

ToughCoils™

Eaton/IH ToughCoils™ have been designed to provide industry leading environmental protection and solenoid performance in a compact and rugged package. ToughCoils™ with integrated connectors are rated up to IP69K environmental protection. ToughCoils™ are available with a variety of popular integrated connection options and with wire leads.

The best in class, one-piece, shell encapsulated, design meets the most stringent environmental requirements for mobile and industrial applications.

The exclusive compact coil design from Eaton/IH, offers the advantage of field retrofitability on all existing, and new, applications.

ToughCoils™ features

IP69K Environmental Protection - This rating provides protection against the ingress of dust and high pressure jet stream. The IP69K test was designed specifically for rating protection against a high-pressure jet stream, high liquid temperature and close nozzle distance from the enclosure surface. IP69K protection is standard on coils with MetriPac or Deutsch, integrated connectors.

"Thermal shock dunk"

Test - Eaton/IH ToughCoils have been qualified to withstand the toughest Mobile Equipment "Thermal Shock Dunk" tests. Integrated Deutsch, MetriPack¹ and Leadwire² connectors exceed "Thermal Shock Dunk" test qualifications at 140°C. The "Thermal Shock Dunk" test requires coils to be heated, reaching a stabilized temperature of 100°C, then immediately immersed in a solution at 0°C. The thermal shock is repeated five times with the coil monitored for dielectric strength in the solution and functional performance is verified. In addition, ToughCoils™ passed a more severe powered dunk test conducted from 100° C to 0° C with 115% rated voltage applied.

¹MetriPack® 150 and MetriPack® 280 are registered trade marks of Delphi Packard Electric Systems

²Coils with integrated connectors are recommended for applications in harsh environments.

Field retrofitable -

ToughCoils™ replace all current Eaton coils used on D Frame and Shell type coils. Compact coil dimensions allow substitution in all existing applications. ToughCoils are available for most 8, 10, 12, 16 and 20 series valves. No additional water/weather proofing is required.

Steel Shell encapsulated design

- ToughCoils™ provide protection against physical and environmental damage.

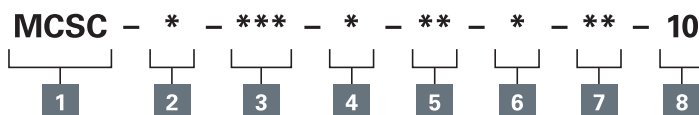
Eaton/IH ToughCoils™, with rated connector, meet or exceed all major OEM environmental protection requirements



Shown with deutsch connection options

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

**1 Function**

MCSC - Solenoid coil

2 Series

S - Size 8 (210 Bar)
P - Size 8 (350 Bar)
J - Size 10, 12, 16, 20 (210 Bar)
H - Size 10, 12, 16, 20 (350 Bar)

3 Voltage rating

012 - 12 volt
024 - 24 volt
036 - 36 volt
048 - 48 volt
115 - 115 volt
230 - 230 volt

4 Voltage type

D - DC
B - DC/with flyback diode
A - AC/with full bridge rectifier

5 Connector

G0 - ISO 4400 DIN 43650
Q0 - Spade Terminals
W0 - Flying lead
N0 - Deutsch Male, DT04-2P, Integrated (DC Only)
 Mating Connector: Deutsch DT06-2S
Y0 - Amp Jr (DC Only)
 Mating Connector: AMP 963040-3 or equivalent
D0 - MetriPack® 150 Male, Integrated (DC Only)
 Mating Connector: Delphi 12052641

J0 - MetriPack® 280 Male, Integrated (DC Only)
 Mating Connector: Delphi 15300027

E0 - Weather-Pack (Packard) female on wire leads
 Mating Connector: Delphi 12010973

F0 - Weather-Pack (Packard) male on wire leads
 Mating Connector: Delphi 12015792

Note: Auxillary parts forming connectors may be required.

6 Lead length

0 - None
A - 152mm [6.0 in] (Standard length with connector)
B - 610mm [24.0 in] (Standard length without connector)

7 Special features

00 - None
 (Only required if valve has special features, omitted if "00.")

8 Design code

10 - Design code

Specifications

Ratings and specifications

Duty Rating	Continuous from 85% to 110% of nominal voltage
Operating temperature	100°C (212°F) continuous @ nominal voltage
Lead Wires	18 gauge, standard 610 mm (24") long, UL style 3173 CSA CL 1251 (meets SAE J1128 XLPE style SXL)
Power Rating	S Series: 20W P Series: 23W J Series: 23W H Series: 29W
Encapsulant	Glass filled nylon
Magnet Wire	U.L. class N, 200°C (392°F) NEMA pub. No. MW 1000, section MW 35 – C (single)
Flyback diode (arc suppressor)	Maximum recurrent peak reverse voltage – 800 V (optional)

Environmental protection

Connector	Ip65	Ip67	Ip69k	Thermal shock dunk
G0: DIN 43650	X*			
Q0: Spade				
Y0: Amp Jr.	X	X ¹ *		
W0: Wire Leads	X	X		X ¹
N0: Deutsch	X	X	X	X
D0: Metri-Pack 150	X	X	X	X
J0: Metri-Pack 280	X	X	X	X

⚠ Caution

Coils may be hot to touch if used in continuous duty applications.

¹Passed environmental testing, but not as robust as other connectors

*Rating dependent on mating connector

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

ToughCoils

For 8 size solenoid valves
S & P series coils

S Series ToughCoils part numbers - 300AA00_____ (Complete part number is 11 Digits)

Voltage	G0** Connector	Q0 Connector	W0 Connector	N0 Connector	Y0 Connector	D0 Connector	J0 Connector
12VDC	001A	009A	015A	021A	026A	031A	036A
24VDC	002A	010A	016A	022A	027A	032A	037A
36VDC	003A	011A	017A	023A	028A	033A	038A
24VAC	004A	012A	018A	—	—	—	—
115VAC	005A	—	—	—	—	—	—
230VAC	006A	—	—	—	—	—	—
12VDC*	007A	013A	019A	024A	029A	034A	039A
24VDC*	008A	014A	020A	025A	030A	035A	040A

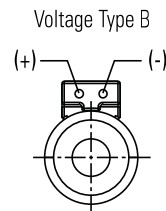
*With flyback diode. (Voltage Type B)

**DIN 43560 mating connector for "G0" style coil — 02-166796.

For other voltages and connectors contact your Eaton representative.

Std. voltages	Amperes*
12 DC	1.67
24 DC	0.83
36 DC	0.56
24 AC	0.93
115 AC	0.19
230 AC	0.10

*Nominal voltage 25°C (77°F).



P Series ToughCoils part numbers - 300AA00_____ (Complete part number is 11 Digits)

Voltage	G0** Connector	Q0 Connector	W0 Connector	N0 Connector	Y0 Connector	D0 Connector	J0 Connector
12VDC	041A	049A	055A	061A	066A	071A	076A
24VDC	042A	050A	056A	062A	067A	072A	077A
36VDC	043A	051A	057A	063A	068A	073A	078A
24VAC	044A	052A	058A	—	—	—	—
115VAC	045A	—	—	—	—	—	—
230VAC	046A	—	—	—	—	—	—
12VDC*	047A	053A	059A	064A	069A	074A	079A
24VDC*	048A	054A	060A	065A	070A	075A	080A

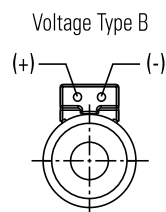
*With flyback diode. (Voltage Type B)

**DIN 43560 mating connector for "G0" style coil — 02-166796.

For other voltages and connectors contact your Eaton representative.

Std. voltages	Amperes*
12 DC	1.92
24 DC	0.96
36 DC	0.64
24 AC	1.06
115 AC	0.22
230 AC	0.11

*Nominal voltage 25°C (77°F).



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

300AA00_____ (Complete part number is 11 Digits)

Voltage	G0** Connector	Q0 Connector	W0 Connector	N0 Connector	Y0 Connector	D0 Connector	J0 Connector
12VDC	081A	089A	095A	101A	106A	111A	116A
24VDC	082A	090A	096A	102A	107A	112A	117A
36VDC	083A	091A	097A	103A	108A	113A	118A
24VAC	084A	092A	098A	—	—	—	—
115VAC	085A	—	—	—	—	—	—
230VAC	086A	—	—	—	—	—	—
12VDC*	087A	093A	099A	104A	109A	114A	119A
24VDC*	088A	094A	100A	105A	110A	115A	120A

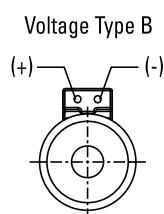
*With flyback diode. (Voltage Type B)

**DIN 43560 mating connector for "G0" style coil — 02-166796.

For other voltages and connectors contact your Eaton representative.

Std. voltages	Amperes*
12 DC	1.92
24 DC	0.96
36 DC	0.64
24 AC	1.06
115 AC	0.22
230 AC	0.11

*Nominal voltage 25°C (77°F). *



H Series ToughCoils part numbers - 300AA00_____ (Complete part number is 11 Digits)

Voltage	G0** Connector	Q0 Connector	W0 Connector	N0 Connector	Y0 Connector	D0 Connector	J0 Connector
12VDC	121A	129A	135A	141A	146A	151A	156A
24VDC	122A	130A	136A	142A	147A	152A	157A
36VDC	123A	131A	137A	143A	148A	153A	158A
24VAC	124A	132A	138A	—	—	—	—
115VAC	125A	—	—	—	—	—	—
230VAC	126A	—	—	—	—	—	—
12VDC*	127A	133A	139A	144A	149A	154A	159A
24VDC*	128A	134A	140A	145A	150A	155A	160A

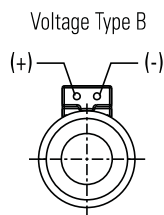
*With flyback diode. (Voltage Type B)

**DIN 43560 mating connector for "G0" style coil — 02-166796.

For other voltages and connectors contact your Eaton representative.

Std. voltages	Amperes*
12 DC	2.42
24 DC	1.21
36 DC	0.81
24 AC	1.34
115 AC	0.28
230 AC	0.14

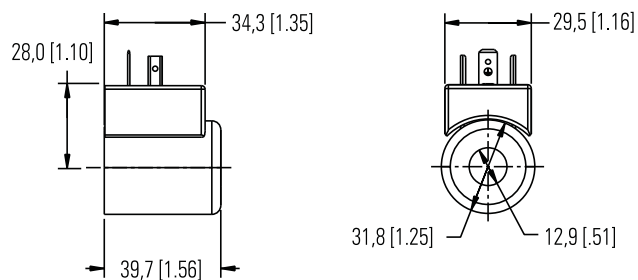
*Nominal voltage 25°C (77°F).



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

S and P Series coils

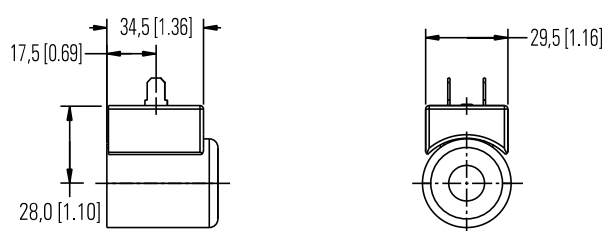
Dimensions



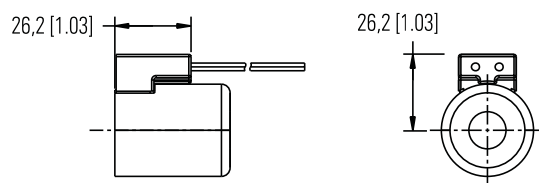
G0
DIN 43650-A Connector



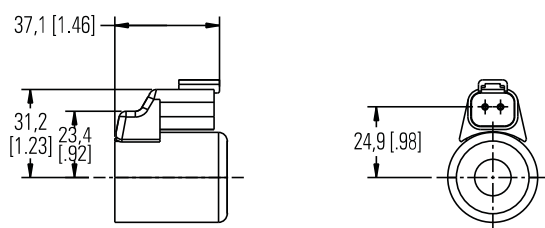
Shown with integrated Deutsch Connector



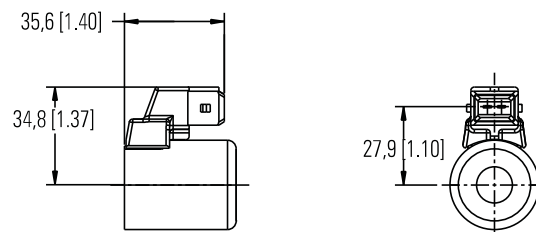
Q0
Spade connector



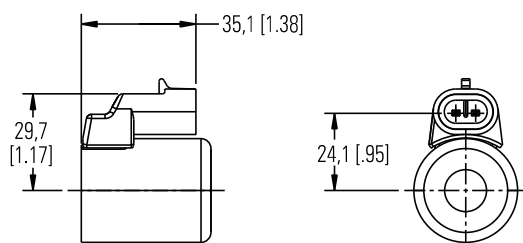
W0
Leadwire



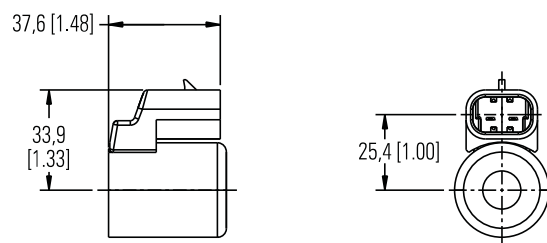
N0
Deutsch Male DTO4-2P integrated connector



Y0
AMP Junior timer integrated connector



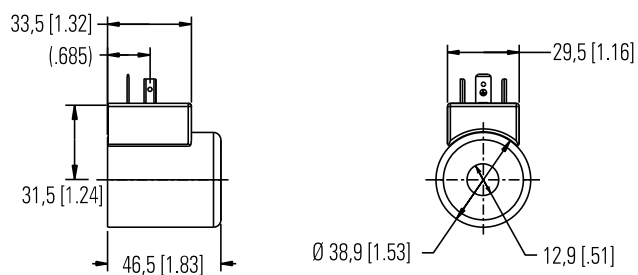
D0
Metri-Pack 150 Male, integrated connector



J0
Metri-Pack 280 Male, integrated connector

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

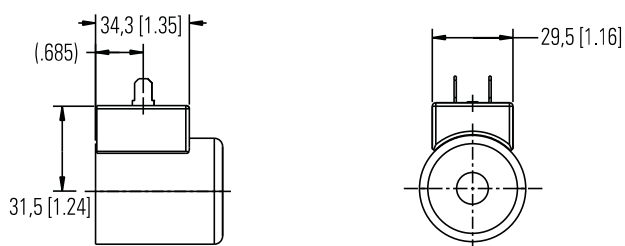
Dimensions



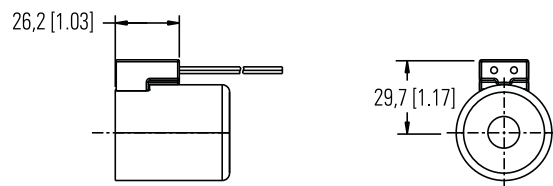
G0
DIN 43650-A Connector



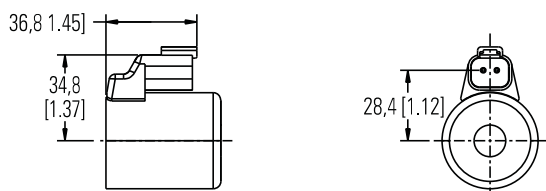
Shown with integrated MetriPack 150 Connector



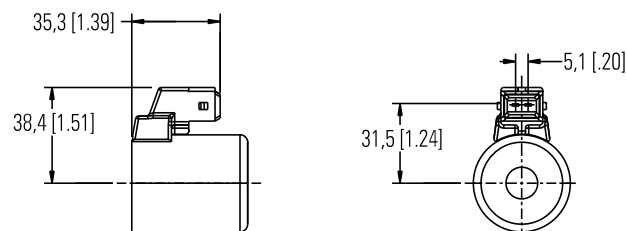
Q0
Spade connector



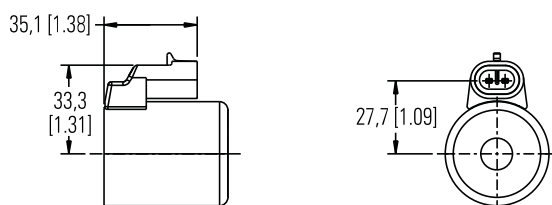
W0
Leadwire



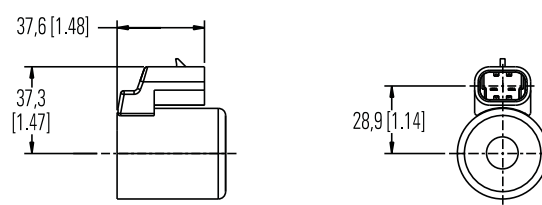
N0
Deutsch male DTO4-2P integrated connector



Y0
AMP Junior timer integrated connector



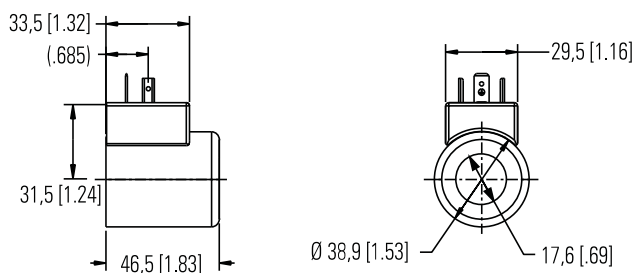
D0
Metri-Pack 150 Male, integrated connector



J0
Metri-Pack 280 Male, integrated connector

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

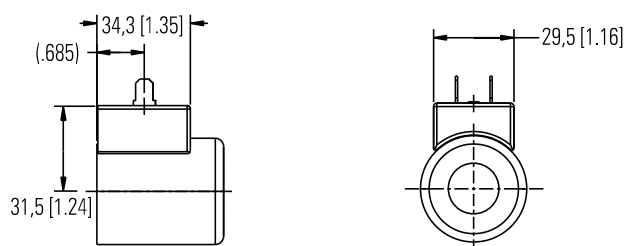
Dimensions



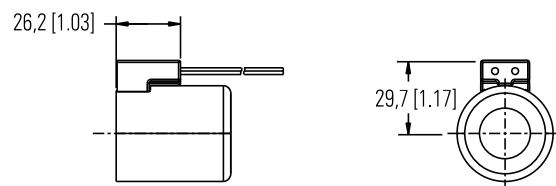
G0
DIN 43650-A Connector



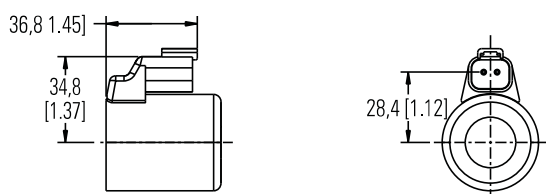
Shown with integrated MetriPack 280 Connector



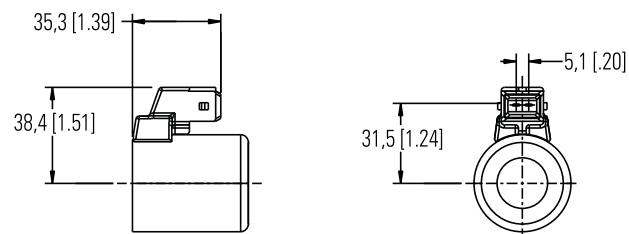
Q0
Spade connector



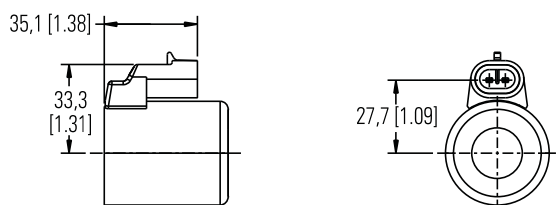
W0
Leadwire



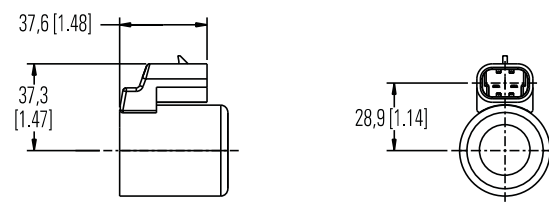
N0
Deutsch male DTO4-2P integrated connector



Y0
AMP Junior timer integrated connector



D0
Metri-Pack 150 Male, integrated connector



J0
Metri-Pack 280 Male, integrated connector

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.