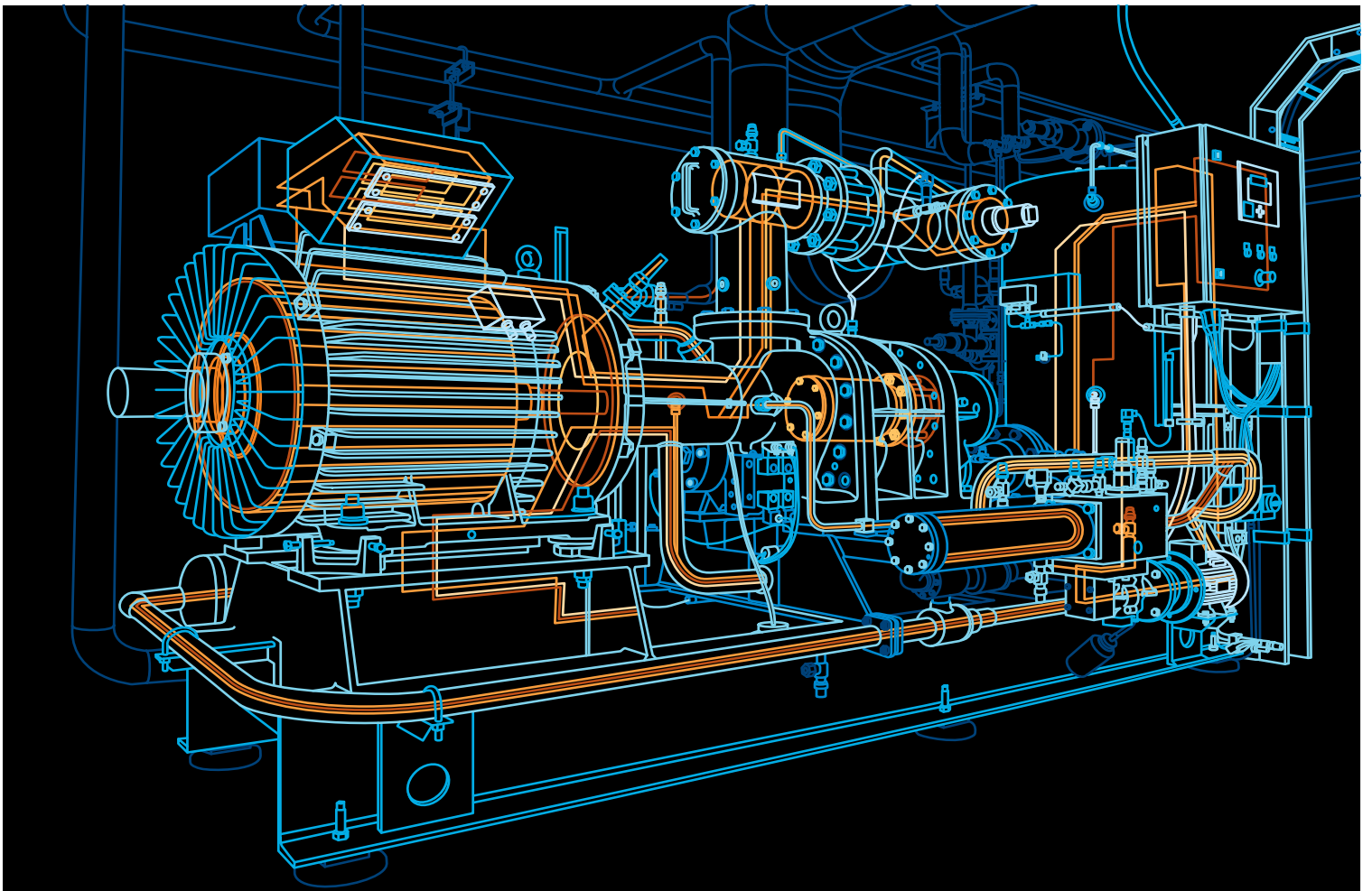




System proS Enclosed Starters

Power and productivity
for a better world™





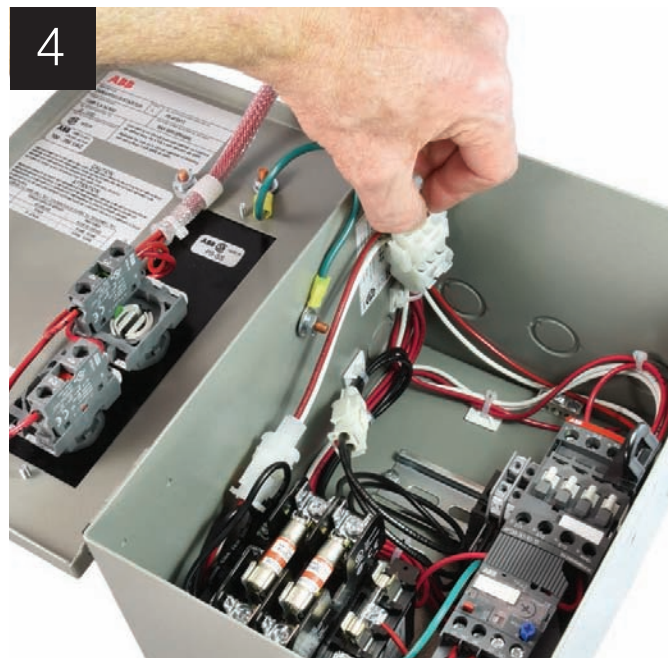
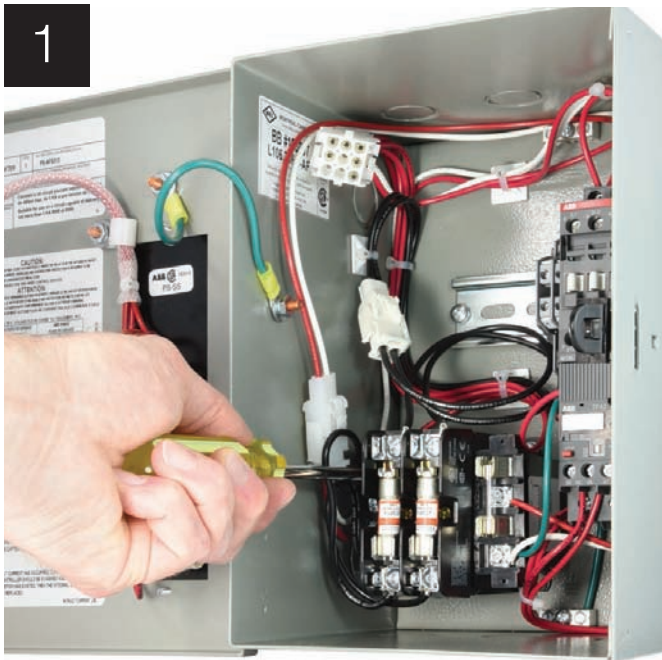
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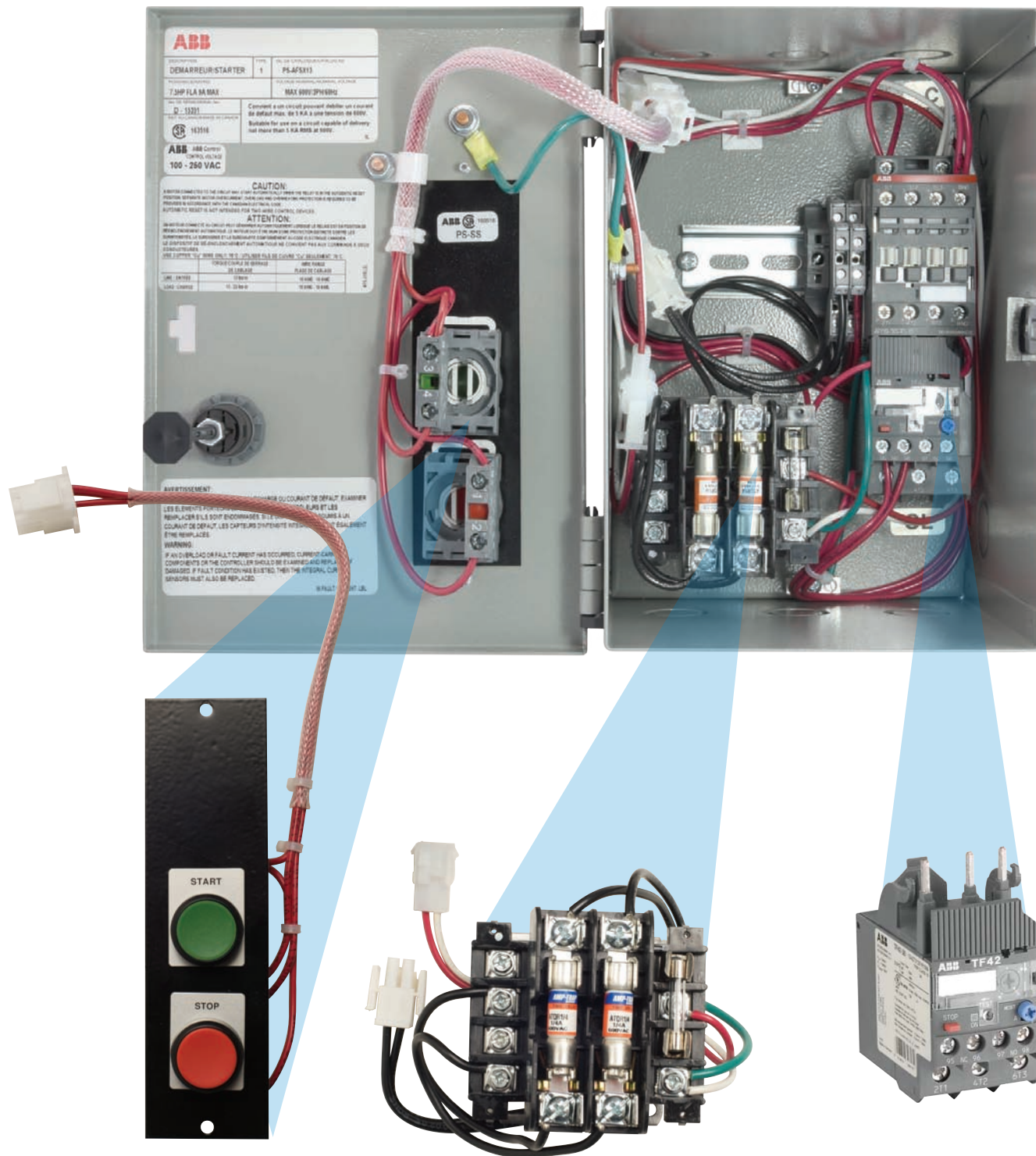
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System proS

Easy as ABB

- A. Install and secure your System proS on a wall
- B. Add overload relays
- C. Install control transformer if required (pictures 1, 2)
- D. Install pilot device kit if required (pictures 3, 4)
- E. Close the cover





System proS Pilot Device Kits

- Pre-wired, ready-to-operate
- One, two or three modules
- Pushbuttons, pilot lights and selector switches

Transformer Kits

- Fused on primary and secondary
- Primary voltage 120-208-240-347-416-480-600
- Secondary voltage 24-120
- Pre-wired and ready to install

O/L Relay

Description

- Across the line (D.O.L.) and 2 speeds starters
- Maximum CSA/UL horsepower ratings 7,5 to 125 HP at 600 VAC
- Non-combination and combination types available
- Compact space saving design
- Pre-wired pilot device and control transformer kits allow for quick and easy field modification and installation
- Captive terminal screws
- Touch safe design: All connection terminals are protected against accidental touch
- External connections: all starters include necessary terminal blocks and wiring to control the starter by an external maintained contact when used with the appropriate pilot device kit

Enclosure Types

- Metal: Type 1, 4/12, 4X stainless steel type 304 # 4

Overload Relay Protection

- All HP rated starters should use a class 10 adjustable overload relay

General Information

The extensive requirements for group motor circuits are:

- isolation and short circuit protection
- motor control : Starting and Stopping
- motor protection against overloads

Those functions are presented in this catalogue; the motor control and motor protection against overloads (See drawing below).

The isolation and short-circuit protection can be provided by disconnect switches : OS/OT range or by Tmax circuit breakers.

Use the recommended fuses as shown in the table on page 45.

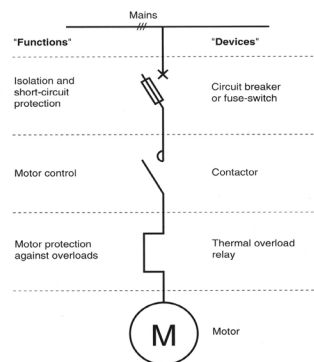
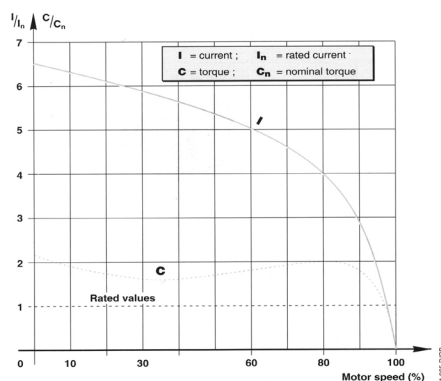
For detailed information please refer to coordination tables available on request.

The control is provided by the contactor of the starter and the protection against overloads by the associated overload relay.

As the supply circuit is normally rated for the motor full load current (FLC), the O/L relay protects both motor and supply circuit against overloads.

High starting torque, simple and low-price direct motor starting with full voltage (so called "direct-on-line" or d.o.l.) is the most common way of starting a motor.

Starting torque and current depend on the motor type. Starting torque is roughly equal to 1.9 to 2.1 times the motor's full speed value and starting current 5.5 to 7 times the motor FLC value. Quick to reach the full speed due to its high starting torque, the d.o.l. starter requires a strong power supply to handle this high inrush current.



Technical specifications

Nominal voltage and frequency: Up to 600V – 50-60Hz (standard range) Connection: - Single phase (1 pole and 2 poles) - Three phase Application configuration: - Direct On Line (D.O.L) - Reversing 2 Speeds – 1 winding 2 Speeds – 2 windings - Contactors - Reversing contactors Main protection: - Non-combination - Combine with disconnect switch - Combine with fusible disconnect switch - Combine with circuit breaker (MCP for starters) - Combine with circuit breaker (MCCB for contactors) Operating coil voltage: - Standard 110-120Volts / 50-60hz. - Other voltage on request. Auxiliary contacts: - A.C. & D.C. rated voltage, 600 Volts - A.C. thermal rated current, 10 Amp. - D.C. thermal rated current, 5 Amp. ProS starters complies with; - CAN/CSA C22.2 No.14-05 - UL/cUL 508A. (Pending) Ambient temperature: -20°C/+40°C ProS starters factory tests: - Insulation test. - Functional test. Enclosure colour: Textured grey ASA61 Enclosure protection: - General purpose Type 1 - Indoor Type 12 - Outdoor Type 4 - Outdoor Type 4X (Stainless Steel) Installation: Enclosure type 1 and 12; - Wall mounting - Top, bottom or side cable entry.	Approximate dimensions: (H x W x D) Non-Combination Type 1 (IEC style & NEMA rated) 10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm) 17" x 12" x 7" (432 x 305 x 178mm) 36" x 20" x 10" (915 x 508 x 254mm) Non-Combination Type 12-4-4X (IEC style & NEMA rated) 10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm) 17" x 13-3/4" x 7" (432 x 350 x 178mm) 36" x 21-3/4" x 10" (915 x 553 x 254mm) Combination Type 1 (IEC style) 20" x 8-1/2" x 8" (508 x 216 x 204mm) 28" x 12" x 8" (712 x 305 x 204mm) 48" x 20" x 10" (1220 x 508 x 254mm) Combination Type 12-4-4X (IEC style) 20" x 8-1/2" x 8" (508 x 216 x 204mm) 28" x 13-3/4" x 7-1/2" (712 x 350 x 191mm) 48" x 21-3/4" x 10" (1220 x 553 x 254mm) Combination Type 1 (NEMA rated) 24" x 12" x 8" (610 x 305 x 204mm) 28" x 18" x 8" (712 x 458 x 204mm) 48" x 24" x 8" (1220 x 610 x 204mm) Combination Type 12-4-4X (NEMA rated) 24" x 12" x 8" (610 x 305 x 204mm) 28" x 18" x 8" (712 x 458 x 204mm) 48" x 24" x 8" (1220 x 610 x 204mm) Approximate weights: Non-Combination Type 1 (IEC style & NEMA rated) 15-20 lbs (7-9 kg) 30-45 lbs (14-2 kg) 100-160 lbs (45-73 kg) Non-Combination Type 12-4-4X (IEC style & NEMA rated) 20-25 lbs (9-12 kg) 35-50 lbs (16-23 kg) 110-170 lbs (50-77 kg) Combination Type 1 (IEC style) 40-60 lbs (18-27 kg) 60-90 lbs (27-41 kg) 125- 150 lbs (57-68 kg) Combination Type 12-4-4X (IEC style) 50-70 lbs (23-32 kg) 70-100 lbs (32-45 kg) 140- 175 lbs (64-80 kg) Combination Type 1 (NEMA rated) 65-85 lbs (30-39 kg) 90-120 lbs (41-55 kg) 170- 205 lbs (77-93 kg) Combination Type 12-4-4X (NEMA rated) 65-85 lbs (30-39 kg) 90-120 lbs (41-55 kg) 170- 205 lbs (77-93 kg)
--	---

System proS

Starter Catalog Number Explanation

PS-AFS X 1 1 - L 04 A 22

Contactor size:

AF = AF09
OF = AF16
1F = AF30

2F = AF52
3F = AF80
4F = AF140

Starter type:

S = Across the Line D.O.L.
R = Reversing
T = 2 Speeds - 2 Windings
V = 2 Speeds - 1 Winding

A = Single phase (120 Volts / 1 Pole)
B = Single phase (208-240 Volts / 2 Poles)

Combination:

X = Not
N = Non-Fusible disc. SW
F = Fusible disc. SW
B = Breaker MCP

Enclosure type:

1 = Type 1 4 = Type 4/12 X = Type 4X (stainless steel type 304 # 4)

Coil voltage:

1 = 24-60 Volts 3 = 100-250 Volts
2 = 48-130 Volts 4 = 250-500 Volts

Overload selection:

HP Rated (thermal O/L)

Class 10 (AF09 - AF16 - AF30)

A = TF42-0.13 (0.10 ... 0.13A)
B = TF42-0.17 (0.13 ... 0.17A)
C = TF42-0.23 (0.17 ... 0.23A)
D = TF42-0.31 (0.23 ... 0.31A)
E = TF42-0.41 (0.31 ... 0.41A)
F = TF42-0.55 (0.41 ... 0.55A)
G = TF42-0.74 (0.55 ... 0.74A)
H = TF42-1.0 (0.74 ... 1.0A)
J = TF42-1.3 (1.0 ... 1.3A)
K = TF42-1.7 (1.3 ... 1.7A)
L = TF42-2.3 (1.7 ... 2.3A)
M = TF42-3.1 (2.3 ... 3.1A)
N = TF42-4.2 (3.1 ... 4.2A)
P = TF42-5.7 (4.2 ... 5.7A)
Q = TF42-7.6 (5.7 ... 7.6A)
R = TF42-10 (7.6 ... 10A)
S = TF42-13 (10 ... 13A)
T = TF42-16 (13 ... 16A)
U = TF42-20 (16 ... 20A)
V = TF42-24 (20 ... 24A)
W = TF42-29 (24 ... 29A)
X = TF42-35 (29 ... 35A)

Class 10 (AF52)

A = TF65-28 (22 ... 28A)
B = TF65-33 (25 ... 33A)
C = TF65-40 (30 ... 40A)
D = TF65-47 (36 ... 47A)
E = TF65-53 (44 ... 53A)
F = TF65-60 (50 ... 60A)
G = TF65-67 (57 ... 67A)

Class 10 (AF80)

A = TF96-51 (40 ... 51A)
B = TF96-60 (48 ... 60A)
C = TF96-68 (57 ... 68A)
D = TF96-78 (65 ... 78A)
E = TF96-87 (75 ... 87A)
F = TF96-96 (84 ... 96A)

Class 10 (AF140)

A = TF140DU-90 (66 ... 90A)
B = TF140DU-110 (80 ... 110A)
C = TF140DU-135 (100 ... 135A)
D = TF140DU-142 (110 ... 142A)

(Overload must be selected when used with combination breakers "MCP")

Overload selection for 2 Speeds - 1 Winding "V" & 2 Speeds - 2 Windings "T"

1 * = 2S1W

2 * = 2S2W

Auxiliary contacts: 22 = 2 N.O. + 2 N.C.

Pilot device:

(Starter type "S" - "A" - "B")

A = PS-SS (P.B. "Start" + "Stop")
B = PS-SSI (P.B. "Start" + "Stop" + P.L. "On")
C = PS-SL2 (2 Positions "Off/On")
D = PS-SL2I (2 Positions "Off/On" + P.L. "On")
E = PS-SL3 (3 Positions "Hand/Off/Auto")
F = PS-SL3I (3 Positions "Hand/Off/Auto" + P.L. "On")
G = PS-PL (P.L. "On")
Q = PS-SE (P.B. "Start" - "Emergency Stop")
S = PS-SL2IO (2 Positions "Off/On" + P.L. "On" + "Fault")
T = PS-SL2IO-F (2 Positions "Hors/En" + P.L. "En Service" + "Faute")
U = PS-SL3IO (3 Positions "Hand/Off/Auto" + P.L. "On" + "Fault")
W = PS-SL2IH** (2 Positions "Off/On" + P.L. "On" + "Off")
Y = PS-SL3IH** (3 Positions "Hand/Off/Auto" + P.L. "On" + "Off")
XA = PS-SL2K (2 Positions Key operated "Off/On")
XB = PS-SL2KI (2 Positions Key operated "Off/On" + P.L. "On")
XC = PS-SL3K (3 Positions Key operated "Hand/Off/Auto")
XD = PS-SL3KI (3 Positions Key operated "Hand/Off/Auto" + P.L. "On")
XE = PS-SL2KIO (2 Positions Key operated "Off/On" + P.L. "On" + "Fault")
XF = PS-SL3KIO (3 Positions Key operated "Hand/Off/Auto" + P.L. "On" + "Fault")
XG = PS-SL2KIH** (2 Positions Key operated "Off/On" + P.L. "On" + "Off")
XH = PS-SL3KIH** (3 Positions Key operated "Hand/Off/Auto" + P.L. "On" + "Off")

** = Factory installed pilot device kit ONLY

(Starter type "R")

A = PS-FRS (P.B. "Forward" + "Reverse" + "Stop")
B = PS-SL3R (3 Positions "Forward/Off/Reverse")
C = PS-SL3RI (3 Positions "Forward/Off/Reverse" + P.L. "Forward" + "Reverse")

(Starter type "T" - "V")

A = PS-FSO (P.B. "Slow" + "Fast" + "Stop")
B = PS-SL3F (3 Positions "Slow/Off/Fast")
C = PS-SL3FI (3 Positions "Slow/Off/Fast" + P.L. "Slow" + "Fast")
D = PS-FSO-F (P.B. "Lent" + "Rapide" + "Arrêt")
G = PS-SL4F (4 Positions "Auto/Off/Slow/Fast")
H = PS-SL4FI (4 Positions "Auto/Off/Slow/Fast" + P.L. "Slow" + "Fast")

Control transformer:

(AF09 - AF16 - AF30 - AF52 - AF80)

01 = PS-50-240/120 (240/120 Volts-50VA)
02 = PS-50-347/120 (347/120 Volts-50VA)
03 = PS-50-480/120 (480/120 Volts-50VA)
04 = PS-50-600/120 (600/120 Volts-50VA)
05 = PS-50-240/24 (240/24 Volts-50VA)
06 = PS-50-480/24 (480/24 Volts-50VA)
07 = PS-50-600/24 (600/24 Volts-50VA)
08 = PS-50-208/120 (208/120 Volts-50VA)
09 = PS-50-208/24 (208/24 Volts-50VA)
12 = PS-50-120/24 (120/24 Volts-50VA)

(AF140)

01 = PS-100-240/120 (240/120 Volts-100VA)
02 = PS-100-347/120 (347/120 Volts-100VA)
03 = PS-100-480/120 (480/120 Volts-100VA)
04 = PS-100-600/120 (600/120 Volts-100VA)
05 = PS-100-240/24 (240/24 Volts-100VA)
06 = PS-100-480/24 (480/24 Volts-100VA)
07 = PS-100-600/24 (600/24 Volts-100VA)
08 = PS-100-208/120 (208/120 Volts-100VA)
09 = PS-100-208/24 (208/24 Volts-100VA)
12 = PS-100-120/24 (120/24 Volts-100VA)

System proS

Single Phase Starters, Non-Combination¹



HP Rated, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 120V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
13.8	AF09	0.75	PS-AFAX13	PS-AFAX43	PS-AFAXX3
20	AF16	1.5	PS-0FAX13	PS-0FAX43	PS-0FAXX3
24	AF30	2	PS-1FAX13	PS-1FAX43	PS-1FAXX3
34	AF52	3	PS-2FAX13	PS-2FAX43	PS-2FAXX3
80	AF80	7.5	PS-3FAX13	PS-3FAX43	PS-3FAXX3

HP Rated, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 240V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
10	AF09	1.5	PS-AFBX13	PS-AFBX43	PS-AFBXX3
17	AF16	3	PS-0FBX13	PS-0FBX43	PS-0FBXX3
28	AF30	5	PS-1FBX13	PS-1FBX43	PS-1FBXX3
50	AF52	10	PS-2FBX13	PS-2FBX43	PS-2FBXX3
68	AF80	15	PS-3FBX13	PS-3FBX43	PS-3FBXX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage
selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFAX11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

System proS

Single Phase Combination Starters¹



HP Rated

HP Rated, Combination Fused Disconnect Switch, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 120V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
13.8	AF09	0.75	PS-AFAF13	PS-AFAF43	PS-AFAFX3
20	AF16	1.5	PS-0FAF13	PS-0FAF43	PS-0FAFX3
24	AF30	2	PS-1FAF13	PS-1FAF43	PS-1FAFX3
34	AF52	3	PS-2FAF13	PS-2FAF43	PS-2FAFX3
80	AF80	7.5	PS-3FAF13	PS-3FAF43	PS-3FAFX3

HP Rated, Combination Fused Disconnect Switch, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 240V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
10	AF09	1.5	PS-AFBF13	PS-AFBF43	PS-AFBFX3
17	AF16	3	PS-0FBF13	PS-0FBF43	PS-0FBFX3
28	AF30	5	PS-1FBF13	PS-1FBF43	PS-1FBFX3
50	AF52	10	PS-2FBF13	PS-2FBF43	PS-2FBFX3
68	AF80	15	PS-3FBF13	PS-3FBF43	PS-3FBFX3

HP Rated, Combination Starters, Non-Fusible Disconnect, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 120V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
13.8	AF09	0.75	PS-AFAN13	PS-AFAN43	PS-AFANX3
20	AF16	1.5	PS-0FAN13	PS-0FAN43	PS-0FANX3
24	AF30	2	PS-1FAN13	PS-1FAN43	PS-1FANX3
34	AF52	3	PS-2FAN13	PS-2FAN43	PS-2FANX3
80	AF80	7.5	PS-3FAN13	PS-3FAN43	PS-3FANX3

HP Rated, Combination Starters, Non-Fusible Disconnect, Non-Reversing

CSA Motor Switching Current	Contactor Size	Maximum Motor HP ratings 240V	Type 1	Type 4/12	Type 4X
			Catalog Number	Catalog Number	Catalog Number
10	AF09	1.5	PS-AFBN13	PS-AFBN43	PS-AFBNX3
17	AF16	3	PS-0FBN13	PS-0FBN43	PS-0FBNX3
28	AF30	5	PS-1FBN13	PS-1FBN43	PS-1FBNX3
50	AF52	10	PS-2FBN13	PS-2FBN43	PS-2FBNX3
68	AF80	15	PS-3FBN13	PS-3FBN43	PS-3FBNX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFAN11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

System proS

3 Phase Starters, Non-Combination¹



HP Rated, Non-Reversing, 3 Phase Starters

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFSX13	PS-AFSX43	PS-AFSXX3
17	AF16	5	5	10	15	PS-0FSX13	PS-0FSX43	PS-0FSXX3
27	AF30	10	10	20	25	PS-1FSX13	PS-1FSX43	PS-1FSXX3
52	AF52	15	20	40	50	PS-2FSX13	PS-2FSX43	PS-2FSXX3
77	AF80	25	30	60	75	PS-3FSX13	PS-3FSX43	PS-3FSXX3
125	AF140	40	50	100	125	PS-4FSX13	PS-4FSX43	PS-4FSXX3

HP Rated, Reversing, 3 Phase Starters

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFRX13	PS-AFRX43	PS-AFRXX3
17	AF16	5	5	10	15	PS-0FRX13	PS-0FRX43	PS-0FRXX3
27	AF30	10	10	20	25	PS-1FRX13	PS-1FRX43	PS-1FRXX3
52	AF52	15	20	40	50	PS-2FRX13	PS-2FRX43	PS-2FRXX3
77	AF80	25	30	60	75	PS-3FRX13	PS-3FRX43	PS-3FRXX3
125	AF140	40	50	100	125	PS-4FRX13	PS-4FRX43	PS-4FRXX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil. To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFSX11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

System proS

3 Phase Starters, Combination Fusible Disconnect Switch¹



HP Rated, Combination Starters, Fusible Disconnect, Non-Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFSF13	PS-AFSF43	PS-AFSFX3
17	AF16	5	5	10	15	PS-0FSF13	PS-0FSF43	PS-0FSFX3
27	AF30	10	10	20	25	PS-1FSF13	PS-1FSF43	PS-1FSFX3
52	AF52	15	20	40	50	PS-2FSF13	PS-2FSF43	PS-2FSFX3
77	AF80	25	30	60	75	PS-3FSF13	PS-3FSF43	PS-3FSFX3
125	AF140	40	50	100	125	PS-4FSF13	PS-4FSF43	PS-4FSFX3

HP Rated, Combination Starters, Fusible Disconnect, Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFRF13	PS-AFRF43	PS-AFRFX3
17	AF16	5	5	10	15	PS-0FRF13	PS-0FRF43	PS-0FRFX3
27	AF30	10	10	20	25	PS-1FRF13	PS-1FRF43	PS-1FRFX3
52	AF52	15	20	40	50	PS-2FRF13	PS-2FRF43	PS-2FRFX3
77	AF80	25	30	60	75	PS-3FRF13	PS-3FRF43	PS-3FRFX3
125	AF140	40	50	100	125	PS-4FRF13	PS-4FRF43	PS-4FRFX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFSF11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

System proS

3 Phase Starters, Combination Non-Fusible Disconnect Switch¹



HP Rated

HP Rated, Combination Starters, Non-Fusible Disconnect, Non Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFSN13	PS-AFSN43	PS-AFSNX3
17	AF16	5	5	10	15	PS-0FSN13	PS-0FSN43	PS-0FSNX3
27	AF30	10	10	20	25	PS-1FSN13	PS-1FSN43	PS-1FSNX3
52	AF52	15	20	40	50	PS-2FSN13	PS-2FSN43	PS-2FSNX3
77	AF80	25	30	60	75	PS-3FSN13	PS-3FSN43	PS-3FSNX3
125	AF140	40	50	100	125	PS-4FSN13	PS-4FSN43	PS-4FSNX3

HP Rated, Combination Starters, Non-Fusible Disconnect, Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFRN13	PS-AFRN43	PS-AFRNX3
17	AF16	5	5	10	15	PS-0FRN13	PS-0FRN43	PS-0FRNX3
27	AF30	10	10	20	25	PS-1FRN13	PS-1FRN43	PS-1FRNX3
52	AF52	15	20	40	50	PS-2FRN13	PS-2FRN43	PS-2FRNX3
77	AF80	25	30	60	75	PS-3FRN13	PS-3FRN43	PS-3FRNX3
125	AF140	40	50	100	125	PS-4FRN13	PS-4FRN43	PS-4FRNX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFSN11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

System proS

3 Phase Starters, Combination MCP^{1,3}



HP-Rated, Combination Starters, MCP, Non-Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFSB13	PS-AFSB43	PS-AFSBX3
17	AF16	5	5	10	15	PS-0FSB13	PS-0FSB43	PS-0FSBX3
27	AF30	10	10	20	25	PS-1FSB13	PS-1FSB43	PS-1FSBX3
52	AF52	15	20	40	50	PS-2FSB13	PS-2FSB43	PS-2FSBX3
77	AF80	25	30	60	75	PS-3FSB13	PS-3FSB43	PS-3FSBX3
125	AF140	40	50	100	125	PS-4FSB13	PS-4FSB43	PS-4FSBX3

HP Rated, Combination Starters, MCP, Reversing

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFRB13	PS-AFRB43	PS-AFRBX3
17	AF16	5	5	10	15	PS-0FRB13	PS-0FRB43	PS-0FRBX3
27	AF30	10	10	20	25	PS-1FRB13	PS-1FRB43	PS-1FRBX3
52	AF52	15	20	40	50	PS-2FRB13	PS-2FRB43	PS-2FRBX3
77	AF80	25	30	60	75	PS-3FRB13	PS-3FRB43	PS-3FRBX3
125	AF140	40	50	100	125	PS-4FRB13	PS-4FRB43	PS-4FRBX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFSB11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

³ MCP combination starters **MUST** have the overload relay installed by ABB.

System proS

3 Phase Starters, 2S-2W, Non-Combination¹



HP Rated, Non-Reversing, 2 Speeds - 2 Windings

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFTX13	PS-AFTX43	PS-AFTXX3
17	AF16	5	5	10	15	PS-0FTX13	PS-0FTX43	PS-0FTXX3
27	AF30	10	10	20	25	PS-1FTX13	PS-1FTX43	PS-1FTXX3
52	AF52	15	20	40	50	PS-2FTX13	PS-2FTX43	PS-2FTXX3
77	AF80	25	30	60	75	PS-3FTX13	PS-3FTX43	PS-3FTXX3
125	AF140	40	50	100	125	PS-4FTX13	PS-4FTX43	PS-4FTXX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFTX11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

System proS

3 Phase Starters, 2S-2W, Combination¹



HP Rated, Combination Fusible Disconnect, Non-Reversing, 2S-2W

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFTF13	PS-AFTF43	PS-AFTFX3
17	AF16	5	5	10	15	PS-0FTF13	PS-0FTF43	PS-0FTFX3
27	AF30	10	10	20	25	PS-1FTF13	PS-1FTF43	PS-1FTFX3
52	AF52	15	20	40	50	PS-2FTF13	PS-2FTF43	PS-2FTFX3
77	AF80	25	30	60	75	PS-3FTF13	PS-3FTF43	PS-3FTFX3
125	AF140	40	50	100	125	PS-4FTF13	PS-4FTF43	PS-4FTFX3

HP Rated, Combination Non-Fusible Disconnect, Non-Reversing, 2S-2W

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFTN13	PS-AFTN43	PS-AFTNX3
17	AF16	5	5	10	15	PS-0FTN13	PS-0FTN43	PS-0FTNX3
27	AF30	10	10	20	25	PS-1FTN13	PS-1FTN43	PS-1FTNX3
52	AF52	15	20	40	50	PS-2FTN13	PS-2FTN43	PS-2FTNX3
77	AF80	25	30	60	75	PS-3FTN13	PS-3FTN43	PS-3FTNX3
125	AF140	40	50	100	125	PS-4FTN13	PS-4FTN43	PS-4FTNX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil. To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter PS-AFTF11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)

² Ratings listed are at 600V AC

System proS

3 Phase 2S-1W Starters, Non-Combination¹



HP Rated, Non-Reversing, 2 Speeds - 1 Windings

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFVX13	PS-AFVX43	PS-AFVXX3
17	AF16	5	5	10	15	PS-0FVX13	PS-0FVX43	PS-0FVXX3
27	AF30	10	10	20	25	PS-1FVX13	PS-1FVX43	PS-1FVXX3
52	AF52	15	20	40	50	PS-2FVX13	PS-2FVX43	PS-2FVXX3
77	AF80	25	30	60	75	PS-3FVX13	PS-3FVX43	PS-3FVXX3
125	AF140	40	50	100	125	PS-4FVX13	PS-4FVX43	PS-4FVXX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFVX11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)
² Ratings listed are at 600V AC

System proS

3 Phase 2S-1W Starters, Combination¹



HP Rated, Combination Fusible Disconnect, Non-Reversing, 2S-1W

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFVF13	PS-AFVF43	PS-AFVFX3
17	AF16	5	5	10	15	PS-0FVF13	PS-0FVF43	PS-0FVFX3
27	AF30	10	10	20	25	PS-1FVF13	PS-1FVF43	PS-1FVFX3
52	AF52	15	20	40	50	PS-2FVF13	PS-2FVF43	PS-2FVFX3
77	AF80	25	30	60	75	PS-3FVF13	PS-3FVF43	PS-3FVFX3
125	AF140	40	50	100	125	PS-4FVF13	PS-4FVF43	PS-4FVFX3

HP Rated, Combination Non-Fusible Disconnect, Non-Reversing, 2S-1W

CSA Motor Switching Current ²	Contactor Size	Maximum Motor HP ratings				Type 1	Type 4/12	Type 4X
		200/208V	220/240V	460/480V	575/600V	Catalog Number	Catalog Number	Catalog Number
9	AF09	2	2	5	7.5	PS-AFVN13	PS-AFVN43	PS-AFVNX3
17	AF16	5	5	10	15	PS-0FVN13	PS-0FVN43	PS-0FVNX3
27	AF30	10	10	20	25	PS-1FVN13	PS-1FVN43	PS-1FVNX3
52	AF52	15	20	40	50	PS-2FVN13	PS-2FVN43	PS-2FVNX3
77	AF80	25	30	60	75	PS-3FVN13	PS-3FVN43	PS-3FVNX3
125	AF140	40	50	100	125	PS-4FVN13	PS-4FVN43	PS-4FVNX3

Coil Voltage Selection

All AC operated catalogue numbers include a 100 - 250V ac coil.
To select other coil voltages, substitute the code from the coil voltage selection chart for the last digit in the catalogue number.

Ex.: A 24 - 60V ac coil is required for an AF09 starter: use PS-AFVF11

Hz	Volts			
	24 - 60	48 - 130	100 - 250	250 - 500
50/60	1	2	3	4

¹ Overload relays, pilot device kits and control transformers must be ordered separately (see pages 17 to 22)
² Ratings listed are at 600V AC

System proS

Thermal Overload Relay Sizing Chart

Correct sizing of overload relays as per motor HP for IEC-rated starters



1-phase		3-phase				Thermal Overload Relay Class 10	Suffix for factory installation
120V	240V	208V	240V	480V	600V		
-	-	-	-	-	-	TF42-0.13 (0.10 ... 0.13)	A
-	-	-	-	-	-	TF42-0.17 (0.13 ... 0.17)	B
-	-	-	-	-	-	TF42-0.23 (0.17 ... 0.23)	C
-	-	-	-	-	-	TF42-0.31 (0.23 ... 0.31)	D
-	-	-	-	-	-	TF42-0.41 (0.31 ... 0.41)	E
-	-	-	-	-	-	TF42-0.55 (0.41 ... 0.55)	F
-	-	-	-	-	-	TF42-0.74 (0.55 ... 0.74)	G
-	-	-	-	-	1/2	TF42-1.0 (0.74 ... 1.0)	H
-	-	-	-	1/2	3/4	TF42-1.3 (1.0 ... 1.3)	J
-	1/10	-	-	3/4	1	TF42-1.7 (1.3 ... 1.7)	K
-	1/8, 1/6	-	1/2	1	-	TF42-2.3 (1.7 ... 2.3)	L
1/10	1/4	1/2	-	1.5	1.5, 2	TF42-3.1 (2.3 ... 3.1)	M
1/8	1/3	3/4	1	2	3	TF42-4.2 (3.1 ... 4.2)	N
1/6	1/2	1	-	3	-	TF42-5.7 (4.2 ... 5.7)	P
1/4, 1/3	3/4	1.5, 2	1.5, 2	5	5	TF42-7.6 (5.7 ... 7.6)	Q
1/2	1	-	3	-	7.5	TF42-10 (7.6 ... 10)	R
-	1.5, 2	3	-	7.5	10	TF42-13 (10 ... 13)	S
3/4	-	-	5	10	-	TF42-16 (13 ... 16)	T
1	3	5	-	-	15	TF42-20 (16 ... 20)	U
1.5, 2	-	-	7.5	15	20	TF42-24 (20 ... 24)	V
-	5	7.5	10	20	25	TF42-29 (24 ... 29)	W
-	-	10	-	-	-	TF42-35 (29 ... 35)	X
-	-	-	-	-	-	TF65-28 (22 ... 28)	A
-	-	-	-	-	30	TF65-33 (25 ... 33)	B
3	7.5	-	-	25	-	TF65-40 (30 ... 40)	C
-	-	-	15	30	40	TF65-47 (36 ... 47)	D
-	10	15	-	40	50	TF65-53 (44 ... 53)	E
-	-	-	20	-	-	TF65-60 (50 ... 60)	F
-	-	-	-	-	-	TF65-67 (57 ... 67)	G
-	-	-	-	-	-	TF96-51 (40 ... 51)	A
5	-	-	-	-	-	TF96-60 (48 ... 60)	B
-	-	20	-	50	60	TF96-68 (57 ... 68)	C
-	15	25	25	60	75	TF96-78 (65 ... 78)	D
7.5	-	-	30	-	-	TF96-87 (75 ... 87)	E
-	-	-	-	-	-	TF96-96 (84 ... 96)	F
-	-	30	-	-	-	TF140DU-90 (66 ... 90)	A
-	-	-	40	75	100	TF140DU-110 (80 ... 110)	B
-	-	40	50	-	125	TF140DU-135 (100 ... 135)	C
-	-	-	-	100	-	TF140DU-142 (110 ... 142)	D

* It is the client's responsibility to confirm whether the overload relay suggested is appropriate for their application. Please verify correct overload required for each specific application with the motor's name plate.

System proS

Overload Relay Sizing

Overload relay selection

HP rated magnetic starters

- Generally require a class 10 overload relay
- Please choose the appropriate thermal OLR (TF42 to TF140) for these applications
- ABB can install the thermal overload relay on HP rated starters at the factory
- Thermal OLR's can be used in single phase (120V or 240V) applications



* It is the client's responsibility to confirm whether the overload relay suggested is appropriate for their application. Please verify correct overload required for each specific application with the motor's name plate.

System proS

Pilot Device Kits for D.O.L. Starters



Customer or factory installed pilot device kits for D.O.L starters

Pilot Light	# of Devices	Description	Nameplate Language	Nameplate Text	Suffix for factory installation	Catalog Number
130V	1	Pilot Light	English	ON	G	PS-PL
130V	3	Push buttons + Pilot light	English	START / STOP / ON	B	PS-SSI
130V	2	2 Position Switch + Pilot Light	English	OFF-ON / ON	D	PS-SL2I
130V	2	2 Position Keyed Switch + Pilot light	English	OFF-ON / ON	XB	PS-SL2KI
130V	2	3 Position Switch + Pilot Light	English	HAND-OFF-AUTO / ON	F	PS-SL3I
130V	2	3 Position Keyed Switch + Pilot light	English	HAND-OFF-AUTO / ON	XD	PS-SL3KI
24V	1	Pilot Light	English	ON	G	PS-PLF
24V	3	Push buttons + Pilot light	English	START / STOP / ON	B	PS-SSIF
24V	2	2 Position Switch + Pilot Light	English	OFF-ON / ON	D	PS-SL2IF
24V	2	2 Position Keyed Switch + Pilot light	English	OFF-ON / ON	XB	PS-SL2KIF
24V	2	3 Position Switch + Pilot Light	English	HAND-OFF-AUTO / ON	F	PS-SL3IF
24V	2	3 Position Keyed Switch + Pilot light	English	HAND-OFF-AUTO / ON	XD	PS-SL3KIF
--	2	Push buttons	English	START / STOP	A	PS-SS
--	2	Push buttons	English	START / EMERGENCY STOP	Q	PS-SE
--	1	2 Position Switch	English	OFF-ON	C	PS-SL2
--	1	2 Position Keyed Switch	English	OFF-ON	XA	PS-SL2K
--	1	3 Position Switch	English	HAND-OFF-AUTO	E	PS-SL3
--	1	3 Position Keyed Switch	English	HAND-OFF-AUTO	XC	PS-SL3K

System proS

Pilot Device Kits for D.O.L. Starters



Factory installed pilot device kits for D.O.L starters

Pilot Light	# of Devices	Description	Nameplate Language	Nameplate Text	Suffix for factory installation	Catalog Number
130V	3	2 Position Switch + Pilot lights	English	OFF-ON / ON / FAULT	S	PS-SL2IO
130V	3	2 Position Keyed Switch + Pilot lights	English	OFF-ON / ON / FAULT	XE	PS-SL2KIO
130V	3	2 Position Switch + Pilot lights	English	OFF-ON / ON / OFF	W	PS-SL2IH**
130V	3	2 Position Keyed Switch + Pilot lights	English	OFF-ON / ON / OFF	XG	PS-SL2KIH**
130V	3	3 Position Switch + Pilot lights	English	HAND-OFF-AUTO / ON / FAULT	U	PS-SL3IO
130V	3	3 Position Keyed Switch + Pilot lights	English	HAND-OFF-AUTO / ON / FAULT	XF	PS-SL3KIO
130V	3	3 Position Switch + Pilot lights	English	HAND-OFF-AUTO / ON / OFF	Y	PS-SL3IH**
130V	3	3 Position Keyed Switch + Pilot lights	English	HAND-OFF-AUTO / ON / OFF	XH	PS-SL3KIH**
24V	3	2 Position Switch + Pilot lights	English	OFF-ON / ON / FAULT	S	PS-SL2IOF
24V	3	2 Position Keyed Switch + Pilot lights	English	OFF-ON / ON / FAULT	XE	PS-SL2KIOF
24V	3	2 Position Switch + Pilot lights	English	OFF-ON / ON / OFF	W	PS-SL2IHF**
24V	3	2 Position Keyed Switch + Pilot lights	English	OFF-ON / ON / OFF	XG	PS-SL2KIH**
24V	3	3 Position Switch + Pilot lights	English	HAND-OFF-AUTO / ON / FAULT	U	PS-SL3IOF
24V	3	3 Position Keyed Switch + Pilot lights	English	HAND-OFF-AUTO / ON / FAULT	XF	PS-SL3KIOF
24V	3	3 Position Switch + Pilot lights	English	HAND-OFF-AUTO / ON / OFF	Y	PS-SL3IHF**
24V	3	3 Position Keyed Switch + Pilot lights	English	HAND-OFF-AUTO / ON / OFF	XH	PS-SL3KIH**

** = Factory installed pilot device kit ONLY

System proS

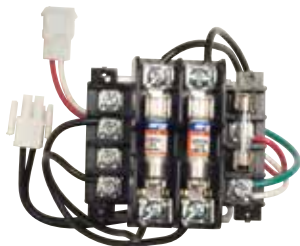
Pilot Device Kits for 2-Speed and Reversing Starters

Customer or factory installed pilot device kits for 2-speed and reversing starters



Starter Type	Pilot Light	# of Devices	Description	Nameplate Language	Nameplate Text	Suffix for factory installation	Catalog Number
Rev.	130V	3	3 Position Switch + Pilot Lights	English	FWD-OFF-REV / FORWARD / REVERSE	C	PS-SL3RI
	24V	3	3 Position Switch + Pilot Lights	English	FWD-OFF-REV / FORWARD / REVERSE	C	PS-SL3RIF
	--	3	Push buttons	English	FORWARD-REVERSE-STOP	A	PS-FRS
	--	1	3 Position Switch	English	FWD-OFF-REV	B	PS-SL3R
2-Speed	130V	3	3 Position Switch + Pilot Lights	English	SLOW-OFF-FAST / SLOW / FAST	C	PS-SL3FI
	130V	3	4 Position Switch + Pilot Lights	English	AUTO-OFF-SLOW-FAST / SLOW / FAST	H	PS-SL4FI
	24V	3	3 Position Switch + Pilot Lights	English	SLOW-OFF-FAST / SLOW / FAST	C	PS-SL3FIF
	24V	3	4 Position Switch + Pilot Lights	English	AUTO-OFF-SLOW-FAST / SLOW / FAST	H	PS-SL4FIF
	--	3	Push buttons	English	FAST-SLOW-STOP	A	PS-FSO
	--	1	3 Position Switch	English	SLOW-OFF-FAST	B	PS-SL3F
	--	1	4 Position Switch	English	AUTO-OFF-SLOW-FAST	G	PS-SL4F

Transformer kits



For Contactor Sizes	VA Rating	Primary Voltage	Secondary Voltage	Suffix for factory installation	Catalog Number
PS-AF, 0F, 1F, 2F, 3F	50	240	120	01	PS-50-240/120
		347	120	02	PS-50-347/120
		480	120	03	PS-50-480/120
		600	120	04	PS-50-600/120
		240	24	05	PS-50-240/24
		480	24	06	PS-50-480/24
		600	24	07	PS-50-600/24
		208	120	08	PS-50-208/120
		208	24	09	PS-50-208/24
		416	120	10	PS-50-416/120
		416	24	11	PS-50-416/24
		120	24	12	PS-50-120/24
PS-4F	100	240	120	01	PS-100-240/120
		347	120	02	PS-100-347/120
		480	120	03	PS-100-480/120
		600	120	04	PS-100-600/120
		240	24	05	PS-100-240/24
		480	24	06	PS-100-480/24
		600	24	07	PS-100-600/24
		208	120	08	PS-100-208/120
		208	24	09	PS-100-208/24
		416	120	10	PS-100-416/120
		416	24	11	PS-100-416/24
		120	24	12	PS-100-120/24

System proS

Technical Data

Standard selection for Non-combination Starters

Table #1

ProS Starters	Main Protection	Contactor	Maximum overload	Combination kA	AC1	AC3	Single phase (HP)			Three Phases (HP)			
					600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AF_X...	N/A	AF09	TF42-16	5	25 Amp	9 Amp	0.75 HP	1 HP	1.5 HP	2 HP	2 HP	5 HP	7.5 HP
PS-0F_X...	N/A	AF16	TF42-24	5	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-1F_X...	N/A	AF30	TF42-35	5	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-2F_X...	N/A	AF52	TF65-60	5	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-3F_X...	N/A	AF80	TF96-87	10	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-4F_X...	N/A	AF140	TF140DU-142	10	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP

Standard cable range for Non-combination Starters

Table #1a

HP ProS Starters	Contactor	Incoming lugs
PS-AF_X...	AF09	2 x (#16AWG - #10AWG)
PS-0F_X...	AF16	2 x (#16AWG - #10AWG)
PS-1F_X...	AF30	2 x (#14AWG - #8AWG)
PS-2F_X...	AF52	2 x (#10AWG - #2AWG)
PS-3F_X...	AF80	2 x (#6AWG - #1AWG)
PS-4F_X...	AF140	2 x (#6AWG - #3/0AWG)

Standard selection for Combination Starters (Disconnect Switches)

Table #2

ProS Starters	Main Protection	Contactor	Maximum overload	Combination kA	AC1	AC3	Single phase (HP)			Three Phases (HP)			
					600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AF_N...	OT30F3	AF09	TF42-16	5	25 Amp	9 Amp	0.75 HP	1 HP	1.5 HP	2 HP	2 HP	5 HP	7.5 HP
PS-0F_N...	OT30F3	AF16	TF42-24	5	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-1F_N...	OT60F3	AF30	TF42-35	5	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-2F_N...	OT100F3	AF52	TF65-60	5	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-3F_N...	OT200U12	AF80	TF96-87	10	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-4F_N...	OT200U12	AF140	TF140DU-142	10	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP

Standard cable range for Combination Starters (Disconnect Switches)

Table #2a

HP ProS Starters	Disconnect Switch	Incoming lugs
PS-AF_N...	OT30F3	1 x (#14AWG - #4AWG)
PS-0F_N...	OT30F3	1 x (#14AWG - #4AWG)
PS-1F_N...	OT60F3	1 x (#14AWG - #4AWG)
PS-2F_N...	OT100F3	1 x (#8AWG - #1/0AWG)
PS-3F_N...	OT200U12	1 x (#4AWG - #300MCM)
PS-4F_N...	OT200U12	1 x (#4AWG - #300MCM)

System proS

Technical Data

Standard selection for Combination Starters (Fuse Disconnect Switches)

Table #3

ProS Starters	Main Protection	Contactor	Maximum overload	Combination kA	AC1	AC3	Single phase (HP)			Three Phases (HP)			
					600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AF_F...	OS30FAJ12	AF09	TF42-16	Contact ABB	25 Amp	9 Amp	0.75 HP	1 HP	1.5 HP	2 HP	2 HP	5 HP	7.5 HP
PS-0F_F...	OS30FAJ12	AF16	TF42-24	Contact ABB	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-1F_F...	OS60GJ12	AF30	TF42-35	Contact ABB	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-2F_F...	OS100GJ12	AF52	TF65-60	Contact ABB	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-3F_F...	OS200J12	AF80	TF96-87	Contact ABB	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-4F_F...	OS200J12	AF140	TF140DU-142	Contact ABB	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP

Standard cable range for Combination Starters (Disconnect Switches)

Table #2a

HP ProS Starters	Fuse Disconnect	Incoming lugs
PS-AF_F...	OS30FAJ12	1 x (#18AWG - #8AWG)
PS-0F_F...	OS30FAJ12	1 x (#18AWG - #8AWG)
PS-1F_F...	OS60GJ12	1 x (#14AWG - #4AWG)
PS-2F_F...	OS100GJ12	1 x (#8AWG - #2/0AWG)
PS-3F_F...	OS200J12	1 x (#4AWG - #300MCM)
PS-4F_F...	OS200J12	1 x (#4AWG - #300MCM)

System proS

Technical Data

Standard selection for Combination Starters (MCP Breakers)

Table #4

ProS Starters	Main Protection	Contactor	Maximum overload	Combination kA	AC1	AC3	Single phase (HP)			Three Phases (HP)			
					600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AF_B...	TS3L025MW	AF09	TF42-16	Contact ABB	25 Amp	9 Amp	0.75 HP	1 HP	1.5 HP	2 HP	2 HP	5 HP	7.5 HP
PS-0F_B...	TS3L050MW	AF16	TF42-24	Contact ABB	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-1F_B...	TS3L050MW	AF30	TF42-35	Contact ABB	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-2F_B...	TS3L100MW	AF52	TF65-60	Contact ABB	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-3F_B...	TS3L150MW	AF80	TF96-87	Contact ABB	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-4F_B...	T4S250E5W	AF140	TF140DU-142	Contact ABB	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP

Standard cable range for Combination Starters (MCP Breakers)

Table #4a

HP ProS Starters	Breaker MCP	Incoming lugs
PS-AF_B...	TS3L025MW	1 x (#14AWG - #2AWG)
PS-0F_B...	TS3L050MW	1 x (#14AWG - #2AWG)
PS-1F_B...	TS3L050MW	1 x (#14AWG - #2AWG)
PS-2F_B...	TS3L100MW	1 x (#14AWG - #1/0AWG)
PS-3F_B...	TS3L150MW	1 x (#2AWG - #4/0AWG)
PS-4F_B...	T4S250E5W	1 x (#6AWG - #350MCM)

Enclosures dimensions for IEC Non-combination Starters

Table #7

ProS Starters		Type 1 (H x W x D)	Type 12-4-4X (H x W x D)	AC1	AC3	Single phase (HP)			Three Phases (HP)			
				600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AFS...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	25 Amp	9 amp	0.75HP	1HP	1.5HP	2HP	2HP	5HP	7.5HP
PS-AFR...												
PS-AFC...												
PS-AFK...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-AFA...												
PS-AFB...												
PS-AFT...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-AFV...												
PS-0FS...												
PS-0FR...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-0FC...												
PS-0FK...												
PS-0FA...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-0FB...												
PS-0FT...												
PS-0FV...	...X...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP
PS-1FS...												
PS-1FR...												

Enclosures dimensions for IEC Combination Starters (Pistol handles)

Table #8

ProS Starters		Type 1 (H x W x D)	Type 12-4-4X (H x W x D)	AC1	AC3	Single phase (HP)			Three Phases (HP)			
				600V	600V	120V	208V	240V	208V	240V	480V	600V
PS-AFS...	...N...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	25 Amp	9 amp	0.75HP	1HP	1.5HP	2HP	2HP	5HP	7.5HP
PS-AFR...												
PS-AFC...												
PS-AFK...	...F...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	30 Amp	17 Amp	1.5 HP	2 HP	3 HP	5 HP	5 HP	10 HP	15 HP
PS-AFA...												
PS-AFB...												
PS-AFT...	...M...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	50 Amp	27 Amp	2 HP	3 HP	5 HP	10 HP	10 HP	20 HP	25 HP
PS-AFV...												
PS-0FS...												
PS-0FR...	...N...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	80 Amp	52 Amp	3 HP	7.5 HP	10 HP	15 HP	20 HP	40 HP	50 HP
PS-0FC...												
PS-0FK...												
PS-0FA...	...F or L...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	105 Amp	77 Amp	7.5 HP	15 HP	15 HP	25 HP	30 HP	60 HP	75 HP
PS-0FB...												
PS-0FT...												
PS-0FV...	...B...	10" x 6-3/4" x 6-1/2" (254 x 172 x 165mm)	10" x 8-1/2" x 6-1/2" (254 x 216 x 165mm)	200 Amp	125 Amp	-	-	-	40 HP	50 HP	100 HP	125 HP
PS-1FS...												
PS-1FR...												

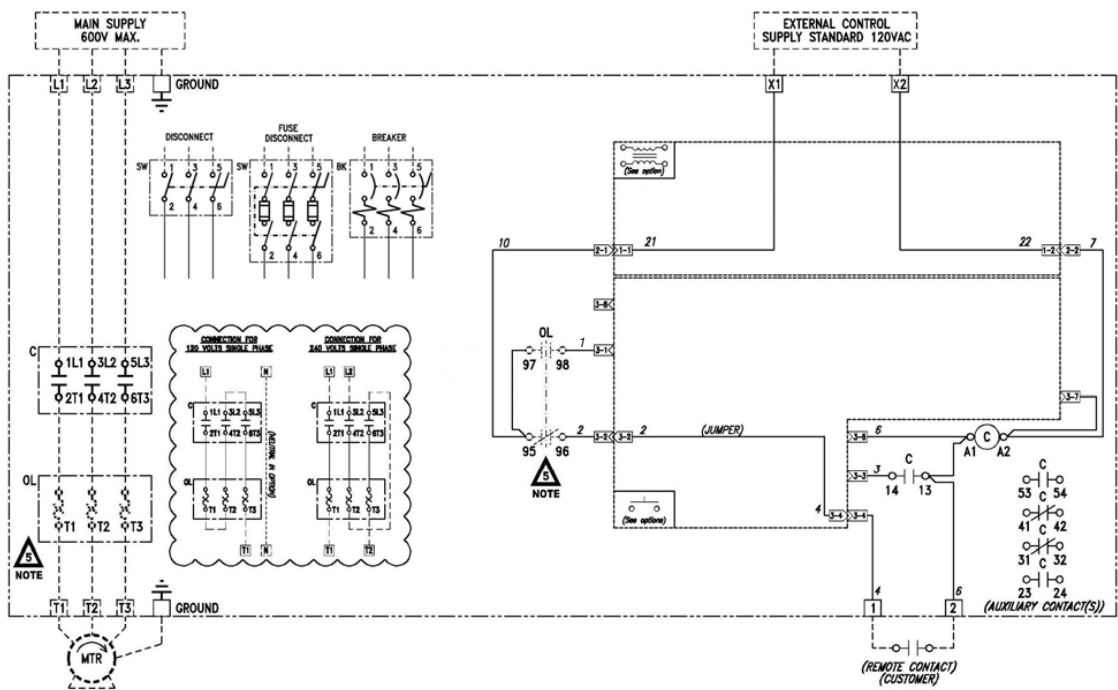
Standard cable range for Overload Relays

Table#11 & 12

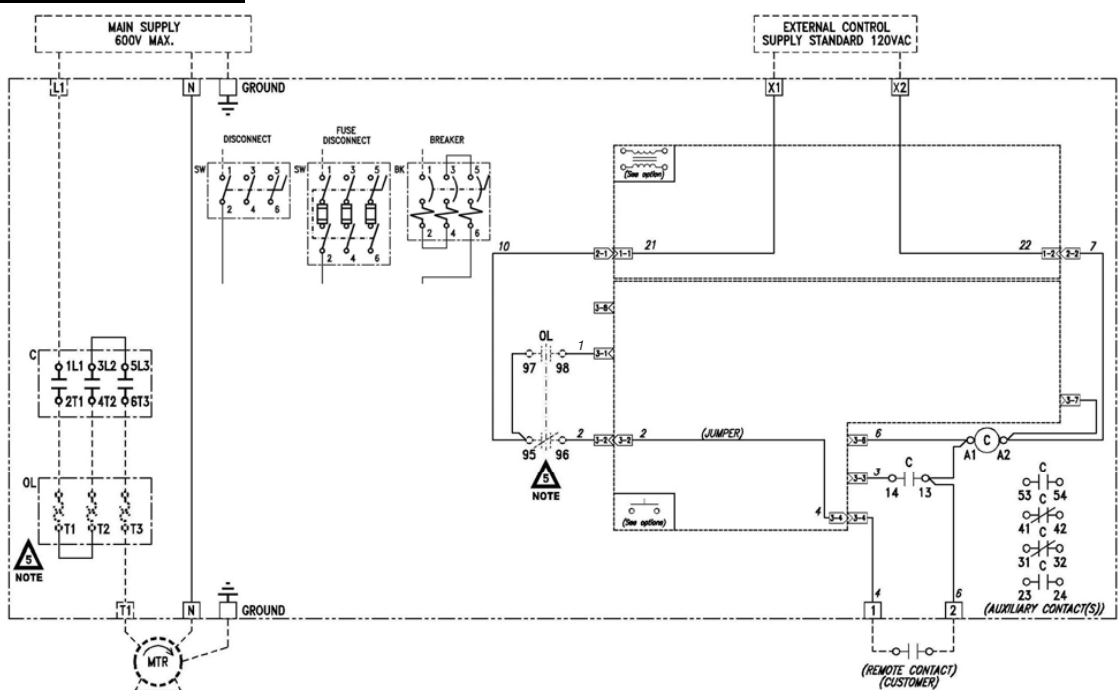
Suffix Code	Thermal Catalog Number	Current Setting Range	Cable Range
A	TF42-0.13	0.10 ... 0.13	2 x (#18AWG - #10AWG)
B	TF42-0.17	0.13 ... 0.17	2 x (#18AWG - #10AWG)
C	TF42-0.23	0.17 ... 0.23	2 x (#18AWG - #10AWG)
D	TF42-0.31	0.23 ... 0.31	2 x (#18AWG - #10AWG)
E	TF42-0.41	0.31 ... 0.41	2 x (#18AWG - #10AWG)
F	TF42-0.55	0.41 ... 0.55	2 x (#18AWG - #10AWG)
G	TF42-0.74	0.55 ... 0.74	2 x (#18AWG - #10AWG)
H	TF42-1.0	0.74 ... 1.0	2 x (#18AWG - #10AWG)
J	TF42-1.3	1.0 ... 1.3	2 x (#18AWG - #10AWG)
K	TF42-1.7	1.3 ... 1.7	2 x (#18AWG - #10AWG)
L	TF42-2.3	1.7 ... 2.3	2 x (#18AWG - #10AWG)
M	TF42-3.1	2.3 ... 3.1	2 x (#18AWG - #10AWG)
N	TF42-4.2	3.1 ... 4.2	2 x (#18AWG - #10AWG)
P	TF42-5.7	4.2 ... 5.7	2 x (#18AWG - #10AWG)
Q	TF42-7.6	5.7 ... 7.6	2 x (#18AWG - #10AWG)
R	TF42-10	7.6 ... 10	2 x (#18AWG - #10AWG)
S	TF42-13	10 ... 13	2 x (#18AWG - #10AWG)
T	TF42-16	13 ... 16	2 x (#18AWG - #10AWG)
U	TF42-20	16 ... 20	2 x (#14AWG - #6AWG)
V	TF42-24	20 ... 24	2 x (#14AWG - #6AWG)
W	TF42-29	24 ... 29	2 x (#14AWG - #6AWG)
X	TF42-35	29 ... 35	2 x (#14AWG - #6AWG)
A	TF65-28	22 ... 28	2 x (#12AWG - #6AWG)
B	TF65-33	25 ... 33	2 x (#12AWG - #6AWG)
C	TF65-40	30 ... 40	2 x (#12AWG - #6AWG)
D	TF65-47	36 ... 47	2 x (#12AWG - #6AWG)
E	TF65-53	44 ... 53	2 x (#12AWG - #6AWG)
F	TF65-60	50 ... 60	2 x (#12AWG - #6AWG)
G	TF65-67	57 ... 67	2 x (#12AWG - #6AWG)
A	TF96-51	40 ... 51	2 x (#8AWG - #3AWG)
B	TF96-60	48 ... 60	2 x (#8AWG - #3AWG)
C	TF96-68	57 ... 68	2 x (#8AWG - #3AWG)
D	TF96-78	65 ... 78	2 x (#8AWG - #3AWG)
E	TF96-87	75 ... 87	2 x (#8AWG - #3AWG)
F	TF96-96	84 ... 96	2 x (#8AWG - #3AWG)
A	TF140DU-90	66 ... 90	2 x (#6AWG - #2/0AWG)
B	TF140DU-110	80 ... 110	2 x (#6AWG - #2/0AWG)
C	TF140DU-135	100 ... 135	2 x (#6AWG - #2/0AWG)
D	TF140DU-142	110 ... 142	2 x (#6AWG - #2/0AWG)

System ProS Electrical Diagrams

Across the Line Starter

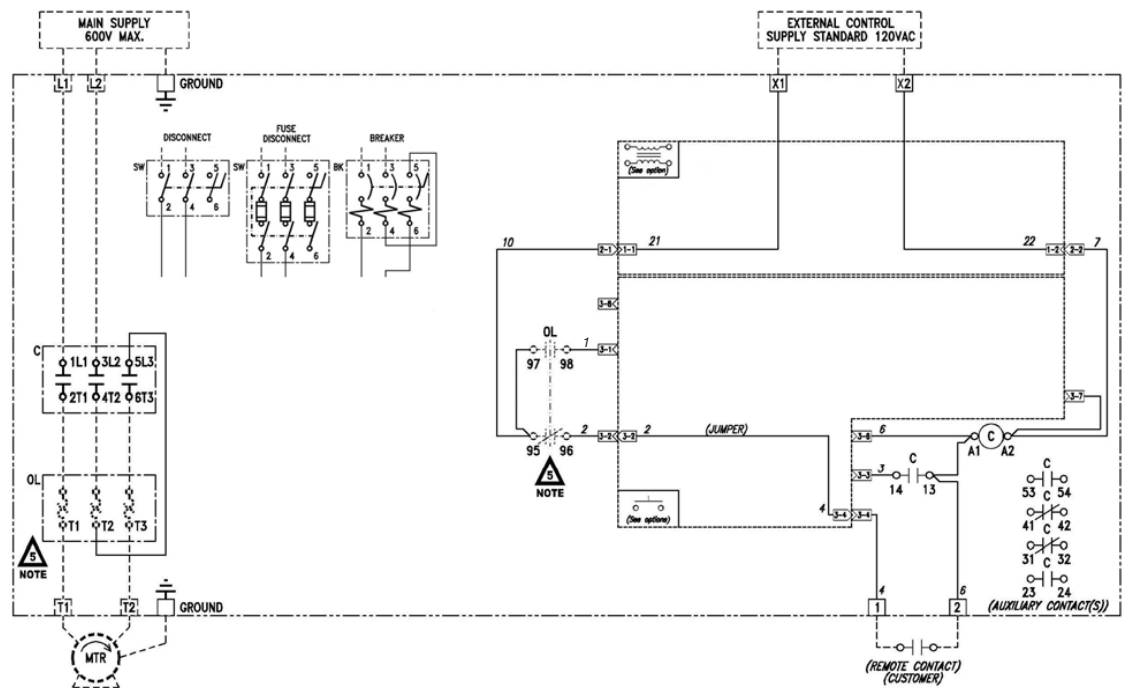


Single Phase 120Volts Starter

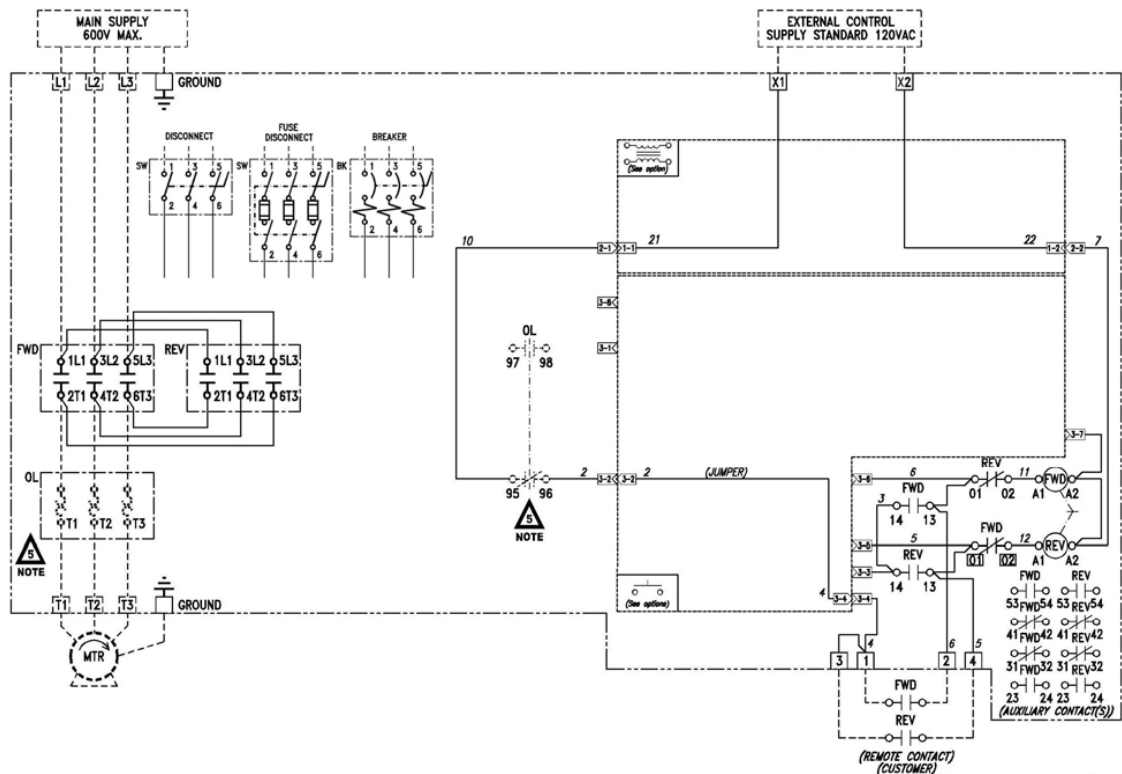


System ProS Electrical Diagrams

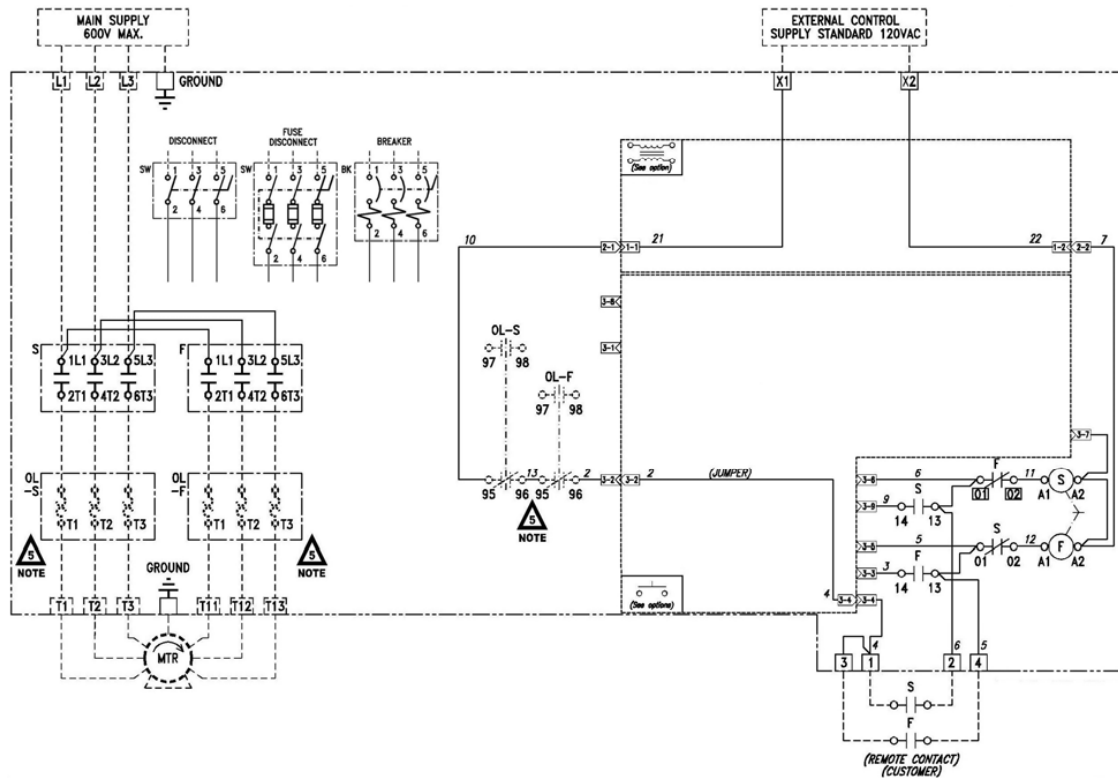
Single Phase 2 poles Starter



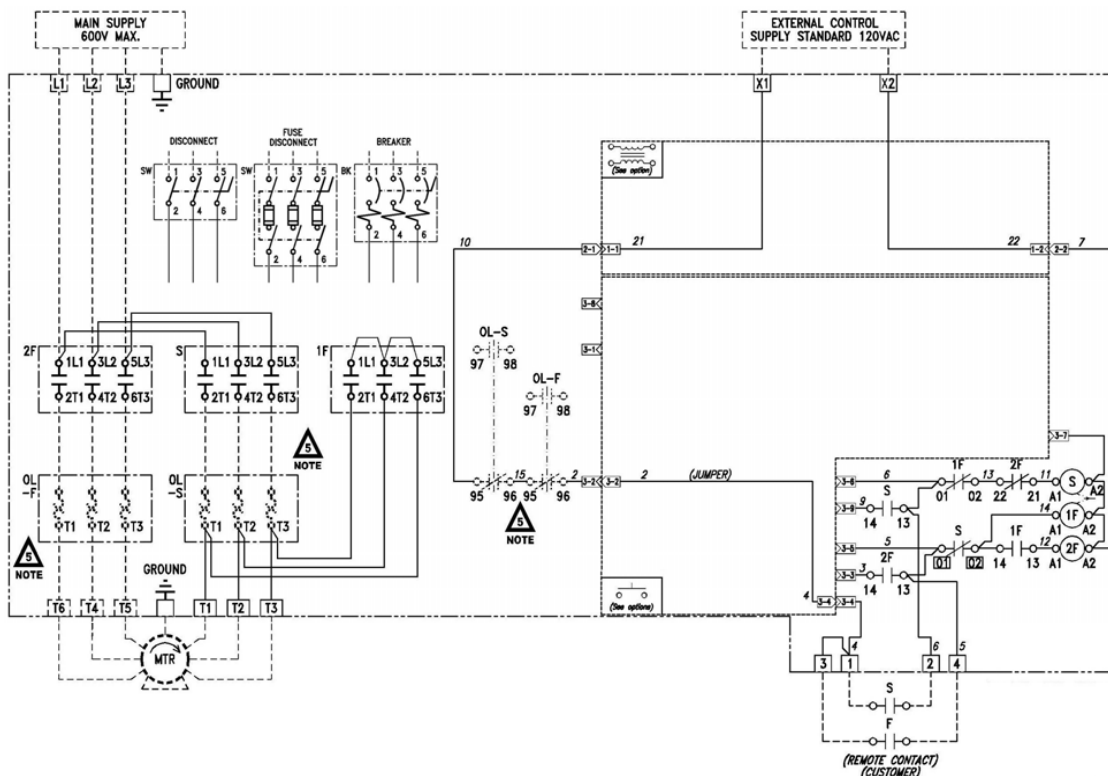
Reversing Starter



2 Speeds – 2 Windings Starter

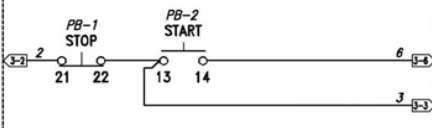
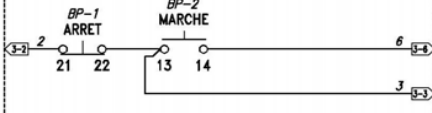
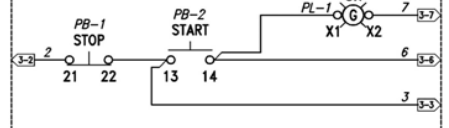
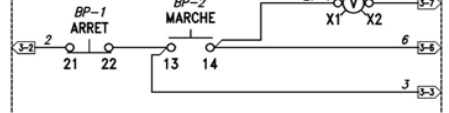
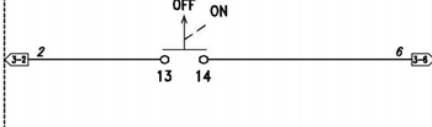
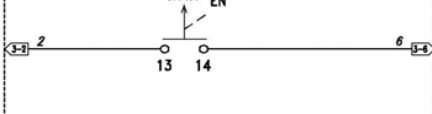
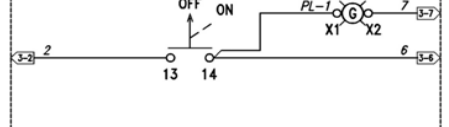
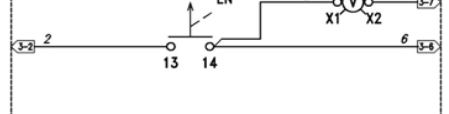
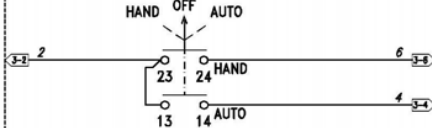
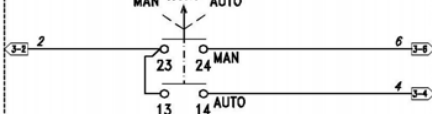
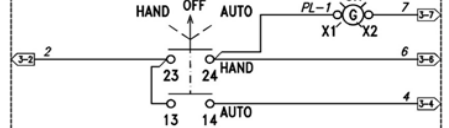
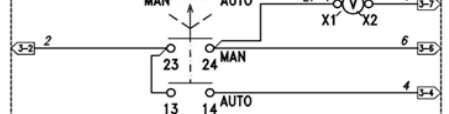
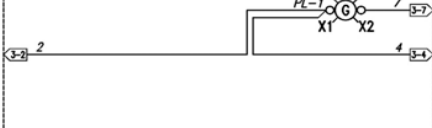
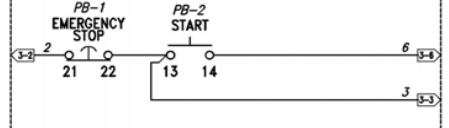
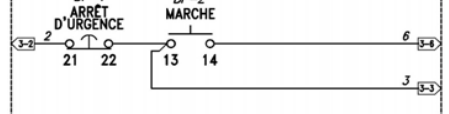


2 Speeds – 1 Winding Starter



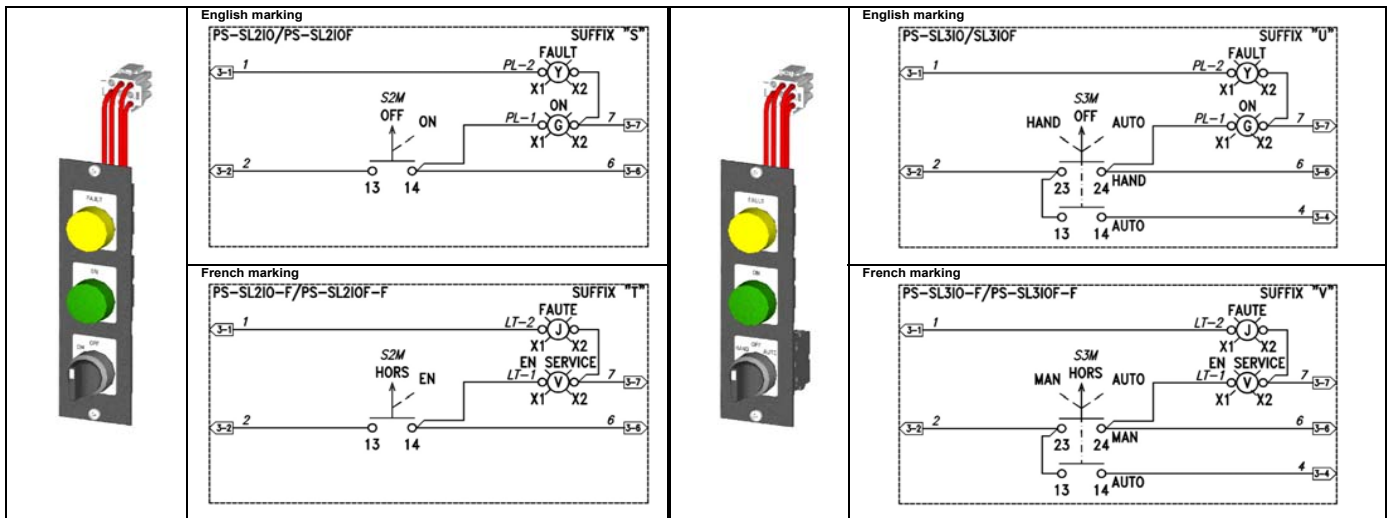
System proS

Pilot Device Kits (For Across the line Starters)

	English marking PS-SS SUFFIX "A"  French marking PS-SS-F SUFFIX "H" 		English marking PS-SSI/PS-SSIF SUFFIX "B"  French marking PS-SSI-F/PS-SSIF-F SUFFIX "J" 
	English marking PS-SL2 SUFFIX "C"  French marking PS-SL2-F SUFFIX "K" 		English marking PS-SL2I/PS-SL2IF SUFFIX "D"  French marking PS-SL2I-F/PS-SL2IF-F SUFFIX "L" 
	English marking PS-SL3 SUFFIX "E"  French marking PS-SL3-F SUFFIX "M" 		English marking PS-SL3I/PS-SL3IF SUFFIX "F"  French marking PS-SL3I-F/PS-SL3IF-F SUFFIX "N" 
	English marking PS-PL/PS-PLF SUFFIX "G"  French marking PS-PL-F/PS-PLF-F SUFFIX "P" 		English marking PS-SE SUFFIX "Q"  French marking PS-SE-F SUFFIX "R" 

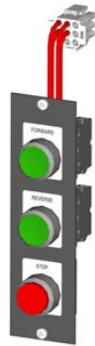
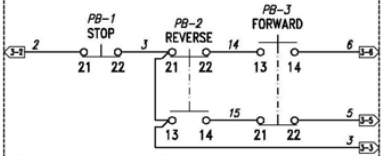
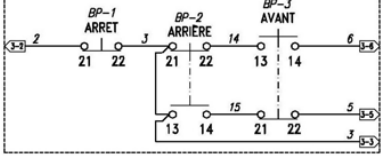
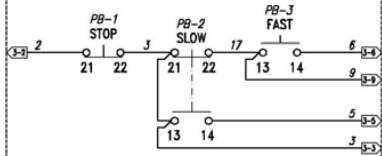
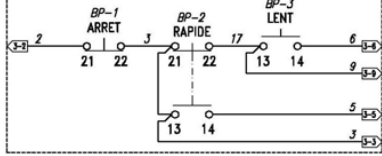
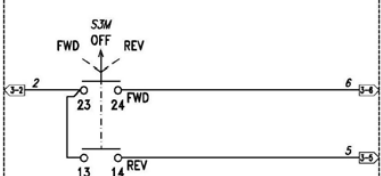
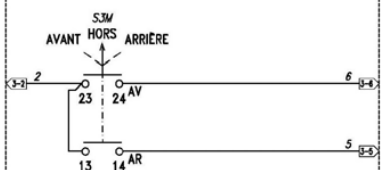
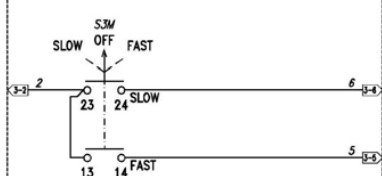
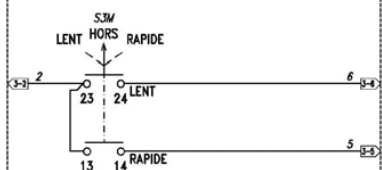
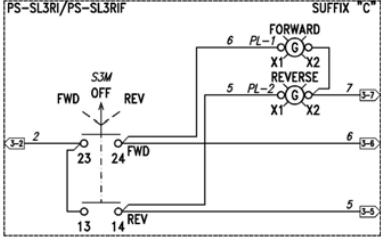
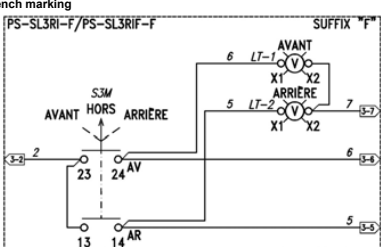
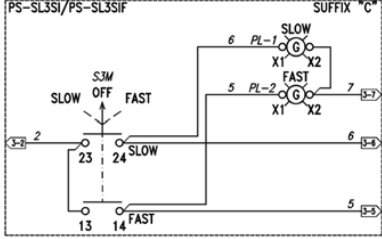
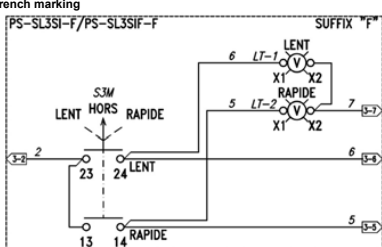
System proS

Pilot Device Kits (For Across the Line Starters)



System proS

Pilot Device Kits (ForReversing & 2 Speed Starters)

Reversing 	English marking PS-FRS SUFFIX "A"  French marking PS-FRS-F SUFFIX "D" 	2 Speeds 	English marking PS-FSO SUFFIX "A"  French marking PS-FSO-F SUFFIX "D" 
Reversing 	English marking PS-SL3R SUFFIX "B"  French marking PS-SL3R-F SUFFIX "E" 	2 Speeds 	English marking PS-SL3S SUFFIX "B"  French marking PS-SL3S-F SUFFIX "E" 
Reversing 	English marking PS-SL3RI/PS-SL3RIF SUFFIX "C"  French marking PS-SL3RI-F/PS-SL3RIF-F SUFFIX "F" 	2 Speeds 	English marking PS-SL3SI/PS-SL3SIF SUFFIX "C"  French marking PS-SL3SI-F/PS-SL3SIF-F SUFFIX "F" 

Dimensions

Metal-Enclosed Starters

Type 1 enclosure for non-combination starters



Starter Type		Dimension				
		A	B	C	D	E
PS-AFS	X	10"	6-3/4"	6-1/2"	10-7/8"	4-1/4"
PS-AFR		(254mm)	(172mm)	(165mm)	(276.26mm)	(107.95mm)
PS-AFA						
PS-AFB	X	17"	12"	7"	17-7/8"	9-1/2"
PS-AFT		(432mm)	(305mm)	(178mm)	(454.03mm)	(241.3mm)
PS-AFV						
PS-0FS	X	10"	6-3/4"	6-1/2"	10-7/8"	4-1/4"
PS-0FR		(254mm)	(172mm)	(165mm)	(276.26mm)	(107.95mm)
PS-0FA						
PS-0FB	X	17"	12"	7"	17-7/8"	9-1/2"
PS-0FT		(432mm)	(305mm)	(178mm)	(454.03mm)	(241.3mm)
PS-0FV						
PS-1FS	X	10"	6-3/4"	6-1/2"	10-7/8"	4-1/4"
PS-1FR		(254mm)	(172mm)	(165mm)	(276.26mm)	(107.95mm)
PS-1FA						
PS-1FB	X	17"	12"	7"	17-7/8"	9-1/2"
PS-1FT		(432mm)	(305mm)	(178mm)	(454.03mm)	(241.3mm)
PS-1FV						
PS-2F_	X	17"	12"	7"	17-7/8"	9-1/2"
PS-3F_		(432mm)	(305mm)	(178mm)	(454.03mm)	(241.3mm)
PS-4F_						
PS-2F_	X	17"	12"	7"	17-7/8"	9-1/2"
PS-3F_		(432mm)	(305mm)	(178mm)	(454.03mm)	(241.3mm)
PS-4F_						
PS-2F_	X	36"	20"	10"	36-7/8"	17-1/2"
PS-3F_		(915mm)	(508mm)	(254mm)	(936.63mm)	(444.5mm)
PS-4F_						

Dimensions

Metal-Enclosed Starters

Type 1 enclosure for IEC-rated combination starters

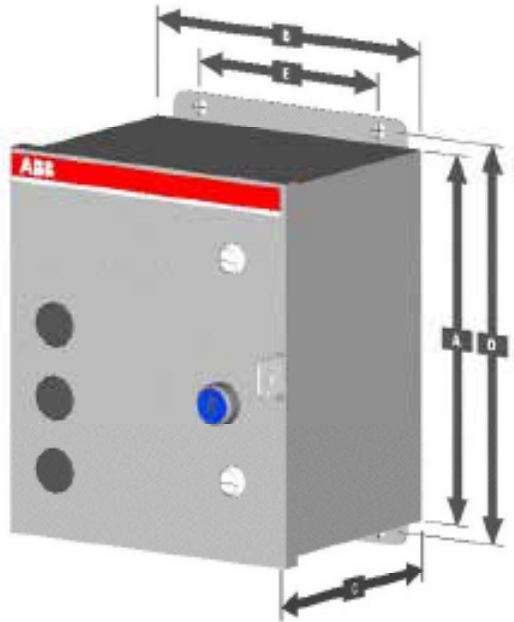


Starter Type		Dimension				
		A	B	C	D	E
PS-AFS	N F B	20"	8-1/2"	8"	20-3/4"	5-3/4"
PS-AFR		(508mm)	(216mm)	(204mm)	(527.05mm)	(146.05mm)
PS-AFA						
PS-AFB						
PS-AFT	N F B	28"	12"	8"	28-7/8"	9-1/2"
PS-AFV		(712mm)	(305mm)	(204mm)	(733.43mm)	(241.3mm)
PS-0FS	N F B	20"	8-1/2"	8"	20-3/4"	5-3/4"
PS-0FR		(508mm)	(216mm)	(204mm)	(527.05mm)	(146.05mm)
PS-0FA						
PS-0FB						
PS-0FT	N F B	28"	12"	8"	28-7/8"	9-1/2"
PS-0FV		(712mm)	(305mm)	(204mm)	(733.43mm)	(241.3mm)
PS-1FS	N F B	20"	8-1/2"	8"	20-3/4"	5-3/4"
PS-1FR		(508mm)	(216mm)	(204mm)	(527.05mm)	(146.05mm)
PS-1FA						
PS-1FB						
PS-1FT	N F B	28"	12"	8"	28-7/8"	9-1/2"
PS-1FV		(712mm)	(305mm)	(204mm)	(733.43mm)	(241.3mm)
PS-2F_	N F B	28"	12"	8"	28-7/8"	9-1/2"
		(712mm)	(305mm)	(204mm)	(733.43mm)	(241.3mm)
PS-3F_	N F B	28"	12"	8"	28-7/8"	9-1/2"
		(712mm)	(305mm)	(204mm)	(733.43mm)	(241.3mm)
PS-4F_	N F B	48"	20"	10"	48-7/8"	17-1/2"
		(1220mm)	(508mm)	(254mm)	(1241.43mm)	(444.5mm)

Dimensions

Metal-Enclosed Starters

Type 4/12 and 4X enclosure for non-combination starters



Starter Type		Dimension				
		A	B	C	D	E
PS-AFS	X	10"	8-1/2"	6-1/2"	10-3/4"	5-3/4"
PS-AFR		(254mm)	(216mm)	(165mm)	(273.05mm)	(146.05mm)
PS-AFA						
PS-AFB						
PS-AFT	X	17"	13-3/4"	7"	17-3/4"	11"
PS-AFV		(432mm)	(350mm)	(178mm)	(450.85mm)	(279.4mm)
PS-OFS						
PS-0FR						
PS-0FA	X	10"	8-1/2"	6-1/2"	10-3/4"	5-3/4"
PS-0FB		(254mm)	(216mm)	(165mm)	(273.05mm)	(146.05mm)
PS-0FT						
PS-0FV						
PS-1FS	X	17"	13-3/4"	7"	17-3/4"	11"
PS-1FR		(432mm)	(350mm)	(178mm)	(450.85mm)	(279.4mm)
PS-1FA						
PS-1FB						
PS-1FT	X	10"	8-1/2"	6-1/2"	10-3/4"	5-3/4"
PS-1FV		(254mm)	(216mm)	(165mm)	(273.05mm)	(146.05mm)
PS-2F_						
PS-3F_						
PS-4F_	X	17"	13-3/4"	7"	17-3/4"	11"
		(432mm)	(350mm)	(178mm)	(450.85mm)	(279.4mm)
	X	36"	21-3/4"	10"	36-3/4"	19"
		(915mm)	(535mm)	(254mm)	(933.45mm)	(482.6mm)

Dimensions

Metal-Enclosed Starters

Type 4/12 and 4Xenclosure for IEC-rated combination starters



Starter Type		Dimension				
		A	B	C	D	E
PS-AFS	N	20" (508mm)	8-1/2" (216mm)	8" (204mm)	20-3/4" (527.05mm)	5-3/4" (146.05mm)
PS-AFR	F					
PS-AFA	B					
PS-AFB						
PS-AFT	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-AFR	F					
PS-AFA	B					
PS-AFB						
PS-0FS	N	20" (508mm)	8-1/2" (216mm)	8" (204mm)	20-3/4" (527.05mm)	5-3/4" (146.05mm)
PS-0FR	F					
PS-0FA	B					
PS-0FB						
PS-0FT	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-0FR	F					
PS-0FA	B					
PS-0FB						
PS-1FS	N	20" (508mm)	8-1/2" (216mm)	8" (204mm)	20-3/4" (527.05mm)	5-3/4" (146.05mm)
PS-1FR	F					
PS-1FA	B					
PS-1FB						
PS-1FT	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-1FR	F					
PS-1FA	B					
PS-1FB						
PS-1FT	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-1FR	F					
PS-1FA	B					
PS-1FB						
PS-2F_	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-2FR	F					
PS-2FA	B					
PS-2FB						
PS-3F_	N	28" (712mm)	13-3/4" (350mm)	7-1/2" (191mm)	28-3/4" (730.25mm)	11" (279.4mm)
PS-3FR	F					
PS-3FA	B					
PS-3FB						
PS-4F_	N	48" (1220mm)	21-3/4" (553mm)	10" (254mm)	48-3/4" (1238.25mm)	19" (482.6mm)
PS-4FR	F					
PS-4FA	B					
PS-4FB						