

# HIGH FORCE IN A SMALL PACKAGE WITH TROMBETTA'S P/Q610 SERIES SOLENOIDS

## P/Q610 Features

Trombetta offers three P/Q610 solenoid models to satisfy a wide range of diesel engine applications. These heavy-duty, dual coil units deliver high force in the smallest possible size... ideal for space confinement or difficult mounting situations.

- Ideal for "on-to-run/fuel shut-down" applications.
- State of the art construction for problem-free operation... "3-wire" design for reliability.
- Heavy duty performance in a compact package.
- Misadjustment will not cause burn-out.
- High pull-in force and continuous duty operation.
- No "mechanical" or "integral" switch problems.
- Easily replaces most competitive solenoids.
- Many options available; boot is standard.

## P/Q610 Applications

Trombetta's P/Q610 solenoids handle "pull" or "push" situations for engine speed control, diesel engine shutdown, or any industrial application where a compact, powerful solenoid is required

## P/Q610 General Specifications

RATED VOLTAGE	12 VOLT	24 VOLT
PULL CURRENT	48 AMPS	25 AMPS
HOLD CURRENT	1 AMP	.48 AMPS
PULL FORCE @ 1"	15 POUNDS (67 NEWTONS)	15 POUNDS (67 NEWTONS)
HOLD FORCE AT RATED VOLTAGE AND 25° C.	20 POUNDS (89 NEWTONS)	20 POUNDS (89 NEWTONS)
SHIPPING WEIGHT	1.3 POUNDS	1.3 POUNDS

## P/Q610 "3-Wire" Solenoid System Operation

The Trombetta P/Q610 Solenoid Series is a state-of-the-art design for demanding engine applications. Dual coil construction delivers high pull-in force and continuous duty hold operation in a small package. The "3 Wire" solenoid system is highly reliable and puts an end to "mechanical switch" problems. Two systems are available for your specific application. Proper installation of either system will eliminate the possibility of solenoid burn out. Fouled or mis adjusted linkage will result in the solenoid only dropping out, not burning out.

- **System #1** – Typically used for "on-to-run" engine shut down applications.

**Operation:** The solenoid is wired directly into the existing engine starter system eliminating the need for "internal" solenoid switches. At the engine starting phase, both coils are energized for the highest possible

pull-in force. After the engine is started, the pull-in coil is de-energized, while the hold coil remains energized providing continuous duty operation.

- **System #2** - Typically used for "RPM/Speed Control" applications.

**Operation:** On applications other than "on-to-run/fuel shut down" applications, a Trombetta S500 Series Electronic Control module is required to allow the solenoid to operate in a continuous duty mode. (See back-page for complete S500 module information.) This remotely mounted electronic switching module will, when energized, power both the pull-in and hold-in coils long enough for the plunger to pull-in and hold. As the module "times out" the pull-in coil is disconnected, putting the solenoid in the "hold in" mode.

## Trombetta P/Q610 SERIES Solenoids



Trombetta solenoid products have been designed and manufactured in the U.S.A. since 1932.

See Trombetta first for long-lasting tough-duty solenoids to fit the toughest – or easiest – applications.

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# Trombetta P/Q610 SERIES Solenoids

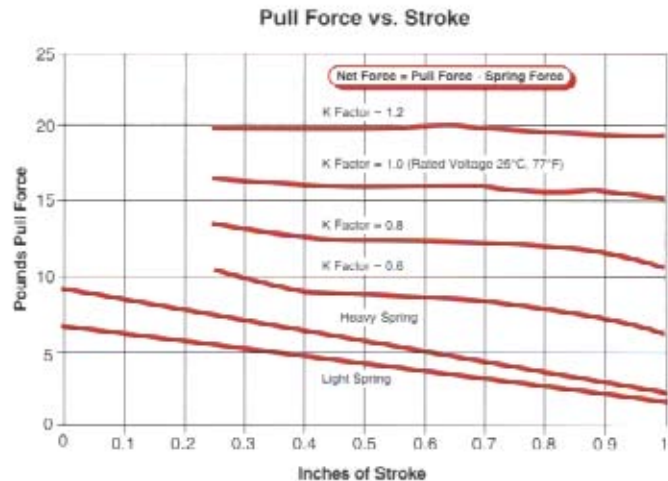
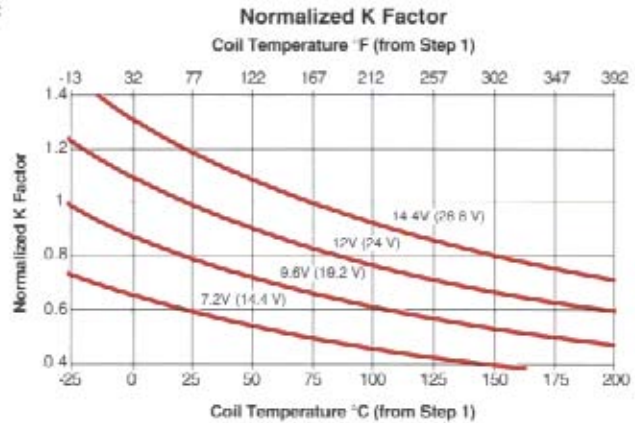
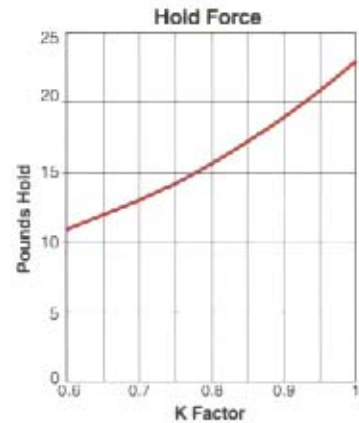
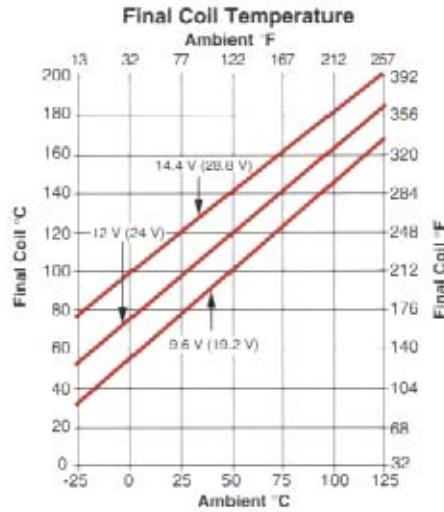


## Determining Solenoid Performance

When a solenoid is used in the continuous hold position, the coil temperature rises. The following steps will allow you to find the pull and hold force available at the elevated coil temperatures seen in this situation. K Factor is a derating constant used to find the pull and hold forces at elevated temperatures. The nominal K Factor is 1.0.

- **Step 1.** Use the **Final Coil Temperature** chart to find coil temperature using ambient temperature and applied voltage.
- **Step 2.** Use the **Normalized K Factor** chart to find normalized K Factor using the temperature found in Step 1 and the voltage applied to the coil. The Normalized K Factor can be read on the left of the chart.
- **Step 3.** Use the **Pull Force vs. Stroke** chart to find pounds of pull force available using the Normalized K Factor found in Step 2, and the stroke in inches.
- **Step 4.** Use the **Hold Force** chart to find hold force available using the Normalized K Factor found in Step 2.

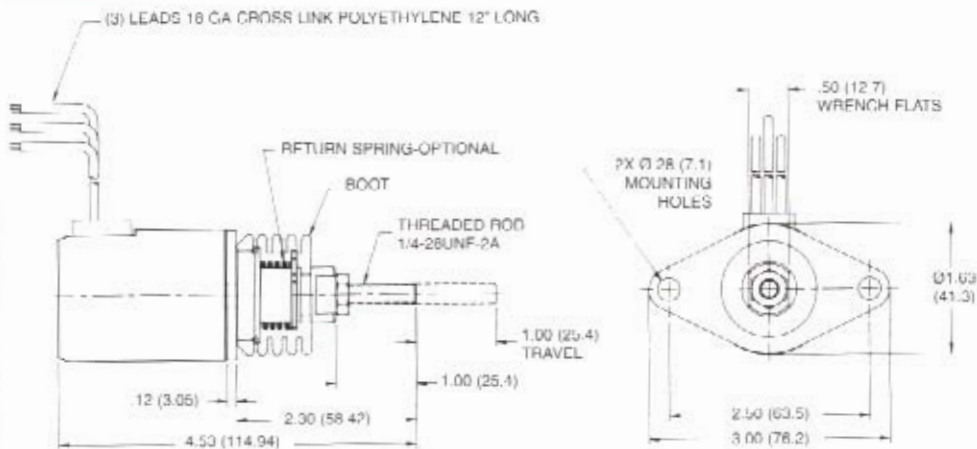
For an application other than described above, consult Trombetta Corporation.



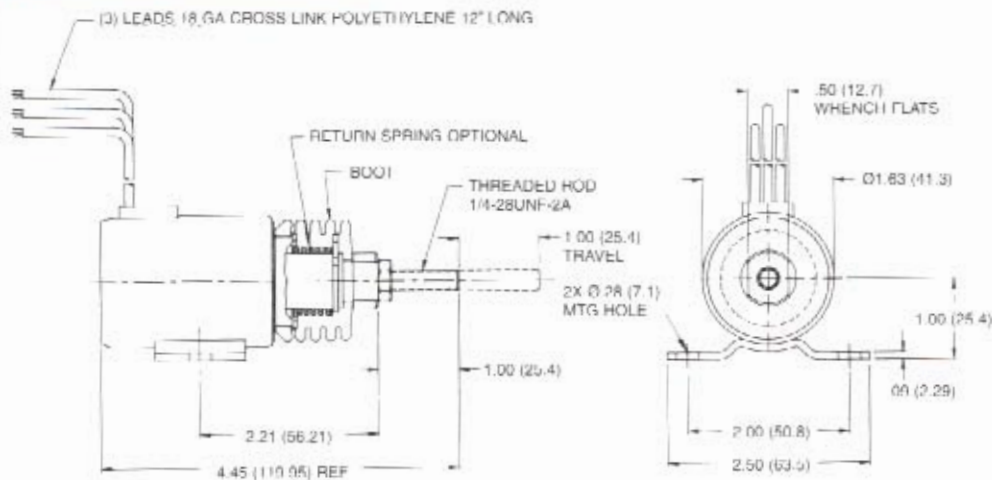


# P/Q610 Solenoid Series... (all dimensions in inches and millimeters)

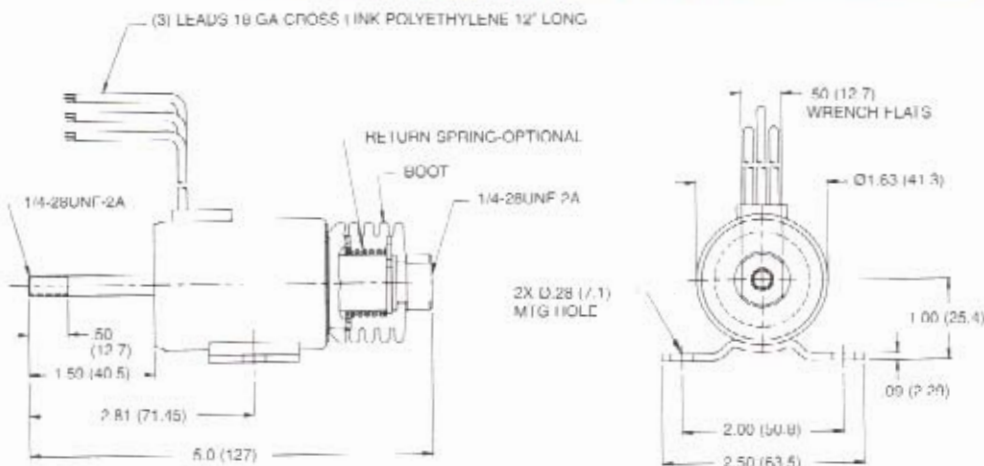
## FLANGE MOUNT ("P" Model - Pull Type)



## SIDE MOUNT ("P" Model - Pull Type)



## SIDE MOUNT ("Q" Model - Push Type)



# Trombetta P/Q610 SERIES Solenoids



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## Trombetta S500 Series Solenoid Control Modules ... for use in continuous duty mode.



Trombetta's S500 Series Solenoid Control Modules are rugged, field proven devices which function as remotely operable, high current timing/switching controls for operating 3-wire solenoids in 2 wire systems. When utilized with Trombetta's proven 3-wire solenoids, they provide a system that can upgrade applications that previously required internally switched solenoids and/or elaborate wiring methods requiring additional costly relays/contactors. Trombetta's S500 series modules allow you to achieve today's 3 wire reliability and simplicity in yesterday's 2-wire systems. Ideal for throttle controls... ideal for remote operation requirements because they require light gage (only 1 amp capacity!) wiring to the remote control location.

### Operation

Using the Trombetta S500 Series Electronic Control module allows all models of the P/Q600 Series solenoids to be operated as "continuous duty" devices, when applied to applications other than "on-to-run/fuel shut off". When 12 or 24 VDC is applied to the module, it will supply power to both the solenoid "pull-in" and "hold in" coils simultaneously, causing the solenoid to pull in and hold. After approximately .5 seconds, the module timer/relay automatically removes voltage from the high current "pull in" coil and leaves only the "hold in" coil energized. The solenoid will remain in the hold mode until power is removed from the S500 module. When input voltage is re-applied, the module cycles through the "pull-in" mode again. For detailed specifications, request bulletin X232.

### P/Q610 Series Part Numbers

MODEL	MOUNT		TYPE		RETURN SPRING/FORCE (LB)		MAX STROKE INCHES
	SIDE	FLANGE	PULL	PUSH	ENERGIZED	@MAX STROKE	
P610-A1V*	X		X		NONE	NONE	1.0
P610-B1V*	X		X		F09514/6.7	F09514/2.2	1.0
P610-C1V*	X		X		F09513/9.2	F09513/3.0	1.0
P610-A5V*		X	X		NONE	NONE	1.0
P610-B5V*		X	X		F09514/6.7	F09514/2.2	1.0
P610-C5V*		X	X		F09513/9.2	F09513/3.0	1.0
Q610-A1V*	X			X	NONE	NONE	1.0
Q610-B1V*	X			X	F09514/6.7	F09514/2.2	1.0
Q610-C1V*	X			X	F09513/9.2	F09513/3.0	1.0

- \* Insert "12" for 12 Volt, and "24" for 24 Volt
- Pull plunger thread - 1/4-28 rod, removable for internal threads.
- Other options available.

## Trombetta... Specializing In Innovative Solutions For Your Electromagnetic Needs

See Trombetta first for a wide variety of ultra-reliable push-or-pull solenoids, electronic control modules, throttle control kits and solenoid linkage accessories.

As a leading supplier to industry for over 60 years, Trombetta offers design and application expertise for standard or custom solenoid products for hundreds of applications. Here are just a few:

- Automotive Industry
- Diesel Engines
- Transportation
- Packaging Machinery
- Factory Automation
- Material Handling
- Food Processing
- Medical Equipment
- Automation Systems
- Security Systems
- Construction Equipment
- Agriculture Equipment
- Military Defense Equipment
- Electrical Switchgear
- Marine Equipment

## Trombetta P/Q610 SERIES Solenoids

### P/Q610 Series Options

- Custom return springs
- Electrical connectors
- Additional voltages
- Custom designs available

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