



- 500w bi-directional tunnel thruster develops over 21lbf (9.5 kgf) forward & reverse thrust in an extremely compact and lightweight package.
- Powerful direct drive DC brushless motors for low noise in noise sensitive applications.
- Magnetically coupled propeller drive eliminates all rotating shaft seals for optimum reliability.
- High stainless steel propeller gives uniform thrust in both directions and is available in both RH and LH direction of rotation.
- Speed & direction control using +/-5v analog signal.
- Rated to 2,800 ft (850m) or optional 5,000 ft (1,500m) depth with 1 atmosphere housings or full ocean depth with oil filled, pressure balanced housings.
- Available with hard anodized 6061-T6 aluminum, Type 316 stainless steel or 6Al4V titanium housings.
- Available with motors for 24vdc, 30vdc, 48vdc, 60vdc, 75vdc, 100vdc, 130vdc, 150vdc, 200vdc, 230vdc or 260vdc. Other voltages optional.

Bollard Output

21lbf (9.5kgf) forward & reverse thrust, using RH & LH investment cast stainless steel propellers.

Input

500w at 24vdc, 30vdc, 48vdc, 60vdc, 75vdc, 100vdc, 130vdc, 150vdc, 200vdc 230vdc or 260vdc, +/-5v analog speed control.

Weight

4-6lbs (1.8-2.7kg) in air, 3-5lbs (1.4-2.3kg) in water, depending on configuration.

Depth Rating

2,800ft (850m) & 5,000ft (1,500m) with 1 atm housings, full ocean depth when oil filled (PBOF).
(specifications subject to change without notice)

Introduction

The Model 540 is a tunnel thruster based upon Tecnadyne's highly successful Model 521 thruster. The Model 540 develops over 9.5kg thrust in both the forward and reverse directions, yet weighs less than 1.4kg in water. Using the same advanced technology as all Tecnadyne thrusters, of which over 4,000 units have been delivered to customers worldwide, the Model 540 is ideally suited as a lateral or vertical thruster on inspection class ROV's, AUV's and manned submersibles.

Magnetic Propeller Coupling

As with all Tecnadyne thrusters, the propeller of the Model 540 is magnetically coupled. With this design, a magnet array is fitted inside the hub of the propeller; and this magnet array 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 always seem to leak over time, the Model 540 achieves extremely high reliability. Additionally, the magnetic coupling will ratchet if overloaded, preventing damage caused by objects jammed in the propeller. And since the water lubricated propeller bearings are external to the pressure housing, they can be easily replaced in a matter of minutes.

High RPM Motor & Planetary Gearbox

The Model 540 uses DC brushless motors that are manufactured to the ISO 9001:2008 quality standard. These high RPM, low inertia motors are coupled to 6/1 ratio planetary gearset, assembled using hardened, high precision spur gears. This motor / gearbox combination delivers maximum reliability, efficiency and power in an extremely compact, lightweight and easy to maintain package.

Custom Designed Bi-Directional Propeller

The newly designed, high efficiency Type 316 stainless steel propeller develops approximately the same thrust in both the forward and reverse directions. This is ideal for use as a lateral or vertical thruster in a wide range of ROV, AUV and manned submersible applications.

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 titanium pressure components, is rated to 1,500m using self-contained electronics in the motor's 1-atmosphere housing. For 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) and the thruster is oil filled and pressure balanced using electrical cabling of flexible Tygon tubing.

Voltages Supported

The Model 540 is available for operation at voltages of 24vdc, 30vdc, 48vdc, 60vdc, 75vdc, 100vdc, 130vdc, 150vdc, 200vdc, 230vdc and 260vdc. 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.

Analog Speed Control

The Model 540 controller accepts a +/-5v analog speed and direction control signal that can be supplied by a computer with D/A card or a simple joystick. Additionally, the Model 540 returns a digital speed feedback signal.

Model 541 Option

The Model 541 has back-EMF filtering capacitors in a slightly longer housing section which reduce the need for external back-EMF filtering. The Model 541 has identical performance to the Model 540.

Other Options

Optional configurations include: strut or blade mounting; the 11 available buss voltage choices previously mentioned; housings of hard anodized aluminum (standard), Type 316 stainless steel or 6Al4V titanium; several bulkhead type or cable end subsea connectors; and RH or LH rotation propellers.

Please note that the specifications are subject to change without notice. Additionally, Model 540 thrusters for operation to depths greater than 1,000 meters are subject to U.S. Government export controls.

Go to www.tecnadyne.com

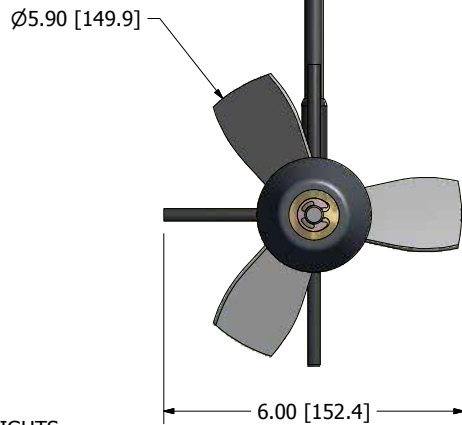


Like Tecnadyne on
Facebook

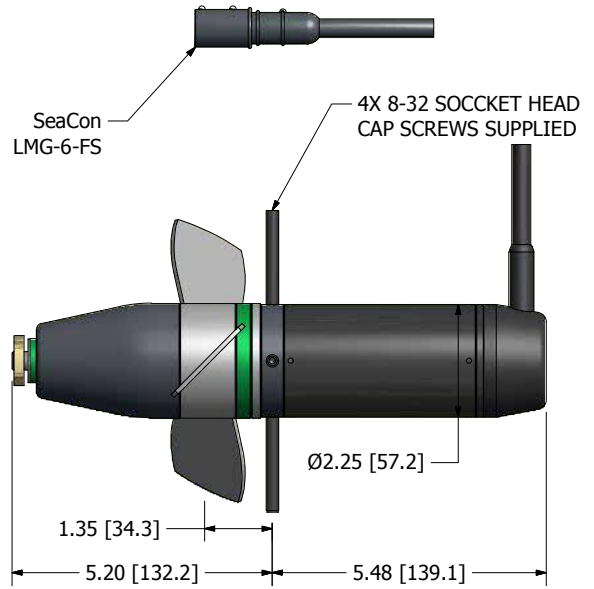


MODEL 540

540-AAA-LMG6FS-XX-0850-AL-SCLX-ST-A-RH



WEIGHTS
 3.7lb [1.7kg] in air
 2.7lb [1.2kg] in water

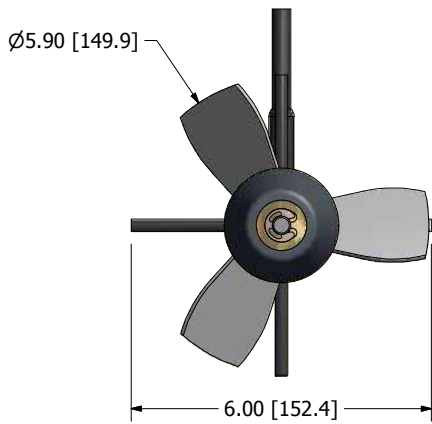


SCALE 1:4

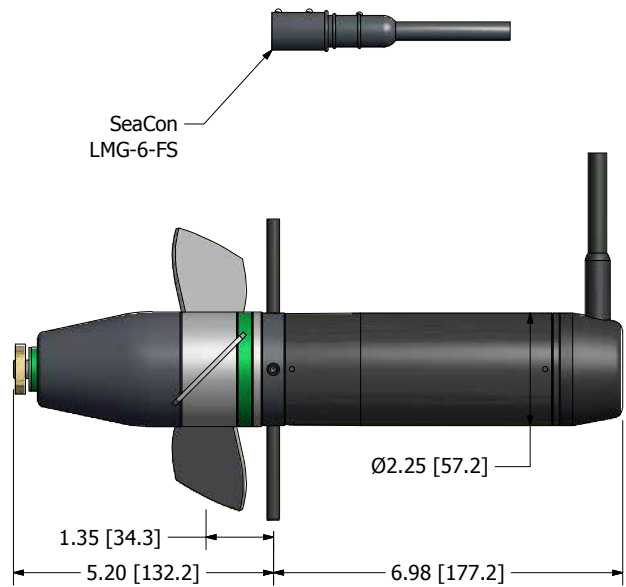
Download STP solid model of this thruster here:
<http://www.tecnadyne.com/thrusters>

MODEL 541

541-AAA-LMG6FS-XX-0850-AL-SCLX-St-A-RH



WEIGHTS
 4.2lb [1.9kg] in air
 3.2lb [1.5kg] in water

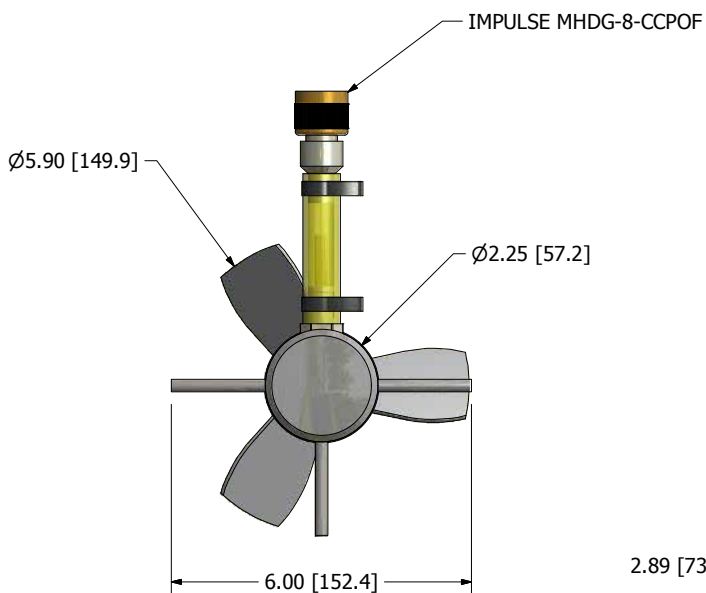


SCALE 1:4

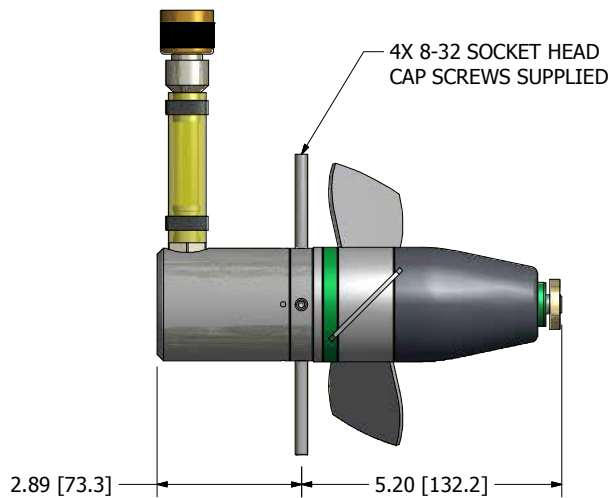
Download STP solid model of this thruster here:
<http://www.tecnadyne.com/thrusters>

MODEL 540

540-AAA-LMG6FS-XX-OFRE-SS-HPF(R)X-ST-A-RH



WEIGHTS
 3.9lb [1.8kg] in air
 3lb [1.4kg] in water

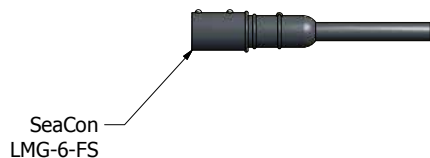


SCALE 1:4

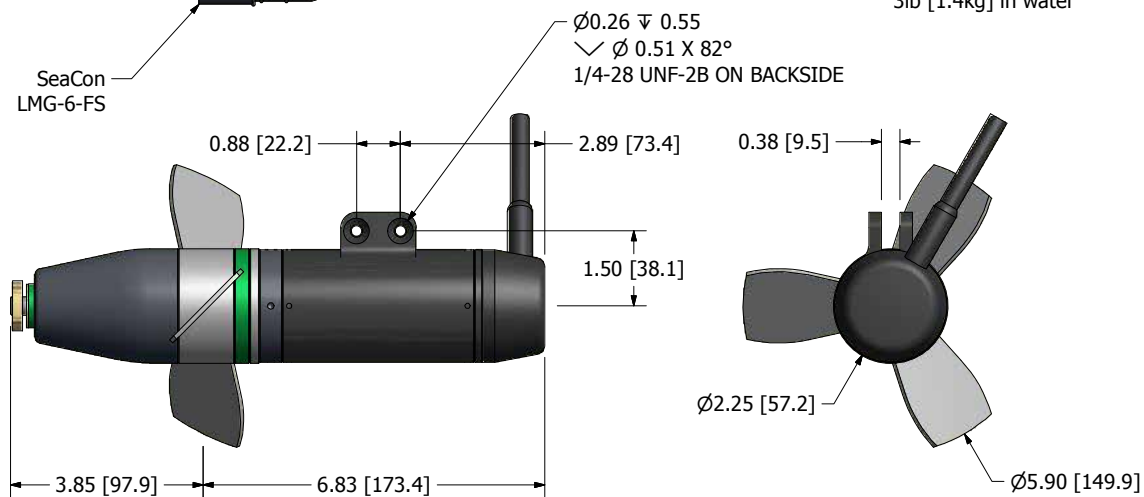
Download STP solid model of this thruster here:
<http://www.tecnadyne.com/thrusters>

MODEL 540

540-AAA-LMG6FS-XX-0850-AL-SCLX-BM-A-RH



WEIGHTS
 3.8lb [1.7kg] in air
 3lb [1.4kg] in water

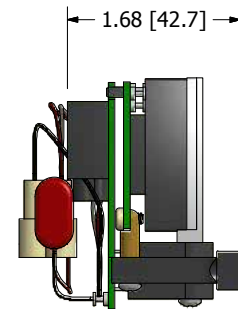
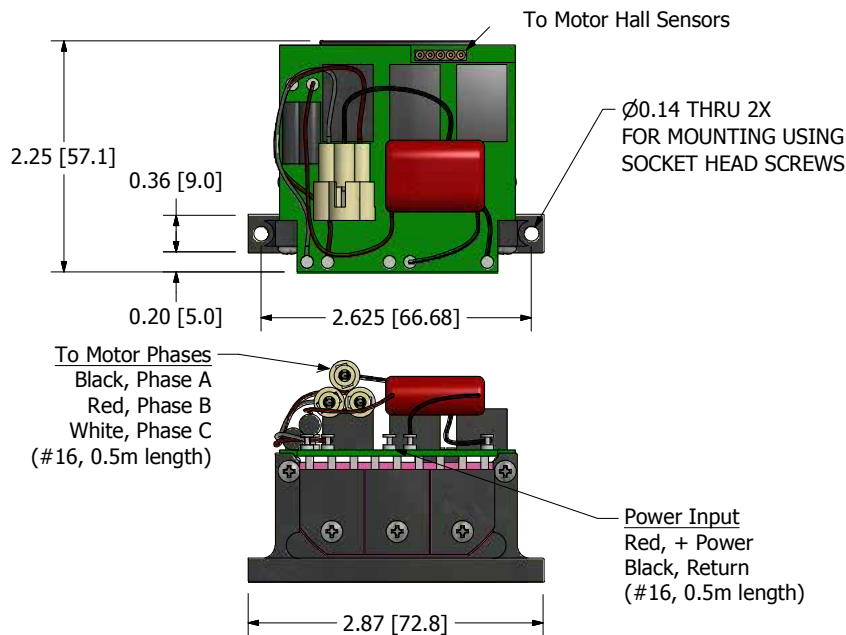


SCALE 1:4

Download STP solid model of this thruster here:
<http://www.tecnadyne.com/thrusters>

REMOTE ELECTRONICS MODULE, HPFX CONFIG

USED IN THE **HPFX** CONFIGURATION & INSTALLED IN CUSTOMER FURNISHED PRESSURE VESSEL.



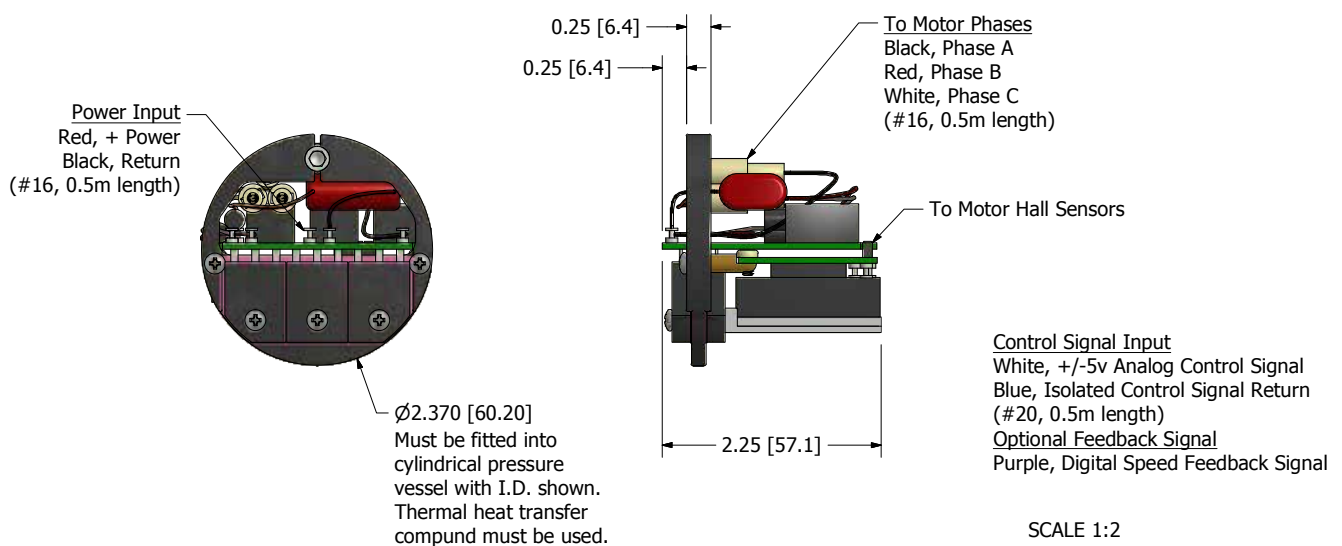
Control Signal Input
 White, +/-5v Analog Control Signal
 Blue, Isolated Control Signal Return
 (#20, 0.5m length)
 Optional Feedback Signal
 Purple, Digital Speed Feedback Signal

SCALE 1:2

Download STP solid model of this electronics module here:
<http://www.tecnadyne.com/thrusters>

REMOTE ELECTRONICS MODULE, HPRX CONFIG

USED IN THE **HPRX** CONFIGURATION & INSTALLED IN CUSTOMER FURNISHED PRESSURE VESSEL.



SCALE 1:2

Download STP solid model of this electronics module here:
<http://www.tecnadyne.com/thrusters>

540 - AAA - BBBB - XX - CCCC - DD - EEEE - FF - HH - JJ

AAA - Buss Voltage Option (Consult factory for other voltages)

24 - 24vdc	60 - 60vdc	130 - 130vdc	230 - 230vdc
30 - 30vdc	75 - 75vdc	150 - 150vdc	260 - 260vdc
48 - 48vdc	100 - 100vdc	200 - 200vdc	

BBBB - Subsea Connector Option (Consult factory for other connectors)

LMG6FS - SeaCon LMG-6-FS, cable end, for **SCLX** only
MCIL5M - SeaCon MCIL5M, cable end, for **SCLX** only, no speed feedback
MCIL6M - SeaCon MCIL5M, cable end, for **SCLX** only
MCBH5M - SeaCon MCBH5M, bulkhead mount, **SCLX** only, no speed feedback
MCBH6M - SeaCon MCBH6M, bulkhead mount, **SCLX** only
IL6M - SeaCon IL6M, cable end, for **SCLX** only
MHDG8CCP - Impulse MHDG-8-BCR, oil filled tubing, for **HPFX** or **HPRX**, all voltages
MCPBOF8M - SubConn MCPBOF8M, oil filled tubing, for **HPFX** or **HPRX**, all voltages

for technical details on the referenced connectors please go to www.seaconworld.com, www.impulse-ent.com & www.subconn.com

XX - Cable Length Option (Does not apply to BCR or FCR style connectors)

XX - Cable Length in X.X meters - leave as XX if no cable installed

CCCC - Maximum Operating Depth Option

0850 - 850 meters (2800 ft)
1500 - 1,500 meters (5,000 ft), (extra cost option)
FOD - Full Ocean Depth (Requires Oil Filled Pressure Compensated option, above)

DD - Material of All Wetted Metallic Surfaces Option

AL - 6061-T6 Aluminum, Hard Anodized Black
SS - Type 316 Stainless Steel, Passivated
TI - 6Al4V Titanium

EEEE - Self Contained or Remote Electronics Option

SCLX - Self Contained Electronics (electronics in housing with motor)
HPFX - Remote Electronics, Square heat plate electronics, 1 Atmosphere Motor Housing
HPRX - Remote Electronics, Round heat plate electronics, 1 Atmosphere Motor Housing
the Model 1020 can also be supplied with the **RSOF** or the **RROF** electronics from the Model 1060

FF - Mounting Option

ST - Strut Mount **BM** - Blade Mount

HH - Propeller Handing Option

RH - Right Hand, Stainless Steel Propeller **LH** - Left Hand, Stainless Steel Propeller

541 - AAA - BBBB - XX - CCCC - DD - EEEE - FF - HH - JJ

AAA - Buss Voltage Option (Consult factory for other voltages)

24 - 24vdc	60 - 60vdc	130 - 130vdc	230 - 230vdc
30 - 30vdc	75 - 75vdc	150 - 150vdc	260 - 260vdc
48 - 48vdc	100 - 100vdc	200 - 200vdc	

BBBB - Subsea Connector Option (Consult factory for other connectors)

LMG6FS - SeaCon LMG-6-FS, cable end, for **SCLX** only
MCIL5M - SeaCon MCIL5M, cable end, for **SCLX** only, no speed feedback
MCIL6M - SeaCon MCIL5M, cable end, for **SCLX** only
MCBH5M - SeaCon MCBH5M, bulkhead mount, **SCLX** only, no speed feedback
MCBH6M - SeaCon MCBH6M, bulkhead mount, **SCLX** only
IL6M - SeaCon IL6M, cable end, for **SCLX** only
MHDG8CCP - Impulse MHDG-8-BCR, oil filled tubing, for **HPFX** or **HPRX**, all voltages
MCPBOF8M - SubConn MCPBOF8M, oil filled tubing, for **HPFX** or **HPRX**, all voltages

for technical details on the referenced connectors please go to www.seaconworld.com, www.impulse-ent.com & www.subconn.com

XX - Cable Length Option (Does not apply to BCR or FCR style connectors)

XX - Cable Length in X.X meters - leave as XX if no cable installed

CCCC - Maximum Operating Depth Option

0850 - 850 meters (2800 ft)
1500 - 1,500 meters (5,000 ft), (extra cost option)
FOD - Full Ocean Depth (Requires Oil Filled Pressure Compensated option, above)

DD - Material of All Wetted Metallic Surfaces Option

AL - 6061-T6 Aluminum, Hard Anodized Black
SS - Type 316 Stainless Steel, Passivated
TI - 6Al4V Titanium

EEEE - Self Contained or Remote Electronics Option

SCLX - Self Contained Electronics (electronics in housing with motor)
HPFX - Remote Electronics, Square heat plate electronics, 1 Atmosphere Motor Housing
HPRX - Remote Electronics, Round heat plate electronics, 1 Atmosphere Motor Housing
the Model 1020 can also be supplied with the **RSOF** or the **RROF** electronics from the Model 1060

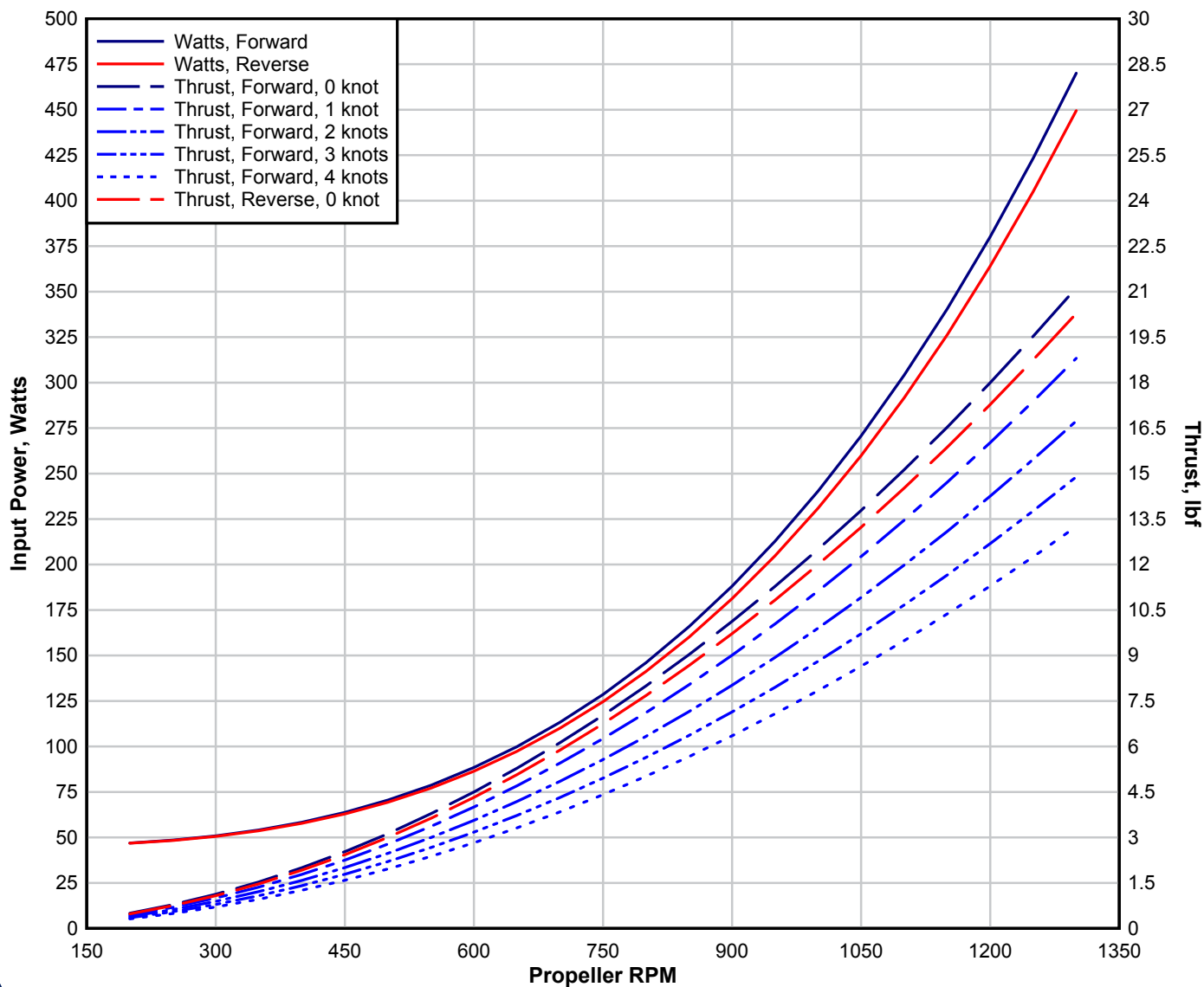
FF - Mounting Option

ST - Strut Mount **BM** - Blade Mount

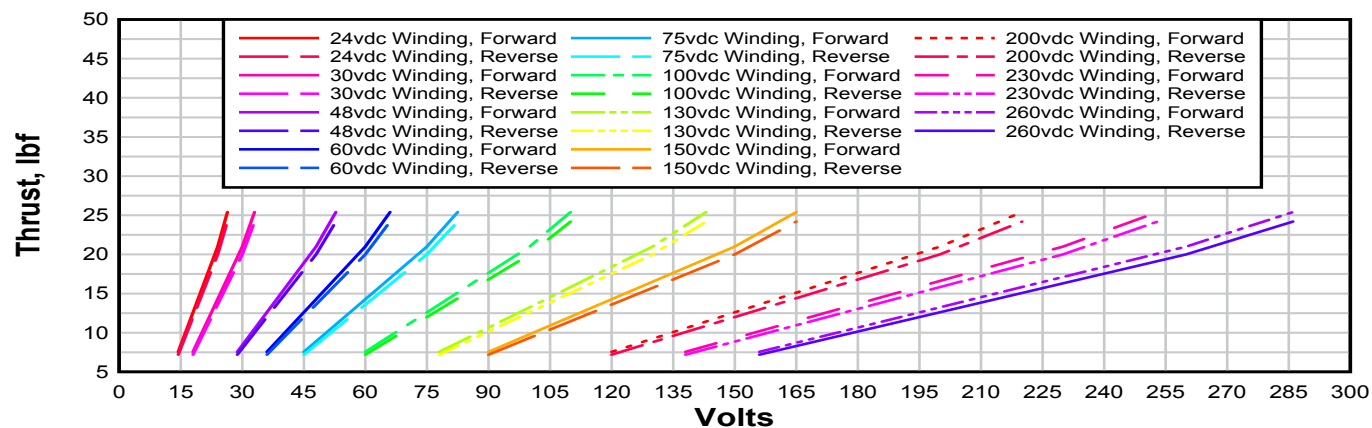
HH - Propeller Handing Option

RH - Right Hand, Stainless Steel Propeller **LH** - Left Hand, Stainless Steel Propeller

Model 540 Thruster
Input Power & Thrust vs. Propeller RPM



Model 540 Thruster
Thrust vs. Voltage Change



WHAT WERE YOU DOING 30 YEARS AGO?

In 1985 Tecnadyme delivered its first thrusters, six Model 1020's that were installed on the original RTV-500 built by Mitsui Engineering & Shipbuilding (MES) of Tokyo. Since that time, we have manufactured and delivered over 6,000 thrusters, including more than 600 of the Model 1020. And even though the Model 1020 that we build today incorporates over 32 design revisions to improve reliability, efficiency and maintainability – that thruster is still 100% compatible with the Model 1020 that was installed on that first RTV-500 system more than 30 years ago. This means that, after 30+ years, MES (or any of our customers) can still purchase or repair a Model 1020 thruster to keep its fleet of ROV's working. And in those 30 years, the Model 1020 thruster has powered vehicles to the Titanic, that discovered JFK's PT-109 in the Pacific, that participated in record depth wellhead completions off the coast of West Africa, that discovered lost cities in the Black Sea, that have scoured the world's oceans for mines, and that have successfully completed thousands of routine subsea missions. And the Model 1020 thruster is still being installed on new ROV and AUV systems worldwide.

And, like the Model 1020, Tecnadyme's twenty-one other thruster models have also served the offshore community with reliability, high performance and cost effectiveness – but none for quite as long as the Model 1020's 30 years. Tecnadyme is constantly developing and releasing new thruster models, with 4 new models released in 2010 and 4 models being released in 2013.

It is Tecnadyme's commitment to its customers and to the subsea community that no vehicle system, be it an ROV, an AUV, a manned submersible or any other subsea system, will ever be made obsolete because the Tecnadyme thrusters installed on that system are no longer available for a reasonable and competitive price.

So, for your next ROV, AUV or manned submersible build or purchase, be sure to specify only genuine Tecnadyme thrusters. You, your operators, your technicians and your customers will be glad you did – for the next 30 years.

QUALITY ASSURANCE

Tecnadyme operates under a Quality Plan that is fully ISO 9001:2008 compliant. All electrical soldering is performed by technicians certified to the IPC J-STD-009 & IPC-A-610 standards.

FINAL TEST & INSPECTION

All Tecnadyme products undergo a rigorous set of final test procedures. Each thruster is operated at reduced power and full power in both directions for extended time periods. Each thruster is pressure tested and then subjected to an insulation breakdown test to identify leaks or other problems. Prior to shipment to the customer, each thruster is certified to perform correctly and to factory specifications.

EXPRESS LIMITED WARRANTY

Subsea thruster motors manufactured by Tecnadyme are warranted to the original Purchaser for a period of one year from the date of shipment from the factory to conform to Tecnadyme's specifications at the time of purchase and to be free of mechanical, electrical and physical defects in material and workmanship if the products have been installed, electrically connected, operated and serviced in accordance with Tecnadyme's instructions as listed in the Operations & Maintenance Manual accompanying the thrusters.

Except for the express warranty set forth herein, Tecnadyme makes no other warranties or guarantees, express, oral, implied or statutory, regarding its subsea thruster products. All such warranties are expressly disclaimed to the extent allowable by law.

BUILT WITH PRIDE



IN THE U.S.A.



9770 Carroll Centre Road, Suite C
San Diego, CA 92126, USA
Voice & Fax: 1-858-586-9660

Ext 101 for Sales, Ext 104 for Service, Ext 113 for Deliveries



Visit our Website
www.tecnadyne.com

Friend us on Facebook
facebook.com/tecnadyne



Get our Tweets
[@tecnadyne](https://twitter.com/tecnadyne)



Follow our Blog
tecnadyne.wordpress.com



Meet on LinkedIn.com/
company/tecnadyne