INSTRUKART MP-55

INSTRUKART MP-55 Oil Differential Pressure Switch User Manual

Model: MP-55 | Brand: INSTRUKART

1. Introduction

The INSTRUKART MP-55 oil differential pressure switch is designed as a safety device for refrigeration compressors. Its primary function is to protect compressors from damage caused by insufficient lubricating oil pressure. In the event of an oil pressure failure, the MP-55 will initiate a compressor shutdown after a predetermined time delay.

This device is suitable for use in refrigerating systems that utilize HCFC and non-flammable HFC refrigerants. Common applications include HVAC systems, various industrial processes, air conditioning plants, and general refrigerating systems.

This manual provides essential information for the safe and effective installation, operation, and maintenance of your MP-55 pressure switch.

2. Safety Information

WARNING: Improper installation, operation, or maintenance can result in serious injury or equipment damage. Read and understand all instructions before proceeding.

- Installation and service must be performed by qualified and authorized personnel only.
- Always disconnect power to the compressor and associated equipment before performing any installation, maintenance, or troubleshooting.
- Ensure proper handling of refrigerants according to local regulations and safety standards.
- Verify that the pressure switch specifications match the system requirements.
- Do not press the reset button without first identifying and rectifying the cause of the low oil pressure condition. Refer to operating instructions to avoid compressor damage.
- Wear appropriate personal protective equipment (PPE) during installation and service.

The product label contains important safety information. Observe all warnings and instructions provided on the

device itself.

Figure 1: Front view of the MP-55 Oil Differential Pressure Switch. The label clearly indicates the model type, manufacturer, and critical safety warnings regarding the reset button in multiple languages.

3. What's in the Box

Upon unpacking, please verify that all components are present and undamaged:

- 1 unit of INSTRUKART MP-55 Oil Differential Pressure Switch
- Instruction Manual (this document)

4. Technical Specifications

Table 1: MP-55 Key Specifications

Parameter	Value
Model Number	MP-55
Differential Pressure Range	0.30 to 4.50 bar
Contact Differential Pressure	0.2 bar
Pressure Connection Size	¼ inch
Pressure Connection Type	Flare
Maximum Working Pressure	17 bar
Maximum Test Pressure	22 bar
Ambient Temperature Range	-40 °C to +60 °C
Refrigerant Compatibility	HCFC and non-flammable HFC refrigerants
Reset Function	Manual Min
Relay Release Time	90 seconds
Electrical Connection Size	Pg 13.5
Electrical Connection Type	Screwed Cable Entry
Voltage	230 V or 115 V AC or DC Supply
Enclosure Rating	IP20
Item Weight	0.74 kg
Manufacturer	INSTRUKART

Features:

- Fixed and adjustable differentials available.
- Extremely narrow switch differential accuracy.
- Reliable, long-life stainless steel bellows.
- Can be used for HCFC and non-flammable HFC refrigerants.

5. Installation

Installation of the MP-55 pressure switch should only be carried out by certified refrigeration technicians or qualified electricians, adhering to all relevant local and national codes and standards.

5.1 Mechanical Installation

1. **Mounting:** Select a suitable location for mounting the pressure switch, ensuring it is protected from excessive

vibration, moisture, and extreme temperatures outside its operating range.

2. **Pressure Connection:** Connect the ¼ inch flare pressure connection to the oil pressure line of the compressor. Ensure a tight, leak-free connection using appropriate tools and sealing methods for refrigerant systems.
3. **Orientation:** The switch can typically be mounted in any position, but refer to the specific markings on the unit for any recommended orientation.

Figure 2: Detail of the ¼ inch flare pressure connection. This connection point is crucial for accurate oil pressure monitoring.

5.2 Electrical Installation

1. **Power Disconnection:** Ensure all power to the compressor and control circuit is disconnected and locked out before beginning electrical work.
2. **Wiring:** Connect the electrical wiring to the screwed cable entry (Pg 13.5) terminals according to the system's wiring diagram. The MP-55 supports 230 V or 115 V AC or DC supply.
3. **Grounding:** Ensure proper grounding of the unit as per electrical safety standards.
4. **Cable Entry:** Secure the cable entry to maintain the IP20 enclosure rating and prevent moisture ingress.

Figure 3: Side view of the MP-55, highlighting the electrical connection area. Proper wiring is essential for safe and reliable operation.

6. Operation

The MP-55 functions by monitoring the differential pressure between the compressor's oil pump discharge and the crankcase pressure. A sufficient differential pressure indicates adequate oil lubrication.

6.1 Normal Operation

During normal compressor operation, the oil differential pressure will be above the set point of the MP-55. The switch remains in a closed state, allowing the compressor to run.

6.2 Low Oil Pressure Detection and Shutdown

If the oil differential pressure drops below the set point (0.30 to 4.50 bar range), the MP-55 initiates a time delay. This delay (approximately 90 seconds) allows for transient pressure fluctuations without nuisance trips.

If the low oil pressure condition persists beyond the 90-second delay, the MP-55 will open its contacts, interrupting the compressor's control circuit and shutting down the compressor. This is a safety measure to prevent damage due to lack of lubrication.

6.3 Manual Reset

After a shutdown due to low oil pressure, the MP-55 requires a manual reset. The reset button should only be pressed after the cause of the low oil pressure has been identified and corrected. Repeatedly pressing the reset button without addressing the underlying issue can lead to severe compressor damage.

Figure 4: Angled view of the MP-55, indicating the location of the manual reset button. This button should only be engaged after troubleshooting.

7. Maintenance

The INSTRUKART MP-55 is designed for reliable operation with minimal maintenance. However, periodic checks are recommended to ensure continued performance and safety.

- **Visual Inspection:** Regularly inspect the pressure switch for any signs of physical damage, corrosion, or loose connections.
- **Leak Checks:** Periodically check the pressure connections for refrigerant or oil leaks.
- **Electrical Connections:** Ensure all electrical connections are secure and free from corrosion.
- **Functionality Test:** As part of routine system maintenance, verify the proper functioning of the oil differential pressure switch and its associated safety circuit. This should be done by qualified personnel.
- **Cleaning:** Keep the exterior of the unit clean and free from dust and debris. Use a dry cloth for cleaning. Do not use abrasive cleaners or solvents.

8. Troubleshooting

Before attempting any troubleshooting, ensure all power to the system is disconnected. Only qualified personnel should perform troubleshooting and repairs.

Table 2: Troubleshooting Guide

Problem	Possible Cause	Action
Compressor shuts down, MP-55 tripped.	Low oil differential pressure.	Check oil level, oil pump operation, oil filter, and system pressures. Rectify the cause before manually resetting the MP-55.
MP-55 does not reset after addressing the issue.	Faulty reset mechanism or internal damage.	Ensure the oil pressure has returned to normal. If it still doesn't reset, the unit may need replacement.
Compressor cycles frequently.	Intermittent low oil pressure, incorrect pressure switch setting, or faulty switch.	Monitor oil pressure. Verify switch settings. If issues persist, consult a technician.
No power to the MP-55.	Loose electrical connections, blown fuse, or circuit breaker trip.	Check wiring, fuses, and circuit breakers. Ensure proper voltage supply.

If the problem persists after following these steps, contact INSTRUKART customer support or a qualified service technician.

9. Application Examples

The INSTRUKART MP-55 is versatile and finds application in various industrial and commercial settings where refrigeration compressors are used. These include:

- HVAC (Heating, Ventilation, and Air Conditioning) systems
- Industrial Refrigeration Plants
- Commercial Air Conditioning Systems

- Deep Freeze and Cold Storage Facilities

Figure 5: Visual examples of environments where the MP-55 oil differential pressure switch is typically utilized, demonstrating its broad applicability.

10. Warranty and Support

For information regarding the warranty period and terms for your INSTRUKART MP-55 Oil Differential Pressure Switch, please refer to the purchase documentation or contact INSTRUKART customer support directly.

If you require technical assistance, have questions about installation, operation, or maintenance, or need to report a product issue, please contact INSTRUKART customer service through their official channels. Provide your product model number (MP-55) and purchase details when seeking support.

Manufacturer: INSTRUKART

Model: MP-55

ASIN: B0DCTXPHHM

Date First Available: August 11, 2024