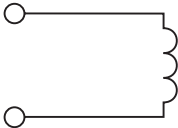
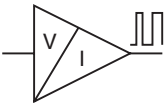
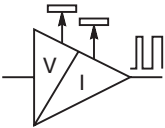
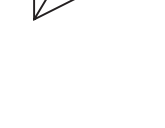


**Contents****Coils and Electronics**

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**CV**Check  
Valves**SH**Shuttle  
Valves**LM**Load/Motor  
Controls**FC**Flow  
Controls**PC**Pressure  
Controls**LE**Logic  
Elements**DC**Directional  
Controls**MV**Manual  
Valves**SV**Solenoid  
Valves**PV**Proportional  
Valves**CE**Coils &  
Electronics**BC**Bodies &  
Cavities**TD**Technical  
Data

CV

Check  
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## INTRODUCTION

This technical tips section is designed to help familiarize you with the Parker line of Coils. In this section we highlight the features and discuss some of the available options. We also use this section to present some common terminology related to coil and coil technology.

# New Parker **SUPER COIL** Now Available!

**Class N Magnetic Wire**  
Internal wires have a class N rating, providing longer life at typical temperatures.

**DC Windings**

All coils are DC wound. An internal full wave rectifier is added for AC current, eliminating inrush current, and allowing for voltage interchangeability.

**Variety of Terminations**

Coils are offered in a wide variety of terminations, including integrally molded connectors and voltages to meet your system requirements.

**Rugged Thermoplastic Encapsulation**

Coil is encased in a thermoplastic polyester resin. This allows for higher temperature exposure and less flexural creep. Also, this resin is resistant to moisture, caustic solutions, and fungus providing protection for coil windings.

**Low Carbon Steel Frame**  
Zinc plated low carbon steel frame surrounds coil, increasing flux density. Low carbon steel provides better magnetic properties and greater permeability.

**Diodes**

Internally molded diodes are available. Polarity is molded into coil for ease of installation.

**Ribbed Surface**

External ridges provide a larger coil surface area, which allows for better heat dissipation.

**\*Exceeds IP69k Specifications**

After exhaustive testing, the new Super Coil has clearly distanced itself from the competition. This coil was subjected to the rigors of this environmental standard and the results were excellent. This coil stands up to most rugged of environmental conditions including weather, dust, and extreme temperature variations.

**\*Water Dunk Test Qualified**

The Super Coil was taken to task in a repeated water dunk thermal cycle test program with alternate exposure to high and low temperature, only to perform with outstanding results.

**\*Endurance Tested**

The goal of this test was to cycle the coil to high temperature extremes in order to validate the coils ability to perform in extreme temperature environments.

**\*Water Spray and Chemical Solvent Compatibility**

The Super Coil was subjected to numerous chemical solvents in a rigorous test which established the fact that these coils can withstand harsh and unusual environments. Also, the coils were subjected to a high pressure water spray test. Once again, the Super Coil passed this test.

*\*Deutsch molded connector or LS option is highly recommended.*

*NOTE: LS coil option will be available January 1, 2011.*



## COMMON OPTIONS

Below are some of the common options to the Unicoil product offering.

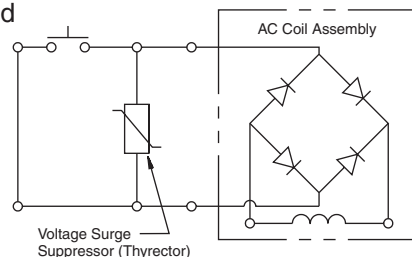
**Continuous Duty:** Parker's standard line of coils are rated for continuous duty operation. This means the coil can be left on continuously without fear of the magnet wire insulation breakdown, when used in standard climate conditions. The Unicoils and Super Coils are made of a high quality Class N magnet wire. This Class N rating signifies the internal wires are rated to 200°C (392°F).

Continuous duty does not mean the coil will have the same amount of power after hours of operation as it had at initial actuation. Coils do heat up during use. This internal heat rise increases the resistance of the coil and thus, decreases the current ( $V = IR$ ). The performance curves presented on the solenoid valve pages are based on a coil at room temperature and 85% of voltage. Thus, when using a valve in continuous duty applications, you may need to derate the performance. In short, the continuous duty rating signifies that while the coil will get hot during use and resistance will increase, it will not generate enough heat to damage the coil.

**Terminations:** Parker offers a wide variety of coil terminations for all coils to meet the demands of your application. Over the years, the dual lead wire and dual spade offerings have been popular due to their ease of installation and availability. In the past few years, the demand for more secure termination connections has increased. In addition, the integral connectors reduce cost and improve integrity by reducing the number of connections. As such, the Amp Junior, Weatherpack, Metri-Pack, and Deutsch have increased in popularity. We offer these connectors on a lead wire coil, as well as an internally molded version of the DIN, Amp Junior, and Metri-Pack coils. If you do not find your desired coil termination in our catalog, contact your factory sales representative. We have added a Sealed Leadwire option to meet IP69K requirements yet still allow for other lead wire options.

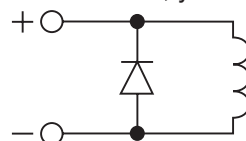
**Current Types:** Both direct current (DC) and alternating current (AC) versions are available for the Parker line of coils. The AC versions are essentially DC coils with a full wave rectifier integrally molded into the coil. The rectifiers are rated for voltage peaks up to 1000 volts maximum. For voltage transients greater than 1000 volts, a Harris Thyrector is recommended. The AC coils operate at 50/60 cycles (Hz). Since the AC versions are rectified

DC coils, there is no inrush current like with "true" AC coils. It also means DC coils and AC coils are interchangeable.



**Voltages:** Parker has a wide selection of coils available to meet your needs. Most coil terminations are available with our standard voltages of 12V and 24V in DC, and 120V and 240V in AC. Voltages 6V, 10V, 18V, 36V, 48V DC and 440V AC are also available for many termination types at a slight premium. Contact your Parker representative should your application call for voltages other than our standard offering.

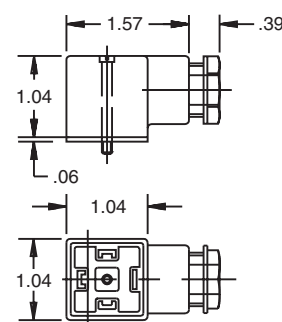
**Diodes:** The Parker Coils can be ordered with a diode molded internally. Parker Unicoils use a 1N5062 diode. The Super Coils use a 1N5627 diode. Diodes are sometimes used to protect sensitive, downstream electrical components from potential surges from the coil. By internally molding the diode into the coil, you can reduce the assembly time and cost associated with externally wiring a diode. One should be careful not to switch the polarity ("+" and "-" terminals), when wiring a coil with an internal diode. If these terminals are switched, the first time voltage is applied to the coil; the short circuit will destroy the diode and render the coil use-less. Parker coils with diodes have "+" and "-" molded near the termination outlet to help identify polarity.



**DIN Connectors:** Parker does offer connectors for use with the DIN style coils. As shown below, the DIN connectors are available in both rectified and non-rectified forms. The cable gland versions can be ordered for type PG9 or PG11.

### Cable Gland

| Type | Non-Rectified | Rectified |
|------|---------------|-----------|
| PG9  | 710549-00     | 712126-01 |
| PG11 | 710549-01     | 712126-00 |

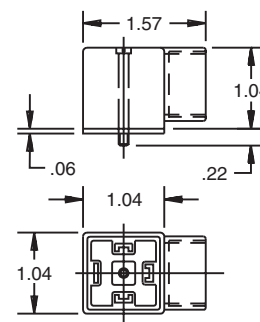
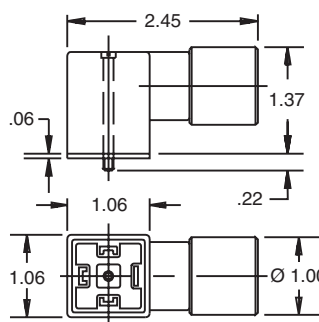


### Conduit

| Rectified |
|-----------|
| 712704-00 |

### Conduit

| Non-Rectified |
|---------------|
| 710549-02     |



CV

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Elements

DC

Directional  
Controls

MV

Manual  
Valves

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Solenoid  
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Proportional  
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CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

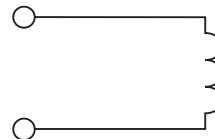
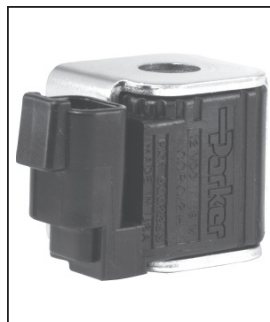
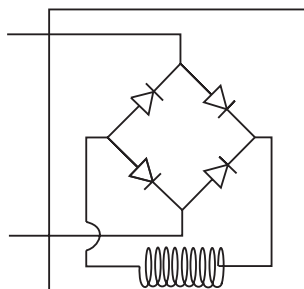
## Features

- Integral Deutsch connector coil exceeds IP69K standards
- Integral Deutsch connector coil thermal shock dunk test rated
- Integral Amp Jr. coil exceeds IP67 standards for thermal shock, water resistance and "dunk capability"
- Universal 50/60 Hz operation
- Waterproof coil hermetically sealed, requires no O-rings or waterproofing kits
- External plated steel flux-carrying band (unlike encapsulated band) enables coil to withstand severe thermal shocks without cracking
- Symmetrical coil can be reversed without affecting performance

## Specifications

|                                                                       |                                      |                                                                                                      |
|-----------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------|
| Coil Type                                                             | S                                    | Standard                                                                                             |
|                                                                       | P                                    | Puissant                                                                                             |
| Nominal Wattage<br>(See Ordering<br>Information For<br>Exact Wattage) | S                                    | 14 Watts                                                                                             |
|                                                                       | P                                    | 19 Watts                                                                                             |
| Duty Cycle                                                            | Continuous @ 100% voltage            |                                                                                                      |
| Magnetic Wire<br>Insulation Class                                     | 'N' Rated at 200°C (392°F)           |                                                                                                      |
| Temperature<br>Range                                                  | -40°C to +200°C<br>(-40°F to +392°F) |                                                                                                      |
| Temperature<br>Rise At Nominal<br>Voltage And<br>Natural Ventilation  | S                                    | 75°C (135°F)                                                                                         |
|                                                                       | P                                    | 95°C (172°F)                                                                                         |
| Dielectric Strength<br>Maximum Current<br>Leakage (Amps)              | .0005                                | In dry lab condition at<br>1000V AC for 30 seconds                                                   |
|                                                                       | .001                                 | After being immersed in 23°C<br>(77°F) water with waterproof<br>connector for 24 hours at<br>500V AC |
| Encapsulating<br>Material                                             | Glass filled rynite                  |                                                                                                      |
| Color Identification<br>On The Terminal<br>Boss                       | S                                    | Black Ring                                                                                           |
|                                                                       | P                                    | Red Ring                                                                                             |
| Weight                                                                | 0.20 kg (0.44 lbs.)                  |                                                                                                      |

## AC Coil Assembly



## Ordering Information

|                         |         |         |             |
|-------------------------|---------|---------|-------------|
| CC                      |         |         |             |
| Super Coil<br>1/2" I.D. | Wattage | Voltage | Termination |

| Code | Wattage  |
|------|----------|
| S    | Standard |
| P    | Puissant |

| Code | Voltage | Watts |    | Amps |      | Ohms** |       |
|------|---------|-------|----|------|------|--------|-------|
|      | Volts   | S     | P  | S    | P    | S      | P     |
| 010  | 10 VDC  | 14    | 19 | 1.38 | 1.90 | 7.25   | 5.26  |
| 012* | 12 VDC  | 14    | 19 | 1.15 | 1.58 | 10.43  | 7.58  |
| 018  | 18 VDC  | 14    | 19 | 0.77 | 1.06 | 23.48  | 17.05 |
| 024* | 24 VDC  | 14    | 19 | 0.58 | 0.79 | 41.74  | 30.30 |
| 048  | 48 VDC  | 14    | 19 | 0.29 | 0.40 | 167.0  | 121.3 |
| 115* | 115 VAC | 16    | 19 | 0.17 | 0.20 | 680    | 576   |
| 230  | 230 VAC | 17    | 22 | 0.09 | 0.12 | 2596   | 1919  |

\*Standard Voltages

\*\*Resistance  $\pm 10\%$  at 68°F

| Code | Termination                                                                               |
|------|-------------------------------------------------------------------------------------------|
| A    | Amp Jr. (DC Only)                                                                         |
| AD   | Amp Jr. with 3 Amp Diode (DC Only)                                                        |
| C    | Double Lead Wire with Conduit Connector (AC Only)                                         |
| *D   | DIN 43650 (AC or DC, Supplied without DIN Connector)                                      |
| H    | Integral Deutsch                                                                          |
| HE   | Integral Deutsch with 3 Amp Diode                                                         |
| *L   | Double Lead (DC Only)                                                                     |
| LS   | Sealed Lead Wire IP69K Rated (Available January 1, 2011)                                  |
| LD   | Double Lead with Deutsch Connector<br>DT04-2P-EP04 (DC Only) (Use 'H' series if possible) |
| LE   | Double Lead with 3 Amp Diode (DC Only)                                                    |
| PF   | Double Lead Wire with Packard Female Weather Pack<br>Connector 1201 5792 (DC Only)        |
| PM   | Double Lead Wire with Packard Male Weather Pack<br>Connector 1201 0973 (DC Only)          |
| *S   | Double Spade (DC Only)                                                                    |
| *W   | Double Screw (DC only)                                                                    |
| WE   | Double Screw with 3 Amp Diode (DC Only)                                                   |
| *Y   | Single Screw (Internally Grounded, DC Only)                                               |

\*UL listed 12/24/48 VDC only.

Note: Additional voltages and other terminals are available. Some coils are UL approved. For details please consult factory.

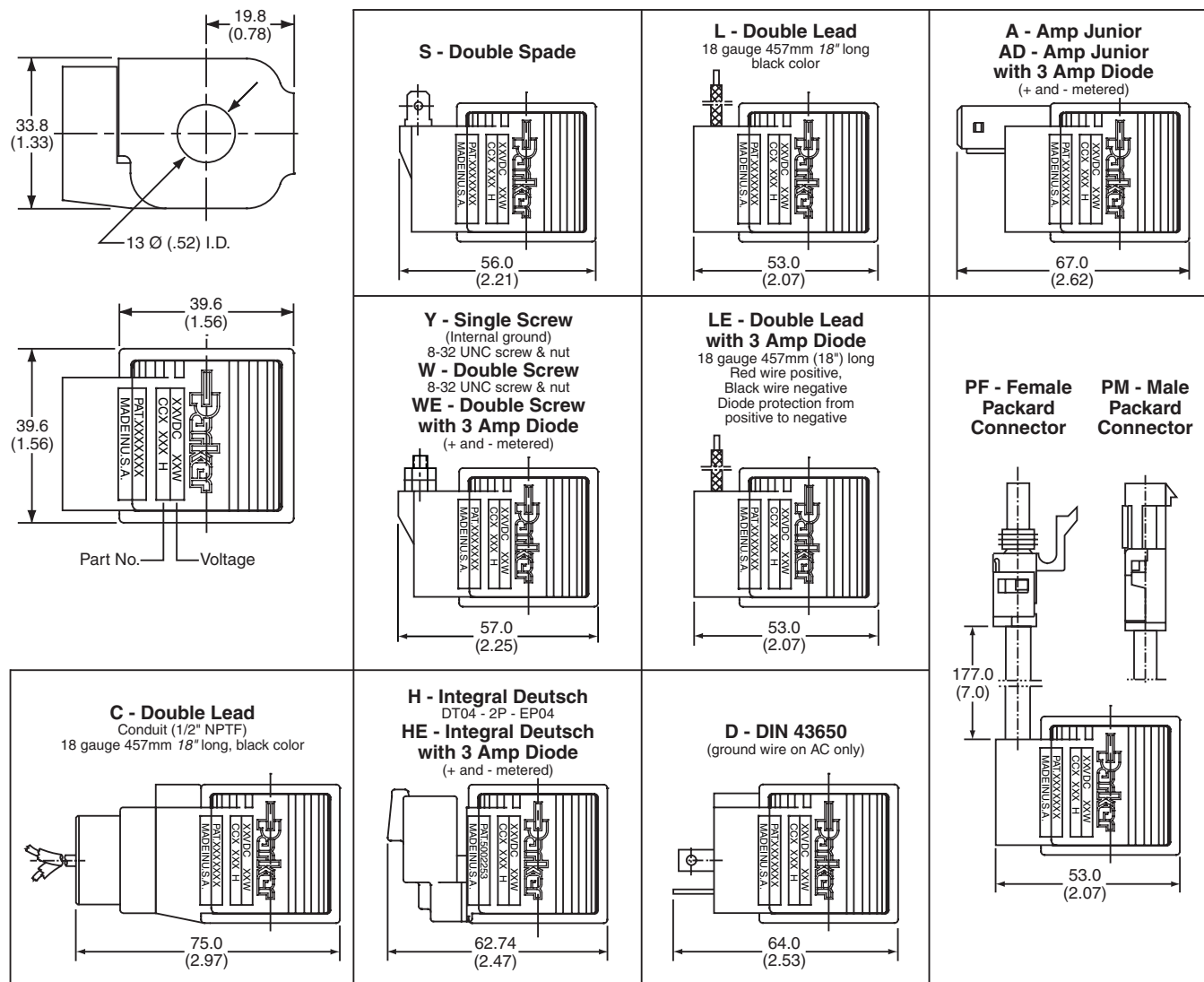
DIN Female Mating Connector: See page CE2

Deutsch Mating Connector: # DT06-2S

Packard Male Weather Pack Connector: 12010973

Packard Female Weather Pack Connector: 12015792

## Terminal Styles and Dimensions



### NOTES:

1. The standard A.C. coil includes a molded-in full wave rectifier rated for 800 peak reverse voltage.
2. All P Puissant (high wattage) coils use a red ring as an indication marker on the terminal boss.

**718164 - Wire connector assembly with 36" leads for Super Coils with Integral Deutsch connectors.**



**CV**

Check Valves

**SH**

Shuttle Valves

**LM**

Load/Motor Controls

**FC**

Flow Controls

**PC**

Pressure Controls

**LE**

Logic Elements

**DC**

Directional Controls

**MV**

Manual Valves

**SV**

Solenoid Valves

**PV**

Proportional Valves

**CE**

Coils & Electronics

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**TD**

Technical Data

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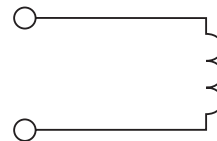
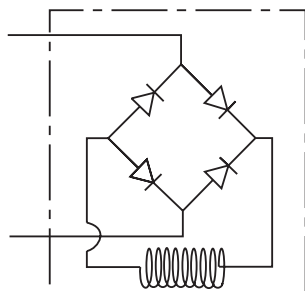
## Features

- Integral Deutsch connector coil exceeds IP69K standards
- Integral Deutsch connector coil thermal shock dunk test rated
- Integral Amp Jr. coil exceeds IP67 standards for thermal shock, water resistance and "dunk capability"
- Universal 50/60 Hz operation
- Coil hermetically sealed, requires no O-rings or waterproofing kits
- External plated steel flux-carrying band (unlike encapsulated band) enables coil to withstand severe thermal shocks without cracking
- Symmetrical coil can be reversed without affecting performance

## Specifications

|                                                                       |                                      |                                                                                                      |
|-----------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------|
| Coil Type                                                             | S                                    | Standard                                                                                             |
|                                                                       | P                                    | Puissant                                                                                             |
| Nominal Wattage<br>(See Ordering<br>Information For<br>Exact Wattage) | S                                    | 18 Watts                                                                                             |
|                                                                       | P                                    | 28 Watts                                                                                             |
| Duty Cycle                                                            | Continuous @ 100% voltage            |                                                                                                      |
| Magnetic Wire<br>Insulation Class                                     | 'N' Rated at 200°C (392°F)           |                                                                                                      |
| Temperature<br>Range                                                  | -40°C to +200°C<br>(-40°F to +392°F) |                                                                                                      |
| Temperature<br>Rise At Nominal<br>Voltage And<br>Natural Ventilation  | S                                    | 75°C (135°F)                                                                                         |
|                                                                       | P                                    | 95°C (172°F)                                                                                         |
| Dielectric Strength<br>Maximum Current<br>Leakage (Amps)              | .0005                                | In dry lab condition at<br>1000V AC for 30 seconds                                                   |
|                                                                       | .001                                 | After being immersed in 23°C<br>(77°F) water with waterproof<br>connector for 24 hours at<br>500V AC |
| Encapsulating<br>Material                                             | Glass filled rynite                  |                                                                                                      |
| Color Identification<br>On The Terminal<br>Boss                       | S                                    | Black Ring                                                                                           |
|                                                                       | P                                    | Red Ring                                                                                             |
| Weight                                                                | 0.29 kg (0.64 lbs.)                  |                                                                                                      |

## AC Coil Assembly



## Ordering Information

CA

Super Coil  
5/8" I.D.

Wattage

Voltage

Termination

| Code | Wattage  |
|------|----------|
| S    | Standard |
| P    | Puissant |

| Code | Voltage | Watts |    | Amps |      | Ohms** |      |
|------|---------|-------|----|------|------|--------|------|
|      |         | S     | P  | S    | P    | S      | P    |
| 010  | 10 VDC  | 18    | 28 | 1.80 | 2.80 | 5.56   | 3.57 |
| 012* | 12 VDC  | 18    | 28 | 1.50 | 2.33 | 8.00   | 5.14 |
| 018  | 18 VDC  | 18    | 28 | 1.00 | 1.56 | 18.0   | 11.6 |
| 024* | 24 VDC  | 18    | 28 | 0.75 | 1.17 | 32.0   | 20.6 |
| 048  | 48 VDC  | 18    | 28 | 0.38 | 0.58 | 128.0  | 82.3 |
| 115* | 115 VAC | 18    | 28 | 0.20 | 0.26 | 554    | 417  |
| 230  | 230 VAC | 18    | 28 | 0.10 | 0.15 | 2100   | 1430 |

\*Standard Voltages

\*\*Resistance ±10% at 68°F

| Code | Termination                                                                               |
|------|-------------------------------------------------------------------------------------------|
| A    | Amp Jr. (DC Only)                                                                         |
| AD   | Amp Jr. with 3 Amp Diode (DC Only)                                                        |
| C    | Double Lead Wire with Conduit Connector (AC Only)                                         |
| *D   | DIN 43650 (AC or DC, Supplied without DIN Connector)                                      |
| H    | Integral Deutsch                                                                          |
| HE   | Integral Deutsch with 3 Amp Diode                                                         |
| HS   | Integral Deutsch with Internal Seal                                                       |
| *L   | Double Lead (DC Only)                                                                     |
| LS   | Sealed Lead Wire IP69K Rated (Available January 1, 2011)                                  |
| LD   | Double Lead with Deutsch Connector<br>DT04-2P-EP04 (DC Only) (Use 'H' series if possible) |
| LE   | Double Lead with 3 Amp Diode (DC Only)                                                    |
| PF   | Double Lead Wire with Packard Female Weather Pack<br>Connector 1201 5792 (DC Only)        |
| PM   | Double Lead Wire with Packard Male Weather Pack<br>Connector 1201 0973 (DC Only)          |
| *S   | Double Spade (DC Only)                                                                    |
| *W   | Double Screw (DC only)                                                                    |
| WE   | Double Screw with 3 Amp Diode (DC Only)                                                   |
| *Y   | Single Screw (Internally Grounded, DC Only)                                               |

\*UL listed 12/24/48 VDC only.

Note: Additional voltages and other terminals are available. Some coils are UL approved. For details please consult factory.

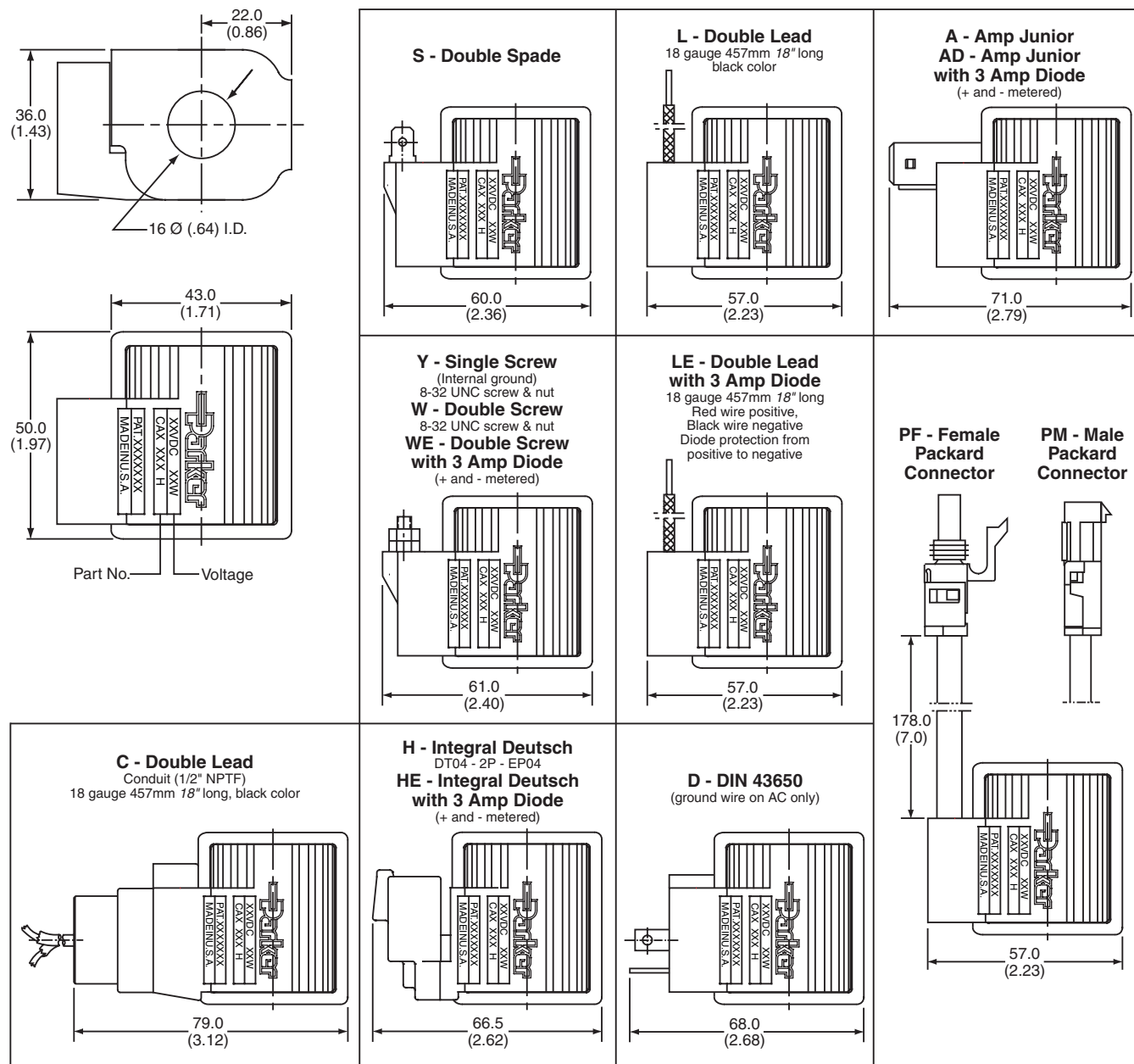
DIN Female Mating Connector: See page CE2

Deutsch Mating Connector: # DT06-2S

Packard Male Weather Pack Connector: 12010973

Packard Female Weather Pack Connector: 12015792

## Terminal Styles and Dimensions



### NOTES:

1. The standard A.C. coil includes a molded-in full wave rectifier rated for 800 peak reverse voltage.
2. All P Puissant (high wattage) coils use a red ring as an indication marker on the terminal boss. (No ring on Integral Deutsch connector.)

**718164 - Wire connector assembly with 36" leads for Super Coils with Integral Deutsch connectors.**



## Technical Information

CV

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Manual  
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Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## Features

- Compact one piece encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- Coil designed for use with series DSL and DSH type valves only
- Coils made with high quality Class N magnet wire
- Superior thick internal iron frame surrounding copper windings to increase the flux density
- More ampere turns to deliver more magnetic flux per input voltage
- A.C. coil operates @ 50/60 cycle (Hz)

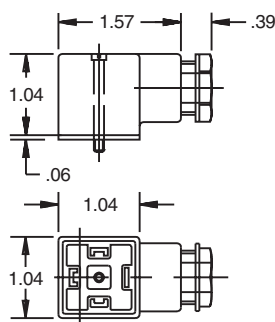
## Specifications

|                         |                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Wattage                 | 14 Watts                                                                                                       |
| Duty Rating             | Continuous @ 100% voltage                                                                                      |
| Wire Class              | Class N - 200°C (392°F)                                                                                        |
| Heat Rise               | 45°C (115°F) over ambient                                                                                      |
| A.C. Rectifier          | Integral full wave bridge                                                                                      |
| Lead Wire               | 18 gauge 24" long, 600 volt rating                                                                             |
| Lead Wire Strain Relief | 34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)                                                 |
| Encapsulating Material  | Rynite, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F) |
| Finish                  | Coil - Black<br>Frame - Yellow zinc dichromate                                                                 |

## Coil Accessories For DIN Connector 43650

## Cable Gland

| Type | Non-Rectified | Rectified |
|------|---------------|-----------|
| PG9  | 710549-00     | 712126-01 |
| PG11 | 710549-01     | 712126-00 |

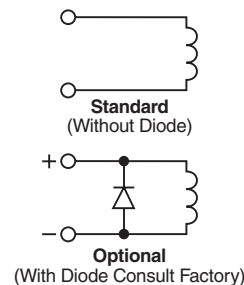
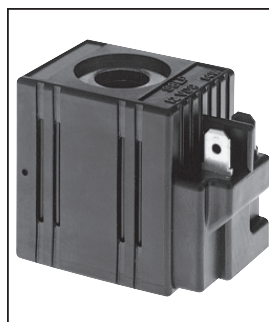
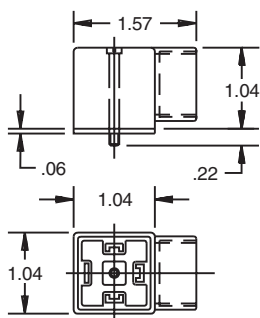
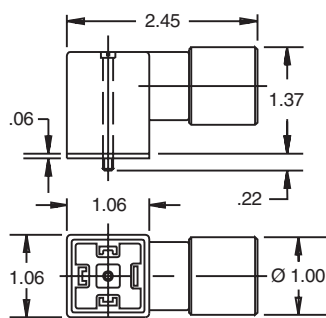


## Conduit

| Rectified |
|-----------|
| 712704-00 |

## Conduit

| Non-Rectified |
|---------------|
| 710549-02     |



## Ordering Information

S8

Unicoil  
1/2" I.D.

L

Wattage



Termination



Diode



Voltage

| Code | Wattage |
|------|---------|
| L    | 14 Watt |

| Code | Diode         |
|------|---------------|
| Omit | Without Diode |
| R    | Diode         |

Diode not available with all connectors.

| Code | Termination             |
|------|-------------------------|
| C    | *Conduit With Leads     |
| D    | *DIN Plug Face          |
| J    | Amp Jr.                 |
| M    | Metri-Pack              |
| P    | *Dual Spade             |
| S    | *Dual Screw             |
| W    | Dual Lead (DC Only)     |
| WS   | Weather Pack Shroud 24" |

\*Diode not available

| Code  | Voltage | Current Amps | Resistance Ohms | Lead Color |
|-------|---------|--------------|-----------------|------------|
| *D006 | 6 VDC   | 2.40         | 2.5             | Black      |
| *D010 | 10 VDC  | 1.45         | 6.9             | Yellow     |
| D012  | 12 VDC  | 1.17         | 10.2            | Red        |
| *D018 | 18 VDC  | 0.84         | 21.5            | Gray       |
| D024  | 24 VDC  | 0.57         | 41.8            | Blue       |
| *D036 | 36 VDC  | 0.45         | 80.5            | Orange     |
| *D048 | 48 VDC  | 0.32         | 150.6           | Green      |
| A120  | 120 VAC | 0.16         | 663             | Brown      |
| A240  | 240 VAC | 0.07         | 3032            | White      |

\* Consult Factory.

## Terminal Styles and Dimensions

| <p><b>Type C</b><br/>Conduit</p>                                               | <p><b>Type D</b><br/>DIN Plug Face 43650</p>                                                                                                                                                                             | <p><b>Type J</b><br/>Amp Jr.</p>      |      |           |    |           |     |          |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------|-----------|----|-----------|-----|----------|
| <p><b>Type M</b><br/>Metri-Pack 150.2 Series<br/>Mating Connector 12162193</p> | <p><b>Type P</b><br/>Dual Spade</p>                                                                                                                                                                                      | <p><b>Type S</b><br/>Double Screw</p> |      |           |    |           |     |          |
| <p><b>Type W</b><br/>Dual Lead</p>                                             | <p><b>Type WS</b><br/>Weather Pack Shroud 12010973<br/>Mating Connector 12015792</p> <table><tr><th>Code</th><th>Connector</th></tr><tr><td>WS</td><td>24" Leads</td></tr><tr><td>WS6</td><td>6" Leads</td></tr></table> |                                       | Code | Connector | WS | 24" Leads | WS6 | 6" Leads |
| Code                                                                           | Connector                                                                                                                                                                                                                |                                       |      |           |    |           |     |          |
| WS                                                                             | 24" Leads                                                                                                                                                                                                                |                                       |      |           |    |           |     |          |
| WS6                                                                            | 6" Leads                                                                                                                                                                                                                 |                                       |      |           |    |           |     |          |

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

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Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## Features

- Compact one piece encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- Coil designed for use with series DSL and DSH type valves only
- Coils made with high quality Class N magnet wire
- Superior thick internal iron frame surrounding copper windings to increase the flux density
- More ampere turns to deliver more magnetic flux per input voltage
- A.C. coil operates @ 50/60 cycle (Hz)

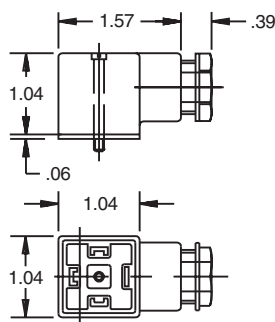
## Specifications

|                         |                                                                                                                |
|-------------------------|----------------------------------------------------------------------------------------------------------------|
| Wattage                 | 20 Watts                                                                                                       |
| Duty Rating             | Continuous @ 100% voltage                                                                                      |
| Wire Class              | Class N - 200°C (392°F)                                                                                        |
| Heat Rise               | 45°C (115°F) over ambient                                                                                      |
| A.C. Rectifier          | Integral full wave bridge                                                                                      |
| Lead Wire               | 18 gauge 24" long, 600 volt rating                                                                             |
| Lead Wire Strain Relief | 34 kg (75 lbs.) @ 21°C (70°F) & 18 kg (40 lbs.) @ 93°C (200°F)                                                 |
| Encapsulating Material  | Rynite, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F) |
| Finish                  | Coil - Black<br>Frame - Yellow zinc dichromate                                                                 |

## Coil Accessories For DIN Connector 43650

### Cable Gland

| Type | Non-Rectified | Rectified |
|------|---------------|-----------|
| PG9  | 710549-00     | 712126-01 |
| PG11 | 710549-01     | 712126-00 |

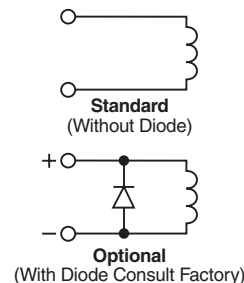
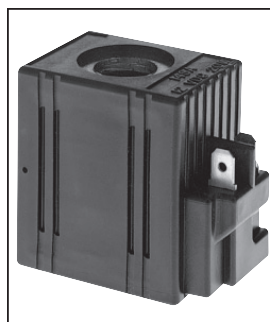
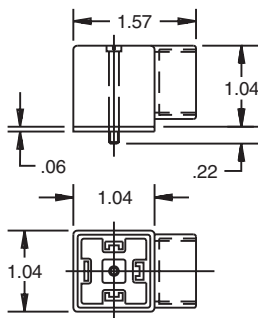
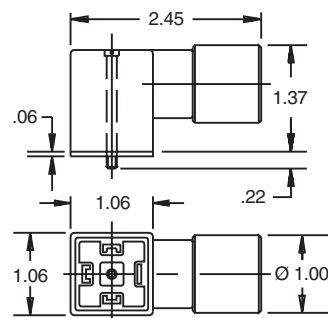


### Conduit

| Rectified |
|-----------|
| 712704-00 |

### Conduit

| Non-Rectified |
|---------------|
| 710549-02     |



## Ordering Information

S10

Unicoil  
5/8" I.D.

L

Wattage



Termination



Diode



Voltage

| Code | Wattage |
|------|---------|
| L    | 20 Watt |

| Code | Diode         |
|------|---------------|
| Omit | Without Diode |
| R    | Diode         |

Diode not available with all connectors.

| Code | Termination             |
|------|-------------------------|
| C    | *Conduit With Leads     |
| D    | *DIN Plug Face          |
| J    | Amp Jr.                 |
| M    | Metri-Pack              |
| P    | *Dual Spade             |
| S    | *Dual Screw             |
| W    | Dual Lead (DC Only)     |
| WS   | Weather Pack Shroud 24" |

\*Diode not available

| Code  | Voltage | Current Amps | Resistance Ohms | Lead Color |
|-------|---------|--------------|-----------------|------------|
| *D006 | 6 VDC   | 3.33         | 1.8             | Black      |
| *D010 | 10 VDC  | 2.10         | 4.8             | Yellow     |
| D012  | 12 VDC  | 1.67         | 7.2             | Red        |
| *D018 | 18 VDC  | 1.21         | 14.9            | Gray       |
| D024  | 24 VDC  | 0.88         | 27.4            | Blue       |
| *D036 | 36 VDC  | 0.61         | 58.9            | Orange     |
| *D048 | 48 VDC  | 0.47         | 102.4           | Green      |
| A120  | 120 VAC | 0.192        | 626             | Brown      |
| A240  | 240 VAC | 0.10         | 2400            | White      |

\* Consult Factory.

## Terminal Styles and Dimensions

| <p><b>Type C</b><br/>Conduit</p>                                               | <p><b>Type D</b><br/>DIN Plug Face 43650</p>                                                                                                                                                                             | <p><b>Type J</b><br/>Amp Jr.</p>      |      |           |    |           |     |          |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------|-----------|----|-----------|-----|----------|
| <p><b>Type M</b><br/>Metri-Pack 150.2 Series<br/>Mating Connector 12162193</p> | <p><b>Type P</b><br/>Dual Spade</p>                                                                                                                                                                                      | <p><b>Type S</b><br/>Double Screw</p> |      |           |    |           |     |          |
| <p><b>Type W</b><br/>Dual Lead</p>                                             | <p><b>Type WS</b><br/>Weather Pack Shroud 12010973<br/>Mating Connector 12015792</p> <table><tr><th>Code</th><th>Connector</th></tr><tr><td>WS</td><td>24" Leads</td></tr><tr><td>WS6</td><td>6" Leads</td></tr></table> |                                       | Code | Connector | WS | 24" Leads | WS6 | 6" Leads |
| Code                                                                           | Connector                                                                                                                                                                                                                |                                       |      |           |    |           |     |          |
| WS                                                                             | 24" Leads                                                                                                                                                                                                                |                                       |      |           |    |           |     |          |
| WS6                                                                            | 6" Leads                                                                                                                                                                                                                 |                                       |      |           |    |           |     |          |

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## Technical Information

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

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Logic  
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Manual  
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Valves

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Electronics

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Bodies &  
Cavities

TD

Technical  
Data

## Features

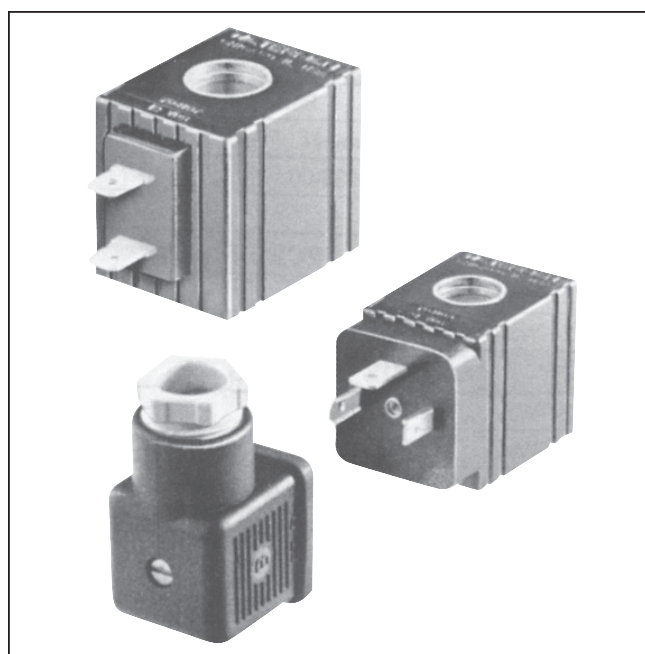
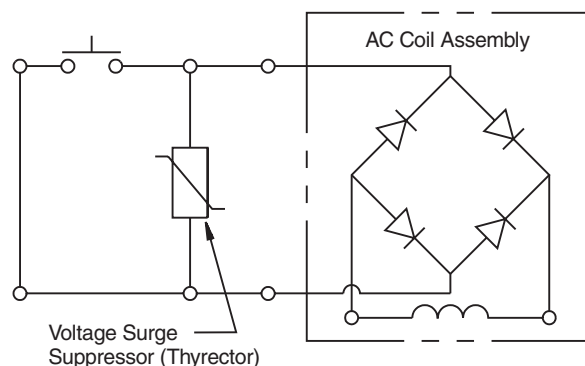
- Compact one piece encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- High watt design available for intermittent operation
- Heavy gauge color coded lead wire with built-in strain relief
- 180°C Class H wire standard
- 200°C Class N wire on high watt models

## Specifications

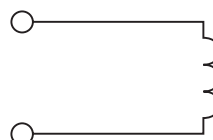
|                                |                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Wattage</b>                 | 12 Watts — Standard - Black Coil<br>25 Watts — High Watt - Red Coil                                                        |
| <b>Duty Rating</b>             | Continuous @ 100% voltage                                                                                                  |
| <b>Wire Class</b>              | Class H for all voltages 12 Watt<br>Class N for all voltages 25 Watt                                                       |
| <b>A.C. Rectifier</b>          | Integral full wave bridge                                                                                                  |
| <b>Lead Wire</b>               | 18 gauge 24" long, 600 volt rating                                                                                         |
| <b>Lead Wire Strain Relief</b> | 34 kg (75 lbs.) @ 21°C (70°F) &<br>18 kg (40 lbs.) @ 93°C (200°F)                                                          |
| <b>Encapsulating Material</b>  | Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F) |

## AC Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



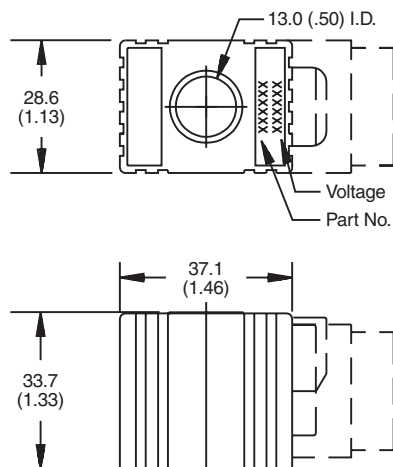
## Symbol



## NOTE:

Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

## Terminal Styles and Dimensions



|                                                                                                |                                                                             |                                                                                                                        |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Type P<br/>Dual Spade</b><br>Thru Hole<br>Tinned Brass<br>SAE 1B-0.25<br><br>33.5<br>(1.32) | <b>Type W<br/>Dual Lead</b><br>18 Gauge<br>24" Long<br><br>25.8<br>(1.02)   | <b>Type C<br/>Double Lead With<br/>Conduit Connector<br/>(1/2" NPTF)</b><br>18 Gauge<br>24" Long<br><br>40.4<br>(1.59) |
| <b>Type D<br/>DIN</b><br>DIN 43650<br>Plug Face Only<br><br>36.6<br>(1.44)                     | <b>Type S<br/>Double Screw</b><br>8-32 Screw<br>& Nut<br><br>33.1<br>(1.31) | <b>Type J<br/>AMP Junior<br/>Timer Type C</b><br><br>40.8<br>(1.61)                                                    |

### NOTES:

- Coil to be installed with part number on nut side.
- For additional terminals, voltages and wattages, consult factory for details.

## Coil Part Numbers

| Voltage   | Watts | Type P<br>Double<br>Spade | Type W<br>Double<br>Lead | Type C<br>Conduit<br>Connector | Type D<br>DIN<br>Plug Face | Type S<br>Double<br>Screw | Amps† | Lead Wire<br>Color |
|-----------|-------|---------------------------|--------------------------|--------------------------------|----------------------------|---------------------------|-------|--------------------|
| **6 VDC   | 12    | 851007-006                | 851009-006               | 851003-006*                    | 851005-006*                | 851011-006                | 2.22  | Black              |
|           | 25    | 851008-006                | 851010-006               | 851004-006                     | 851006-006                 | 851012-006                | 3.90  |                    |
| **10 VDC  | 12    | 851007-010                | 851009-010               | 851003-010*                    | 851005-010*                | 851011-010                | 1.43  | Yellow             |
|           | 25    | 851008-010                | 851010-010               | 851004-010                     | 851006-010                 | 851012-010                | 2.48  |                    |
| 12 VDC    | 12    | 851007-012                | 851009-012               | 851003-012*                    | 851005-012*                | 851011-012                | 1.05  | Red                |
|           | 25    | 851008-012                | 851010-012               | 851004-012                     | 851006-012                 | 851012-012                | 1.94  |                    |
| **18 VDC  | 12    | 851007-018                | 851009-018               | 851003-018*                    | 851005-018*                | 851011-018                | 0.75  | Gray               |
|           | 25    | 851008-018                | 851010-018               | 851004-018                     | 851006-018                 | 851012-018                | 1.42  |                    |
| 24 VDC    | 12    | 851007-024                | 851009-024               | 851003-024*                    | 851005-024*                | 851011-024                | 0.52  | Blue               |
|           | 25    | 851008-024                | 851010-024               | 851004-024                     | 851006-024                 | 851012-024                | 1.17  |                    |
| **36 VDC  | 12    | 851007-036                | 851009-036               | 851003-036*                    | 851005-036*                | 851011-036                | 0.38  | Orange             |
|           | 25    | 851008-036                | 851010-036               | 851004-036                     | 851006-036                 | 851012-036                | 0.73  |                    |
| **48 VDC  | 12    | 851007-048                | 851009-048               | 851003-048*                    | 851005-048*                | 851011-048                | 0.26  | Green              |
|           | 25    | 851008-048                | 851010-048               | 851004-048                     | 851006-048                 | 851012-048                | 0.59  |                    |
| 120 VAC   | 12    |                           |                          | 851003-120                     | 851005-120                 |                           | 0.14  | Brown              |
|           | 25    |                           |                          | 851004-120                     | 851006-120                 |                           | 0.23  |                    |
| 230 VAC   | 12    |                           |                          | 851003-240                     | 851005-240                 |                           | 0.08  | White              |
|           | 25    |                           |                          | 851004-240                     | 851006-240                 |                           | 0.12  |                    |
| **440 VAC | 12    |                           |                          | 851003-480                     | 851005-480                 |                           | 0.04  | Violet             |
|           | 25    |                           |                          | 851004-480                     | 851006-480                 |                           | 0.07  |                    |

\*\*Consult Factory \*UL Listed

†Amperage draw @ 21°C (70°F)

## Technical Information

**CV**

Check  
Valves

**SH**

Shuttle  
Valves

**LM**

Load/Motor  
Controls

**FC**

Flow  
Controls

**PC**

Pressure  
Controls

**LE**

Logic  
Elements

**DC**

Directional  
Controls

**MV**

Manual  
Valves

**SV**

Solenoid  
Valves

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Proportional  
Valves

**CE**

Coils &  
Electronics

**BC**

Bodies &  
Cavities

**TD**

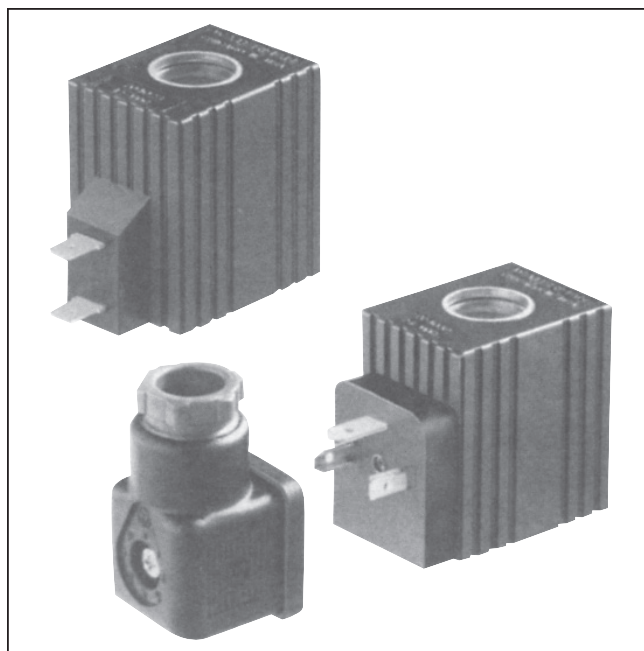
Technical  
Data

## Features

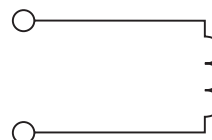
- Compact one piece encapsulated design
- Minimal amperage draw
- Numerous terminals and voltages
- High watt design optional
- Heavy gauge color coded lead wire with built-in strain relief
- 180°C Class H wire standard
- 200°C Class N wire on high watt models

## Specifications

|                                |                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Wattage</b>                 | 17 Watts — Standard - Black Coil<br>30 Watts — High Watt - Red Coil                                                        |
| <b>Duty Rating</b>             | Continuous @ 100% voltage                                                                                                  |
| <b>Wire Class</b>              | Class H for all voltages 17 Watt<br>Class N for all voltages 30 Watt                                                       |
| <b>A.C. Rectifier</b>          | Integral full wave bridge                                                                                                  |
| <b>Lead Wire</b>               | 18 gauge 24" long, 600 volt rating                                                                                         |
| <b>Lead Wire Strain Relief</b> | 34 kg (75 lbs.) @ 21°C (70°F) &<br>18 kg (40 lbs.) @ 93°C (200°F)                                                          |
| <b>Encapsulating Material</b>  | Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F) |

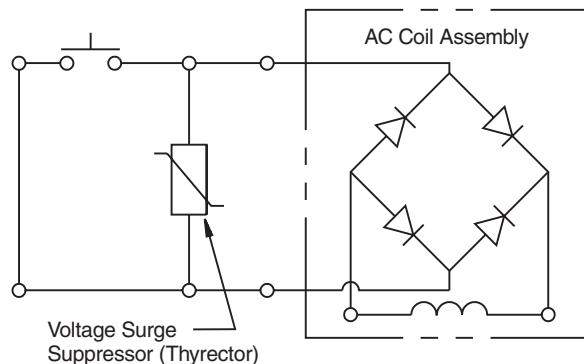


## Symbol



## AC Coil Assembly

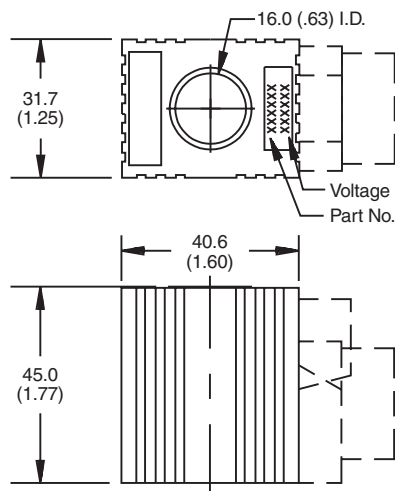
No inductive or capacitive loads can be installed between surge suppressor and rectified valves.

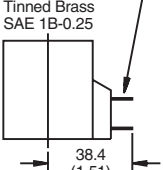
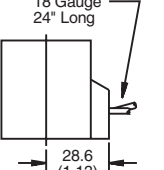
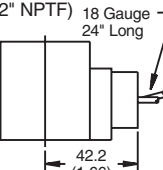
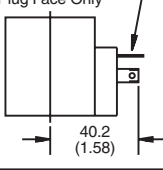
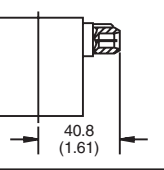


### NOTE:

Parker A.C. Coils incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum. For voltage transients greater than 1000 volts P.I.V., Harris Thyrector V150LA10A or V150LA20A for 115 VAC and V250LA15A or V250LA40A for 200 VAC is recommended.

## Terminal Styles and Dimensions



|                                                                                                                                                                              |                                                                                                                                                          |                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type P<br/>Dual Spade</b><br>Thru Hole<br>Tinned Brass<br>SAE 1B-0.25<br> 38.4<br>(1.51) | <b>Type W<br/>Dual Lead</b><br>18 Gauge<br>24" Long<br> 28.6<br>(1.13) | <b>Type C<br/>Double Lead With<br/>Conduit Connector</b><br>(1/2" NPTF) 18 Gauge<br>24" Long<br> 42.2<br>(1.66) |
| <b>Type D<br/>DIN</b><br>DIN 43650<br>Plug Face Only<br> 40.2<br>(1.58)                     | <b>Type J<br/>AMP Junior<br/>Timer Type C</b><br> 40.8<br>(1.61)       |                                                                                                                                                                                                    |

### NOTES:

- Coil to be installed with part number on nut side.
- For additional terminals, voltages and wattages, consult factory for details.

## Coil Part Numbers

| Voltage | Watts | Type P<br>Double<br>Spade | Type W<br>Double<br>Lead | Type C<br>Conduit<br>Connector | Type D<br>DIN<br>Plug Face | Amps* | Lead Wire<br>Color |
|---------|-------|---------------------------|--------------------------|--------------------------------|----------------------------|-------|--------------------|
| 6 VDC   | 17    | 851021-006                | 851023-006               | 851017-006                     | 851019-006                 | 2.43  | Black              |
|         | 30    | 851022-006                | 851024-006               | 851018-006                     | 851020-006                 | 4.84  |                    |
| 10 VDC  | 17    | 851021-010                | 851023-010               | 851017-010                     | 851019-010                 | 1.58  | Yellow             |
|         | 30    | 851022-010                | 851024-010               | 851018-010                     | 851020-010                 | 3.28  |                    |
| 12 VDC  | 17    | 851021-012                | 851023-012               | 851017-012                     | 851019-012                 | 1.44  | Red                |
|         | 30    | 851022-012                | 851024-012               | 851018-012                     | 851020-012                 | 2.30  |                    |
| 18 VDC  | 17    | 851021-018                | 851023-018               | 851017-018                     | 851019-018                 | 0.94  | Gray               |
|         | 30    | 851022-018                | 851024-018               | 851018-018                     | 851020-018                 | 1.86  |                    |
| 24 VDC  | 17    | 851021-024                | 851023-024               | 851017-024                     | 851019-024                 | 0.72  | Blue               |
|         | 30    | 851022-024                | 851024-024               | 851018-024                     | 851020-024                 | 1.20  |                    |
| 36 VDC  | 17    | 851021-036                | 851023-036               | 851017-036                     | 851019-036                 | 0.43  | Orange             |
|         | 30    | 851022-036                | 851024-036               | 851018-036                     | 851020-036                 | 0.88  |                    |
| 48 VDC  | 17    | 851021-048                | 851023-048               | 851017-048                     | 851019-048                 | 0.30  | Green              |
|         | 30    | 851022-048                | 851024-048               | 851018-048                     | 851020-048                 | 0.58  |                    |
| 120 VAC | 17    |                           |                          | 851017-120                     | 851019-120                 | 0.15  | Brown              |
|         | 30    |                           |                          | 851018-120                     | 851020-120                 | 0.24  |                    |
| 230 VAC | 17    |                           |                          | 851017-240                     | 851019-240                 | 0.08  | White              |
|         | 30    |                           |                          | 851018-240                     | 851020-240                 | 0.13  |                    |
| 440 VAC | 17    |                           |                          | 851017-480                     | 851019-480                 | 0.04  | Violet             |
|         | 30    |                           |                          | 851018-480                     | 851020-480                 | 0.07  |                    |

\*Amperage draw @ 21°C (70°F)

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

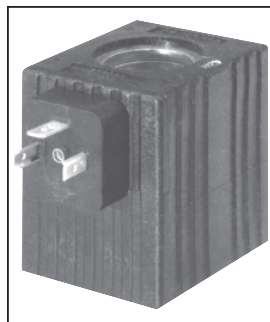
Technical  
Data

## Features

- Compact one piece encapsulated design
- Numerous terminals and voltages
- Heavy gauge color coded lead wire with built-in strain relief
- 200°C Class N wire standard
- U.L. recognized on most DC coils (consult factory)

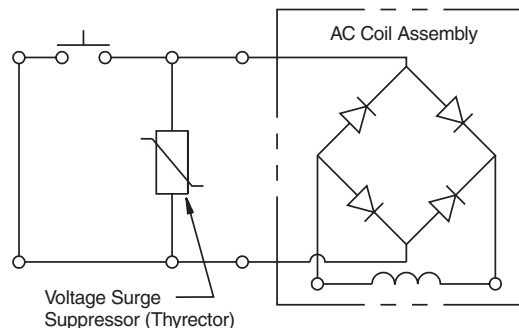
## Specifications

|                                |                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Wattage</b>                 | 42 Watts — Standard<br>30 Watts — Low Watt                                                                                 |
| <b>Duty Rating</b>             | Continuous @ 100% voltage                                                                                                  |
| <b>Wire Class</b>              | Class N for all voltages                                                                                                   |
| <b>Lead Wire</b>               | 18 gauge 24" long, 600 volt rating                                                                                         |
| <b>Lead Wire Strain Relief</b> | 34 kg (75 lbs.) @ 21°C (70°F) &<br>18 kg (40 lbs.) @ 93°C (200°F)                                                          |
| <b>Encapsulating Material</b>  | Glass filled nylon, resistant to moisture, caustic solutions, fungus, and temperatures from -40°C (-40°F) to 200°C (392°F) |
| <b>Color</b>                   | Black                                                                                                                      |

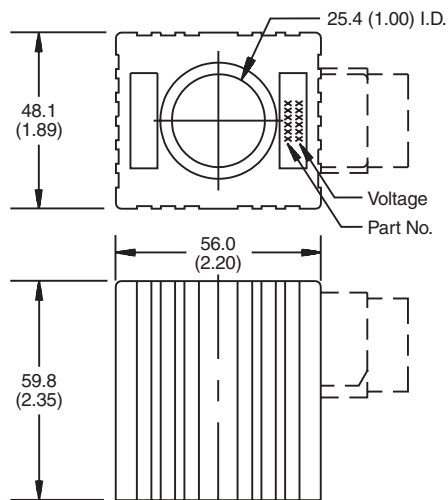


## AC Coil Assembly

No inductive or capacitive loads can be installed between surge suppressor and rectified valves.



## Terminal Styles and Dimensions



### NOTES:

1. Coil to be installed with part number on nut side.
2. For additional terminals, voltages and wattages, consult factory for details.

## Coil Part Numbers

| Wattage  | Voltage | Type P<br>Double Spade | Type W<br>Double Lead | Type D<br>ISO STANDARD | Amps | Lead Wire<br>Color |
|----------|---------|------------------------|-----------------------|------------------------|------|--------------------|
| 42 Watts | 12 VDC  | 851060-012*            | 851062-012*           | 851058-012*            | 3.53 | Red                |
| 42 Watts | 24 VDC  | 851060-024*            | 851062-024*           | 851058-024*            | 1.79 | Blue               |
| 30 Watts | 12 VDC  | 853496-012             | 853497-012            | 853495-012             | 2.50 | Red                |
| 30 Watts | 24 VDC  | 853496-024             | 853497-024            | 853495-024             | 1.25 | Blue               |

\*UL Listed

## Notes

**CV**

## Check Valves

SH

## Shuttle Valves

LM  
tor

## Load/Motor Controls

FC

## Flow Controls

PC

## Pressure Controls

**LE**

## Logic Elements

**DC**

### Directional Controls

**MV**

## Manual Valves

SV

## Solenoid Valves

**PV**

## Proportional Valves

CE

## Coils & Electronics

**BC**

## Bodies & Cavities

**TD**

## Technical Data

CV

Check  
Valves

SH

Shuttle  
ValvesLM  
Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
ElementsDC  
Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
ValvesPV  
Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## General Description

Proportional Valve Controllers. 12 and 24 Volts, PWM. For additional information see Technical Tips on pages CE1-CE2.

## Operation

The 902/932 and 904/934 are valve top mounted PWM controllers for proportional control valves. They can be used with an external potentiometer to give accurate current control using the units internal reference voltage. Alternatively these controllers can be used with a 0-10V command signal from a PLC or engine management system.

'I Max' adjustment is provided to allow the maximum output current to be set via a 12 turn potentiometer. Turn clockwise to increase the output current.

### Notes:

#### *XPRO902 and XPRO932*

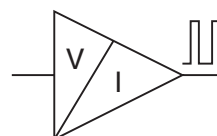
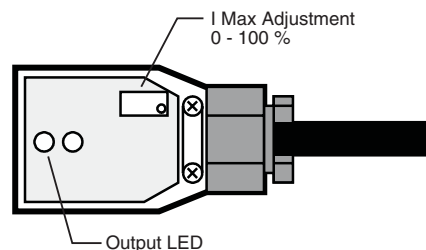
In order to avoid damaging a controller the +8V (yellow) lead must not be shorted to the +12V (red) lead or to the 0V (blue) lead.

#### *XPRO904 and XPRO934*

In order to avoid damaging a controller the +15V (yellow) lead must not be shorted to the +24V (red) lead or to the 0V (blue) lead.

## Specifications

|                          |                                                                                                                |
|--------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Nominal Voltage</b>   | <b>XPRO902</b> 12V DC<br><b>XPRO932</b> 12V DC<br><b>XPRO904</b> 24V DC<br><b>XPRO934</b> 24V DC               |
| <b>Maximum Power</b>     | <b>XPRO902</b> 19W<br><b>XPRO932</b> 30W<br><b>XPRO904</b> 19W<br><b>XPRO934</b> 30W                           |
| <b>(IP) Rating</b>       | IP 65                                                                                                          |
| <b>Maximum Current</b>   | <b>XPRO902</b> 1.6A<br><b>XPRO932</b> 2.6A<br><b>XPRO904</b> 1.0A<br><b>XPRO934</b> 1.4A                       |
| <b>Command Voltage</b>   | 0 - 10V                                                                                                        |
| <b>Input Resistance</b>  | 10K ohms                                                                                                       |
| <b>Reference Voltage</b> | <b>XPRO902</b> +8V (2mA)<br><b>XPRO932</b> +8V (2mA)<br><b>XPRO904</b> +15V (2mA)<br><b>XPRO934</b> +15V (2mA) |
| <b>Cable Length</b>      | 1 meter                                                                                                        |
| <b>Frequency</b>         | 110 Hz $\pm 5\%$                                                                                               |

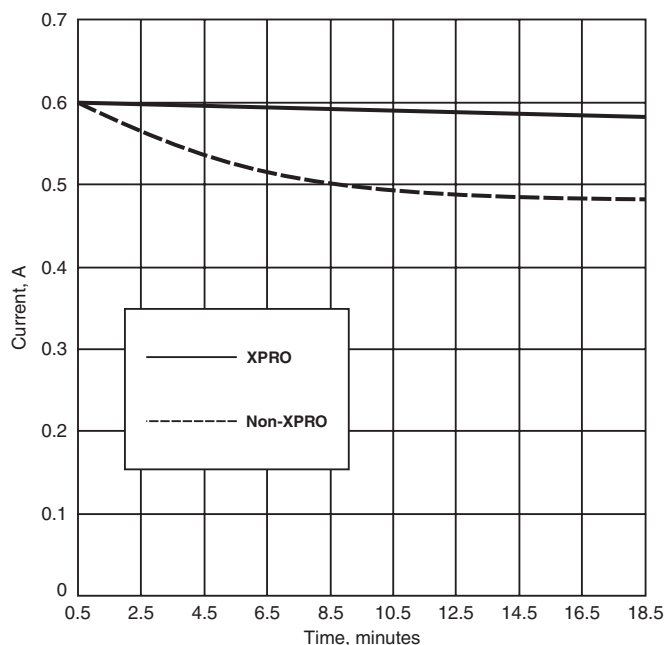


## Features

- Self contained DIN 'Plug Top'
- High impact resistant molded ABS
- Complies with current CE regulations

## Output Regulation

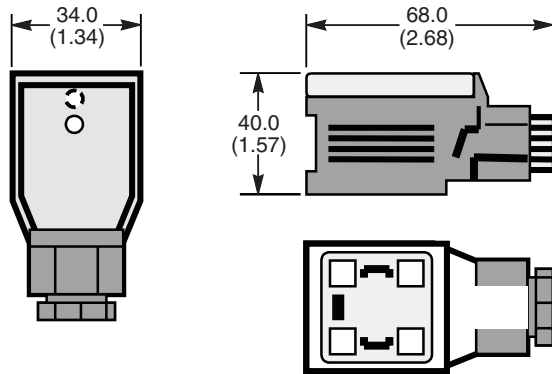
(Curve shows coil temperature compensation)



## Application

For use with most proportional valves. GP, HP, JP, GTP and AP series valves.

## Dimensions Millimeters (Inches)

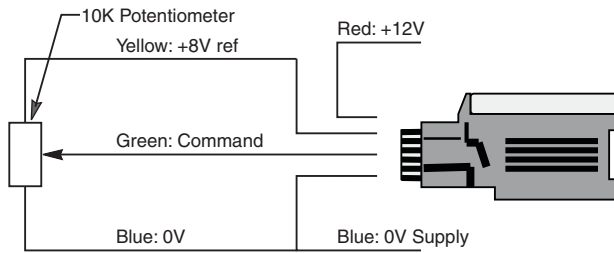


## Ordering Information

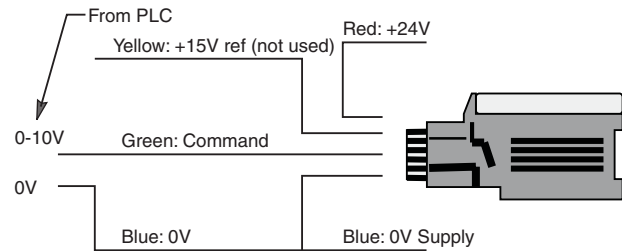
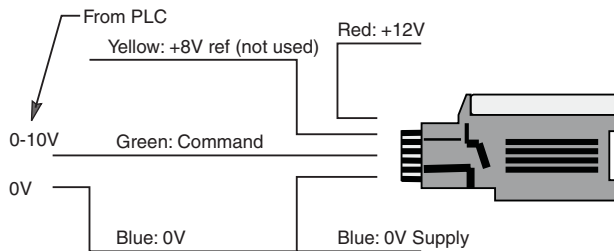
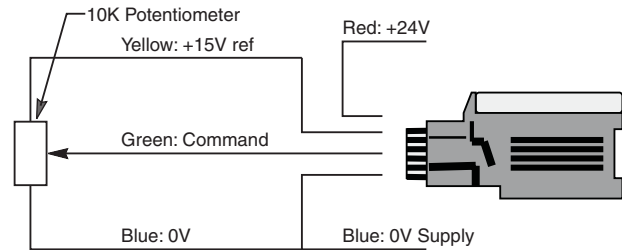
| XPRO       |                 |
|------------|-----------------|
| Controller | Maximum Current |
| Code       | Maximum Current |
| 902        | 1.6A            |
| 932        | 2.6A            |
| 904        | 1.0A            |
| 934        | 1.4A            |

## Connection Details

XPRO902 and XPRO932



XPRO904 and XPRO934



## Controller / Coil Combination

| Coil    | Controller |          |
|---------|------------|----------|
|         | XPRO 902   | XPRO 932 |
| CCS012D | X          |          |
| CCP012D | X          |          |
| CAS012D | X          |          |
| CAP012D |            | X        |

| Coil    | Controller |          |
|---------|------------|----------|
|         | XPRO 904   | XPRO 934 |
| CCS024D | X          |          |
| CCP024D | X          |          |
| CAS024D | X          |          |
| CAP024D |            | X        |

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## General Description

Proportional Valve Controllers. 12 and 24 Volts, PWM with Adjustable Dither. For additional information see Technical Tips on pages CE1-CE2.

## Operation

The 902d/932d and 904d/934d are valve top mounted PWM controllers for proportional control valves. They can be used with an external potentiometer to give accurate current control using the units internal reference voltage. Alternatively these controllers can be used with a 0-10V command signal from a PLC or engine management system.

'I Max' adjustment is provided to allow the maximum output current to be set via a 12 turn potentiometer. Turn clockwise to increase the output current.

Dither adjustment POT is used to alter the PWM frequency of the controller from 95 HZ to 230 Hz. By changing the frequency this pot controls the amount of dither imposed on the valve. Lower frequency = more dither, higher frequency = less dither. Turn clockwise to increase frequency.

### Notes:

#### *XPRO902d and XPRO932d*

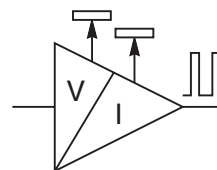
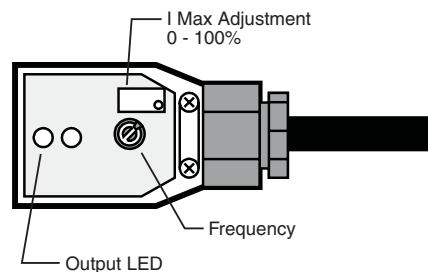
In order to avoid damaging a controller the +8V (yellow) lead must not be shorted to the +12V (red) lead or to the 0V (blue) lead.

#### *XPRO904d and XPRO934d*

In order to avoid damaging a controller the +15V (yellow) lead must not be shorted to the +24V (red) lead or to the 0V (blue) lead.

## Specifications

|                   |                |            |
|-------------------|----------------|------------|
| Nominal Voltage   | XPRO902d       | 12V DC     |
|                   | XPRO932d       | 12V DC     |
|                   | XPRO904d       | 24V DC     |
|                   | XPRO934d       | 24V DC     |
| Maximum Power     | XPRO902d       | 19W        |
|                   | XPRO932d       | 30W        |
|                   | XPRO904d       | 19W        |
|                   | XPRO934d       | 30W        |
| (IP) Rating       | IP 65          |            |
| Maximum Current   | XPRO902d       | 1.6A       |
|                   | XPRO932d       | 2.6A       |
|                   | XPRO904d       | 1.0A       |
|                   | XPRO934d       | 1.4A       |
| Command Voltage   | 0 - 10V        |            |
| Input Resistance  | 10K ohms       |            |
| Reference Voltage | XPRO902d       | +8V (2mA)  |
|                   | XPRO932d       | +8V (2mA)  |
|                   | XPRO904d       | +15V (2mA) |
|                   | XPRO934d       | +15V (2mA) |
| Cable Length      | 1 meter        |            |
| Frequency         | 95 Hz - 230 Hz |            |

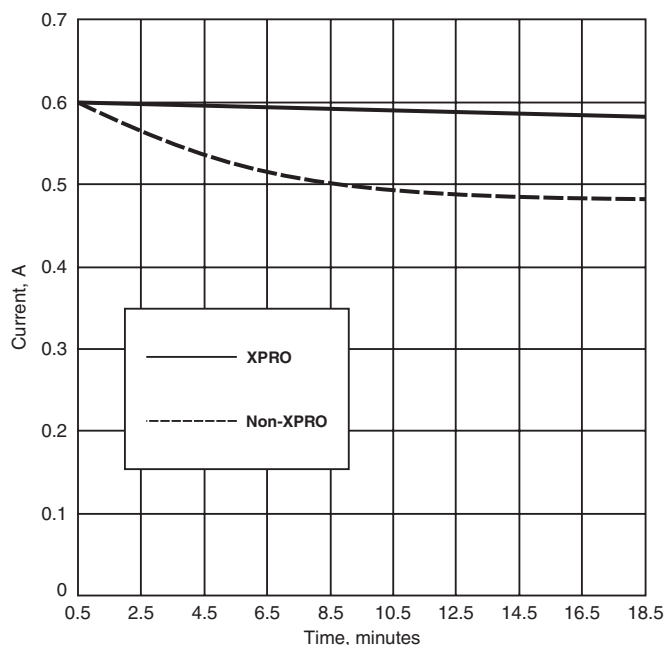


## Features

- Self contained DIN 'Plug Top'
- High impact resistant molded ABS
- Complies with current CE regulations

## Output Regulation

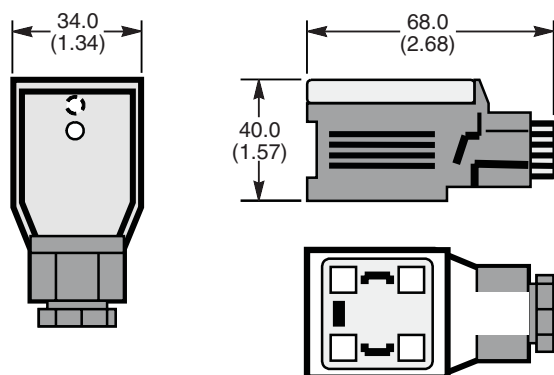
(Curve shows coil temperature compensation)



## Application

For use with most proportional valves. GP, HP, JP, GTP and AP series valves.

## Dimensions Millimeters (Inches)



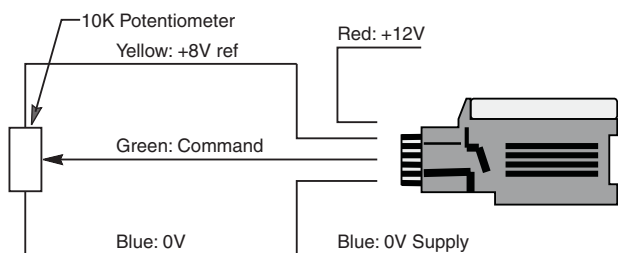
## Ordering Information

|             |                        |
|-------------|------------------------|
| <b>XPRO</b> |                        |
| Controller  | Maximum Current        |
| <b>Code</b> | <b>Maximum Current</b> |
| 902d        | 1.6A                   |
| 932d        | 2.6A                   |
| 904d        | 1.0A                   |
| 934d        | 1.4A                   |

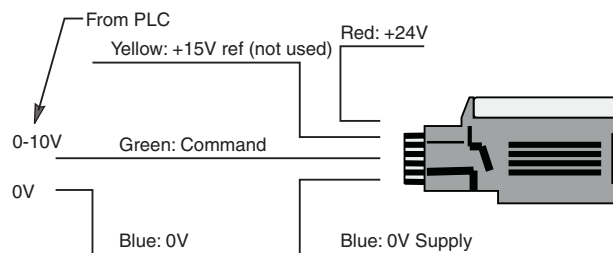
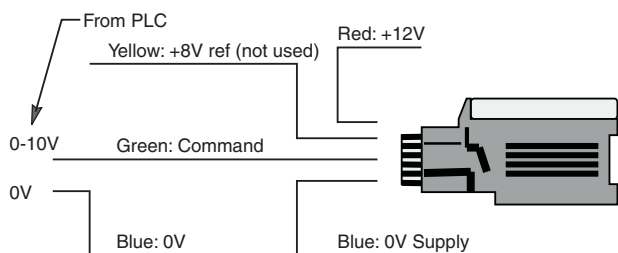
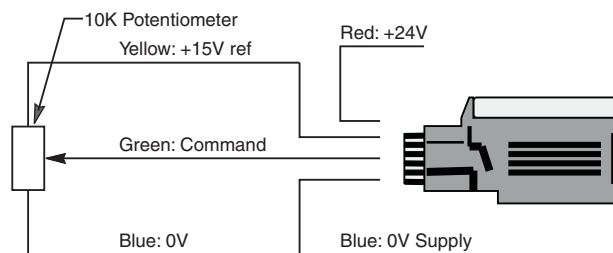
Setting for standard:  
Dither frequency: 110 HZ

## Connection Details

XPRO902d and XPRO932d



XPRO904d and XPRO934d



## Controller / Coil Combination

| Coil    | Controller |           |
|---------|------------|-----------|
|         | XPRO 902d  | XPRO 932d |
| CCS012D | X          |           |
| CCP012D | X          |           |
| CAS012D | X          |           |
| CAP012D |            | X         |

| Coil    | Controller |           |
|---------|------------|-----------|
|         | XPRO 904d  | XPRO 934d |
| CCS024D | X          |           |
| CCP024D | X          |           |
| CAS024D | X          |           |
| CAP024D |            | X         |

CV

Check  
Valves

SH

Shuttle  
Valves

LM  
Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## General Description

Proportional Valve Controllers. 12 and 24 Volts, PWM with Multiple Adjustments. For additional information see Technical Tips on pages CE1-CE2.

## Operation

The 902rid/932rid and 904rid/934rid are valve top mounted PWM controllers for proportional control valves. They can be used with an external potentiometer to give accurate current control using the units internal reference voltage. Alternatively these controllers can be used with a 0-10V command signal from a PLC or engine management system.

'I' Max adjustment is provided to allow the maximum output current to be set via a 12 turn potentiometer. Turn clockwise to increase the output current.

Ramp Up and Ramp Down adjustments provide independent, linear control of the time it takes, to reach 'I' Max and to switch off, up to 8 seconds of delay. Turn clockwise for slower ramps.

'I' Min adjustment Pot sets the minimum current the controller will jump to when a command signal is present, used to eliminate dead band in a slow ramp. Turn clockwise for a higher 'I' Min setting.

Dither adjustment Pot is used to alter the PWM frequency of the controller from 95 HZ to 230 Hz. By changing the frequency this pot controls the amount of dither imposed on the valve. Lower frequency = more dither, higher frequency = less dither. Turn clockwise to increase frequency.

### Notes:

#### XPRO902rid and XPRO932rid

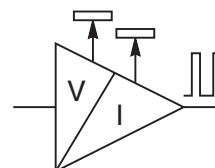
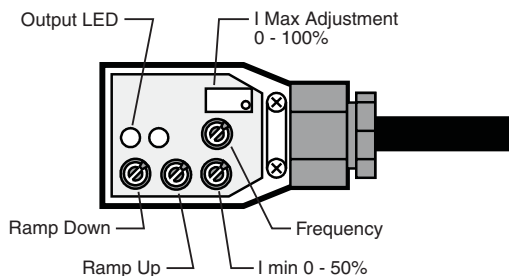
In order to avoid damaging a controller the +8V (yellow) lead must not be shorted to the +12V (red) lead or to the 0V (blue) lead.

#### XPRO904rid and XPRO934rid

In order to avoid damaging a controller the +15V (yellow) lead must not be shorted to the +24V (red) lead or to the 0V (blue) lead.

## Specifications

|                   |                                                                 |      |
|-------------------|-----------------------------------------------------------------|------|
| Nominal Voltage   | XPRO902rid & 932rid 12V DC<br>XPRO904rid & 934rid 24V DC        |      |
| Maximum Power     | XPRO902rid & 904rid 19W<br>XPRO932rid & 934rid 30W              |      |
| (IP) Rating       | IP 65                                                           |      |
| Maximum Current   | XPRO902rid                                                      | 1.6A |
|                   | XPRO932rid                                                      | 2.6A |
|                   | XPRO904rid                                                      | 1.0A |
|                   | XPRO934rid                                                      | 1.4A |
| Command Voltage   | 0 - 10V                                                         |      |
| Input Resistance  | 10K ohms                                                        |      |
| Reference Voltage | XPRO902rid & 932rid +8V (2mA)<br>XPRO904rid & 934rid +15V (2mA) |      |
| Cable Length      | 1 meter                                                         |      |
| Ramp Up/Down      | 200ms - 8s                                                      |      |

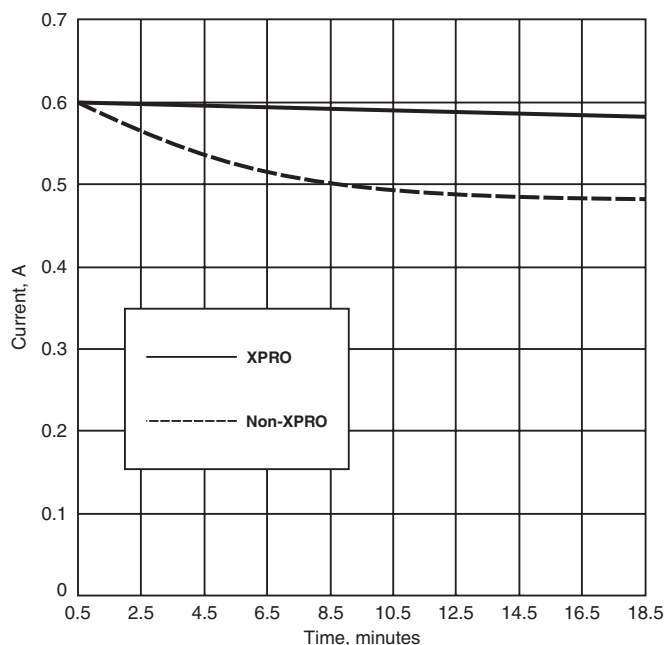


## Features

- Self contained DIN 'Plug Top'
- High impact resistant molded ABS
- Complies with current CE regulations

## Output Regulation

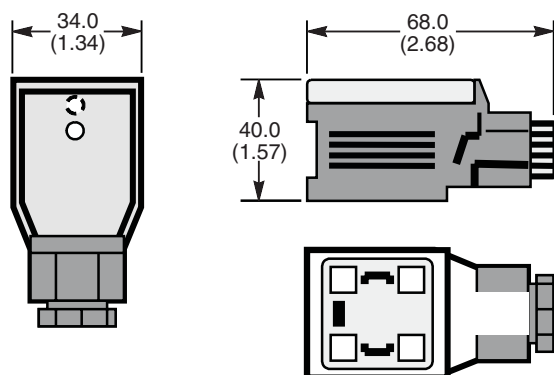
(Curve shows coil temperature compensation)



## Application

For use with most proportional valves. GP, HP, JP, GTP and AP series valves.

## Dimensions Millimeters (Inches)



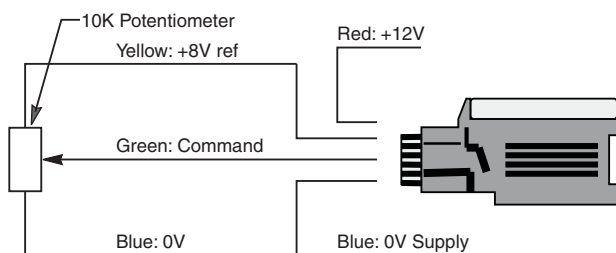
## Ordering Information

| XPRO        |                        |
|-------------|------------------------|
| Controller  | Maximum Current        |
| <b>Code</b> | <b>Maximum Current</b> |
| 902rid      | 1.6A                   |
| 932rid      | 2.6A                   |
| 904rid      | 1.0A                   |
| 934rid      | 1.4A                   |

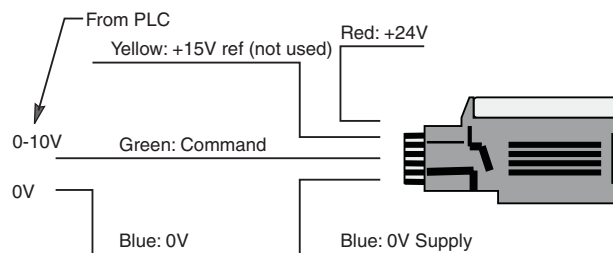
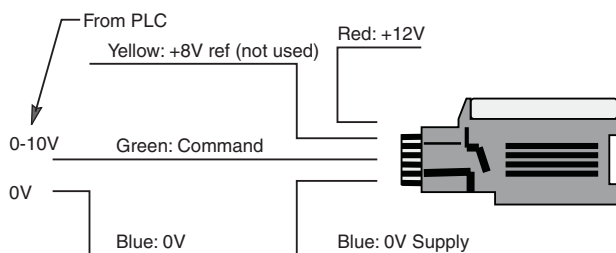
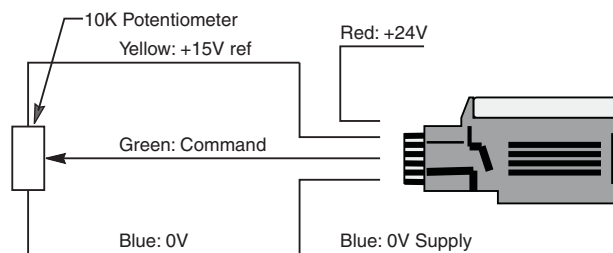
Setting for standard:  
Dither frequency: 110 HZ

## Connection Details

XPRO902rid and XPRO932rid



XPRO904rid and XPRO934rid



## Controller / Coil Combination

| Coil    | Controller  |             |
|---------|-------------|-------------|
|         | XPRO 902rid | XPRO 932rid |
| CCS012D | X           |             |
| CCP012D | X           |             |
| CAS012D | X           |             |
| CAP012D |             | X           |

| Coil    | Controller  |             |
|---------|-------------|-------------|
|         | XPRO 904rid | XPRO 934rid |
| CCS024D | X           |             |
| CCP024D | X           |             |
| CAS024D | X           |             |
| CAP024D |             | X           |

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

Logic  
Elements

DC

Directional  
Controls

MV

Manual  
Valves

SV

Solenoid  
Valves

PV

Proportional  
Valves

CE

Coils &  
Electronics

BC

Bodies &  
Cavities

TD

Technical  
Data

## General Description

Soft Start Valve Controller. 12 and 24 Volt PWM. For additional information see Technical Tips on pages CE1-CE2.

## Features

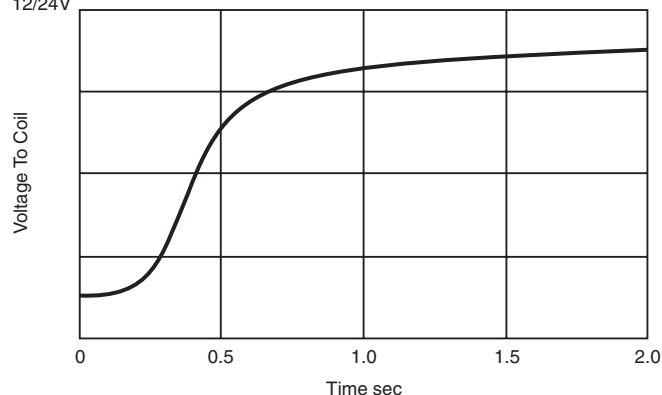
- Self contained DIN PWM 'Plug Top'
- High impact resistant moulded ABS
- Supplied with approximately 1 meter of two color coded cables
- Can be used with 12V DC and 24V DC coils
- Fixed 1-second ramp upon engagement

## Operation

The 704 is a soft start plug top PWM controller used for reducing the hydraulic pressure peaks produced when a hydraulic valve is operated. It can simply be used in place of a standard DIN connector.

## Output Voltage

12/24V

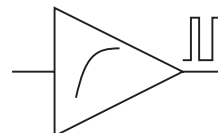
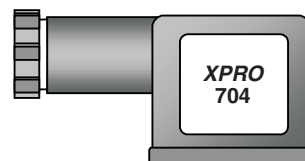


## Application

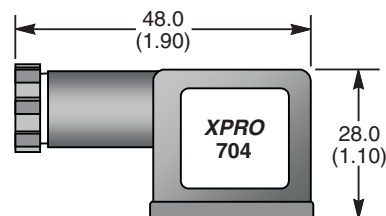
For use with most proportional valves. GP, HP, JP, GTP and AP series valves.

## Specifications

|                 |                   |
|-----------------|-------------------|
| Nominal Voltage | 12V DC and 24V DC |
| Maximum Power   | 36W               |
| (IP) Rating     | IP 65             |
| Maximum Current | 3.0A              |
| Coil Resistance | 4.5 - 30 ohms     |
| Ramp Up         | Fixed 1000ms      |



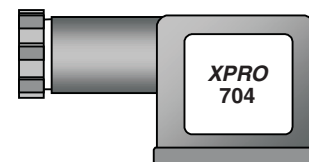
## Dimensions

 Millimeters (Inches)

## Connection Details

Brown + 12V / 24V

Blue 0V Supply



## Controller / Coil Combination

XPRO 704 can be used with all 12V DC and 24V DC DIN coils.

## Ordering Information

XPRO

704

Controller

Plug Type

| Code | Plug Type  |
|------|------------|
| 704  | Soft Start |

## General Description

Soft Start/Stop Valve Controller. 12 and 24 Volts, PWM with Adjustable Ramps. For additional information see Technical Tips on pages CE1-CE2.

## Features

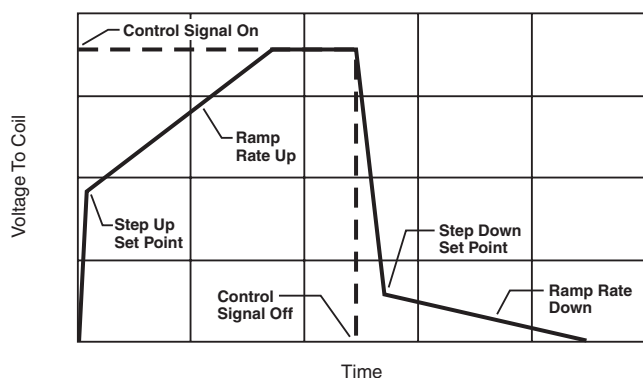
- Adjustable ramp to engage and disengage
- Self contained DIN 'Plug Top'
- High impact resistant moulded ABS

## Operation

The 704b is a valve top mounted 'soft start, soft stop' controller for use with a range of valves.

The controller can be set to jump to a preset 'step' voltage then ramp up to maximum at a preset rate. It can also be set to jump down to a preset 'step' voltage and ramp down to zero. This can be used to eliminate 'bangs' or hydraulic shocks associated with operating a hydraulic valve.

## Output Voltage

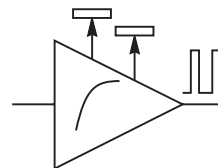
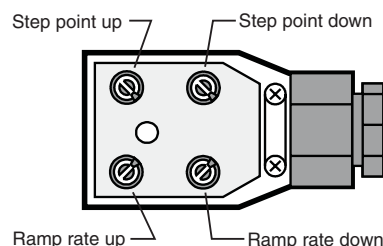


## Application

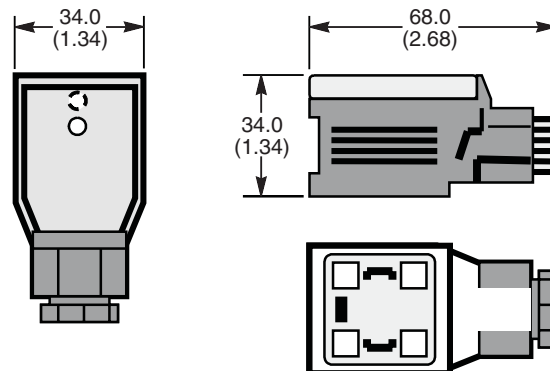
For use with most proportional valves. GP, HP, JP, GTP and AP series valves.

## Specifications

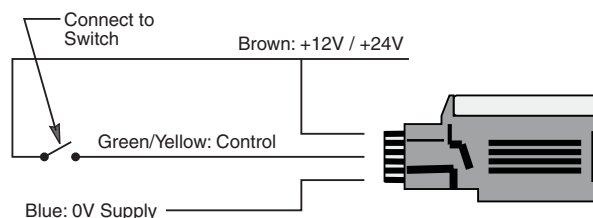
|                    |                   |
|--------------------|-------------------|
| Nominal Voltage    | 12V DC and 24V DC |
| Maximum Power      | 36W               |
| (IP) Rating        | IP 65             |
| Maximum Current    | 3.0A              |
| Coil Resistance    | 4.8 - 30 ohms     |
| Coil Voltage       | +V Supply         |
| Control Resistance | 820 ohms          |
| Cable Length       | 1 meter           |
| Step Up Adjust     | 10 - 80%          |
| Step Down Adjust   | 10 - 80%          |
| Ramp Up/Down       | 200ms - 4s        |



## Dimensions



## Connection Details



## Controller / Coil Combination

XPRO 704b can be used with all 12V DC and 24V DC DIN coils.

## Ordering Information

|             |                       |
|-------------|-----------------------|
| <b>XPRO</b> | <b>704b</b>           |
| Controller  | Plug Type             |
| Code        | Plug Type             |
| 704b        | Soft Start, Soft Stop |

CV

Check  
Valves

SH

Shuttle  
Valves

LM

Load/Motor  
Controls

FC

Flow  
Controls

PC

Pressure  
Controls

LE

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Elements

DC

Directional  
Controls

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Valves

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Valves

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TD

Technical  
Data

## General Description

Power Saver Controller. 12 and 24 Volt, PWM.  
For additional information see Technical Tips on  
pages CE1-CE2.

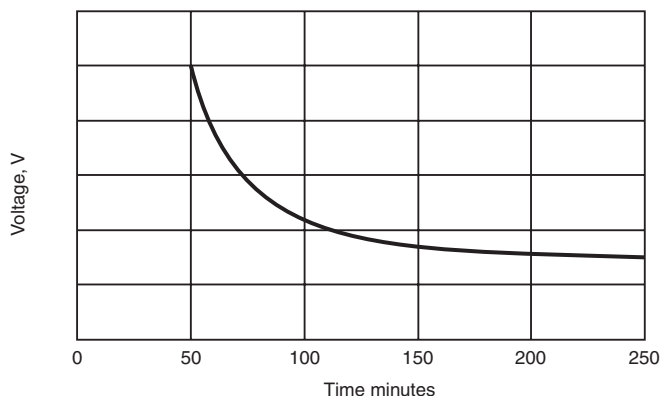
## Features

- Reduced power consumption and heat generation
- Self contained DIN 'Plug Top'
- High impact resistant moulded ABS
- Supplied with approximately 1 meter of two color coded cables

## Operation

The 804 is a power saver plug top PWM controller used for reducing the current consumption of a standard on/off valve. The plug will deliver full voltage to the valve for 50mS then drop down to a holding voltage of 30% of the applied voltage. This can be used where multiple valves are used and power consumption is a consideration. It can simply be used in place of a standard DIN connector.

## Voltage Applied To Coil

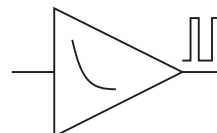
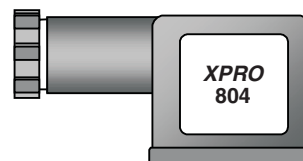


## Application

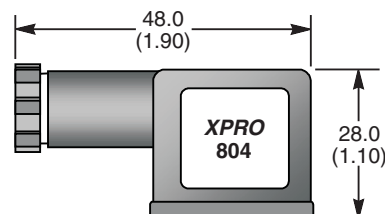
For use with most on/off valves. GO, GS series valves.

## Specifications

|                   |                   |
|-------------------|-------------------|
| Nominal Voltage   | 12V DC and 24V DC |
| Maximum Power     | 36W               |
| (IP) Rating       | IP 65             |
| Maximum Current   | 3.0A              |
| Coil Resistance   | 4.5 - 30 ohms     |
| Current Reduction | 30% of Max        |



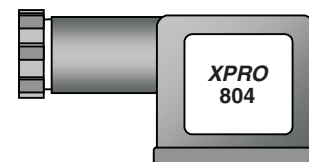
## Dimensions

 Millimeters (Inches)

## Connection Details

Brown + 12V / 24V

Blue 0V Supply



## Controller / Coil Combination

XPRO 804 can be used with all 12V DC and 24V DC coils.

## Ordering Information

XPRO

804

Controller

Plug Type

| Code | Plug Type        |
|------|------------------|
| 804  | Power Saver Plug |

## Notes

**CV**

## Check Valves

SH

## Shuttle Valves

LM

## Load/Motor Controls

FC

## Flow Controls

PC

### Pressure Controls

**LE**

## Logic Elements

**DC**

## Directional Controls

**MV**

## Manual Valves

SV

## Solenoid Valves

**PV**

### Proportion: Valves

**CE**

## Coils & Electronics

**BC**

## Bodies & Cavities

**TD**

## Technical Data