

# Fractional Manual Starters

Easy, simple starting of Motors up to 1 HP

Sprecher + Schuh Fractional Manual Starters (FMS) consist of a snap switch combined with a thermal overload device operating on the solder-ratchet principle. To reset the overload mechanism, the switch lever is moved to the OFF position. The motor can be restarted by simply pushing the switch lever to the ON position. The switch is designed to prevent being held closed under a sustained motor overload.

## Easy to Order

FMS Starters are easy to order. Simply choose a 1-Pole or 2-Pole with or without the Neon pilot light and then order the required Heater Element. You're done!


## Typical Applications

Starting and overload protection of small 1-phase 115...230V AC/DC or 277 VAC motors used on the following applications:

- Unit heaters
- Fans
- Stokers
- Pumps
- Refrigeration compressors



### Fractional Manual Starter

	Ratings (HP)		Poles Ⓜ	Type 1 General Purpose Surface Mounting Catalog Number
	115...230V AC	277V AC		
	Toggle Switch Only			
	1	1	1-Pole	FMS-TAX4
	1	1	2-Pole	FMS-TAX5
	Toggle Switch with Neon Pilot Light (115 or 230V)			
	1	1	1-Pole	FMS-TAX216
FMS with Neon Pilot light	1	1	2-Pole	FMS-TAX217

### Heater Element (Required) ①

Full Load Amps	Catalog Number
0.17	P1
0.20	P2
0.25	P3
0.32	P4
0.39	P5
0.46	P6
0.57	P7
0.71	P8
0.79	P9
0.87	P10
0.98	P11
1.08	P12
1.19	P13
1.30	P14
1.43	P15
1.58	P16
1.75	P17
1.88	P18
2.13	P19
2.40	P20
2.58	P21
2.92	P22
3.09	P23
3.32	P24
3.37	P25
4.16	P26
4.51	P27
4.93	P28
5.43	P29
6.03	P30
6.83	P31
7.72	P32
8.24	P33
8.90	P34
9.60	P35
10.8	P36
12.0	P37
13.5	P38
15.2	P39

### Optional Locking Attachment

	Accessory Locking Attachment For locking toggle switch in ON or OFF position.	Catalog Number
		FMS-N1

### Selecting Heater Elements ②

The "Full Load Amps" listed in the table can be used for heater element selection. The rating of the relay in amperes at 40°C is 115% of the "Full Load Amps" (FLA) listed for the catalog number. Refer to the motor nameplate for the full load current, the service factor, and/or the motor classification by application and temperature rise. Use this motor nameplate information, the application rules and the FLA listed in the table to determine the Heater Element catalog number for motors rated for Continuous Duty.

1. For the Same Temperature at the Controller and Motor : Select the Heater Element with the listed FLA nearest the full load value shown on the motor nameplate.
2. For Higher Temperature at the Controller than at the Motor : If the full load current value shown on the motor nameplate is between the listed FLAs, select the Heater Element with the next higher value.
3. For a Lower Temperature at the Controller than at the Motor : If the full load current value shown on the motor nameplate is between the listed FLAs , select the Heater Element with the next lower value.
4. All other motors rated for continuous duty (includes motors with marked service factor 1.0): Select the Heater Element one rating smaller than determined by rules in 1, 2 and 3.

### Ordering Instructions

Order FMS Catalog Number
Order Required FMS Heater Element(s) ①
Order Optional FMS Locking Attachment

- ① One heater is required for 1-pole or 2-pole applications. See schematic on next page.
- ② Two-pole selections are applicable for 3/4 HP at 115...230V DC.
- ③ Rule 2 and 3 temperature difference not to exceed more than 10°C (18°F).

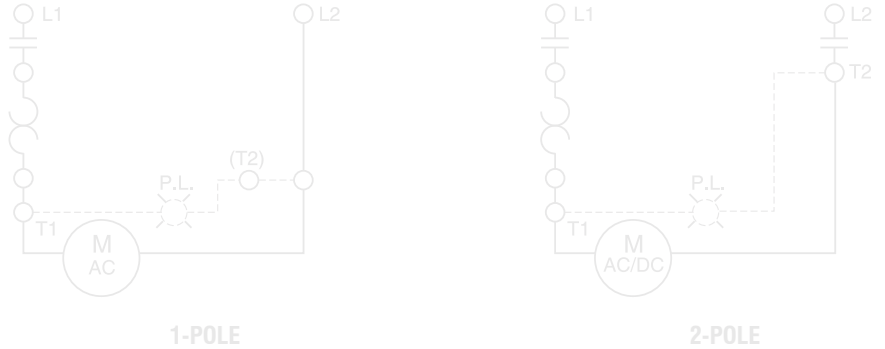
This page has moved. See new NEMA Starters Section starting at page 101.1

**Technical Information**

**Eutectic Operation**

Thermal overload devices using the eutectic alloy method are spring loaded in the normal, or reset, position. When the heater is cold, the solder is solid and holding the spring loaded ratchet. When FLA is passed through the heater, and if excess current flows, then the solder will melt and allow the ratchet mechanism to turn. This result trips the device. The device is reset by turning the switch to the OFF position and allowing it to cool.

**P.L.: Pilot Light (Optional)**



**Standards Compliance**

- UL 508
- EN60947-4-1
- CSA C22.2, No. 14

**Certifications**

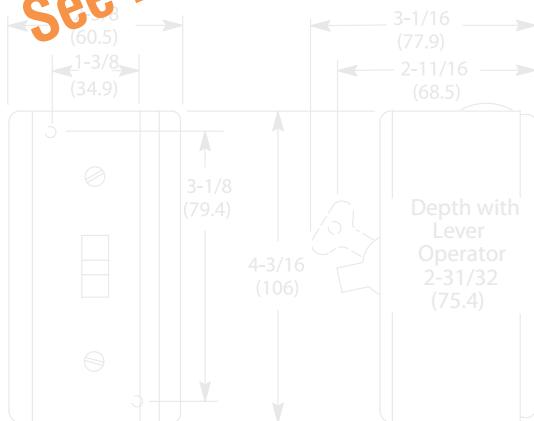
- UL Listed - Enclosed Products (File No. E14841; Guide No. NLRV)
- CSA Certified (File No. LR 1234)
- American Bureau of Shipping (ABS)
- CE marked

**Trip Time**

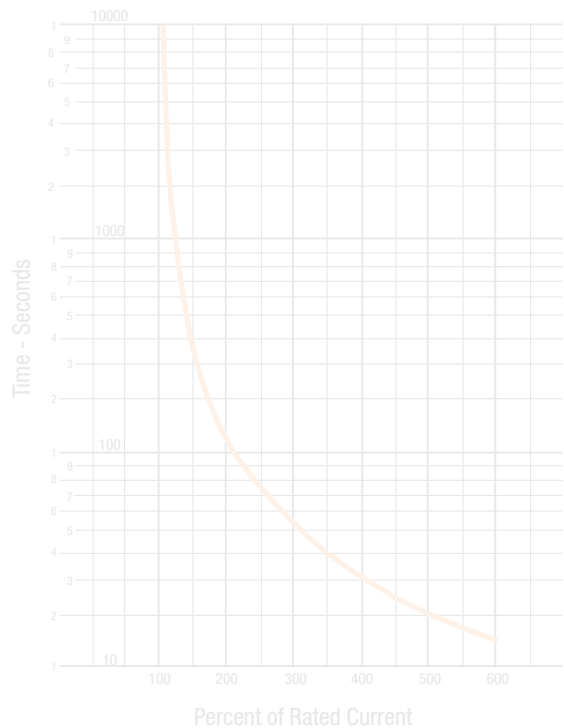
- Class 20
- Reset Time: The actual time to reset will vary based on the ambient temperature surrounding the overload. Under most conditions it will take from approximately 90 seconds up to 5 minutes for the solder to solidify enough for the overload to be reset. When this happens, the overload will not be able to be reset by pushing the reset button. The ratchet assembly inside the overload block will spin freely until the solder has solidified.

**Dimensions**

FMS Type 1 General Purpose Starter Dimensions



TIME - Current Characteristics at 40°C



NOTE: Trip will occur at 115% of FLA

See new NEMA Starters Section starting at page 101.1