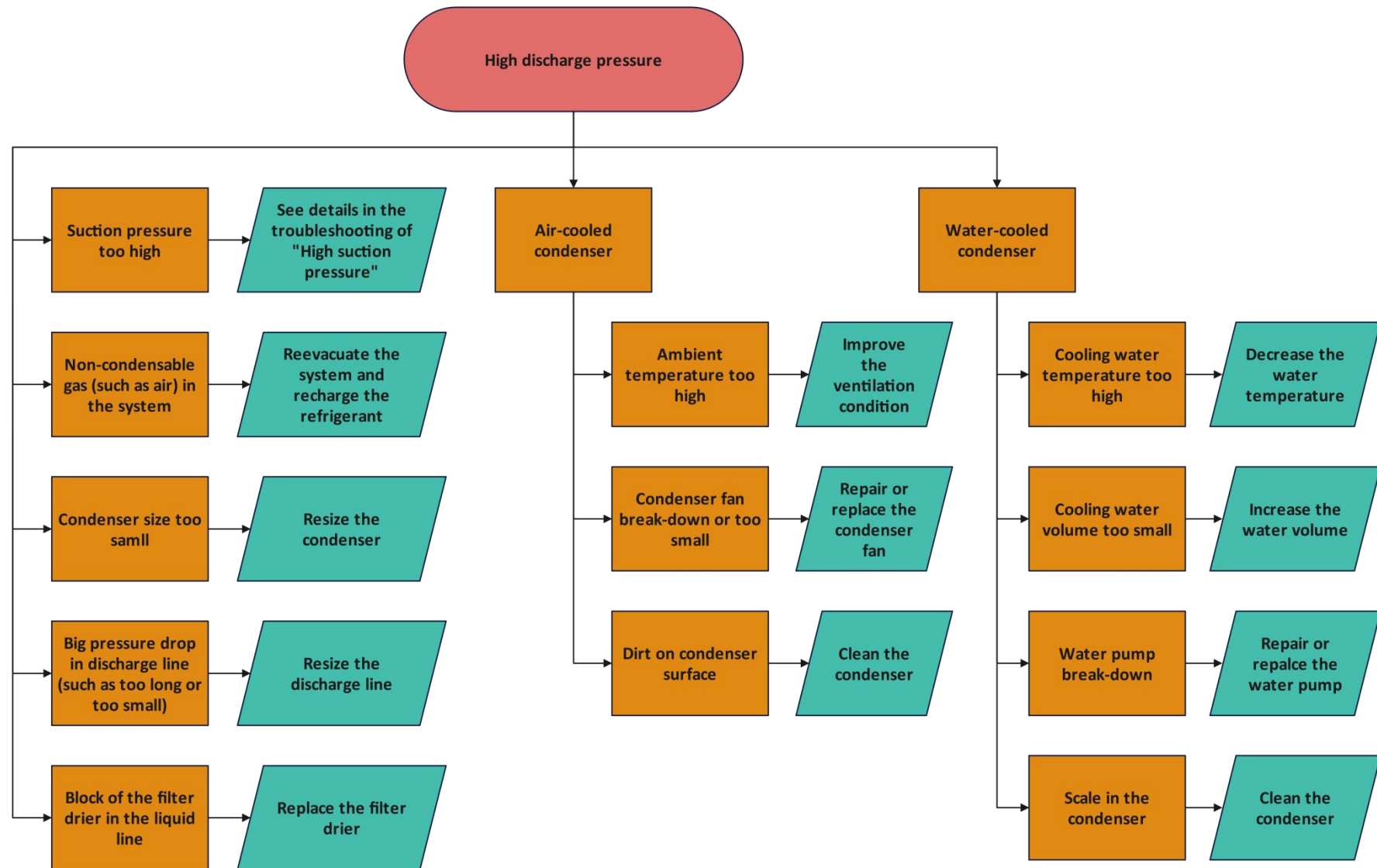
7) High suction pressure

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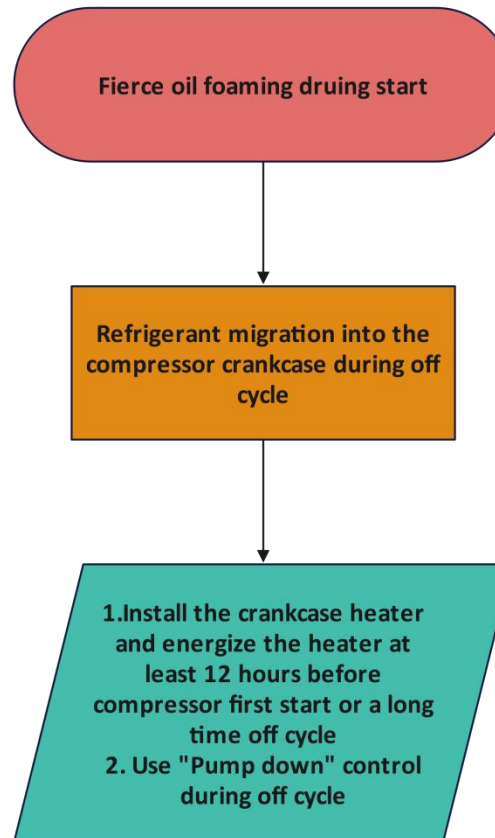
8) Low discharge pressure

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9) High discharge pressure

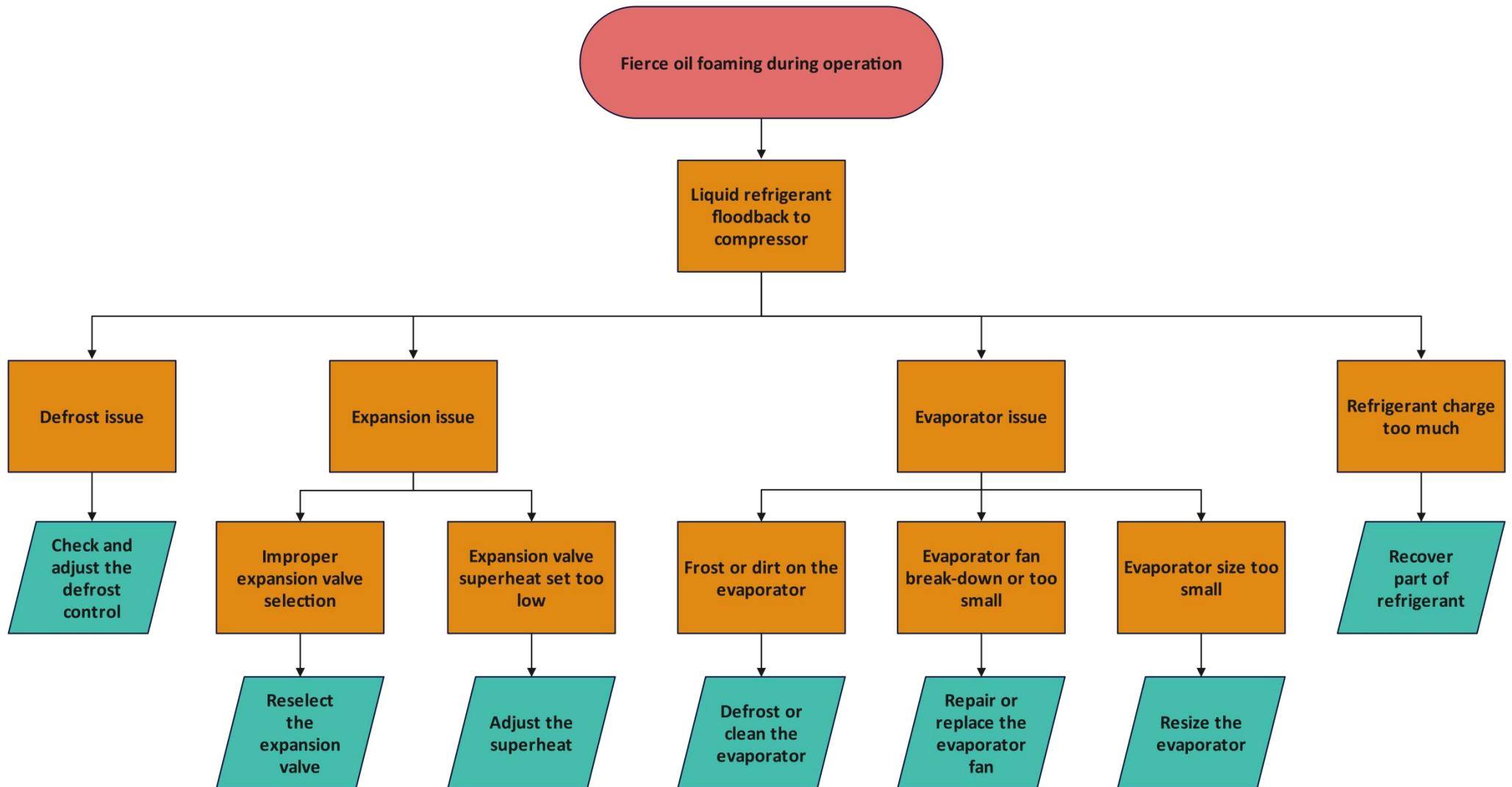

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10) Fierce oil foaming during start

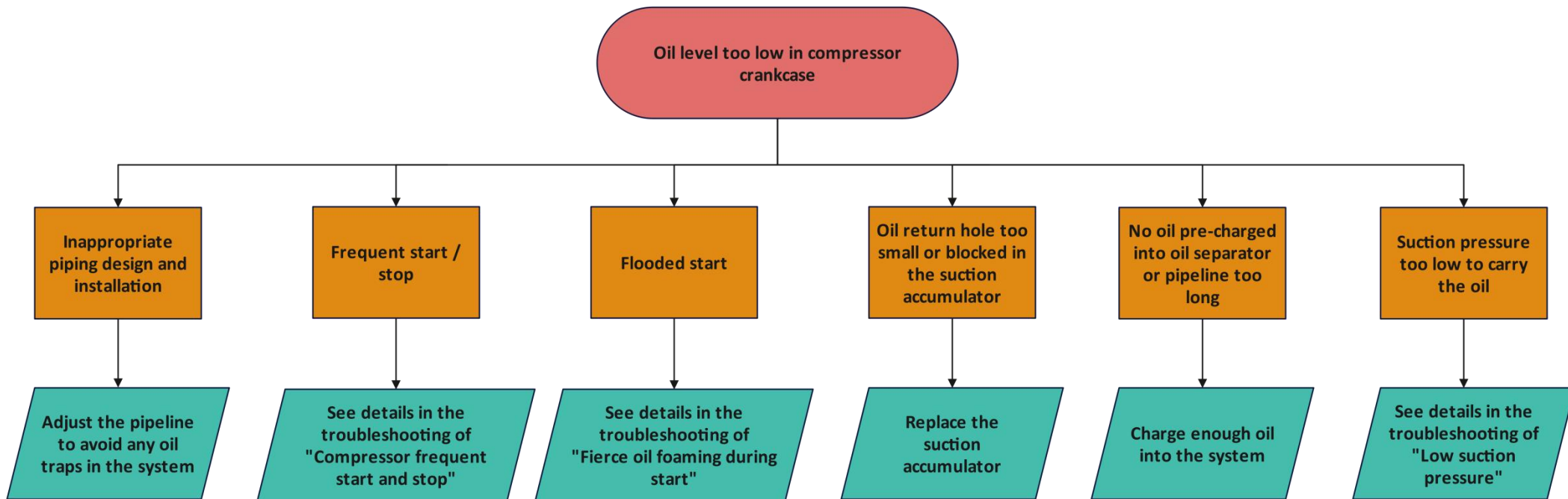


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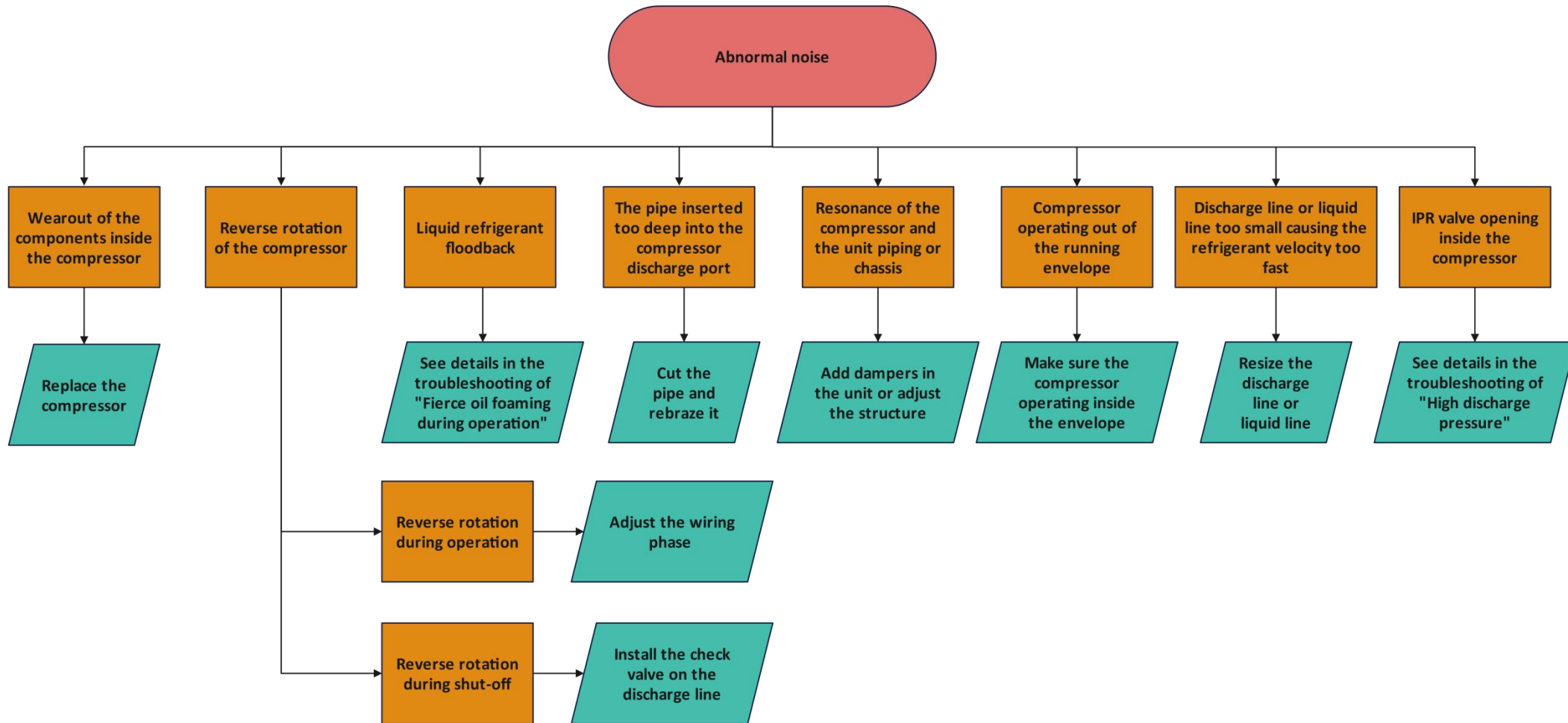
11) Fierce oil foaming during operation

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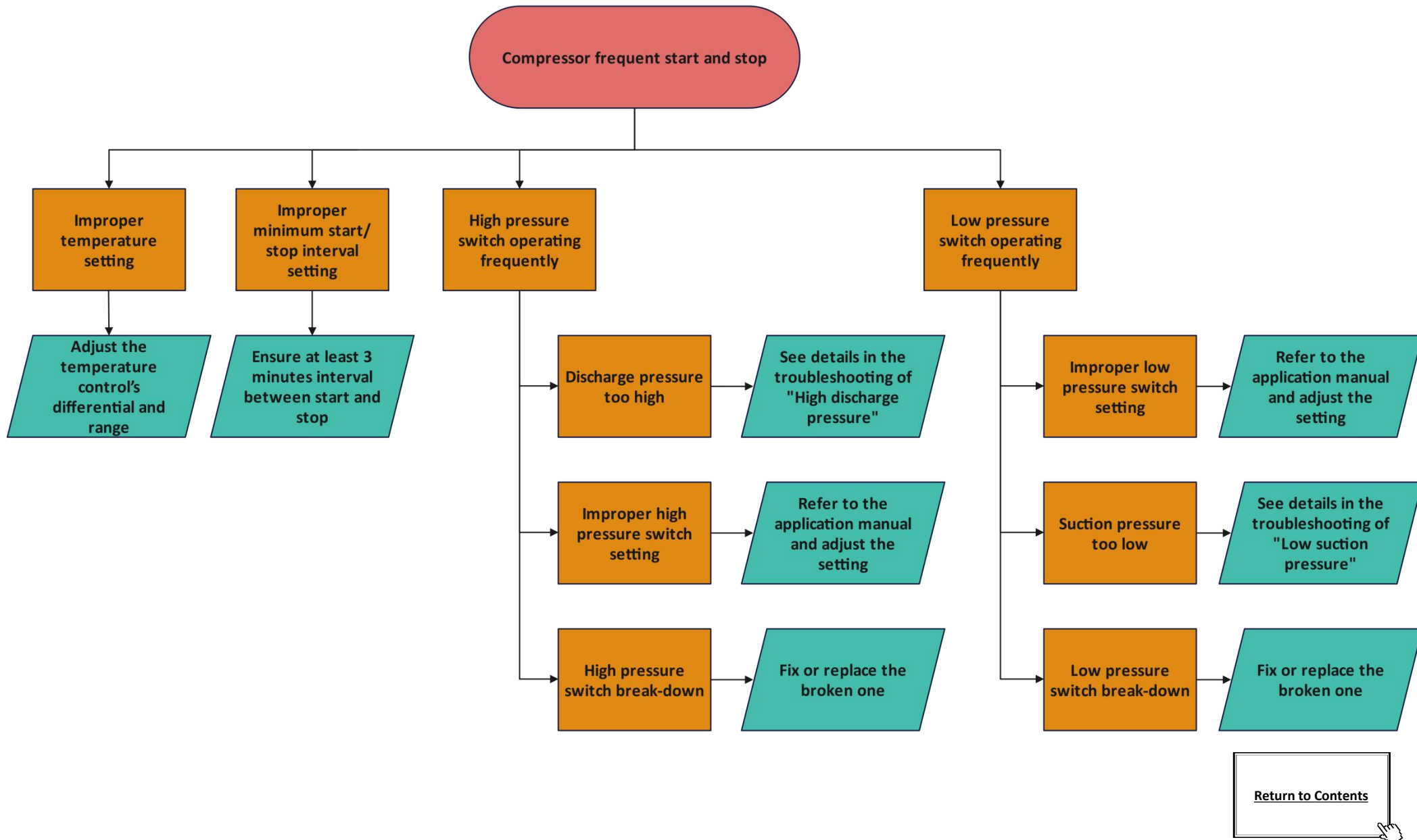
12) Oil level too low in compressor crankcase

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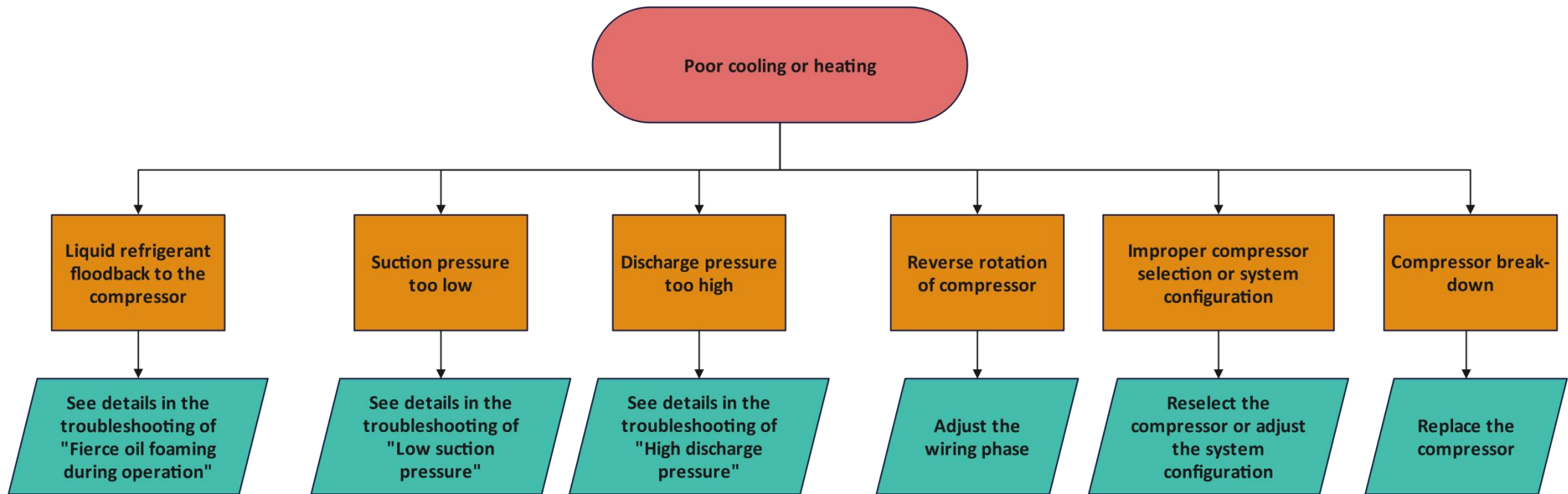
13) Abnormal noise


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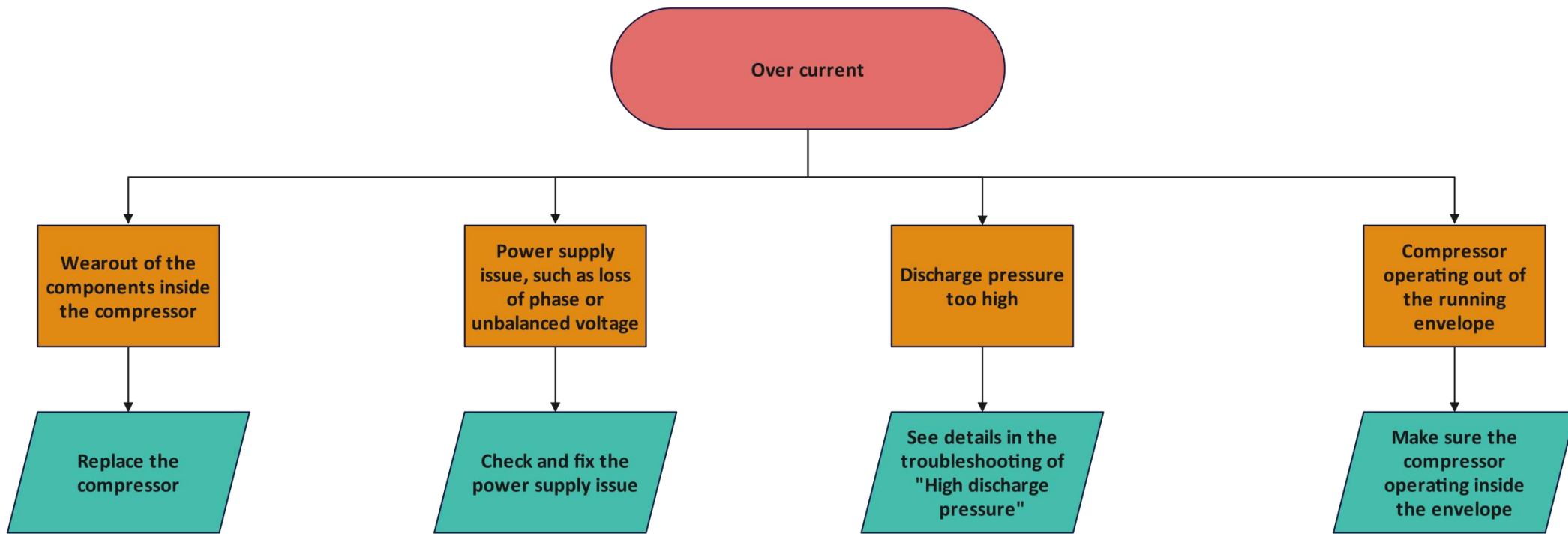
14) Compressor frequent start and stop



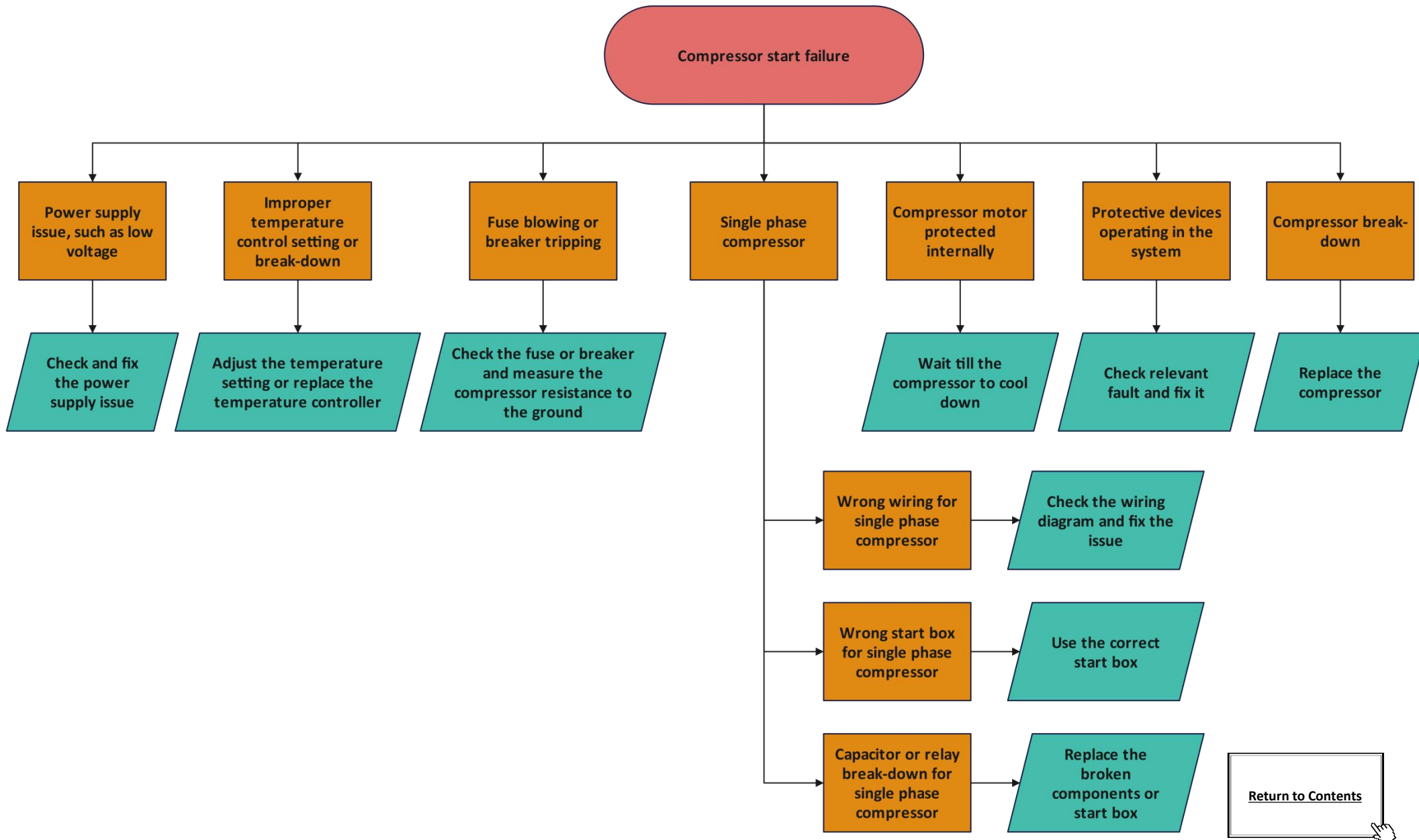
15) Poor cooling or heating

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16) Over current

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17) Compressor start failure

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