

# 3.1

## NEMA Manual Starters

### Starters and Switches

#### MS Series, Single-Phase Starters



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#### MS Series, Single-Phase Starters

##### Product Description

- The MS Motor Starter is a compact, versatile unit featuring heavy sliding contacts as well as “quick-make” and “quick-break” mechanism
- Standard with large pressure type terminals, straight-through wiring and a trip-free handle mechanism
- The “plug-in” heater element is keyed to ensure proper positioning and an adjustable knob allows a setting of plus or minus ten percent of the nominal heater rating

##### Application Description

The MS Manual Motor Starter provides manual control and overload protection to single-phase motors. By utilizing the interchangeable heater elements, the starter can protect motors ranging from 0.40A up to 16.0A. Ideal for HVAC applications.

##### Features

- Compact size
- Trip-free handle mechanism
- Keyed heater elements to ensure proper installation
- Starters available with red pilot light
- The operating handle of the enclosed units can be locked in the OFF position
- Enclosures are offered in NEMA 1, 3, 4 and 5
- Hazardous locations cast aluminum enclosures are available rated for Type 7, Class I, Group D (vapors) and Type 9, Class II, Groups E, F and G (dust)

##### Standards and Certifications

- UL File No. E19222, Category NLRV
- CSA File No. LR39402-6, Class 3211-05



##### Instructional Leaflet

IL12987G

### Product Selection

#### When Ordering Specify

- Catalog number of manual motor starter
- Heater pack selection
- Any required accessories
- Heater coil selection according to the motor full load current requirements

#### MS Series Starters

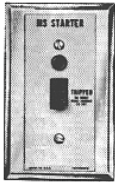
##### MS Series, Single-Phase Starters



#### Open Type

Number of Poles	Horsepower	Voltage	Catalog Number <sup>①</sup>
1	1	120/240V, 277 Vac	<b>MST01</b>
	1/4	120/240 Vdc	<b>MST01</b>
	1/4	32 Vdc	<b>MST01</b>
2	1	120/240V, 277 Vac	<b>MST02</b>
	1	120/240 Vdc	<b>MST02</b>
	1/4	32 Vdc	<b>MST02</b>

##### Switch and Pilot Light Mounted on Flush Plate



#### Flush Plate (No Enclosure Included)

Number of Poles	Flush Plate Type	Voltage	Catalog Number <sup>①</sup>
1	General purpose	Switch only	<b>MST01FN</b>
2		Switch with pilot light	<b>MST02FN1P</b>
1	Stainless steel	Switch only	<b>MST01DN</b>
		Switch with pilot light	<b>MST01DN1P</b>
2		Switch only	<b>MST02DN</b>
		Switch with pilot light	<b>MST02DN1P</b>

#### Note

<sup>①</sup> Does not include heater. Select heater from tables on [Page V5-T3-8](#).

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#### Enclosed Types

##### Starter and Pilot Light Mounted in Type 1 Enclosure



Number of Poles	Enclosure Type	Product Feature	Catalog Number ①
1	General purpose Type 1	Starter only	<b>MST01SN</b>
		Starter with pilot light	<b>MST01SN1P</b>
2		Starter only	<b>MST02SN</b>
		Starter with pilot light	<b>MST02SN1P</b>

##### Starter, Hand/Auto and Pilot Light—Type 1 Enclosure



2	General purpose NEMA 1	Starter with Hand/Auto switch and pilot light	<b>MST02RN1PH</b> ②
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##### Waterproof Type 3, 4 and 5



1	Waterproof Type 3, 4 and 5	Through hub	<b>MST01AH</b>
2		Through hub	<b>MST02AH</b>

##### Hazardous Location Type 7D, 9E, 9F and 9G



1	Hazardous location ③	Through hub	<b>MST01EH</b>
2		Through hub	<b>MST02EH</b>

##### Typical Heater



##### Heater Element Installation



#### Heater Selection for MS Starters

Motor Full Load Current	Catalog Number	Motor Full Load Current	Catalog Number	Motor Full Load Current	Catalog Number	Motor Full Load Current	Catalog Number
0.4–0.43	<b>MSH-5A</b>	1.04–1.15	<b>MSH1-3A</b>	2.72–2.95	<b>MSH3-4A</b>	7.04–7.74	<b>MSH8-8A</b>
0.44–0.48	<b>MSH-55A</b>	1.16–1.27	<b>MSH1-45A</b>	2.96–3.27	<b>MSH3-7A</b>	7.75–8.46	<b>MSH9-7A</b>
0.49–0.53	<b>MSH-61A</b>	1.28–1.35	<b>MSH1-6A</b>	3.28–3.59	<b>MSH4-1A</b>	8.47–9.35	<b>MSH10-6A</b>
0.54–0.58	<b>MSH-67A</b>	1.36–1.51	<b>MSH1-7A</b>	3.60–3.99	<b>MSH4-5A</b>	9.36–10.30	<b>MSH11-7A</b>
0.59–0.64	<b>MSH-74A</b>	1.52–1.67	<b>MSH1-9A</b>	4.00–4.39	<b>MSH5-0A</b>	10.31–11.35	<b>MSH12-9A</b>
0.65–0.71	<b>MSH-81A</b>	1.68–1.83	<b>MSH2-1A</b>	4.40–4.79	<b>MSH5-5A</b>	11.36–12.47	<b>MSH14-2A</b>
0.72–0.78	<b>MSH-89A</b>	1.84–1.99	<b>MSH2-3A</b>	4.80–5.26	<b>MSH6-0A</b>	12.48–13.67	<b>MSH15-6A</b>
0.79–0.87	<b>MSH-98A</b>	2.00–2.23	<b>MSH2-5A</b>	5.27–5.83	<b>MSH6-6A</b>	13.68–15.12	<b>MSH17-1A</b>
0.88–0.95	<b>MSH1-1A</b>	2.24–2.47	<b>MSH2-8A</b>	5.84–6.39	<b>MSH7-3A</b>	15.13–16.00	<b>MSH18-6A</b>
0.96–1.03	<b>MSH1-2A</b>	2.48–2.71	<b>MSH3-1A</b>	6.40–7.03	<b>MSH8-0A</b>	—	—

#### Notes

- ① Does not include heater. Select heater from table above.
- ② For OFF function, use OFF position on starter toggle switch.
- ③ Type 7D = Type 7, Class I, Group D; Type 9E, 9F and 9G = Type 9, Class II, Groups E, F and G.

**Accessories**

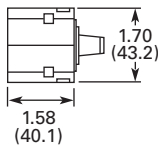
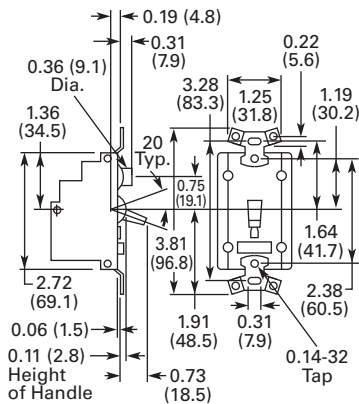
**MS Accessories**

Description	Catalog Number
Pilot light kit (NEMA 1 enclosure and flush plates)	<b>MSPT</b>
Box, 1 unit (NEMA 1 enclosure)	<b>MS1BN</b>
Cover, 1 unit (NEMA 1 enclosure)	<b>MS1CN</b>
Flush plate, 1 unit (steel)	<b>MS1FN</b>
Flush plate, 1 unit (stainless steel)	<b>MS1DN</b>
Handle guard (padlockable for NEMA 1 enclosure and flush plates)	<b>MSLG</b>

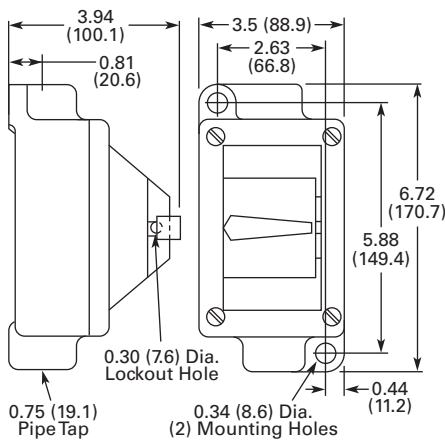
**Dimensions**

Approximate Dimensions in Inches (mm)

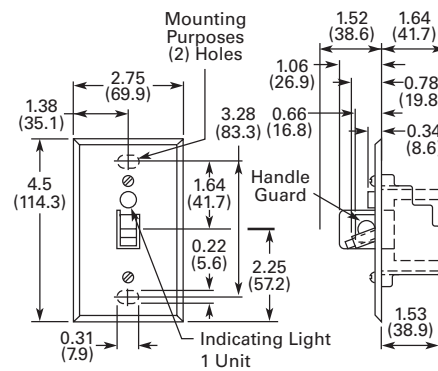
**MS Motor Starter Toggle Operated Open Units**



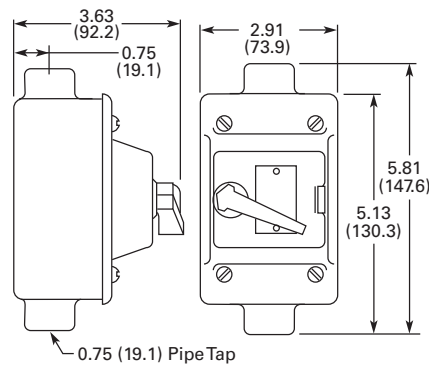
**Hazardous Location (Cast Aluminum)**



**Flush Plates**



**Watertight (Cast Aluminum)**



**Type 1 Enclosure (Boxes and Covers)**

