

# 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

## Heater Element (Required) ❶

Full Load Amps	Catalog Number
0.17	P1
0.21	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

C7 NEMA Starters

## Fractional Manual Starter

Ratings (HP)	Ratings (HP)		Poles	Type 1 General Purpose Surface Mounting Catalog Number
	115...230V AC	277V AC		
<b>Toggle Switch Only</b>				
1	1	1-Pole	FMS-TAX4	
1	1	2-Pole	FMS-TAX5	
<b>Toggle Switch with Neon Pilot Light (115 or 230V)</b>				
1	1	1-Pole	FMS-TAX216	
1	1	2-Pole	FMS-TAX109	



FMS with Neon Pilot light

## Optional Locking Attachment

Accessory	Catalog Number
 <p><b>Locking Attachment</b> For locking toggle switch in ON or OFF position.</p>	FMS-N1

## Selecting Heater Elements ❸

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) ❶
Order Optional FMS Locking Attachment

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

### Type 1 General Purpose Enclosures

C8

Starters & Enclosed Products

<b>Enclosure (Box) Kit Includes:</b> <ul style="list-style-type: none"> <li>Hinged cover</li> <li>Backpan pre-drilled for listed arrangements (not tapped)</li> <li>(2) Ground Lugs and Symbol label</li> <li>(2) 22mm knockouts for pilot devices ④</li> <li>CEP7-1ERA Overload Reset Adapter ⑤</li> <li>MR7 Reset Kit for Cover</li> <li>(2) 22mm knockouts for Reset ⑥</li> <li>Dual Conduit knockouts - Top and Bottom</li> <li>*A* Box - (2) 1/2 to 3/4" and (1) 3/4 to 1"</li> <li>*B* Box - (2) 1/2 to 3/4"; (1) 1 to 1-1/4"; (1) 3/4 to 1"</li> <li>(4) 8-32 x 1/2" screws for mounting controllers</li> <li>*B* Box also includes (2) 10-32 x 3/4" screws</li> <li>Does not include wire</li> </ul>											
				<b>"A" Box Kit</b>			<b>"B" Box Kit</b>				
<b>Optional: 35mm DIN Rail Kit</b> with (2) 10-32 x 1/4" screws ②				<b>SF-2</b> (2 inches long)			<b>SF-3</b> (3 inches long)				
<b>Dimensions ⑥</b>				10" x 8" x 6" Type 1 Enclosure			12" x 10" x 6" Type 1 Enclosure				
For use with Controller		For use with overload		*A* Box Kit accommodates			*B* Box Kit accommodates				
		CEP7-1EE*	CEP7-1EF*	CT7N	Use with No CPT	Use with 50VA CPT ③	Space for 2" DIN Rail ②	Use with No CPT	Use with 50VA CPT	Use with 100VA CPT ③	Space for 3" DIN Rail ②
<b>Non-reversing Contactors</b>											
CA7-9...55	~	~	~	✓	✓	✓	✓	✓	✓	✓	✓
CA7-60...97 ⑦	~	~	~	No	No	No	✓	N/A	✓	✓	✓
<b>Reversing Contactors</b>											
CAU7-9...37	~	~	~	✓	No	✓	✓	✓	✓	✓	✓
CAU7-43...55	~	~	~	No	No	No	✓	✓	✓	✓	✓
CAU7-60...97 ⑦	~	~	~	No	No	No	No	N/A	No	No	No
<b>Non-Reversing Starters</b>											
CAT7-9...23	✓	✓	①	✓	✓	✓	✓	✓	✓	✓	✓
CAT7-30...55	✓	✓	①	✓	✓	✓	✓	✓	✓	✓	✓
CAT7-60...97 ⑦	N/A	✓	①	No	No	No	✓	N/A	✓	✓	✓
<b>Reversing Starters</b>											
CAU7-9...23	✓	✓	①	✓	No	✓	✓	✓	✓	✓	✓
CAU7-30...37	✓	✓	①	✓	No	✓	✓	✓	✓	✓	✓
CAU7-43...55	✓	✓	①	No	No	No	✓	✓	✓	✓	✓
CAU7-60...97 ⑦	N/A	No	No	No	No	No	No	No	No	No	No
<b>NEMA Sized Non-reversing Starters</b>											
CATN7-12...16	✓	✓	①	✓	✓	✓	✓	✓	✓	✓	✓
CATN7-37	✓	✓	①	✓	✓	✓	✓	✓	✓	✓	✓
CATN7-43	✓	✓	①	✓	✓	✓	✓	✓	✓	✓	✓
CATN7-85	N/A	✓	①	No	No	No	✓	N/A	✓	✓	✓

① Alternatively CT7N overload relay can be used which will require CT7N-RA3 Reset Adapter. Not included in the kit. Order separately.  
 ② 2" DIN rail can accommodate up to (3) V7-W4 TB's or equivalent DIN rail mount timers, relays, etc. Order kit SF-2 separately.  
 3" DIN rail can accommodate up to (6) V7-W4 TB's or equivalent DIN rail mount timers, relays, etc. Order kit SF-3 separately.  
 ③ Enclosure designed for use with CPT with top mount secondary fuse, plus back pan mounted Ambus Fuseholder with (2) primary fuses. A CPT and the addition of extra terminal blocks or other control relay using the 2" DIN rail space may require a design change.

④ This enclosure is designed for use with a D7 multi-function Start/Stop as standard plus a D7D monolithic pilot light to fit the (2) 22mm knockouts provided. Additional pilot device holes will require field drilling and may interfere with the controller or the addition of a CPT or TB's.  
 ⑤ (2) 22mm knockout locations are provided for one reset Kit to be located contingent on the type of controller used. See box Instruction sheet for mounting details of controller and reset kit.  
 ⑥ For enclosure dimensions see page C8:23  
 ⑦ CA7-97 and CAT7-97 will not fit in "B" Box because of wire bending space requirements. See Selection tables for box sizes starting on page C8:23 for dimensions.  
 ⑧ The CEP7-1ERA reset adapter is a 3rd generation accessory only compatible to 3rd generation CEP7-1 overloads