



Cartridge Valves Technical Information

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Cartridge Valves Technical Information

Coils Quick reference



R16

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Coils
Quick reference



COIL TERMINATION SPECIFICATIONS

Code	Termination	Specifications
A	DIN 43650	DIN 43650A/ISO 4400 standard electrical connector
AJ	Amp Junior	Integral to coil
AMJ	Amp Junior	Integral to coil
AMS	Amp SuperSeal 1.5 (also conforms to MetriPak 150 Type 1)	Integral to coil; mating connector is Delphi-Packard Part Number 12052641
AS	Amp SuperSeal 1.5 (also conforms to MetriPak 150 Type 1)	Integral to coil; mating connector is Delphi-Packard Part Number 12052641
C	Conduit	Two 18 AWG wires, 457 mm [18 in] long with 1/2-14 NPT internal thread for conduit
DE	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
DED	Deutsch with diode	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
DN	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
DP	Dual Post	Two No. 8-32UNC screw terminals 9.5 mm [0.375 in] long
DT04	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E1	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
E2	DIN 43650 with diode	DIN 43650A / ISO 4400 standard electrical connector
E3	Amp Junior	Integral to coil
E4	Amp Junior with diode	Integral to coil
E5	DIN 43650 with rectifier	DIN 43650A / ISO 4400 standard electrical connector
E8	Lead wires	Two 18 AWG wires, 457 mm [18 in] long
E9	Lead wires with diode	Two 18 AWG wires, 457 mm [18 in] long
E10	Deutsch (on leads)	On two 18 AWG lead wires, 203 mm [8 in] long with protective braid; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E11	Deutsch (on leads) with diode	On two 18 AWG lead wires, 203 mm [8 in] long with protective braid; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S

**COIL TERMINATION
 SPECIFICATIONS
 (continued)**

Code	Termination	Specifications
E12	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E13	Deutsch with diode	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
FL & FL600	Flying leads	Two 18 AWG wires, 600 mm [24 in] long
FLD	Flying leads with diode	Two 18 AWG wires, 600 mm [24 in] long
H	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
L	Lead Wires	Two 18 AWG wires, 457 mm [18 in] long
M2	Metri-Pak 150 Type 1 (also conforms to Amp SuperSeal 1.5)	Integral to coil; mating connector is Delphi-Packard Part Number 12052641
M3	Metri-Pak 150 Type 2	Integral to coil; mating connector is Delphi-Packard Part Number 12040753
S	Dual Spade	Two 6.35 mm [0.25 in] wide Type 1B spade terminals per SAE J858A
S1	Single Spade	One 6.35 mm [0.25 in] wide Type 1B spade terminal per SAE J858A with internal ground
SP	Dual Spade (M13 & M16 coils)	Two 6.35 mm [0.25 in] wide Type 1B spade terminals per SAE J858A
	Single Post (D08 & D10 coils)	One No. 8-32UNC Screw Terminals 9.5 mm [0.375 in] long with internal ground
WPF	Weatherpack Female	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12010973
WPM	Weatherpack Male	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12015792
WPM D	Weatherpack Male with diode	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12015792

Not all connectors available with all coils. Consult individual coil data sheets for details.

PLUS+1™ COMPLIANT

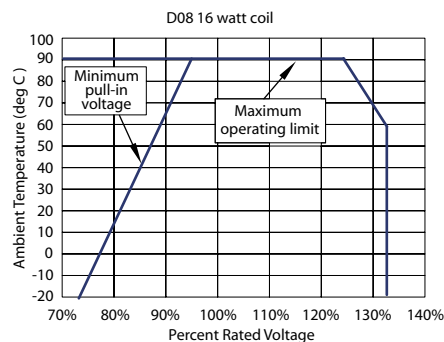
Sauer-Danfoss solenoid valves are PLUS+1™ compliant. PLUS+1 compliance means our coils are directly compatible with the PLUS+1 machine control architecture. Adding solenoid valves to your application using PLUS+1 GUIDE software is as easy as *drag-and-drop*. Software development that used to take months can now be done in just a few hours. For more information on PLUS+1 GUIDE, visit www.sauer-danfoss.com/plus1. The table below details available GUIDE function blocks for controlling Sauer-Danfoss solenoid valves.

GUIDE function blocks

On-off	10106088
On-off-on	10106102
Two-way proportional	10106103
Three-way proportional	10106104

SPECIFICATIONS

- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 60 °C [-22 to 140 °F]
- Diodes are available; contact your Sauer-Danfoss representative.
- Environmental protection: IP65
- Input voltage tolerance: ± 10%
- All AC coils are internally rectified



P103 948E

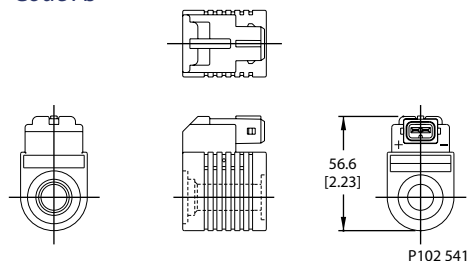
ELECTRICAL SPECIFICATIONS

16 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	6.3	9	25	36	900	3600
Current draw (A) at 25 °C [77 °F]	1.6	1.33	0.8	0.67	0.13	0.07
Color	Green	Grey	Blue	Black	Black	Black

TERMINALS

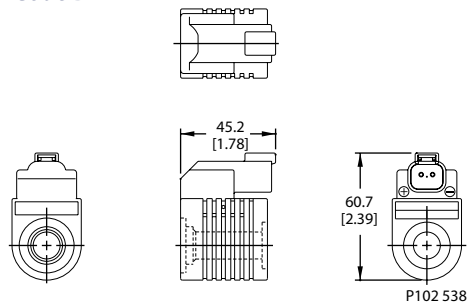
Amp Junior Timer Code AJ



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-AJ
12 VDC	16	D08-16W-12D-AJ
20 VDC	16	D08-16W-20D-AJ
24 VDC	16	D08-16W-24D-AJ

Deutsch Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-DE
12 VDC	16	D08-16W-12D-DE
20 VDC	16	D08-16W-20D-DE
24 VDC	16	D08-16W-24D-DE

mm [in]

Coils
D08



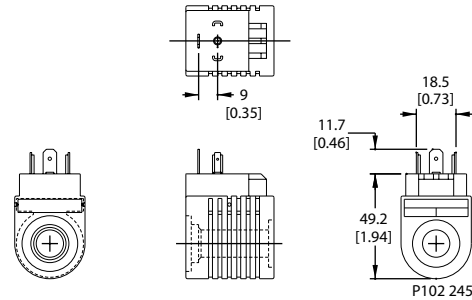
Cartridge Valves Technical Information

Coils D08



TERMINALS (continued)

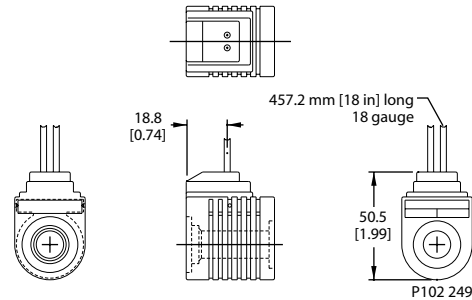
DIN 43650 Code H



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-H
12 VDC	16	D08-16W-12D-H
20 VDC	16	D08-16W-20D-H
24 VDC	16	D08-16W-24D-H
110 VAC	16	D08-16W-120A-H
220 VAC	16	D08-16W-240A-H

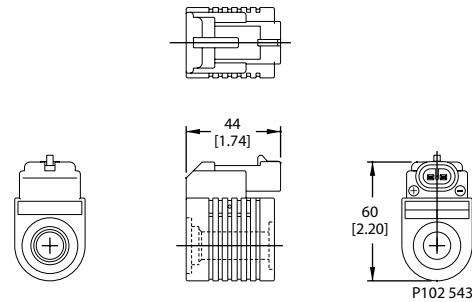
Lead wires Code L



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-L
12 VDC	16	D08-16W-12D-L
20 VDC	16	D08-16W-20D-L
24 VDC	16	D08-16W-24D-L

MetriPak 150 Type 1 Code M2



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-M2
12 VDC	16	D08-16W-12D-M2
20 VDC	16	D08-16W-20D-M2
24 VDC	16	D08-16W-24D-M2

mm [in]



Cartridge Valves Technical Information

Coils
D08



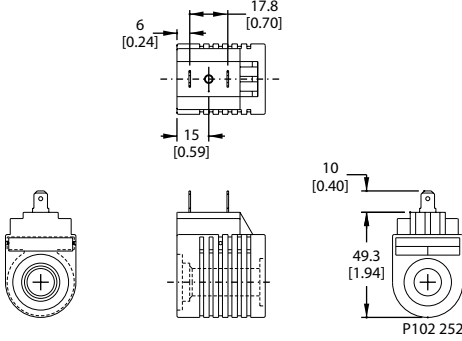
Coils

TERMINALS
(continued)

Spade
Code S

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-S
12 VDC	16	D08-16W-12D-S
20 VDC	16	D08-16W-20D-S
24 VDC	16	D08-16W-24D-S



mm [in]



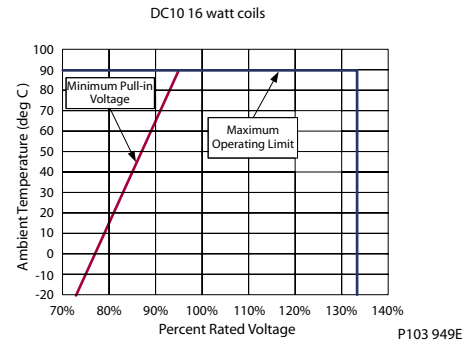
Cartridge Valves Technical Information

Coils D10



SPECIFICATIONS

- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 60 °C [-22 to 140 °F]
- Diodes are available; contact your Sauer-Danfoss representative.
- Environmental protection: IP65
- Input voltage tolerance: ± 10%
- All AC coils are internally rectified



Coils
D10

ELECTRICAL SPECIFICATIONS

16 watt coils

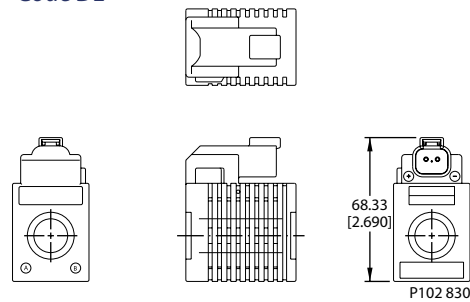
Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	6.3	9	25	36	900	3600
Current draw (A) at 25 °C [77 °F]	1.6	1.33	0.8	0.67	0.13	0.07
Color	Green	Grey	Blue	Black	Black	Black

30 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	3.3	4.8	13	19	480	1920
Current draw (A) at 25 °C [77 °F]	3	2.5	1.5	1.25	0.25	0.13
Color	Green	Grey	Blue	Black	Black	Black

TERMINALS

Deutsch Code DE



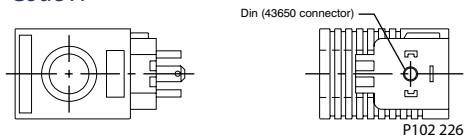
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-DE
12 VDC	16	D10-16W-12D-DE
20 VDC	16	D10-16W-20D-DE
24 VDC	16	D10-16W-24D-DE
10 VDC	30	D10-30W-10D-DE
12 VDC	30	D10-30W-12D-DE
20 VDC	30	D10-30W-20D-DE
24 VDC	30	D10-30W-24D-DE

mm [in]

**TERMINALS
(continued)**

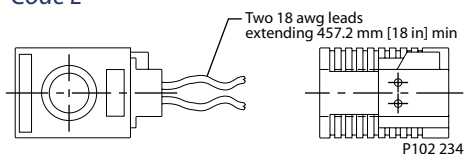
*DIN 43650
Code H*



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-H
12 VDC	16	D10-16W-12D-H
20 VDC	16	D10-16W-20D-H
24 VDC	16	D10-16W-24D-H
110 VAC	16	D10-16W-120A-H
220 VAC	16	D10-16W-240A-H
10 VDC	30	D10-30W-10D-H
12 VDC	30	D10-30W-12D-H
20 VDC	30	D10-30W-20D-H
24 VDC	30	D10-30W-24D-H
110 VAC	30	D10-30W-120A-H
220 VAC	30	D10-30W-240A-H

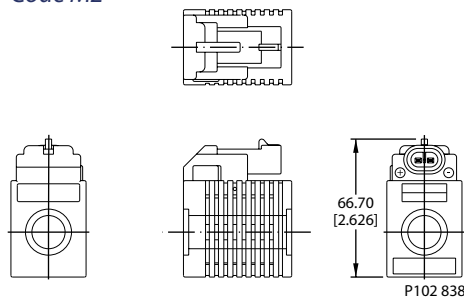
*Lead wires
Code L*



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-L
12 VDC	16	D10-16W-12D-L
20 VDC	16	D10-16W-20D-L
24 VDC	16	D10-16W-24D-L
10 VDC	30	D10-30W-10D-L
12 VDC	30	D10-30W-12D-L
20 VDC	30	D10-30W-20D-L
24 VDC	30	D10-30W-24D-L

*MetriPak 150 Type 1
Code M2*



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-M2
12 VDC	16	D10-16W-12D-M2
20 VDC	16	D10-16W-20D-M2
24 VDC	16	D10-16W-24D-M2
10 VDC	30	D10-30W-10D-M2
12 VDC	30	D10-30W-12D-M2
20 VDC	30	D10-30W-20D-M2
24 VDC	30	D10-30W-24D-M2



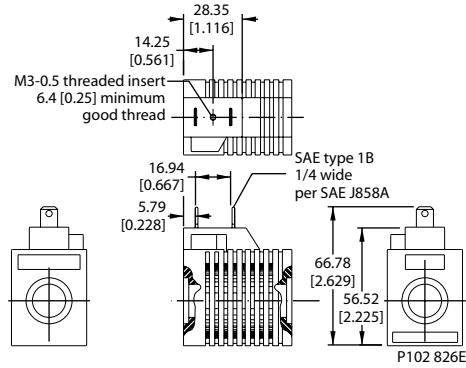
Cartridge Valves Technical Information

Coils D10



TERMINALS (continued)

Dual Spade Code S



Part numbers

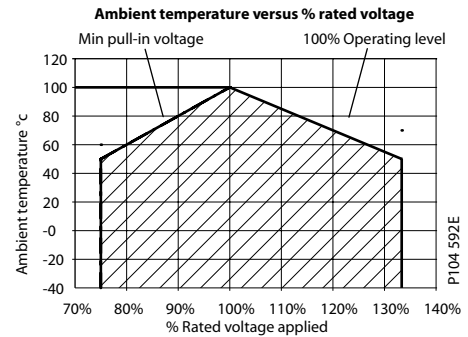
Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-SD
12 VDC	16	D10-16W-12D-SD
20 VDC	16	D10-16W-20D-SD
24 VDC	16	D10-16W-24D-SD
10 VDC	30	D10-30W-10D-SD
12 VDC	30	D10-30W-12D-SD
20 VDC	30	D10-30W-20D-SD
24 VDC	30	D10-30W-24D-SD

Coils

mm [in]

SPECIFICATIONS

- Duty cycle rating: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature: -40 to 70 °C [-40 to 158 °F]
- Diodes are available; contact your Sauer-Danfoss representative.
- Environmental protection: IP69K (AJ, DE, and M2 connectors), IP65 (all other connectors)
- Input voltage tolerance: $\pm 10\%$

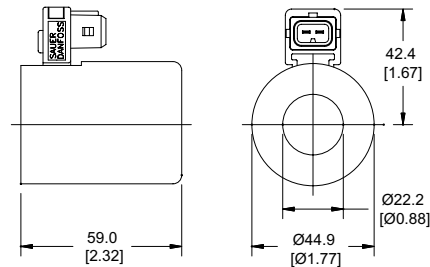


ELECTRICAL SPECIFICATIONS

30 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.3	4.8	13	19
Current draw (A) at 25 °C [77 °F]	3	2.5	1.5	1.25
Color	Green	Gray	Blue	Yellow

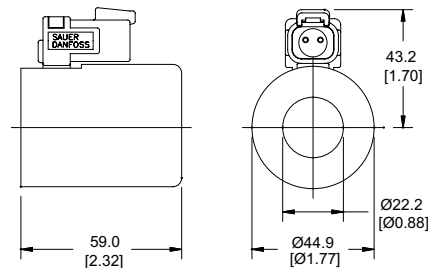
TERMINALS

Amp Jr.
Code AJ

P103 215

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-AJ
12 VDC	30	D14E-30W-12D-AJ
20 VDC	30	D14E-30W-20D-AJ
24 VDC	30	D14E-30W-24D-AJ

Deutsch
Code DE

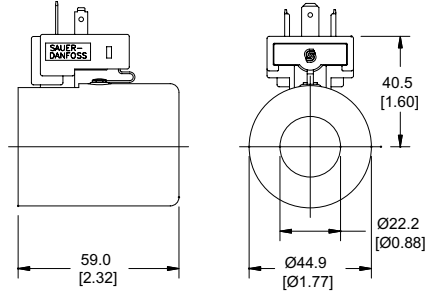
P103 216

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-DE
12 VDC	30	D14E-30W-12D-DE
20 VDC	30	D14E-30W-20D-DE
24 VDC	30	D14E-30W-24D-DE

TERMINALS
(continued)

DIN 43650
Code H

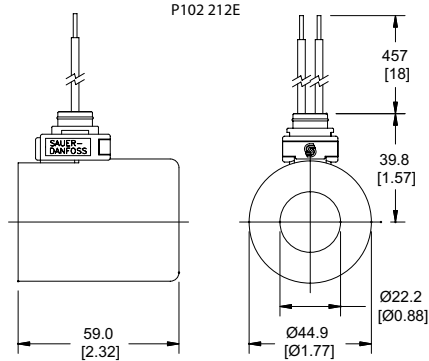


P102 203E

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-H
12 VDC	30	D14E-30W-12D-H
20 VDC	30	D14E-30W-20D-H
24 VDC	30	D14E-30W-24D-H

Lead wires
Code L

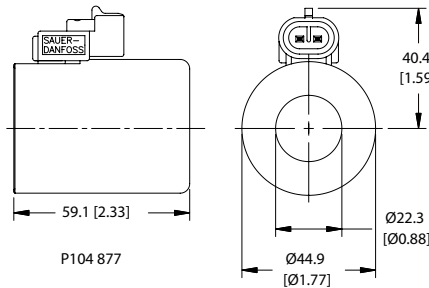


P102 212E

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-L
12 VDC	30	D14E-30W-12D-L
20 VDC	30	D14E-30W-20D-L
24 VDC	30	D14E-30W-24D-L

Metripak 150, type 1
Code M2

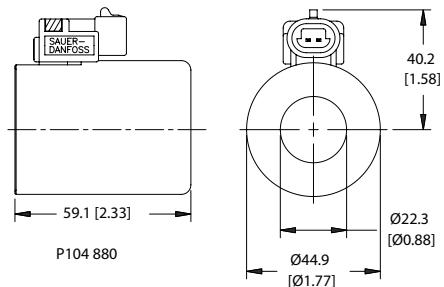


P104 877

Part numbers

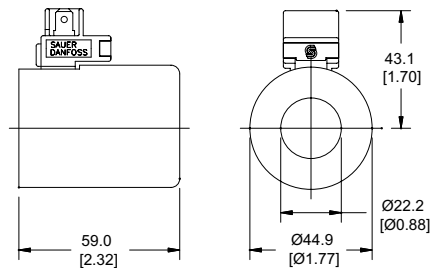
Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-M2
12 VDC	30	D14E-30W-12D-M2
20 VDC	30	D14E-30W-20D-M2
24 VDC	30	D14E-30W-24D-M2

mm [in]

TERMINALS
(continued)MetriPak 150, Type 2
Code M3

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-M3
12 VDC	30	D14E-30W-12D-M3
20 VDC	30	D14E-30W-20D-M3
24 VDC	30	D14E-30W-24D-M3

Dual Spade
Code S

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-S
12 VDC	30	D14E-30W-12D-S
20 VDC	30	D14E-30W-20D-S
24 VDC	30	D14E-30W-24D-S

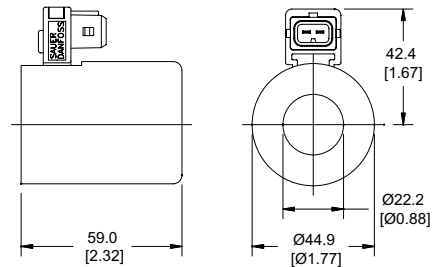
P102 841E

SPECIFICATIONS

- Magnet wire insulation: Class H (200°C)
- Maximum continuous current 1.8 A (at 12 V) 0.9 A (at 24 V)
- Ambient temperature: -40 to 70 °C [-40 to 158 °F]
- Environmental protection: IP69K (AJ, DE, and AS connectors), IP65 (all other connectors)
- Input voltage tolerance: $\pm 10\%$

ELECTRICAL SPECIFICATIONS
35 watt coils

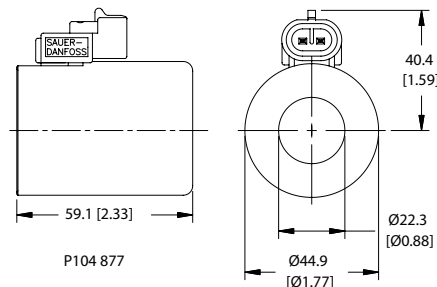
Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4.1	17
Current draw (A) at 25 °C [77 °F]	1.8	0.9
Color	Gray	Yellow

TERMINALS
*Amp Jr.
Code AJ*


P103 215

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-AJ
24 VDC	35	D14E-24D-0.9A-AJ

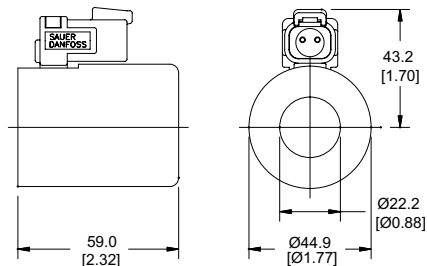
*Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS*


P104 877

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-AS
24 VDC	35	D14E-24D-0.9A-AS

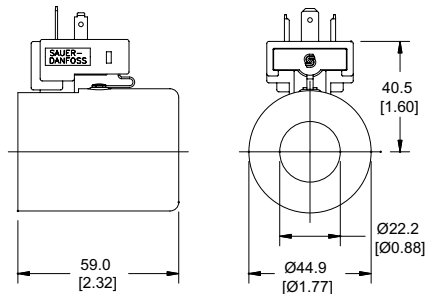
mm [in]

TERMINALS
(continued)Deutsch
Code DE

P103 216

Part numbers

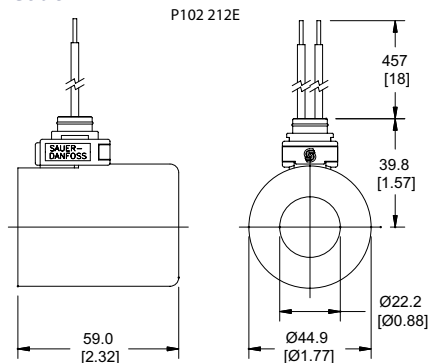
Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-DE
24 VDC	35	D14E-24D-0.9A-DE

DIN 43650
Code DN

P102 203E

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-DN
24 VDC	35	D14E-24D-0.9A-H

Lead wires
Code FL

P102 212E

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-FL
24 VDC	35	D14E-24D-0.9A-FL



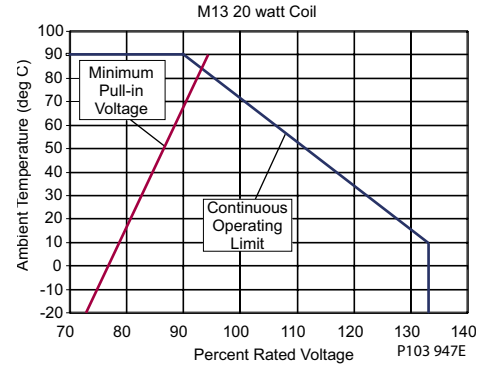
Cartridge Valves Technical Information

Coils M13



SPECIFICATIONS

- Duty cycle: 100% at 115% of rated voltage at 40°C [104°F]
- Magnet wire insulation: Class H (200C)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection rating: IP67 (AJ, AS, DE, and M3 term.) IP65 (all others)
- Input voltage range: 85% to 115% of rated voltage
- Temperature rise at 115% of rated voltage: 130°C [266°F] above ambient
- Weight: 0.2 kg [0.44 lb]



Coils
M13

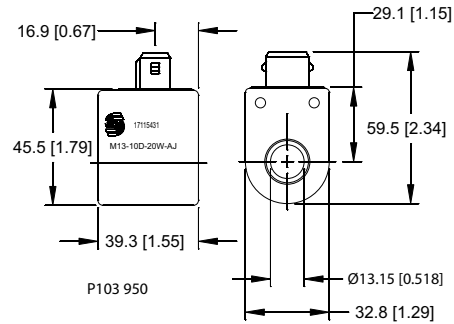
ELECTRICAL SPECIFICATIONS

20 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	5	7.2	20	29
Current draw (A) at 25 °C [77 °F]	2	1.67	1	0.83

TERMINALS

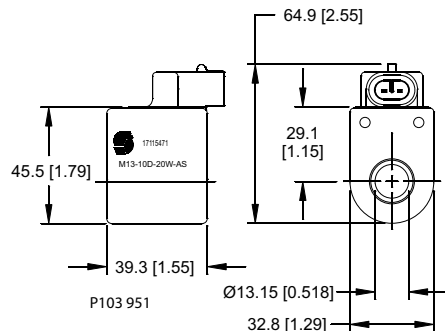
Amp Jr. Code AJ



Part numbers

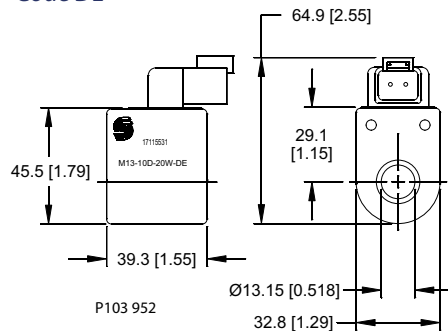
Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-AJ
12 VDC	20	M13-12D-20W-AJ
20 VDC	20	M13-20D-20W-AJ
24 VDC	20	M13-24D-20W-AJ

mm [in]

TERMINALS
(continued)Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS

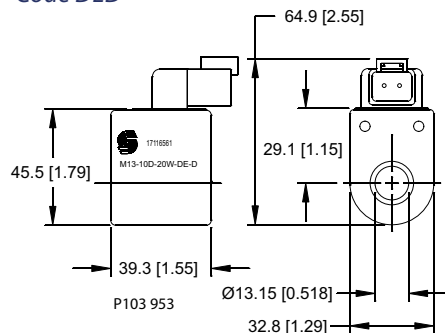
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-AS
12 VDC	20	M13-12D-20W-AS
20 VDC	20	M13-20D-20W-AS
24 VDC	20	M13-24D-20W-AS

Deutsch
Code DE

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DE
12 VDC	20	M13-12D-20W-DE
20 VDC	20	M13-20D-20W-DE
24 VDC	20	M13-24D-20W-DE

Deutsch w/diode
Code DED

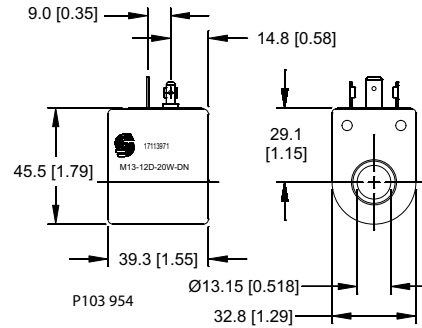
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DED
12 VDC	20	M13-12D-20W-DED
20 VDC	20	M13-20D-20W-DED
24 VDC	20	M13-24D-20W-DED

TERMINALS
(continued)

ISO 4400 (DIN 43650)

Code DN

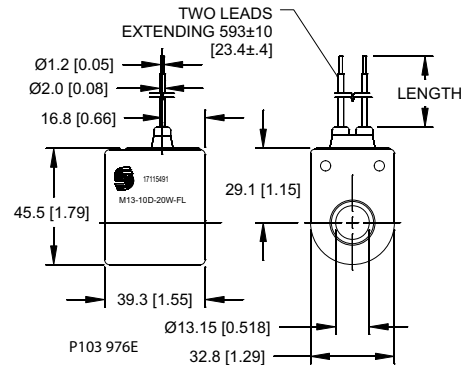


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DN
12 VDC	20	M13-12D-20W-DN
20 VDC	20	M13-20D-20W-DN
24 VDC	20	M13-24D-20W-DN

Lead wires

Code FL

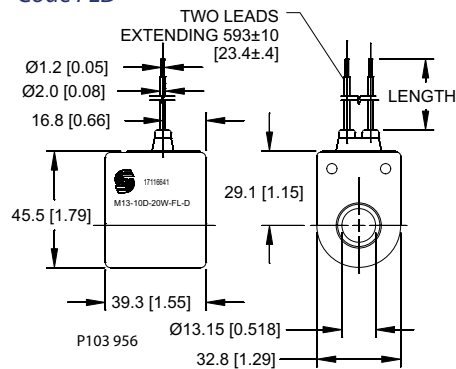


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-FL
12 VDC	20	M13-12D-20W-FL
20 VDC	20	M13-20D-20W-FL
24 VDC	20	M13-24D-20W-FL

Lead wires w/diode

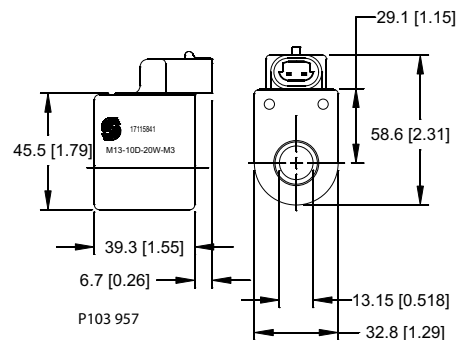
Code FLD



Part numbers

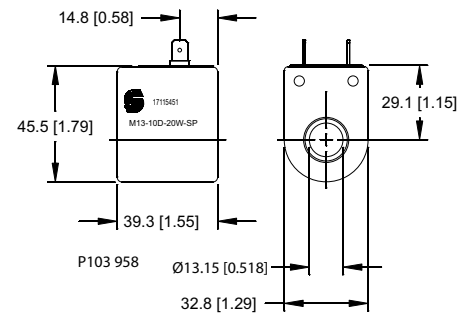
Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-FLD
12 VDC	20	M13-12D-20W-FLD
20 VDC	20	M13-20D-20W-FLD
24 VDC	20	M13-24D-20W-FLD

mm [in]

TERMINALS
(continued)MetriPak 150, Type 2
Code M3

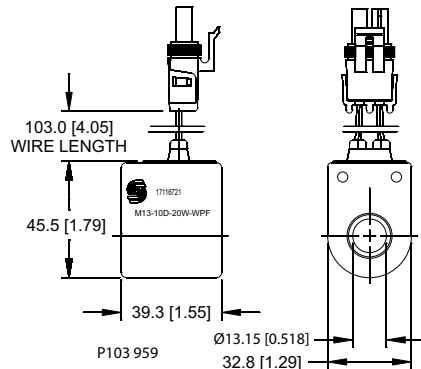
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-M3
12 VDC	20	M13-12D-20W-M3
20 VDC	20	M13-20D-20W-M3
24 VDC	20	M13-24D-20W-M3

Spade
Code SP

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-SP
12 VDC	20	M13-12D-20W-SP
20 VDC	20	M13-20D-20W-SP
24 VDC	20	M13-24D-20W-SP

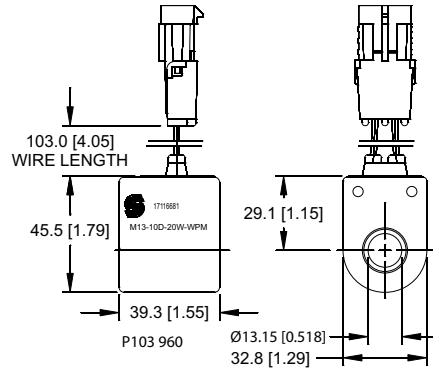
Weather pack (female)
Code WPF

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPF
12 VDC	20	M13-12D-20W-WPF
20 VDC	20	M13-20D-20W-WPF
24 VDC	20	M13-24D-20W-WPF

TERMINALS
(continued)

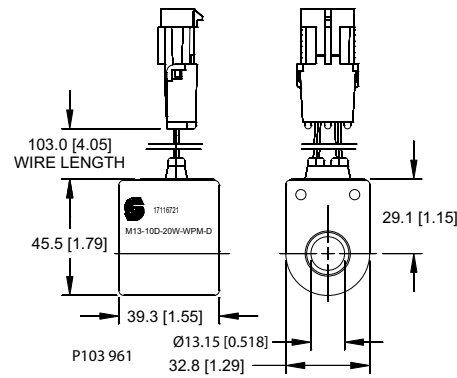
Weather pack (male)
Code WPM



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPM
12 VDC	20	M13-12D-20W-WPM
20 VDC	20	M13-20D-20W-WPM
24 VDC	20	M13-24D-20W-WPM

Weather pack (male) w/diode
Code WPMD



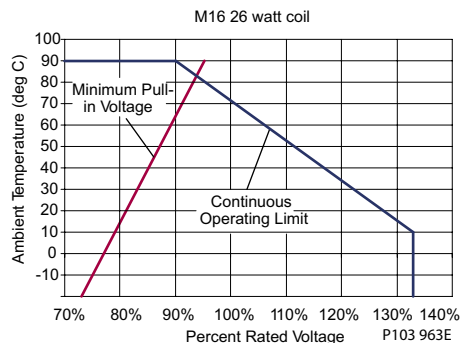
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPMD
12 VDC	20	M13-12D-20W-WPMD
20 VDC	20	M13-20D-20W-WPMD
24 VDC	20	M13-24D-20W-WPMD

Coils

SPECIFICATIONS

- Duty cycle: 100% at 115% of rated voltage at 40°C [104°F]
- Magnet wire insulation: Class H (200C)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection rating: IP67 (AJ, AS, DE, and M3 term.) IP65 (all others)
- Input voltage range: 85% to 115% of rated voltage
- Temperature rise at 115% of rated voltage: 130°C [266°F] above ambient
- Weight: 0.24 kg [0.53 lb]



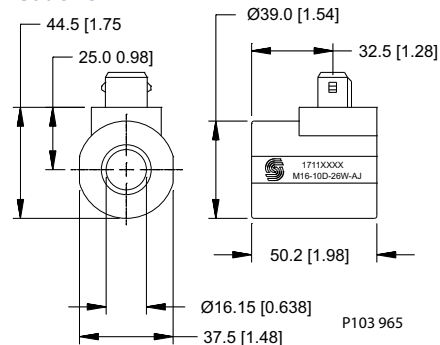
ELECTRICAL SPECIFICATIONS

26 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4	5.6	15	22
Current draw (A) at 25 °C [77 °F]	2.5	2.14	1.33	1.1

TERMINALS

*Amp Jr.
Code AJ*

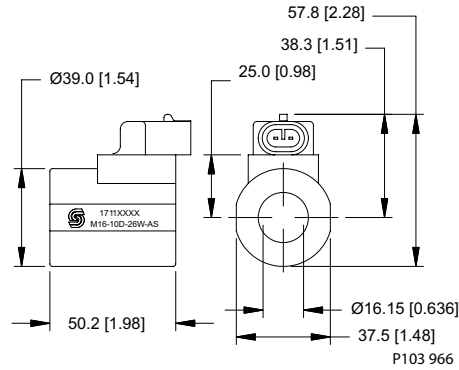


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-AJ
12 VDC	26	M16-12D-26W-AJ
20 VDC	26	M16-20D-26W-AJ
24 VDC	26	M16-24D-26W-AJ

TERMINALS
(continued)

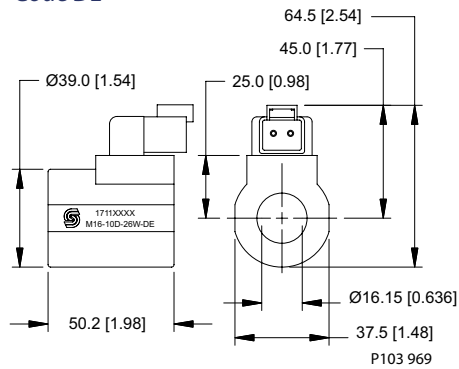
Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-AS
12 VDC	26	M16-12D-26W-AS
20 VDC	26	M16-20D-26W-AS
24 VDC	26	M16-24D-26W-AS

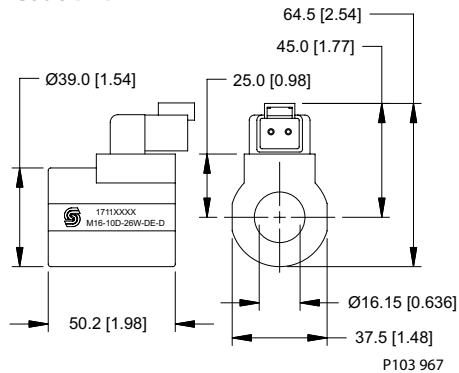
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DE
12 VDC	26	M16-12D-26W-DE
20 VDC	26	M16-20D-26W-DE
24 VDC	26	M16-24D-26W-DE

Deutsch w/diode
Code DED



Part numbers

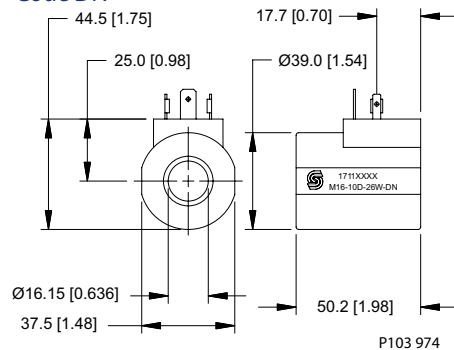
Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DED
12 VDC	26	M16-12D-26W-DED
20 VDC	26	M16-20D-26W-DED
24 VDC	26	M16-24D-26W-DED

mm [in]

TERMINALS
(continued)

ISO 4400 (DIN 43650)

Code DN

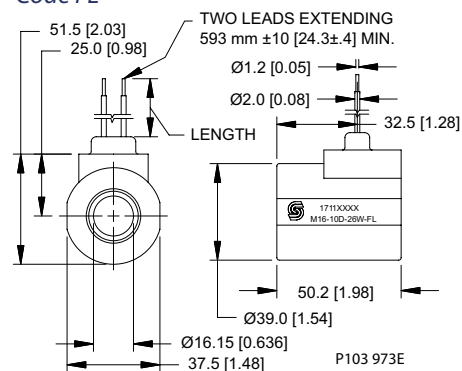


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DN
12 VDC	26	M16-12D-26W-DN
20 VDC	26	M16-20D-26W-DN
24 VDC	26	M16-24D-26W-DN

Lead wires

Code FL

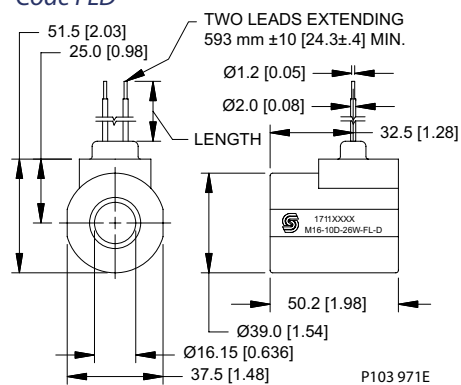


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-FL
12 VDC	26	M16-12D-26W-FL
20 VDC	26	M16-20D-26W-FL
24 VDC	26	M16-24D-26W-FL

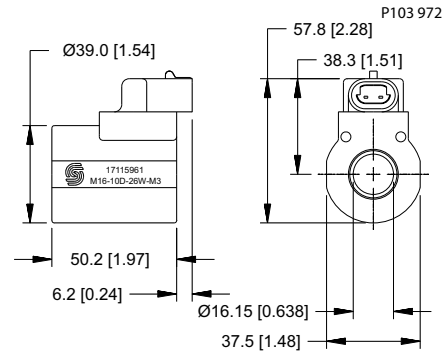
Lead wires w/diode

Code FLD



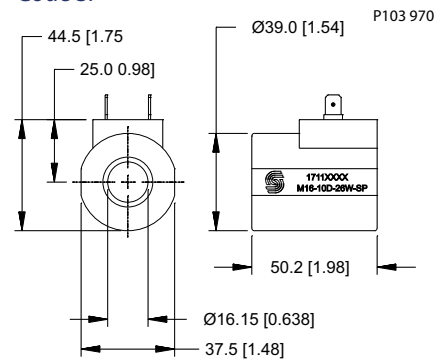
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-FLD
12 VDC	26	M16-12D-26W-FLD
20 VDC	26	M16-20D-26W-FLD
24 VDC	26	M16-24D-26W-FLD

TERMINALS
(continued)MetriPak 150, Type 2
Code M3

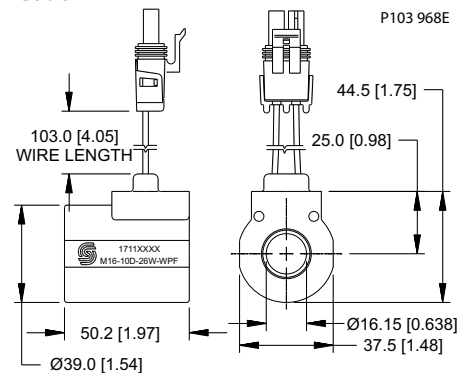
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-M3
12 VDC	26	M16-12D-26W-M3
20 VDC	26	M16-20D-26W-M3
24 VDC	26	M16-24D-26W-M3

Spade
Code SP

Part numbers

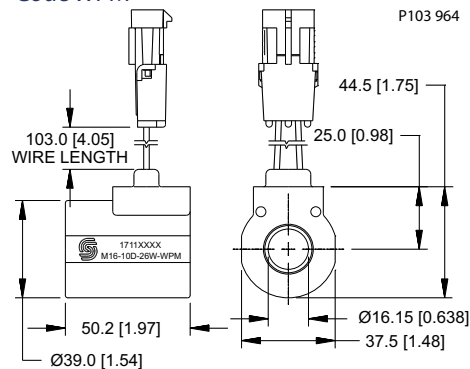
Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-SP
12 VDC	26	M16-12D-26W-SP
20 VDC	26	M16-20D-26W-SP
24 VDC	26	M16-24D-26W-SP

Weather pack (female)
Code WPF

Part numbers

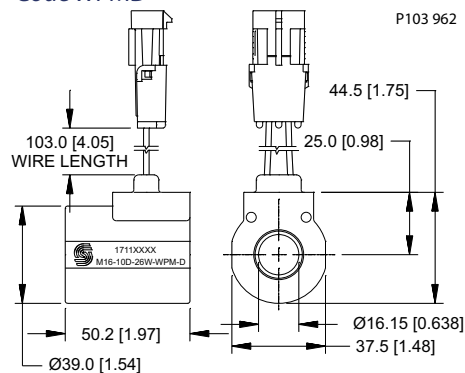
Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPF
12 VDC	26	M16-12D-26W-WPF
20 VDC	26	M16-20D-26W-WPF
24 VDC	26	M16-24D-26W-WPF

mm [in]

TERMINALS
(continued)Weather pack (male)
Code WPM

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPF
12 VDC	26	M16-12D-26W-WPM
20 VDC	26	M16-20D-26W-WPM
24 VDC	26	M16-24D-26W-WPM

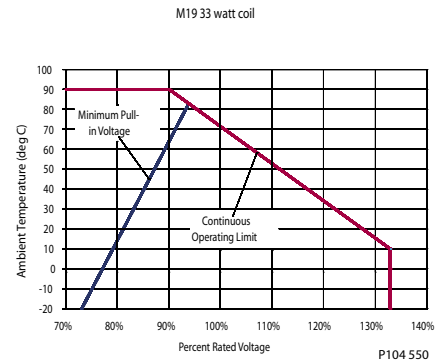
Weather pack (male) w/diode
Code WPMD

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPMD
12 VDC	26	M16-12D-26W-WPMD
20 VDC	26	M16-20D-26W-WPMD
24 VDC	26	M16-24D-26W-WPMD

SPECIFICATIONS

- Duty cycle: 100% at 115% of rated voltage at 40°C [104°F]
- Magnet wire insulation: Class H (200C)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection rating: IP65
- Input voltage range: 85% to 115% of rated voltage
- Temperature rise at 115% of rated voltage: 130°C [266°F] above ambient temperature
- Weight: 0.37 kg [0.82 lb]



Coils
M19

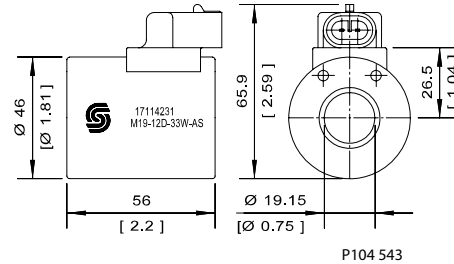
ELECTRICAL SPECIFICATIONS

33 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4.4	17
Current draw (A) at 25 °C [77 °F]	2.76	1.38

TERMINALS

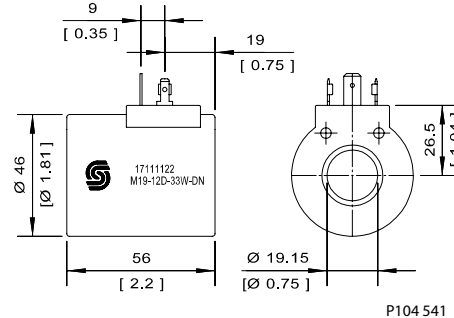
Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	33	M19-12D-33W-AS
24 VDC	33	M19-24D-33W-AS

ISO 4400 (DIN 43650)
Code DN



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	33	M19-12D-33W-DN
24 VDC	33	M19-24D-33W-DN

mm [in]



Cartridge Valves Technical Information

Coils
M19



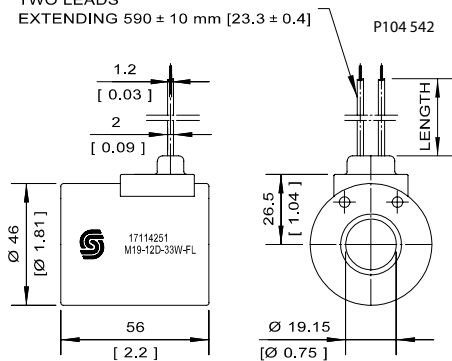
Coils

TERMINALS
(continued)

Lead wires

Code FL

TWO LEADS
EXTENDING 590 ± 10 mm [23.3 ± 0.4]



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	33	M19-12D-33W-FL
24 VDC	33	M19-24D-33W-FL

mm [in]

SPECIFICATIONS

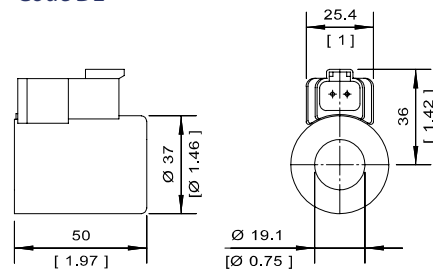
- Magnet wire insulation: Class H (200C)
- Duty cycle rating: 100%
- Maximum continuous current 1.8 A (at 12 V) 0.9 A (at 24 V)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection: IP69K (DE connector), IP65 (all other connectors)
- Weight: 0.37 kg [0.82 lb]

ELECTRICAL SPECIFICATIONS

22 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.7	16
Current draw (A) at 25 °C [77 °F]	1.8	0.9

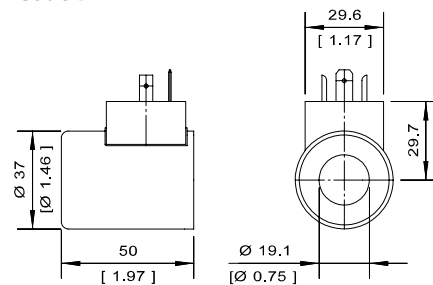
TERMINALS

Deutsch
Code DE

P104 546

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-DE
24 VDC	22	M19P-24D-0.9A-DE

ISO 4400 (DIN 43650)
Code DN

P104 544

Part numbers

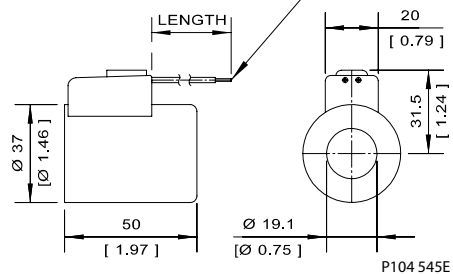
Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-DN
24 VDC	22	M19P-24D-0.9A-DN

TERMINALS
(continued)

Lead wires

Code FL

TWO LEADS AWG18
EXTENDING 140 ± 10 mm [5.5 ± 0.4]



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-FL
24 VDC	22	M19P-24D-0.9A-FL

SPECIFICATIONS

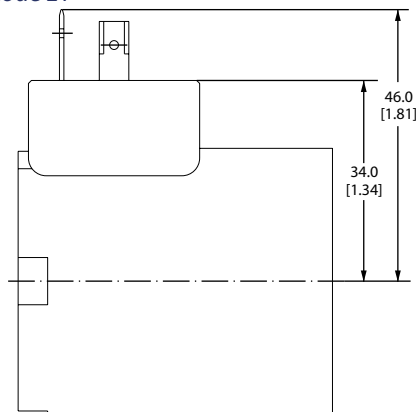
- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 50 °C [-22 to 122 °F]
- Diodes are available; contact your Sauer-Danfoss representative.
- Environmental protection: IP67 (E12 connector), IP65 (all other connectors)
- Input voltage tolerance: $\pm 10\%$

ELECTRICAL SPECIFICATIONS

40 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.6	14

TERMINALS

DIN 43650
Code E1

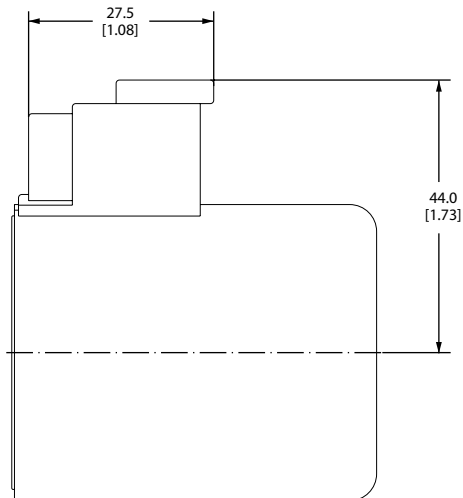
P102 859

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8063
24 VDC	40	158-8065

TERMINALS
(continued)

Deutsch
Code E12

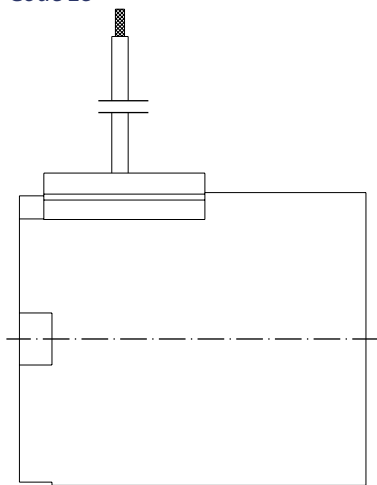


P102 857

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8067
24 VDC	40	158-8069

Lead wires
Code E8



P102 860

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8090
24 VDC	40	158-8091

SPECIFICATIONS

- Duty cycle rating: 100% at 100% of rated current at 50C [122 deg F]
- Magnet wire insulation: Class H (200 C)
- Ambient temperature: -20 to +50 C [-4 to +122 deg F]
- Environmental protection: IP65
- Weight: 0.45kg [1.0 lb]

ELECTRICAL SPECIFICATIONS

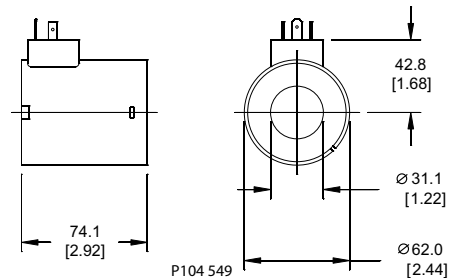
30 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	2.3	13
Current draw (A) at 25 °C [77 °F]	2.5	1.25

TERMINALS

ISO 4400 (DIN 43650)

Code E1

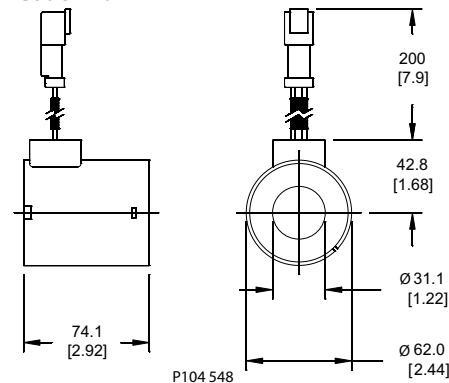


Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	158-8096
24 VDC	30	158-8097

Duetsch connector on lead wires

Code E10



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	Consult factory
24 VDC	30	Consult factory

mm [in]



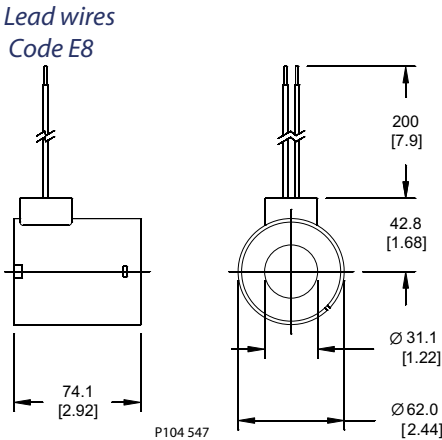
Cartridge Valves Technical Information

Coils PD05



Coils

TERMINALS (continued)

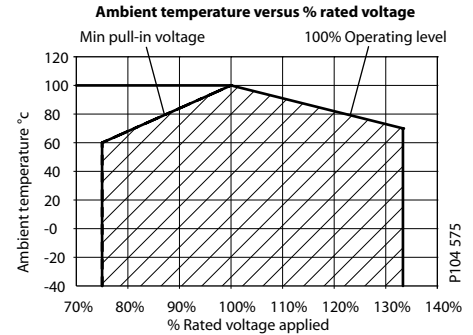


Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	158-8092
24 VDC	30	158-8093

SPECIFICATIONS

- Duty cycle: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature range: -40 to +70 °C [-40 to 158 °F]
- Environmental rating: IP69K
- Input voltage range: 75% to 133% of rated voltage
- Weight: 0.22 kg [0.49 lb]



Coils
R13

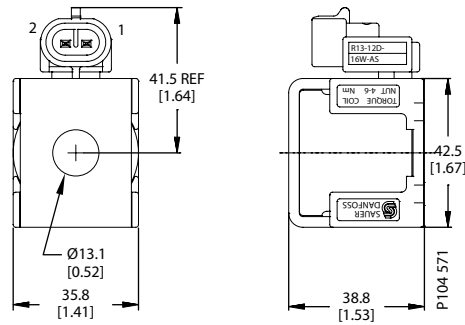
ELECTRICAL SPECIFICATIONS

16 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	6.2	9	25	36
Current draw (A) at 25 °C [77 °F]	1.62	1.34	0.81	0.67
Color	Green	Gray	Blue	Yellow

TERMINALS

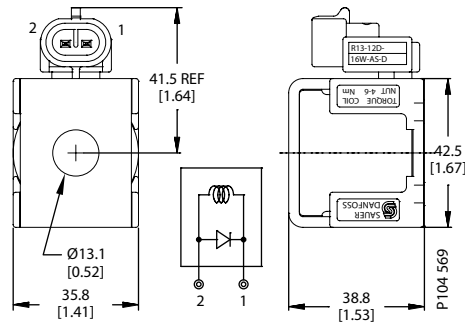
Amp SuperSeal 1.5/MertiPak 150 Type 1 Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-AS
12 VDC	16	R13-12D-16W-AS
20 VDC	16	R13-20D-16W-AS
24 VDC	16	R13-24D-16W-AS

Amp SuperSeal 1.5/MertiPak 150 Type 1 w/diode Code ASD



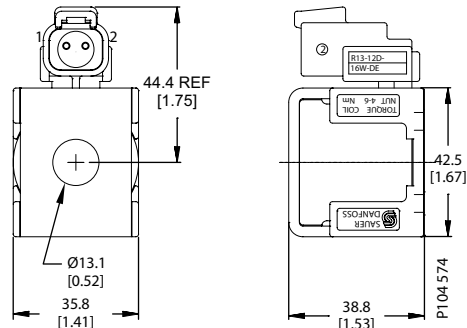
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-AS-D
12 VDC	16	R13-12D-16W-AS-D
20 VDC	16	R13-20D-16W-AS-D
24 VDC	16	R13-24D-16W-AS-D

mm [in]

TERMINALS
(continued)

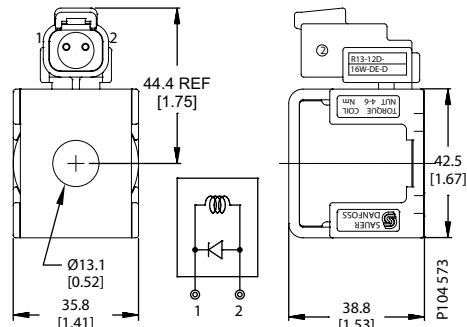
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-DE
12 VDC	16	R13-12D-16W-DE
20 VDC	16	R13-20D-16W-DE
24 VDC	16	R13-24D-16W-DE

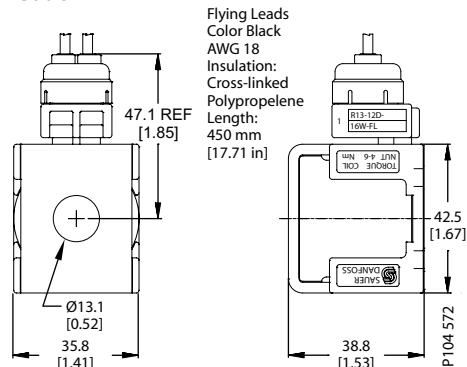
Deutsch w/diode
Code DED



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-DE-D
12 VDC	16	R13-12D-16W-DE-D
20 VDC	16	R13-20D-16W-DE-D
24 VDC	16	R13-24D-16W-DE-D

Lead wires
Code FL

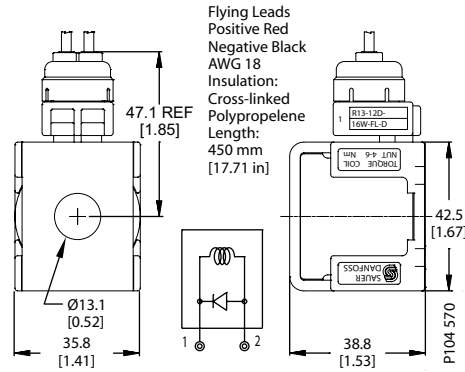


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-FL
12 VDC	16	R13-12D-16W-FL
20 VDC	16	R13-20D-16W-FL
24 VDC	16	R13-24D-16W-FL

TERMINALS
(continued)

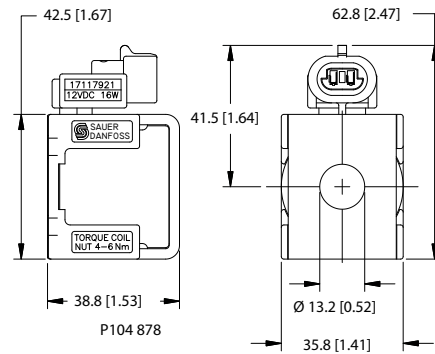
Lead wires w/diode
Code FLD



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-FL-D
12 VDC	16	R13-12D-16W-FL-D
20 VDC	16	R13-20D-16W-FL-D
24 VDC	16	R13-24D-16W-FL-D

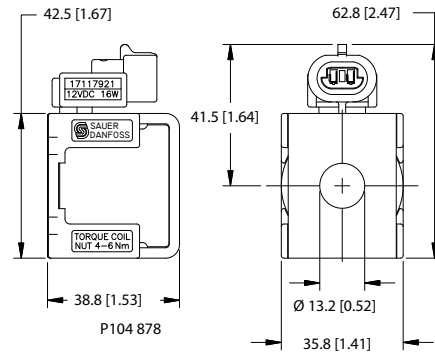
MetriPak 150, type 2
Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-M3
12 VDC	16	R13-12D-16W-M3
20 VDC	16	R13-20D-16W-M3
24 VDC	16	R13-24D-16W-M3

MetriPak 150, type 2 w/diode
Code M3D



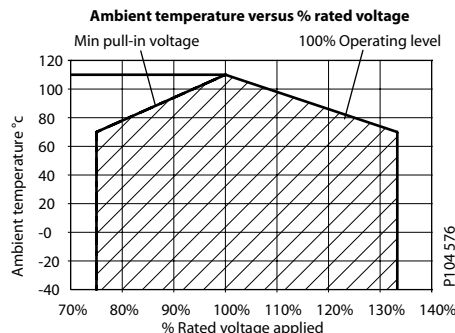
Part numbers

Voltage (V)	Power (W)	Part Number
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mm [in]

SPECIFICATIONS

- Duty cycle: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature range: -40 to +70 °C [-40 to 158 °F]
- Environmental rating: IP69K
- Input voltage range: 75% to 133% of rated voltage
- Weight: 0.34 kg [0.75 lb]



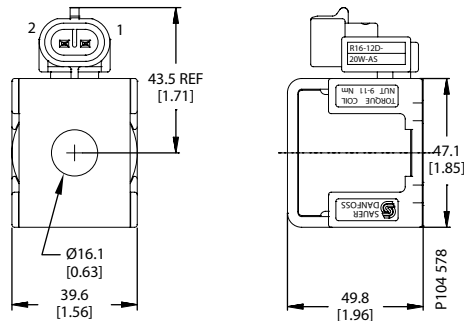
ELECTRICAL SPECIFICATIONS

20 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4.8	6.9	20	28
Current draw (A) at 25 °C [77 °F]	2.08	1.74	1.01	0.85
Color	Green	Gray	Blue	Yellow

TERMINALS

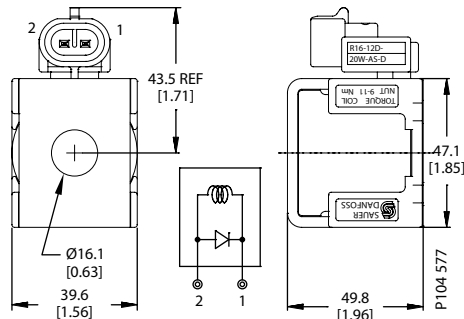
Amp SuperSeal 1.5/MetriPak 150 Type 1 Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-AS
12 VDC	20	R16-12D-20W-AS
20 VDC	20	R16-20D-20W-AS
24 VDC	20	R16-24D-20W-AS

Amp SuperSeal 1.5/MetriPak 150 Type 1 w/diode Code ASD



Part numbers

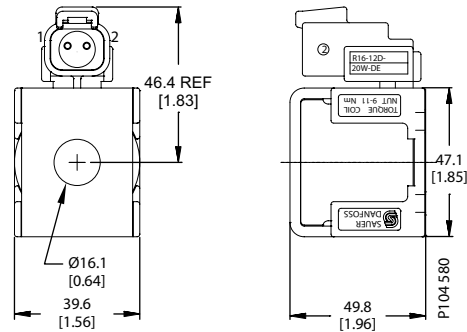
Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-AS-D
12 VDC	20	R16-12D-20W-AS-D
20 VDC	20	R16-20D-20W-AS-D
24 VDC	20	R16-24D-20W-AS-D

mm [in]

Coils
R16

TERMINALS
(continued)

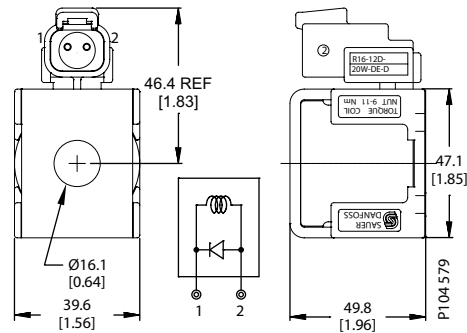
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-DE
12 VDC	20	R16-12D-20W-DE
20 VDC	20	R16-20D-20W-DE
24 VDC	20	R16-24D-20W-DE

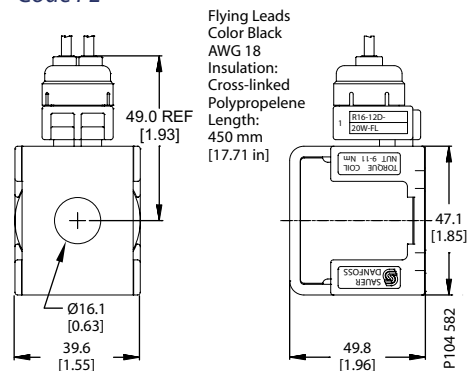
Deutsch w/diode
Code DED



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-DE-D
12 VDC	20	R16-12D-20W-DE-D
20 VDC	20	R16-20D-20W-DE-D
24 VDC	20	R16-24D-20W-DE-D

Lead wires
Code FL



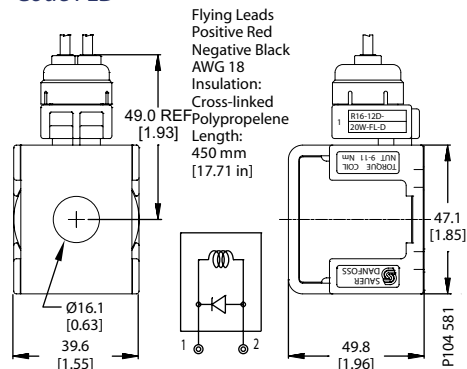
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-FL
12 VDC	20	R16-12D-20W-FL
20 VDC	20	R16-20D-20W-FL
24 VDC	20	R16-24D-20W-FL

mm [in]

TERMINALS
(continued)

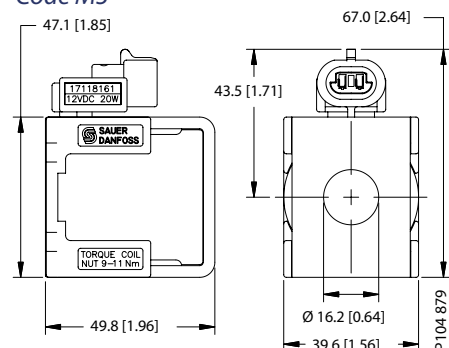
Lead wires w/diode
Code FLD



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-FL-D
12 VDC	20	R16-12D-20W-FL-D
20 VDC	20	R16-20D-20W-FL-D
24 VDC	20	R16-24D-20W-FL-D

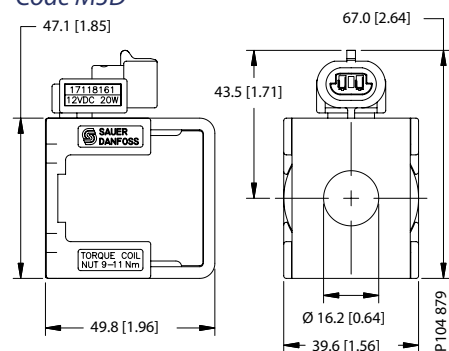
MetriPak 150, type 2
Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-M3
12 VDC	20	R16-12D-20W-M3
20 VDC	20	R16-20D-20W-M3
24 VDC	20	R16-24D-20W-M3

MetriPak 150, type 2 w/diode
Code M3D



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-M3-D
12 VDC	20	R16-12D-20W-M3-D
20 VDC	20	R16-20D-20W-M3-D
24 VDC	20	R16-24D-20W-M3-D