MODEL 580
DC BRUSHLESS THRUSTERS

The Model 580 is the direct drive version of our highly successful Model 560 thruster. By using a slightly larger motor, we are able to eliminate the planetary gearbox of the Model 560, and to directly drive the propeller through Tecnadyne's signature magnetic coupling. This results in a thruster that is quieter and more reliable.

BOLLARD THRUST

37lbf (17kgf) forward, 22lbf (10kgf) reverse,
RH & LH stainless steel propeller options

INPUT

1kw input power
Voltage options
between 48vdc - 330vdc
+/-5v analog or RS485 digital speed control

WEIGHT

5 - 7lbs (2.3 - 3.2kg) in air
4 - 6lbs (1.8 - 2.7kg) in water
(Depending on configuration)

DEPTH RATING

2,800ft (850m), 3,300ft (1000m) &
5,000ft (1'500m) with 1 atm housings.
Full ocean depth when oil filled
(PBOF - requires remote electronics)

CONSTRUCTION

Available with hard anodized 6061-T6 aluminum.
Type 316 stainless steel
or 6Al4V titanium housings

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MODEL 580 DESCRIPTION

MAGNETIC PROPELLER COUPLING

As with all Tecnadyne thrusters, the propeller of the Model 580 is magnetically coupled. With this design, a magnet array is fitted inside the hub of the propeller and is driven by a matching magnet array attached to the motor inside the sealed pressure vessel. By eliminating the rotating drive shaft and shaft seals that invariably leak over time, the Model 580 achieves extremely high reliability. Additionally, the magnetic coupling will ratchet if overloaded, preventing damage caused by objects jammed in the propeller. Since the water lubricated propeller bearings are external to the pressure housing, they can be easily replaced in a matter of minutes.

HIGH EFFICIENCY DIRECT-DRIVE DC BRUSHLESS MOTOR

The Model 580 uses a direct drive DC brushless motor that is manufactured to the ISO 9001:2015 quality standard. This low RPM motor drives the propeller directly through the magnetic coupling. This motor assembly delivers maximum reliability and power in an extremely reliable, low noise, and easy to maintain package.

HIGH POWER DENSITY PROPELLER & NOZZLE

The high efficiency Type 316 stainless steel propeller is available in both right and left hand rotations and is precision investment cast by a U.S foundry. With a Kort nozzle for Bollard thrust, it delivers 25% more thrust and 20% higher effciency compared to the older Model 520.

DEPTH RATING OPTIONS

The standard configuration is rated to 850m depth and places the electronics controller within the 1-atmosphere motor housing. An extra cost option, using special pressure components, is rated to 1,500m using self-contained electronics in the motor's 1-atmosphere housing. For greater depths, up to full ocean depth rating, the electronics module is installed in a remote, one atmosphere housing (either the customer's housing or one supplied by Tecnadyne) The thruster is oil filled and pressure balanced using electrical cabling of flexible PVC tubing with a maximum tubing length of 10m.

VOLTAGES SUPPORTED

The Model 580 is available for operation at specific voltages between 48 VDC and 330 VDC. DC power must be supplied by a well filtered battery bank, rectified and filtered AC or a regulated DC power supply with less than 10% voltage ripple. See Tecnadyne application notes for details on thruster integration.

RS485 OR ANALOG SPEED CONTROL

Two speed control options are available for the Model 580. The controller is jumper selectable for either closed loop multi-mode, RS485 speed control or for +/-5v analog speed and direction control. In addtion ,the thruster can be supplied with seperate enable and water detect lines.

MODEL 581 OPTION

The Model 581 has an extended housing and carries back-EMF filtering capacitors . The capacitors reduce the requirement for external back-EMF filtering. The Model 581 performance is identical to the Model 580.

OTHER OPTIONS

Optional configurations include: Eleven available buss voltage choices. Housings made from anodized aluminum (standard), Type 316 stainless steel or 6Al4V titanium; three mounting styles, including saddle mount, blade mount, and tab mount. Several bulkhead types or cable end subsea connectors , RH or LH rotation propellers, and a nozzle inlet screen.

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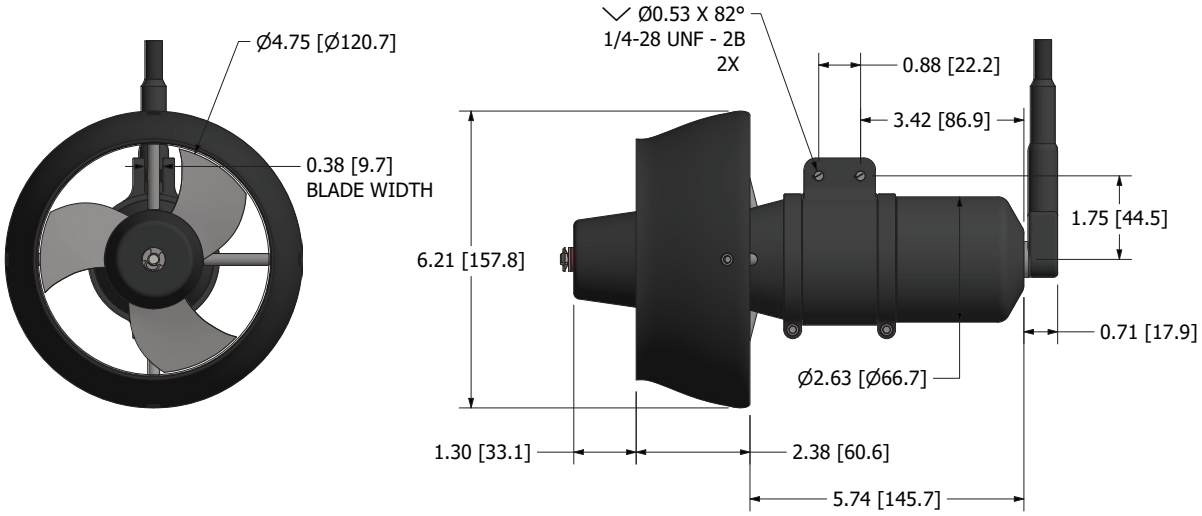
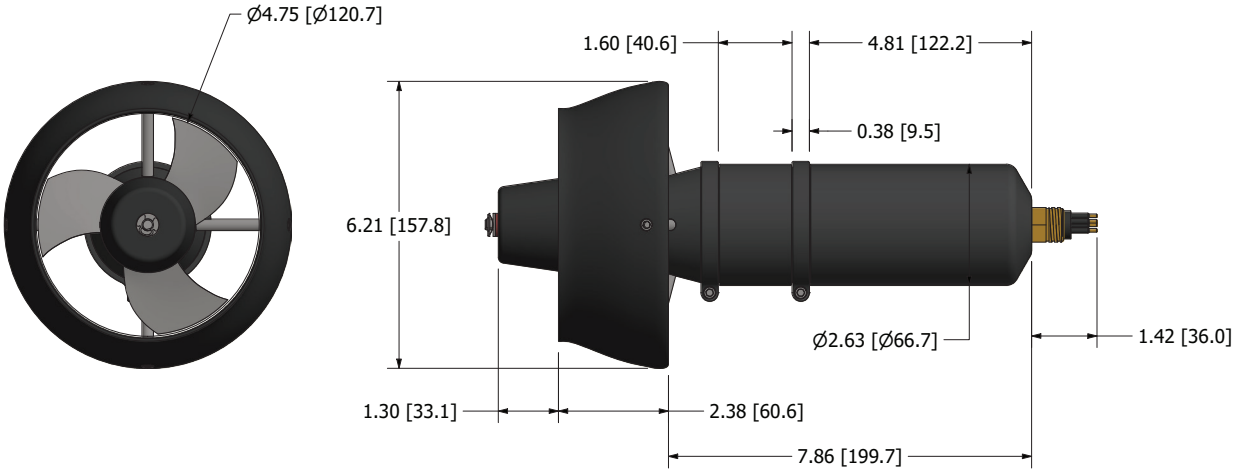
MODEL 580
REPRESENTATIVE CONFIGURATIONS

MODEL 580
580-AAA-LMG6FS-XX-0850-AL-SCLX-SM-R-RS-BK



WEIGHTS
5.4lb [2.45kg] in air
3.3lb [1.5kg] in water

MODEL 581
581-AAA-LMG6FS-XX-0850-AL-SCLX-SM-R-RS-BK



WEIGHTS
5.8lb [2.63kg] in air
3.4lb [1.54kg] in water

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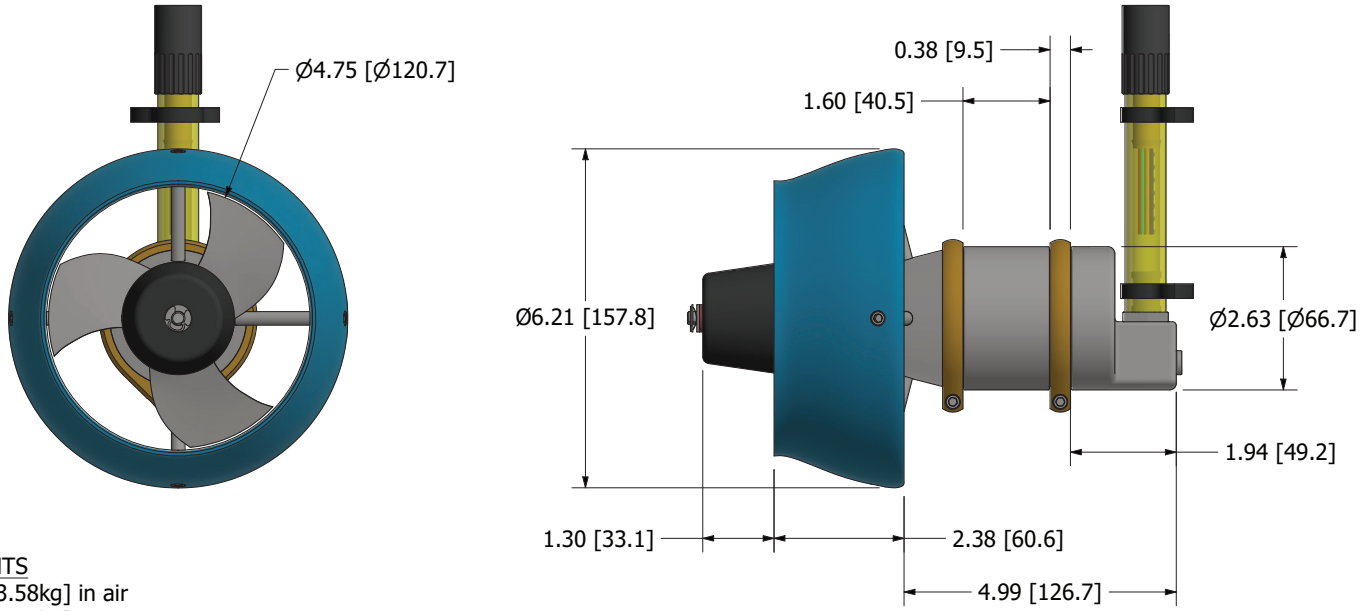
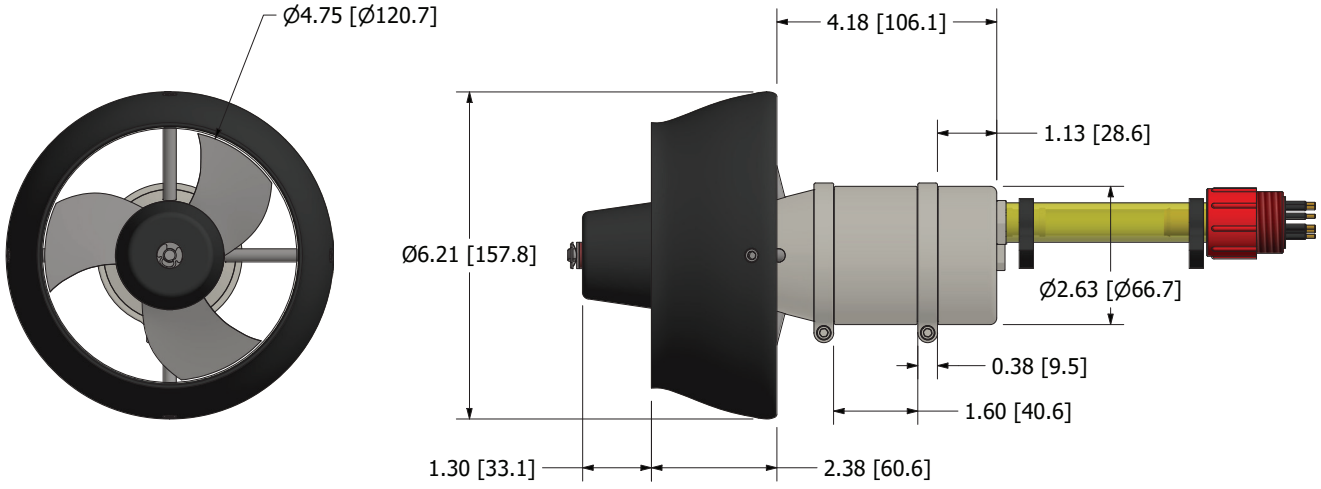
MODEL 580
REPRESENTATIVE CONFIGURATIONS

MODEL 580
580-AAA-MHDG8CCPOF-XX-CSD-SS-HPF(R)X-SM-R-RS-BK



WEIGHTS
7.9lb [3.58kg] in air
6.0lb [2.72kg] in water

MODEL 580
580-AAA-LMG6FS-XX-CSD-TI-HPF(R)X-SM-R-RS-BK



WEIGHTS
6.0lb [2.72kg] in air
4.2lb [1.9kg] in water

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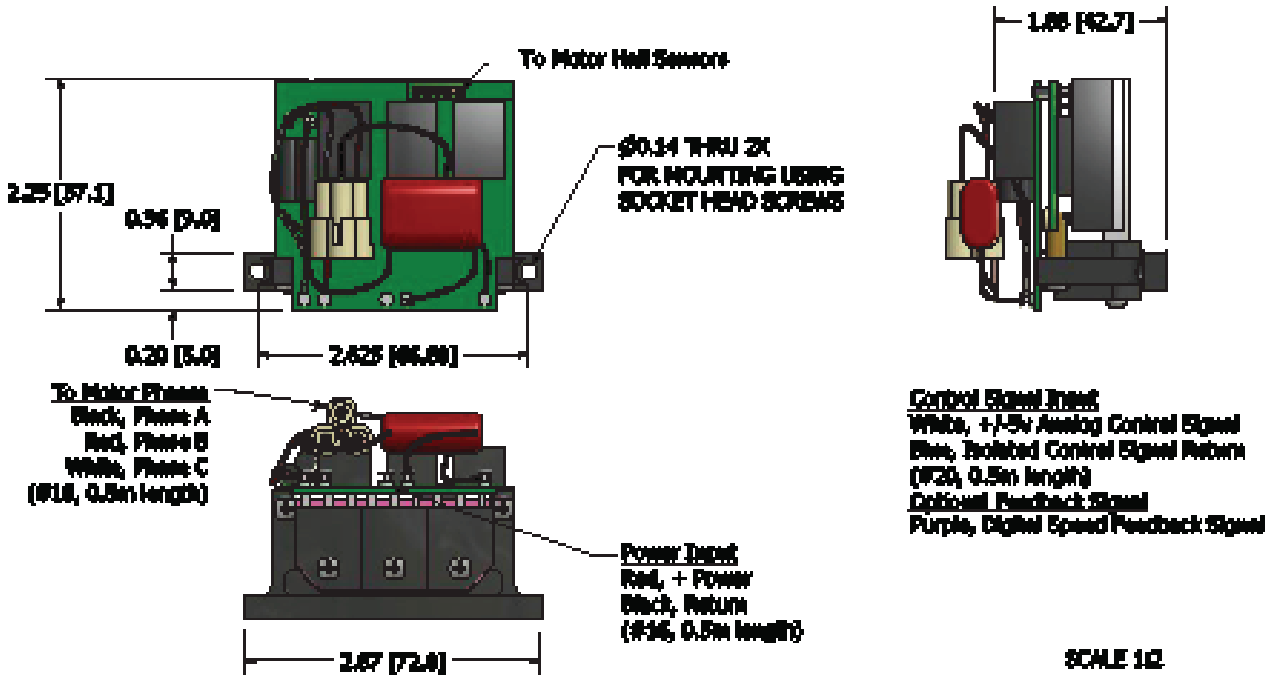
MODEL 580
REMOTE ELECTRONICS OPTIONS

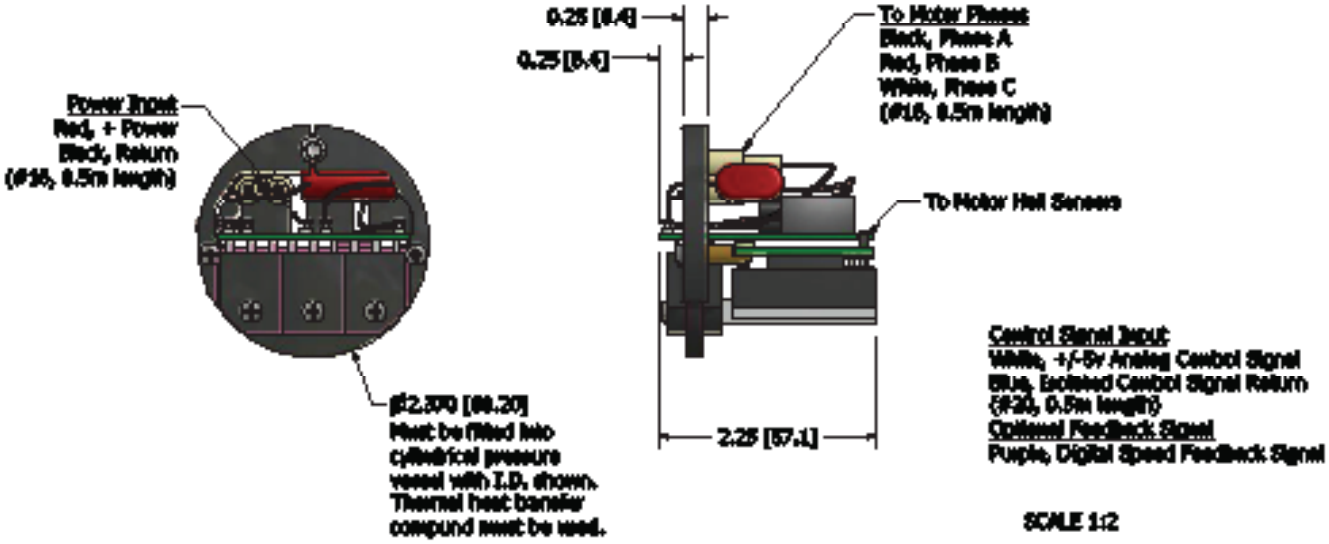
HPFX ELECTRONICS CONFIGURATION

*USED IN **HPFX** CONFIGURATION & REQUIRES INSTALLATION IN 1ATM PRESSURE VESSEL.*



HPRX BLOCK ELECTRONICS CONFIGURATION

*USED IN **HPRX** CONFIGURATION & REQUIRES INSTALLATION IN 1ATM PRESSURE VESSEL.*



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MODEL 580
SPECIFICATIONS

MODEL 580 - PERFORMANCE AT DIFFERENT VOLTAGES

NOMINAL VOLTAGE	48	60	75	100	150	200	260	330
INPUT VOLTAGE RANGE	40-56	50-70	60-90	75-125	125-175	175-225	230-290	300-360
INPUT CURRENT	20	17	13	10	6.5	5	3	3
MAXIMUM INPUT POWER	960	1000	975	1000	975	1000	780	990
PEAK FORWARD	34	35	35	37	37	37	34	40
PEAK REVERSE BOLLARD	20	20	20	21	21	21	19	22
PROPELLER RPM	3100	3120	3125	3150	3150	3150	3100	3250

ANALOG CONTROL DRIVER SPECIFICATIONS (RPLX, RBLX)

DESCRIPTION	UNITS	VALUE
ISOLATED INSTRUMENTATION POWER	VDC mA	NOT REQUIRED
CONTROL SIGNAL (2)	VDC	+/-5
SPEED OUTPUT (OPTIONAL)	-	12V AMPLITUDE PULSE
SPEED OUTPUT FREQUENCY RANGE	-	0-1200
COMMUTATION TYPE	Hz	TRAPEZOIDAL
COMMUTATION FEEDBACK SENSORS	-	HALL SENSORS
SWITCHING FREQUENCY	kHz	20
PROTECTIONS	-	PULSE BY CURRENT LIMITING

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MODEL 580
SPECIFICATIONS

RS-485 REMOTE DRIVER SPECIFICATIONS (SCLX, RPLX, RBLX)

DESCRIPTION	UNITS	VALUE
BAUD RATES SUPPORTED	kbps	9.6-115
ISOLATED INSTRUMENTATION POWER	VDC mA	NOT REQUIRED
CONTROL SIGNAL OPTION (2)	VDC	+/-5
SPEED OUTPUT	-	5-12VDC PULSE,
SPEED OUTPUT FREQUENCY RANGE	Hz	0-7200
CLOSED LOOP CONTROL	-	VELOCITY LOOP
COMMUTATION TYPE	-	TRAPEZOIDAL
COMMUTATION FEEDBACK SENSORS	-	HALL SENSORS
SWITCHING FREQUENCY		20
PROTECTIONS	-	MOTOR OVER-TEMPERATURE SHUTDOWN PULSE BY PULSE CURRENT LIMITING
FEEDBACKS VIA RS-485 (SEE COMMUNICATIONS MANUAL FOR DETAILS)		INPUT VOLTAGE, INPUT CURRENT, SPEED, DIRECTION ELECTRONICS TEMPERATURE, MOTOR TEMPERATURE, POWER ON TIME

NOTES:

1. DC Brushless Thrusters are not constant power devices. Voltages above nominal rating will result in increased speed, thrust and power draw. Ensure maximum input power is not exceeded by reducing speed command and its voltages above nominal. If thruster is operated above maximum power rating, damage may occur. Conversely, the thruster can be operated at voltages below nominal, however will result in decreased maximum speed, thrust and power draw. Oil filled thrusters may require more input power at depth due to viscosity changes in the oil.
2. Analog control signal dictates speed and direction of the unit. Typically, a voltage of +/-4.70Vdc will give maximum speed (100% PWM command.) See final test report for exact start and stop voltage. RS-485 remote drivers have the option of speed command via serial or analog control. Serial feedback is available if analog control mode is used.

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MODEL 580 & 581
CONFIGURATION & PART NUMBERING

580 (581)-AAA-BBBBB-XX-CCCC-DD-EEEE-FF-G-HH-JJ

AAA

NOMINAL VOLTAGAE OPTION
(CONSULT FACTORY FOR OTHER VOLTAGES)

- 048 - 48VDC
- 060 - 60VDC
- 075 - 75VDC
- 100 - 100VDC
- 150 - 150VDC
- 200 - 200VDC
- 260 - 260VDC
- 330 - 330VDC

BBBBB

SUBSEA CONNECTOR OPTION
(CONSULT FACTORY FOR OTHER CONNECTORS)

- LMG6FS - SEACON, CABLE END, SCLX ONLY
- MCIL5M - SEACON, CABLE END, NO SPEED FEEDBACK, SCLX ONLY
- MCIL6M - SEACON, CABLE END, SCLX ONLY
- MCBH5M - SEACON, BULKHEAD, NO SPEED FEEDBACK, SCLX ONLY
- MCBH6M - SEACON, BULKHEAD, SCLX ONLY
- IL6M - SEACON, BULKHEAD, SCLX ONLY
- MHDG8CCP - IMPULSE, OIL FILLED TUBE, HPFX & HPRX ONLY
- MCPBOF8M - SUBCONN, OIL FILLED TUBE, HPFX & HPRX ONLY

XX

CABLE LENGTH OPTION
(DOES NOT APPLY TO BCR OR FCR CONNECTORS)

- XX - CABLE LENGTH IN METERS (LEAVE AS XX IF NO CABLE INSTALLED)

CCCC

MAXIMUM OPERATING DEPTH OPTION

- 0850 - 850 METERS (2,800FT)
- 1000 - 1000 METERS (3300FT)
- 1500 - 1,500 METERS (5,000 FT)
- CSD - CUSTOMER SPECIFIED DEPTH (REQUIRES REMOTE ELECTRONICS & OIL FILLED PRESSURE COMPENSATED OPTION FOR DEPTHS GREATER THAN 1,200M)

DD

HOUSING MATERIAL OPTION

- AL - 6061-T6 ALUMINUM, HARD ANODIZED BLACK
- SS - TYPE 316 STAINLESS STEEL, PASSIVATED
- TI - 6AL4V TITANIUM

EEEE

SELF-CONTAIANED OR REMOTE ELECTRONICS OPTION

- SCLX - SELF-CONTAINED ELECTRONICS, 1200M MAX
- HPFX - REMOTE ELECTRONICS, FLAT SURFACE MOUNT
- HPRX - REMOTE ELECTRONICS, CYLINDER MOUNT

FF

MOUNTING OPTION

- SM - SADDLE MOUNT
- BM - BLADE MOUNT

G

CONTROL OPTION

- A - +/-5V ANALOG CONTROL
- R - RS485 CONTROL, MODEL 561 ONLY

HH

PROPELLER HANDING OPTION

- RS - RIGHT HAND, STAINLESS STEEL PROPELLER
- LS - LEFT HAND STAINLESS STEEL PROPELLER

JJ

NOZZLE OPTIONS

- BK - BLACK
- BS - BLACK WITH INLET SCREEN

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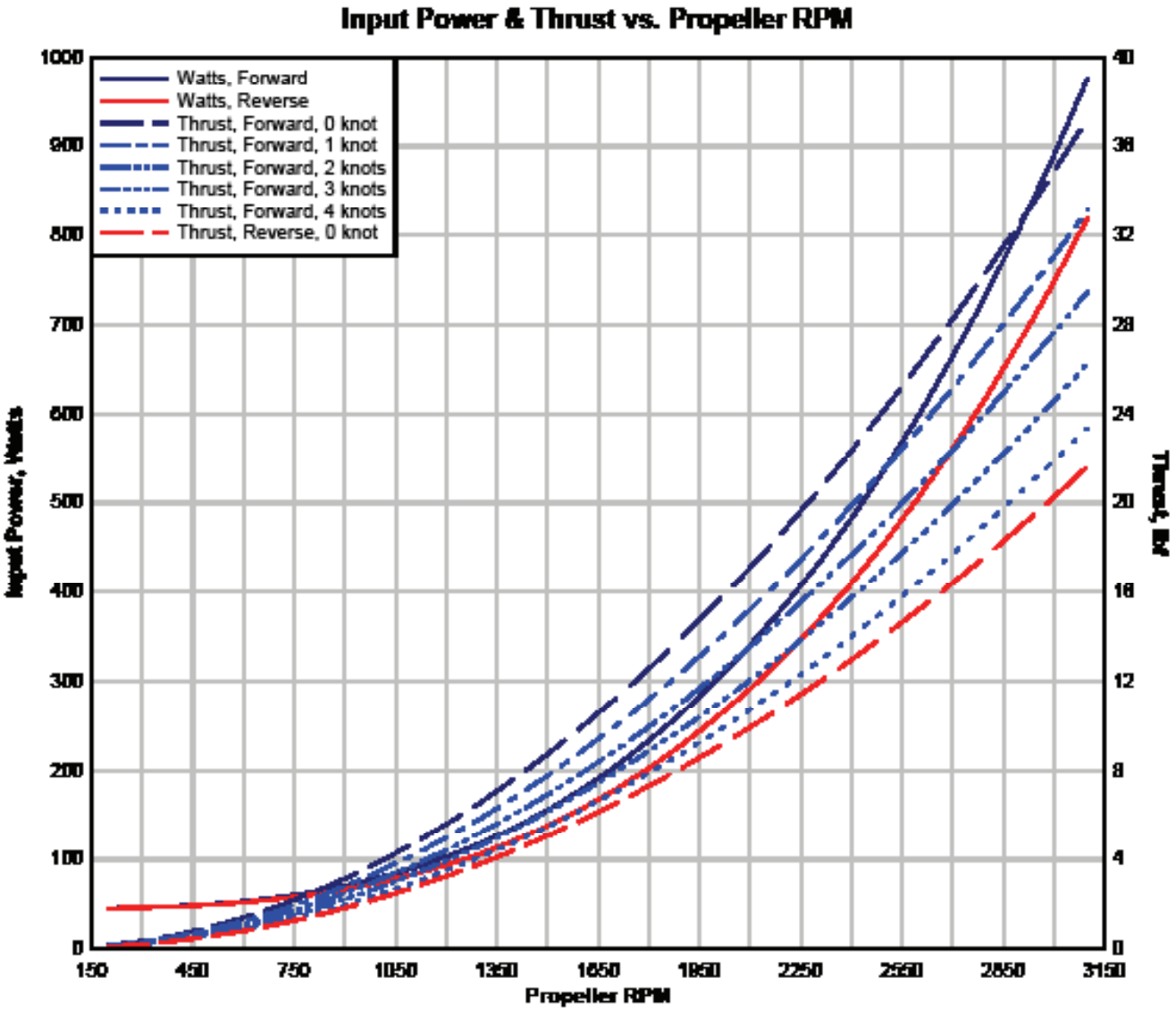
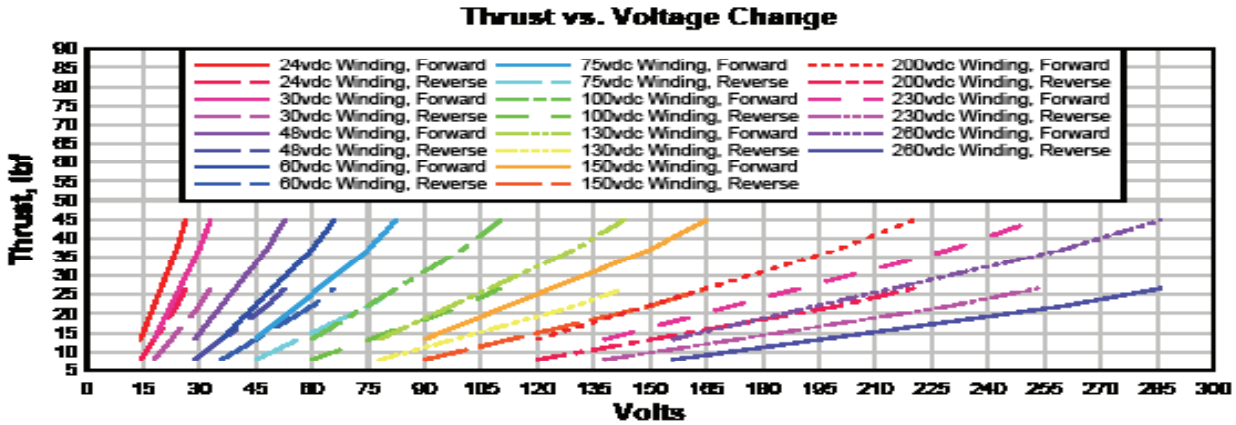
MODEL 580 & 581
THRUST PERFORMANCE CURVES





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