D500/600 Solenoid Families

D500 & 600 Solenoid Families-

The pull of high energy

with cool continuous control.

These solenoids provide high energy pull performance without any accessories required.

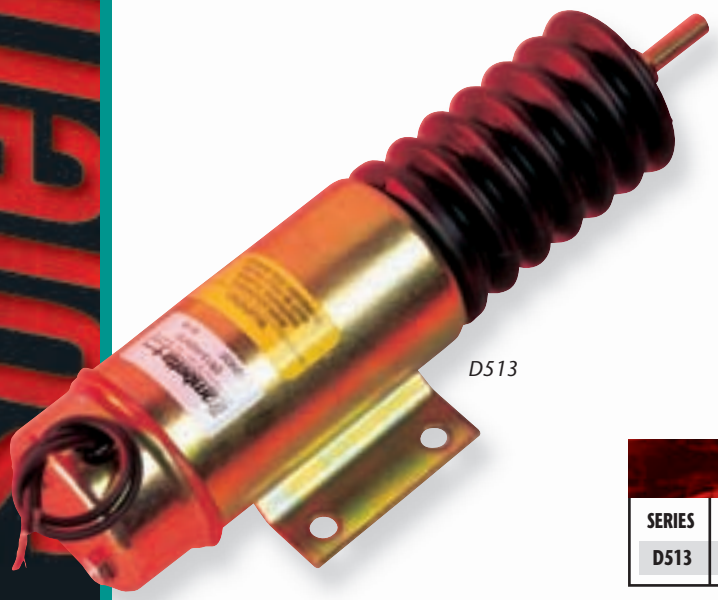
STROKES OF GENIUS

Trombetta®
MOTION TECHNOLOGIES
Strokes of Genius.

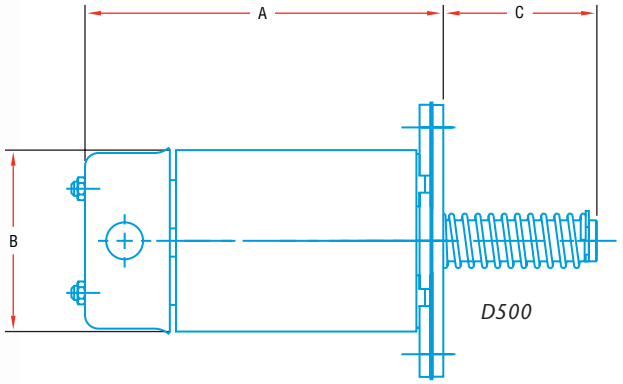
D500/600 Solenoids

D500/600 Solenoid Families

The D500 & 600 Families contain an integral cut-out switch for controlling the dual winding coils allowing for high energy pull performance with cool, continuous holding control. These products do not require any additional accessories. The D500 & 600 Families offer a proven and reliable electro-mechanical approach to complete a pull and hold function. These solenoids are used in industrial brakes, locking, positioning controls and large engine and vehicle controls. D500 & 600 Solenoids are available in a variety of base sizes. Trombetta can customize any products to meet specific customer requirements. D500 & 600 options include various voltages, insulation classes, mounting, rods, spring returns, surface finishes and various boot options.



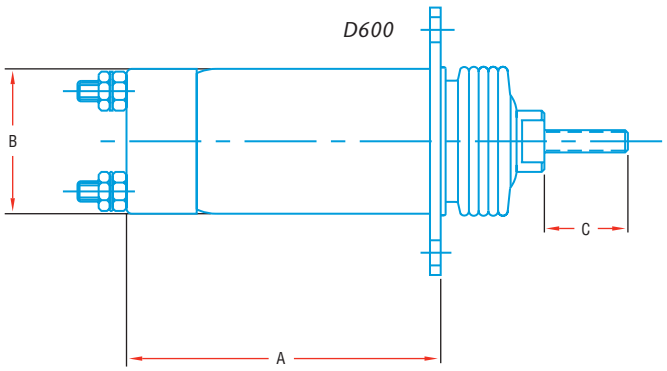
D513



D500 Solenoid Family					
SERIES	STROKE (inches)	MAX. FORCE (lbs)	A inches [mm]	B inches [mm]	C inches [mm]
D513	1 1/2	65	3.90 [99.1]	2.00 [50.8]	Length variable.

These are general dimensions and forces only. Trombetta can customize to meet your needs.

D610



D600 Solenoid Family					
SERIES	STROKE (inches)	MAX. FORCE (lbs)	A inches [mm]	B inches [mm]	C inches [mm]
D610	1	14	3.50 [88.9]	1.60 [40.6]	Length variable.

These are general dimensions and forces only. Trombetta can customize to meet your needs.

CONTROL PERFORMANCE WITH TROMBETTA.

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FOR MORE INFORMATION, VISIT OUR WEBSITE AT WWW.TROMBETTA.COM.

Trombetta® MOTION TECHNOLOGIES
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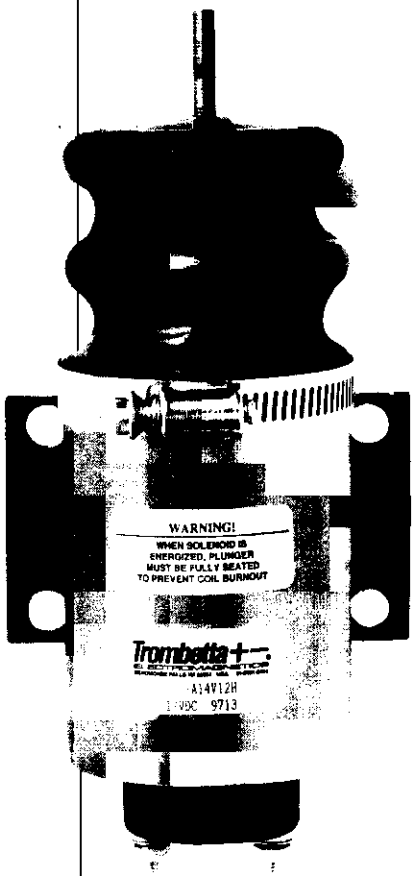
TROMBETTA'S HIGH FORCE D500 SOLENOIDS OFFER LONGER STROKES AND AN INTEGRAL SWITCH

Trombetta
D500 SERIES
Solenoids



D500 Features

Trombetta's D500 Series was designed for heavy duty diesel engines and industrial applications in harsh environments.

- Higher force and longer strokes than competitive solenoids.
- Dual coil construction for high pull force.
- Heavy duty, integral switch.
- Continuous duty operation
- Can be application engineered to your order.

D500 Applications

Trombetta's D500 Series handles all but the most unusual diesel enginge applications for fuel shut-off, throttle control, dampers, ether injection, and other critical control situations.

Determining solenoid performance:

Trombetta has extensively tested the D500 series solenoid for electromechanical & temperature performance. The data shown should be considered as **Typical**. Please use this information as a selection guide and consult Trombetta with details about your application.

Basic operation of a D500 solenoid:

This type of solenoid uses a coil having two sections; a high power, pulse duty, ***Pull*** winding, and a low power, continuous duty ***Hold*** winding. When the solenoid is energized, and the plunger is extended, a built-in switch on the end of the unit is closed, connecting both sections of the coil to the input terminals. During the time it takes for the plunger to pull in, the pulse duty power is drawn. Once the plunger seats, it opens up the internal switch, and then only continuous duty power is drawn. Caution should be taken when installing this type of solenoid... damage to the solenoid may occur if the plunger does not fully seat.

The force a solenoid can produce depends on several conditions:

1. ***Stroke.*** The force depends on the distance of the plunger from the fully energized position. The fully energized position equals 0" stroke, or plunger seated.
2. ***Voltage.*** As the voltage measured at the solenoid increases, so does the force. Keep in mind, when the pull section of the coil is being energized, a significant voltage drop can occur in the wiring to the solenoid.
3. ***Temperature.*** When the solenoid's coil temperature rises, the amount of force decreases. Two things determine the coil temperature: a) The net ambient temperature. In most cases, use the air temperature as the ambient. The net ambient is the combined effect of the air around the solenoid, and heat conducted via the solenoid's mounting plate. b) The average power input to the coil. In most cases, consider the hold section of the coil to be on continuously. The hold section power depends on the voltage applied. The pull-in heating can be ignored, unless frequently cycled.

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
D513 SERIES
Solenoids

Determining the solenoid's force for a given set of conditions:

Charts A & B apply to all of the D500 series solenoids. Each size D500 has its own Charts C & D.

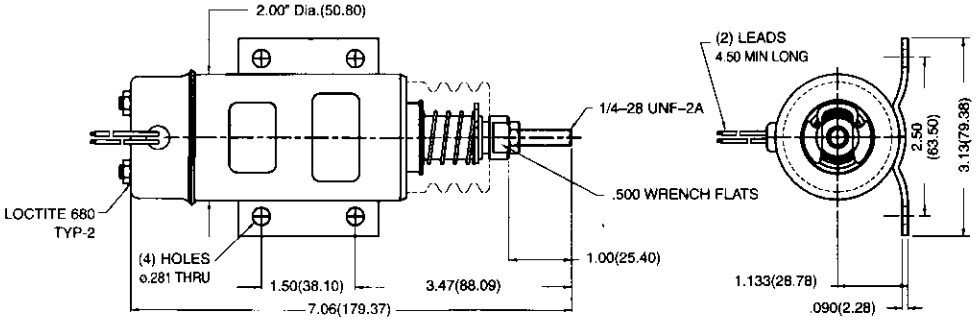
- Step 1. Find the final coil temperature using Chart A: Find the line representing your % of rated voltage applied to the hold section. Locate your ambient temperature on the x-axis. Read the final coil temperature on the y-axis. 120% of rated voltage might be typical, in the case of an engine application, where the electrical system is charging, and the solenoid is energized.
- Step 2. Determine the K factor using Chart B: The *K factor* is a value which represents the combined effect of voltage and coil temperature. The *K factor* = 1.0 when you have 100% rated voltage and a 25°C coil temperature. Locate the final coil temperature you found in Step 1 on the x-axis. Select the % of rated voltage curve you wish to use when finding the forces in Step 3 or 4. Read the *K factor* on the y-axis. Note: the % of rated voltage used here does not have to be the same as used in Step 1. For example, 120% might be used in figuring the heating in the hold condition, but only 80% may be available for pull-in, due to voltage drop in the wiring, etc.
- Step 3. Find the pull force using Chart C: Locate the stroke of the solenoid on the x-axis. Use the curve for the *K factor* found in Step 2. The pounds pull force can then be read on the y-axis.
- Step 4. Find the hold force using Chart D: Locate the *K factor* you found in Step 2 on the x-axis. Read the pounds hold force on the y-axis.

D513 Series Part Numbers

Catalog Number	Rated Voltage	Return Spring
D513-A33V12	12	NONE
D513-A33V24	24	NONE
D513-B33V12	12	LIGHT
D513-B33V24	24	LIGHT
D513-C33V12	12	MEDIUM
D513-C33V24	24	MEDIUM
D513-D33V12	12	HEAVY
D513-D33V24	24	HEAVY

- All units have 1/4-28 external pull rods.
- Additional models are available

D513 Solenoid Series... all dimensions in inches (and millimeters)



SOLENOID SHOWN ENERGIZED

Chart A - Finding the Final Coil Temperature

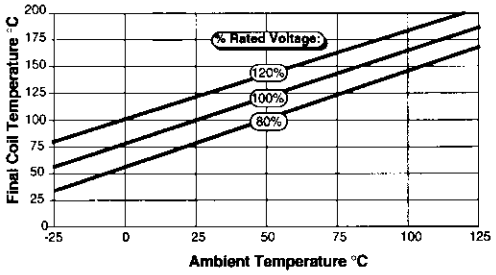
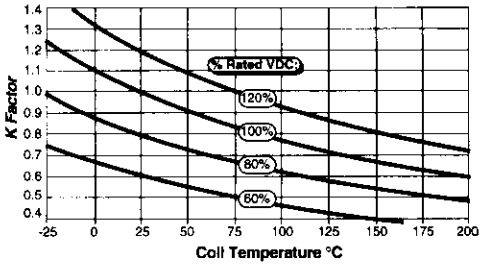
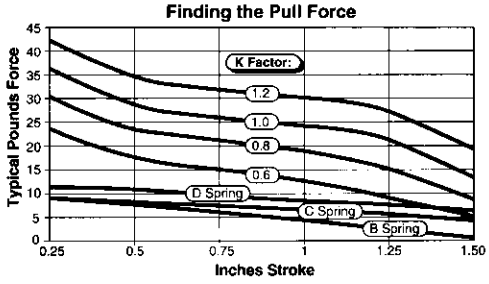


Chart B - Finding the *K Factor*

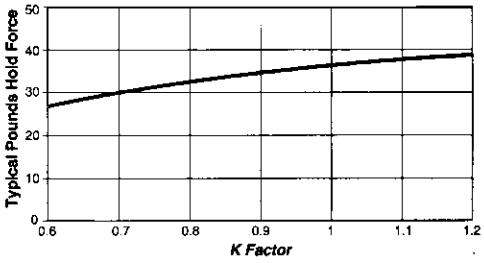


D513-A32 Solenoids - Chart C - Finding the Pull Force



MAX. STROKE 1.5"

D513-A32 Solenoids - Chart D - Finding the Hold Force



D513 General Specifications at 100% Rated Voltage & 25°C

	WATTS	AMPS (12V UNIT)	AMPS (24V UNIT)	POUNDS FORCE	NEWTONS FORCE
PULL-IN @ 1.5"	840	68	36	13.9	62
HOLD	11	0.9	0.4	37	164
SHIPPING WEIGHT: 2.6 POUNDS					