TROMBETTA
PRODUCT GUIDE 2014

TROMBETTA
DC Power Solutions for a Harsh World

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Trombetta is a leading worldwide manufacturer of DC power switching and power management products for mobile applications. Trombetta, founded in 1932 has manufacturing operations in Milwaukee WI, Malden MA, Tijuana MX and Wuxi, China. Trombetta's products include DC Contactors, Industrial Work Solenoids, Voltage Regulators and various Electronic Controls.

Focused on meeting their customers' design requirements, Trombetta strives to develop innovative solutions that reduce costs while increasing performance. Trombetta's rugged designs are focused on meeting the demands of mobile equipment including extreme operating temperatures, humidity, exposure to splash and spray of contaminants as well as shock and vibration.

Trombetta products have become the industry standard for Powersports, Lawn and Garden Equipment, Agriculture and Construction, Medium and Heavy Duty Trucks, RV, and Mobile Hydraulic applications. Trombetta's facilities are ISO 9001-2008 certified, demonstrating its commitment to continuous improvement of products, processes, and responsiveness to the needs of customers.

TROMBETTA

DC Power Solutions for a Harsh World

Images left to right, courtesy of: Greg Goebel, David Wright, burts, 888pablo888, Erik Gudmundson, Sa'ad Jafar.

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DC SOLENOIDS CONTACTORS

DC SOLENOIDS ACTUATORS

Designed for high current applications, the Trombetta 'Bear' range of solenoid contactors represent excellent value. The combination of high impact plastic and zinc steel housing provides a robust device, compact in size and easy to install. Available with either 12 or 24VDC coils and copper or long life silver alloy the 'Bear' is ideal for battery management, emergency starting, load switching and a myriad of demanding transport applications.

Specifications

Electrical

Contact Rating: 225 Amps nominal*
600 Amps peak inrush*
Contact State: Normally Open (N/O)
Contact Life: Copper – 25K cycles
Silver Alloy – 50K cycles
Coil Voltage: 12VDC or 24VDC*
Coil Duty Cycle: 100% @25°C*
Insulation: Ungrounded

Mechanical

Coil terminals: 10-32 Studs
Contact Terminals: 5/16-24 Studs

Environmental

Operating Temp: -40°C to +85°C
Sealing: Unsealed

Available Options

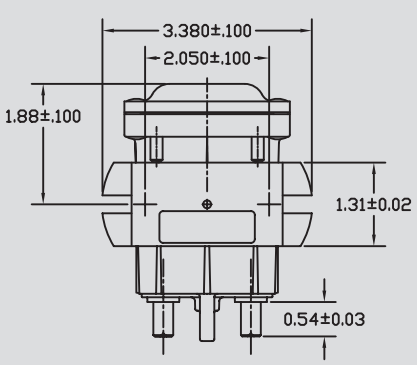
Curved mounting bracket; Intermittent rated coils; 36 and 48VDC coils.

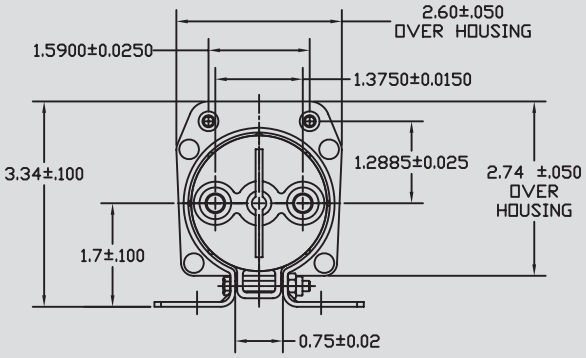
* detailed information available upon request

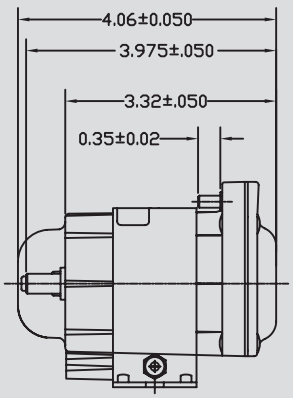
Models

Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
114-1211-010	12VDC	225 Amps	Continuous	Ungrounded	Copper	Flat On Side
114-2411-010	24VDC	225 Amps	Continuous	Ungrounded	Copper	Flat On Side
114-1211-020	12VDC	225 Amps	Continuous	Ungrounded	Silver Alloy	Flat On Side
114-2411-020	24VDC	225 Amps	Continuous	Ungrounded	Silver Alloy	Flat On Side

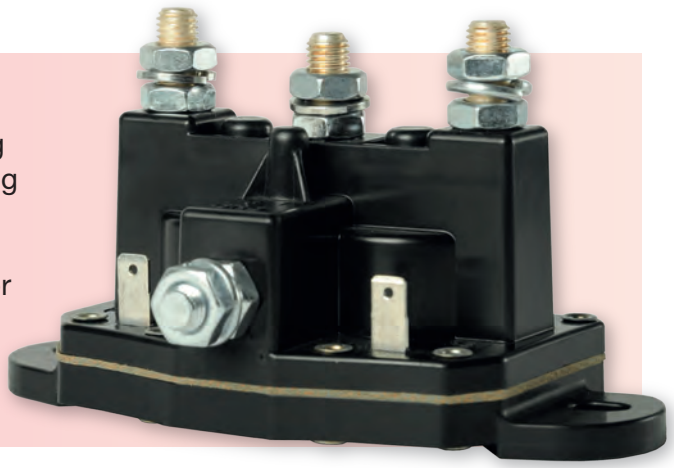
Dimensions







Trombetta's Reversing Polarity (RP) DC contactors provide a cost effective and simple solution for reversing direction of permanent magnet DC motors. By integrating two DC Contactors into a single unit, Trombetta has provided an efficient means for manufacturers and installers to reduce assembly costs. The RP is perfect for any application that requires reversing motion, such as winching, lifting, sliding and levelling systems in a multitude of transport applications.



Specifications

Electrical

Contact Rating: 75 Amps for 5 minutes*
150 Amps peak inrush (copper)*
500 Amps peak inrush (silver)*
Contact State: Normally Open (N/O)
Contact Life: Copper – 10K cycles
Silver Alloy – 5K cycles
Coil Voltage: 12VDC or 24VDC*
Coil Duty Cycle: 20% @25°C*
Insulation: Ungrounded

Mechanical

Coil terminals: ¼" (6.35mm) QC Terminals
Contact Terminals: 5/16-24 Studs

Environmental

Operating Temp: -40°C to +60°C
Sealing: Unsealed

Available Options

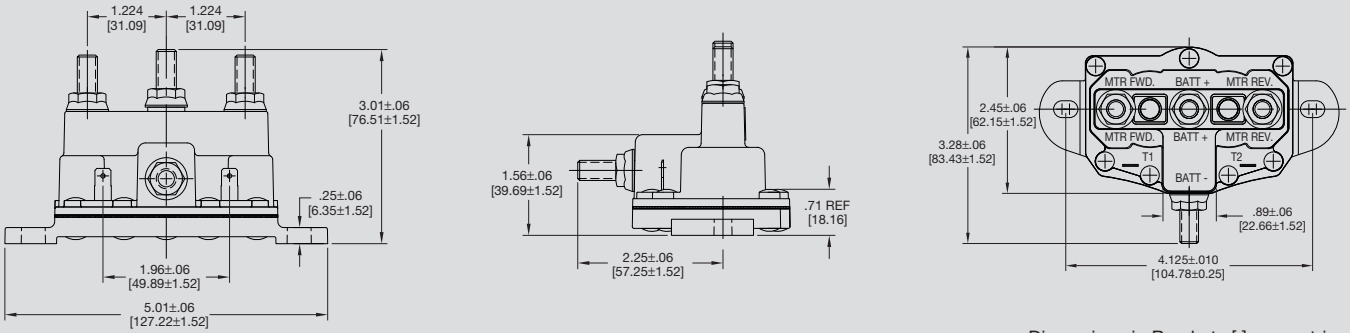
Hose clamp mounting bracket; Silver plated contact studs.

* detailed information available upon request

Models

Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
214-1231-A11	12VDC	75 Amps	Intermittent	Ungrounded	Copper	Moulded Base
214-1231-A61-06	12VDC	75 Amps	Intermittent	Ungrounded	Silver Alloy	Moulded Base
214-2431-A61-06	24VDC	75 Amps	Intermittent	Ungrounded	Silver Alloy	Moulded Base

Dimensions



Dimensions in Brackets [ ] are metric

Engineered to withstand high temperatures, excessive dust, liquid and vibration the Defender contactor is an ideal choice for arduous environmental conditions. It is designed to carry currents as low as 350 milliamps and as high as 100 amps. With coil Transient Volt Suppression (TVS), the Defender protects sensitive components in your system. Perfect for off road, mission critical, earth moving, mining and agricultural applications, the Defender is the ultimate performer.

Specifications

Electrical

Contact Rating: 200 Amps resistive @ 12VDC
100 Amps resistive @ 24VDC
100 Amps inductive
400 Amps peak inrush
Contact State: Normally Open (N/O)
Contact Life: 20K cycles
Coil Voltage: 12VDC or 24VDC
Coil Duty Cycle: 100% @25°C
Insulation: Ungrounded

Mechanical

Coil terminals: Deutsch-2Pin Connector DT06-25
Contact Terminals: 5/16-24 Studs

Environmental

Operating Temp: -40°C to +85°C
Sealing: Sealed (IP Rating Pending)

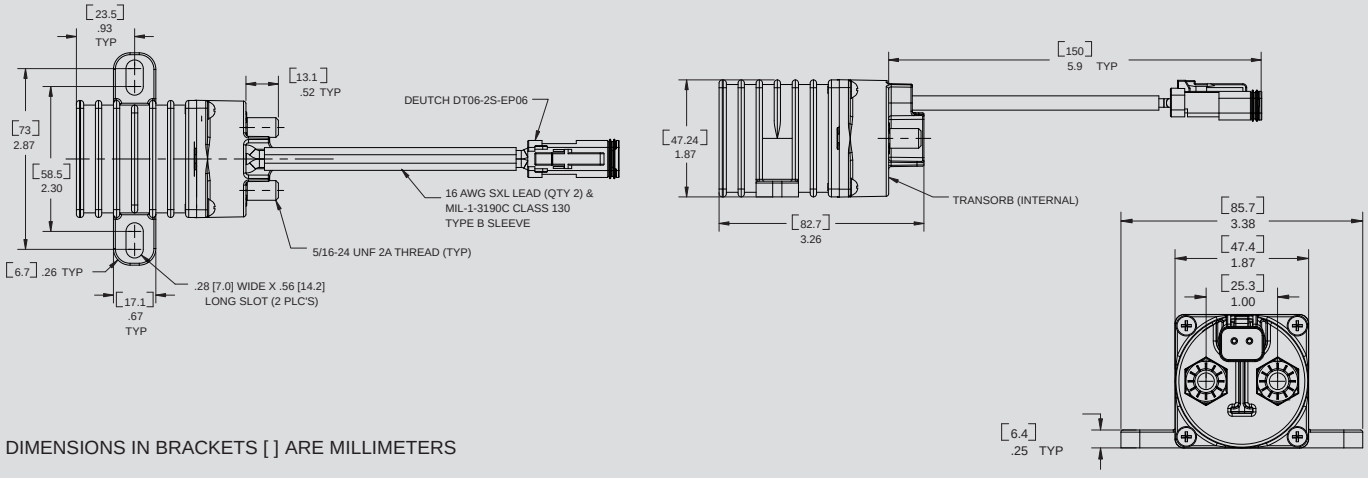
Available Options

Alternate lead connectors; Silver plated contact studs.

Models

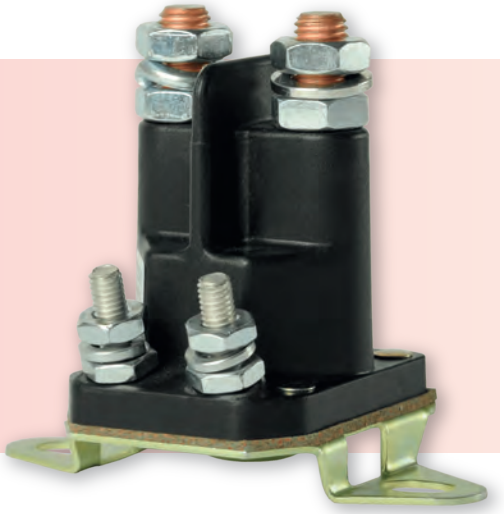
Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
404-1231-032	12VDC	200 Amps	Continuous	Ungrounded	Silver Alloy	Integrally cast
404-2431-032	24VDC	100 Amps	Continuous	Ungrounded	Silver Alloy	Integrally cast

Dimensions



DIMENSIONS IN BRACKETS [ ] ARE MILLIMETERS

The High Performance (HP) range of contactors from Trombetta feature durable, high temperature resistant plastic housings suitable for a variety of environmental conditions. Designed with efficiency, longevity and reliability in mind, the HP range is a cost effective solution for a myriad of applications including small engine starting applications, driving electric motors, battery management, etc. Ideal for golf carts, ride-on mowers, UTV's, stationary engines and gen-sets amongst others.



Specifications

Electrical

Contact Rating: 100 Amps nominal*
200 Amps intermittent*
300/400 Amps peak inrush*
Contact State: Normally Open (N/O)
Contact Life: Copper – 12K cycles
Silver Alloy – 50K cycles
Coil Voltage: 12VDC or 24VDC*
Coil Duty Cycle: Continuous – 100% @25°C*
Intermittent – 15% @ 25°C*
Insulation: Available in grounded or ungrounded variants.

Mechanical

Coil terminals: 10-32 Studs
Contact Terminals: 5/16-24 Studs

Environmental

Operating Temp: -40°C to +60°C
Sealing: Unsealed

Available Options

Alternate coil terminal styles; Alternate contact terminal sizes; Dust and/or liquid sealing; Various mounting brackets; Various coil voltages.

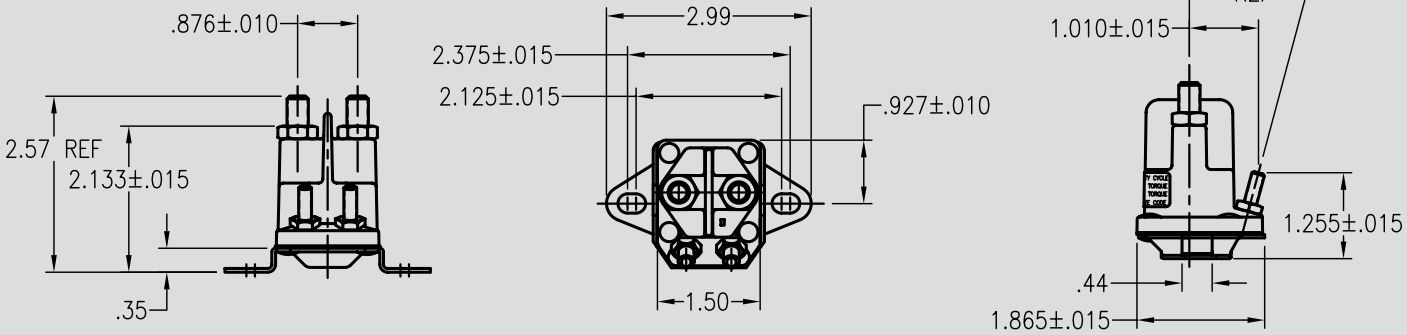
* detailed information available upon request

Models

Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
764-1221-020*	12VDC	100 Amps	Continuous	Ungrounded	Silver Alloy	Flat On Base
784-1221-210	12VDC	200 Amps	Intermittent	Ungrounded	Copper	Flat On Base
784-1221-020	12VDC	100 Amps	Continuous	Ungrounded	Silver Alloy	Flat On Base
784-2421-020	24VDC	100 Amps	Continuous	Ungrounded	Silver Alloy	Flat On Base

* 6.35mm push-on terminals

Dimensions



The Trombetta PowerSeal range features an environmentally sealed housing to IEC 60529, IP66 and IP67 standard. It is the first contactor designed specifically for electric vehicles and other applications where environmental protection is a must. The sealed design is the core of the construction and is optimized for high performance at lower cost. Constructed from high impact plastic with zinc plated steel frame, the PowerSeal range is designed for high performance, durability and longevity.

The compact design makes the PowerSeal range perfect for installations where space is at a premium. Two standard mounting configurations are available which allow for either vertical or horizontal fixing with alternate mounting bracket designs available upon request. The PowerSeal range is ideal for a myriad of applications including electric forklifts and vehicles, pallet jacks, scissor lifts, floor scrubbers, golf carts and utility vehicles.

Specifications

Electrical

Contact Rating:	150 Amps nominal* 800 Amps peak inrush*
Contact State:	Normally Open (N/O)
Contact Life:	100K cycles
Coil Voltage:	12VDC or 24VDC*
Coil Duty Cycle:	100% @25°C (continuous duty models) 25% @25°C (intermittent duty models)
Insulation:	Ungrounded

Mechanical

Coil terminals:	10-32 Studs
Contact Terminals:	5/16-24 Studs

Environmental

Operating Temp:	-40°C to +65°C
Sealing:	IP66 / IP67

Available Options

Various mounting bracket styles; Intermittent rated coils; Various coil voltages; Alternate coil terminals; Grounded coil circuit; Silver Alloy Contacts.

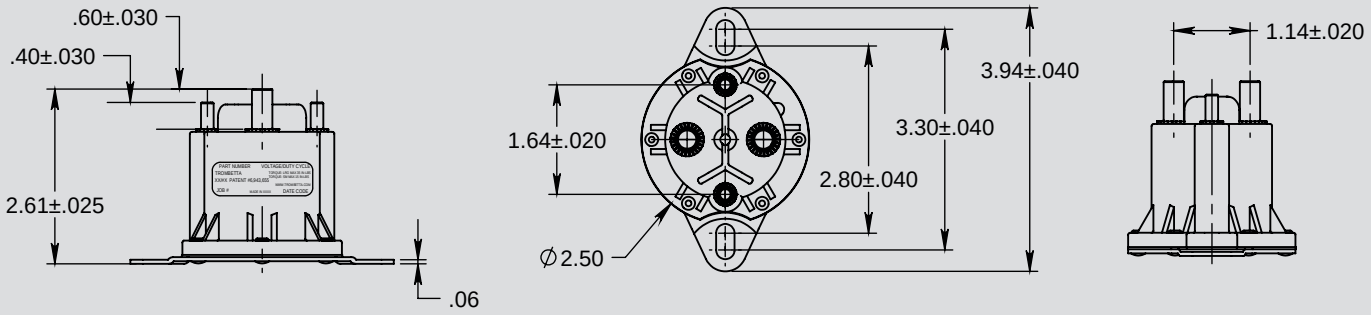
* detailed information available upon request

Models

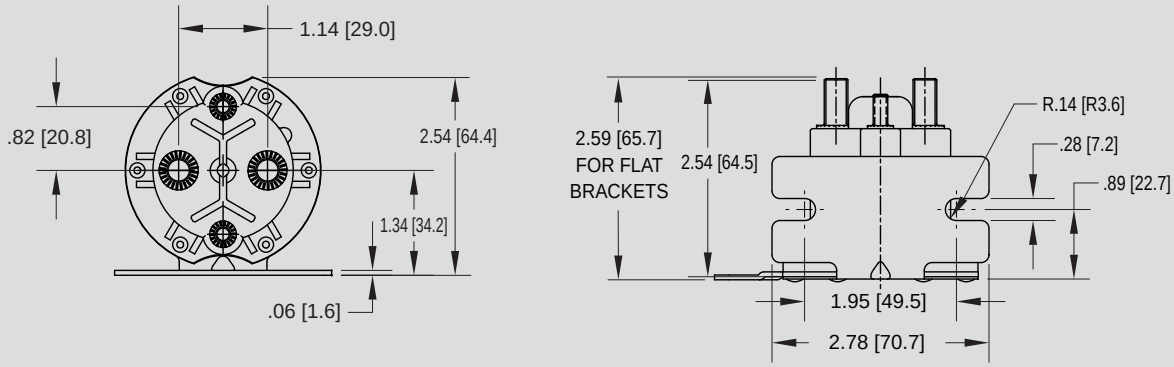
Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
684-1221-212	12VDC	150 Amps	Intermittent	Ungrounded	Copper	Flat On Base
684-2421-212	24VDC	150 Amps	Intermittent	Ungrounded	Copper	Flat On Base
684-1251-212	12VDC	150 Amps	Intermittent	Ungrounded	Copper	Flat On Side
684-2451-212	24VDC	150 Amps	Intermittent	Ungrounded	Copper	Flat On Side
684-1221-012	12VDC	150 Amps	Continuous	Ungrounded	Copper	Flat On Base
684-2421-012	24VDC	150 Amps	Continuous	Ungrounded	Copper	Flat On Base
684-1251-012	12VDC	150 Amps	Continuous	Ungrounded	Copper	Flat On Side
684-2451-012	24VDC	150 Amps	Continuous	Ungrounded	Copper	Flat On Side

Dimensions

Flat on BASE bracket

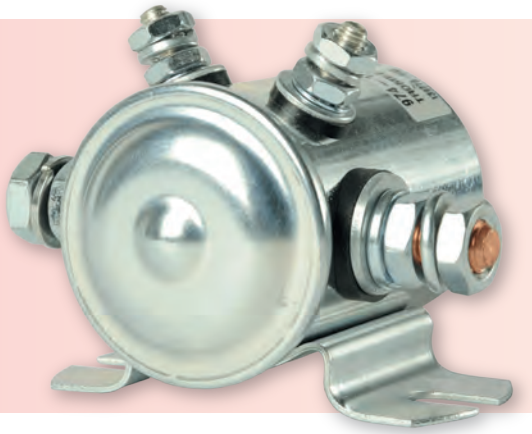


Flat on SIDE bracket



DIMENSIONS IN BRACKETS [ ] ARE MILLIMETERS

The traditional metal contactor has been redesigned by Trombetta to provide a high performance, electrically efficient and extremely robust device for demanding applications. The Metal DC contactor range features high current carrying capacity in a compact metal housing. The universal mounting design makes it the ideal replacement for applications including mining, construction and agricultural equipment, military and emergency vehicles, buses, coaches, boats – anywhere a heavy duty contactor is required.



Specifications

Electrical

Contact Rating: 125 Amps nominal*
600/500 Amps peak inrush*
12/24VDC*
Contact State: Normally Open (N/O)
Contact Life: 50K cycles
Coil Voltage: 12VDC or 24VDC*
Coil Duty Cycle: 100% @25°C*
Insulation: Ungrounded

Mechanical

Coil terminals: 10-32 Studs
Contact Terminals: 5/16-24 Studs

Environmental

Operating Temp: -40°C to +60°C
Sealing: Unsealed

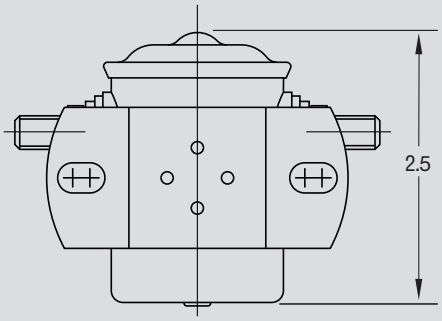
Available Options
Various mounting bracket styles; Intermittent rated coils; Various coil voltages; Grounded coil circuit.

* detailed information available upon request

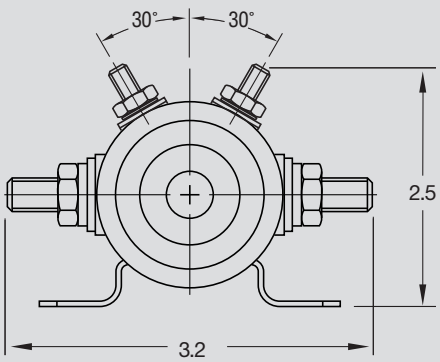
Models

Part No.	Voltage	Rating	Coil Duty	Grounding	Contacts	Bracket
974-1215-010	12VDC	125 Amps	Continuous	Ungrounded	Copper	Flat On Side
974-2415-010	24VDC	125 Amps	Continuous	Ungrounded	Copper	Flat On Side

Dimensions



Flat mount, closed slots.
Other options available.



The D610 range of solenoid actuators offer a proven and reliable electromechanical solution for pull and hold functions. An integral changeover contact switches the pull coil to the hold coil thus eliminating the need for additional relays or controllers. The dual wound coil design provides high energy pulling performance while maintaining a low powered continuous holding operation. Ideal for damper/flap control, engine shutdown/throttling and general actuation requirements.

Specifications

Properties

Stroke Length:	25.4mm (1”)
Net Pull Force:	62.3 Newtons (14lbf)
Net Hold Force:	120 Newtons (27lbf)
Weight:	0.77 kg (1.7lbs)

Mechanical

Termination:	6-32 UNC studs
Shaft thread:	¼-28 UNF male
Shaft length:	25.4mm (1”)

Electrical

Pull Current:	42 Amps @ 12VDC
Hold Current	0.8 Amps @ 12VDC
Design Voltage:	12VDC (24VDC optional)
Duty Cycle:	100% of rated voltage @25°C
Insulation:	Ungrounded

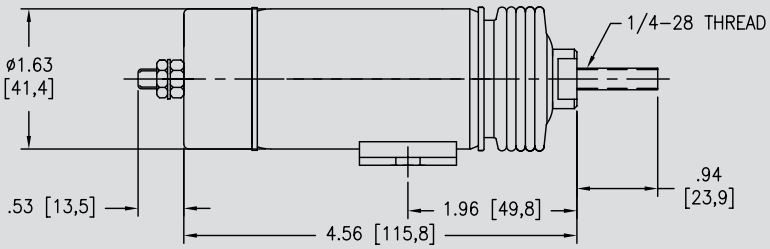
Available Options

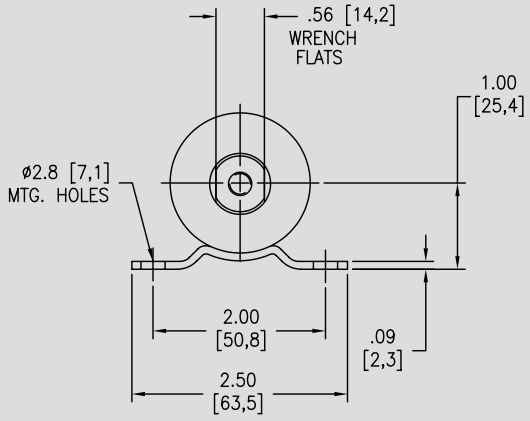
Return springs:	Light and heavy duty
Mounting brackets:	Flange mounting model

Models

Model	Voltage	Configuration	Light Spring P/N	Heavy Spring P/N	Mounting
D610-A1V12	12VDC	Internally switched	F09514	F09513	Side

Dimensions





The D513 range of solenoid actuators offer a proven and reliable electromechanical solution for pull and hold functions. An integral changeover contact switches the pull coil to the hold coil thus eliminating the need for additional relays or controllers. The dual wound coil design provides high energy pulling performance while maintaining a low powered continuous holding operation. Ideal for damper/flap control, engine shutdown/throttling and general actuation requirements.

Specifications

Properties

Stroke Length:	38.1mm (1.5”)
Net Pull Force:	61.8 Newtons (13.9lbf)
Net Hold Force:	164 Newtons (37lbf)
Weight:	1.18 kg (2.6lbs)

Mechanical

Termination:	150mm (6”) flying leads
Shaft thread:	¼-28 UNF male
Shaft length:	25.4mm (1”)

Electrical

Pull Current:	68 Amps @ 12VDC 36 Amps @ 24VDC
Hold Current	0.9 Amps @ 12VDC 0.4 Amps @ 24VDC
Design Voltage:	12VDC or 24VDC
Duty Cycle:	100% of rated voltage @25°C
Insulation:	Ungrounded

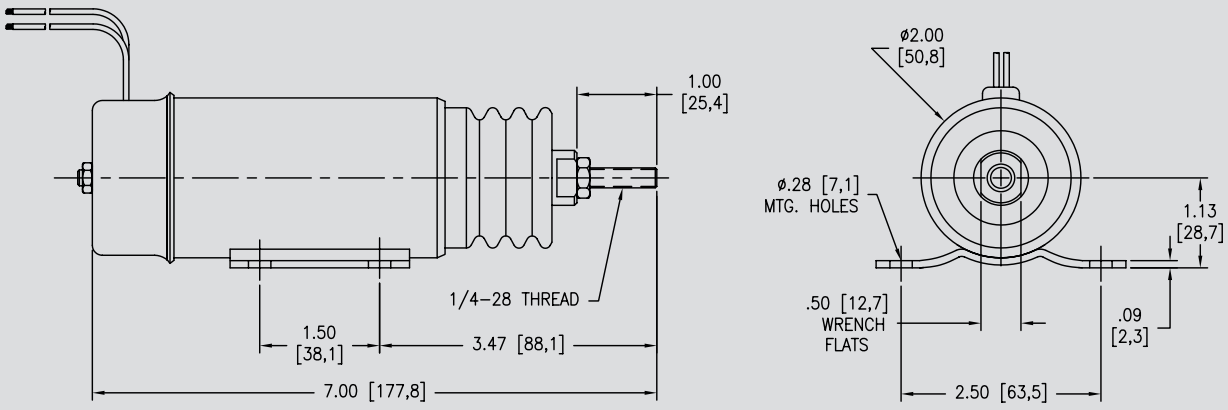
Available Options

Return springs:	Light duty

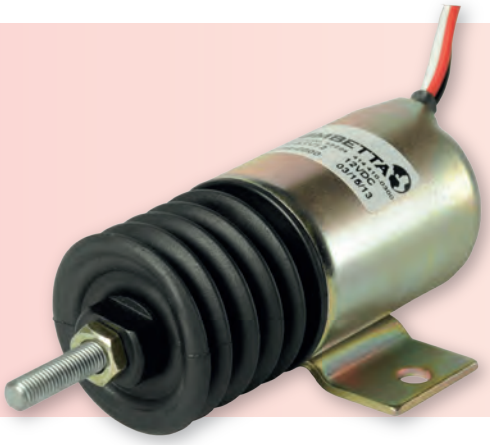
Models

Model	Voltage	Configuration	Light Spring P/N	Heavy Spring P/N	Mounting
D513-A32V12	12VDC	Internally switched	F10124	None	Side
D513-A33V24	24VDC	Internally switched	F10124	None	Side

Dimensions



The P610 range of solenoid actuators are a dual wound design with independent control coils for both pull and hold functions. The advantage of separately controlled coils is that, when wired correctly, there is less risk of pull-in coil burnout as there is with dependently switched modules. The P610 range offers high pulling power in a compact package. Ideal for a vast range of applications in both stationary and mobile plant and equipment.



Specifications

Properties

Stroke Length:	25.4mm (1”)
Net Pull Force:	67 Newtons (15lbf)
Net Hold Force:	102 Newtons (23lbf)
Weight:	0.6 kg (1.3lbs)

Mechanical

Termination:	300mm (12”) flying leads
Shaft thread:	¼-28 UNF male
Shaft length:	25.4mm (1”)

Electrical

Pull Current:	48 Amps @ 12VDC
	25 Amps @ 24VDC
Hold Current	1 Amp @ 12VDC
	0.48 Amps @ 24VDC
Design Voltage:	12VDC (24VDC optional)
Duty Cycle:	100% of rated voltage @25°C
Insulation:	Ungrounded

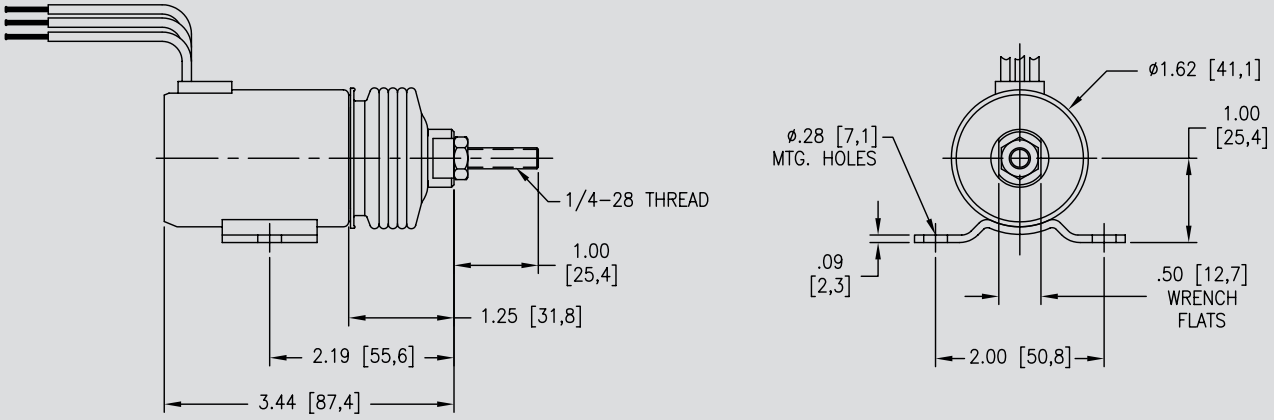
Available Options

Return springs:	Light and heavy duty
Mounting brackets:	Flange mounting models
Reverse actuation:	Push actuator models

Models

Model	Voltage	Configuration	Light Spring P/N	Heavy Spring P/N	Mounting
P610-A1V12	12VDC	Externally switched	F09514	F09513	Side
P610-A1V24	24VDC	Externally switched	F09514	F09513	Side

Dimensions



The P612 range of solenoid actuators are a dual wound design with independent control coils for both pull and hold functions. The advantage of separately controlled coils is that, when wired correctly, there is less risk of pull-in coil burnout as there is with dependently switched modules. The P612 range offers high pulling power in a compact package. Ideal for a vast range of applications in both stationary and mobile plant and equipment.

Specifications

Properties

Stroke Length:	25.4mm (1”)
Net Pull Force:	102 Newtons (23lbf)
Net Hold Force:	191 Newtons (43lbf)
Weight:	0.77 kg (1.7lbs)

Mechanical

Termination:	300mm (12”) flying leads
Shaft thread:	¼-28 UNF male
Shaft length:	25.4mm (1”)

Electrical

Pull Current:	60 Amps @ 12VDC
	33 Amps @ 24VDC
Hold Current	0.9 Amps @ 12VDC
	0.5 Amps @ 24VDC
Design Voltage:	12VDC or 24VDC
Duty Cycle:	100% of rated voltage @25°C
Insulation:	Ungrounded

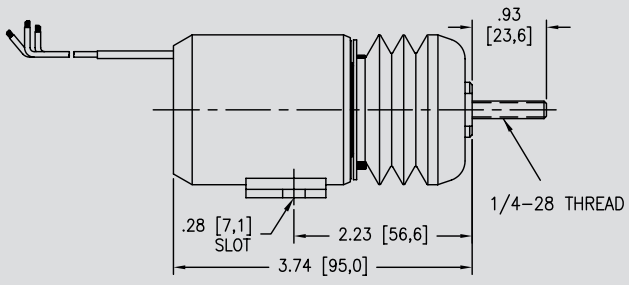
Available Options

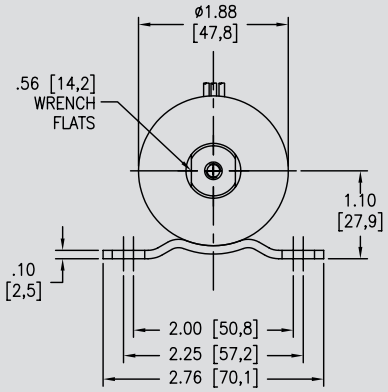
Return springs:	Light and heavy duty
Mounting brackets:	Flange mounting model

Models

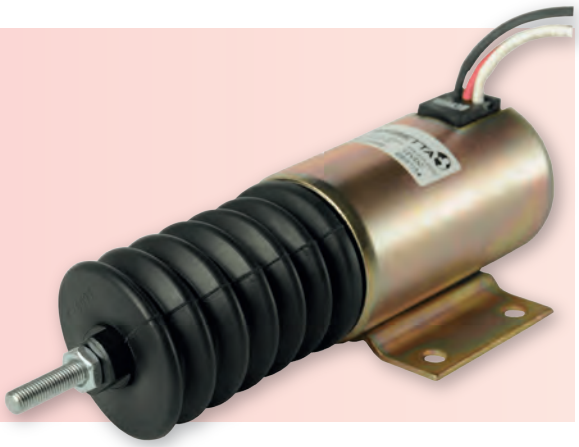
Model	Voltage	Configuration	Light Spring P/N	Heavy Spring P/N	Mounting
P612-A1V12	12VDC	Externally switched	E07358	F10399	Side
P612-A1V24	24VDC	Externally switched	E07358	F10399	Side

Dimensions





The P613 range of solenoid actuators are a dual wound design with independent control coils for both pull and hold functions. The advantage of separately controlled coils is that, when wired correctly, there is less risk of pull-in coil burnout as there is with dependently switched modules. The P613 range offers high pulling power in a compact package. Ideal for a vast range of applications in both stationary and mobile plant and equipment.



Specifications

Properties

Stroke Length:	38.1mm (1.5”)
Net Pull Force:	94 Newtons (21lbf)
Net Hold Force:	178 Newtons (40lbf)
Weight:	1.23 kg (2.7lbs)

Mechanical

Termination:	300mm (12”) flying leads
Shaft thread:	¼-28 UNF male
Shaft length:	25.4mm (1”)

Electrical

Pull Current:	70 Amps @ 12VDC 36 Amps @ 24VDC
Hold Current	0.88 Amp @ 12VDC 0.48 Amps @ 24VDC
Design Voltage:	12VDC or 24VDC
Duty Cycle:	100% of rated voltage @25°C
Insulation:	Ungrounded

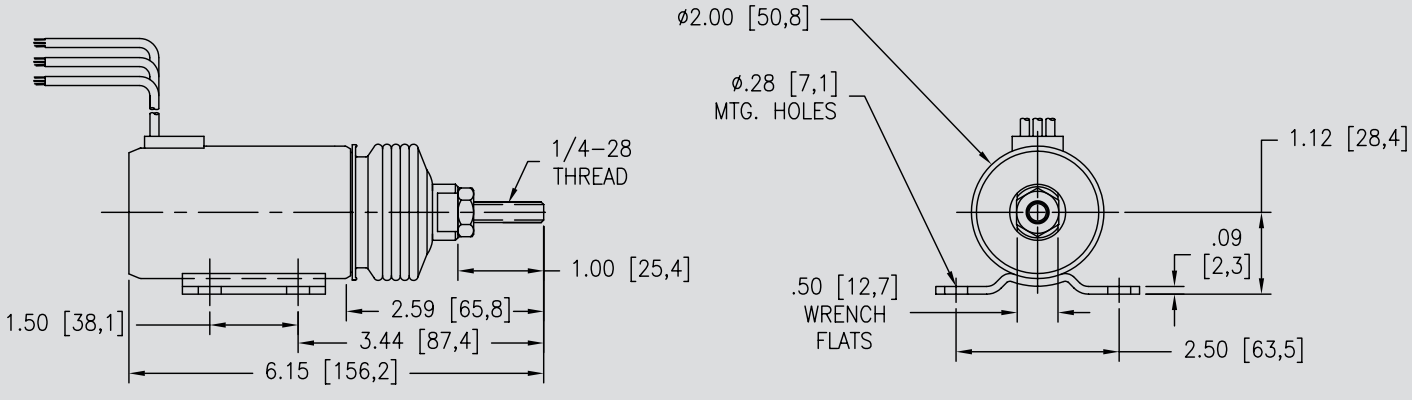
Available Options

Return springs:	Light duty
Mounting brackets:	Flange mounting models
Reverse actuation:	Push actuator models

Models

Model	Voltage	Configuration	Light Spring P/N	Heavy Spring P/N	Mounting
P613-A1V12	12VDC	Externally switched	F10124	None	Side
P613-A1V24	24VDC	Externally switched	F10124	None	Side

Dimensions



The S500 range of Voltage Control Over-Energizer (VCOE) are Trombetta's solution for precise and efficient control of dual winding solenoid actuators. These special modules are designed to enhance performance by increasing force capability and reducing operating temperature. They regulate the electrical power applied to the coils during pull and hold operation to optimize the performance of the solenoid. Available in both solid state and electro-mechanical control (relay) models.

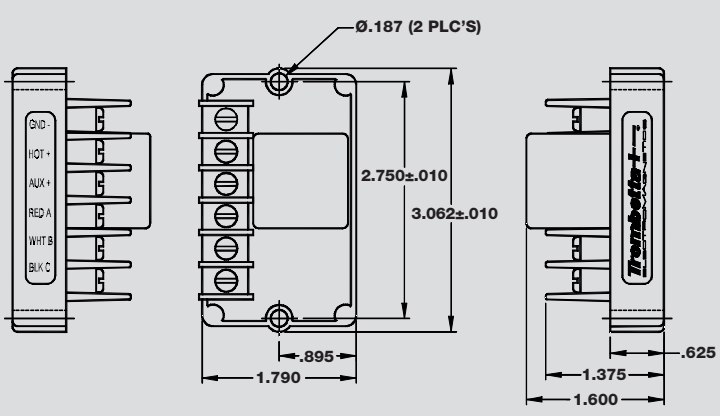
Specifications

	S500-A6 Electro-Mechanical	S500-A60 Solid State
Operating Voltage:	10-32VDC	8.5-32VDC (see note 2)
Max Load Current:	80 Amps @ 12VDC (see note 1. for 24VDC) 0.48 Amps @ 24VDC	80 Amps @ 12VDC 40 Amps @ 24VDC
Max Load Power:	1000 Watts (see note 1)	1000 Watts
Actuation Time:	Approx 0.5 seconds	Approx 0.5 seconds
Aux Input Voltage:	8.2VDC minimum	8.2VDC minimum
Reverse Polarity protection:	Yes	Yes
Insulation:	Ungrounded	Ungrounded
Termination:	Screw terminals	Screw terminals

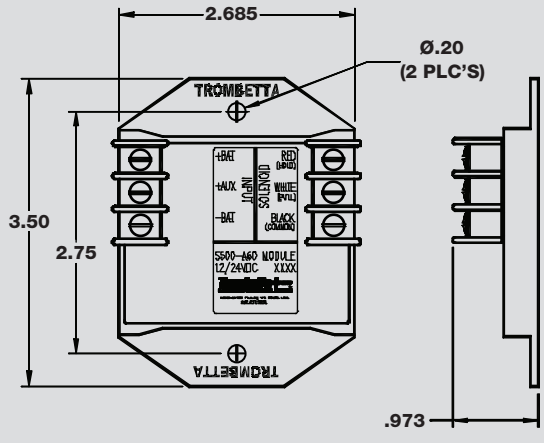
1. An external contactor must be used for operation of 24VDC coils
2. Minimum voltage required to ensure complete pull-in activation

Dimensions

S500-A6



S500-A60



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Disclaimer: E & O.E. - the information and specifications detailed in this catalogue were deemed to be accurate at the time of printing. Amelec Australia Pty Ltd reserves the right, subject to Australian law, at its discretion and without notice, to change the information and specifications contained within.

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