TECNADYNE

MODEL 300
DC BRUSHLESS THRUSTER

- 475w thruster develops over 17lbf (7.7 kgf) forward thrust & over 7lbf (3.2kgf) 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 efficiency propeller & Kort nozzle for maximum Bollard thrust.
- Investment cast stainless steel propeller in either right hand or left hand 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, 48vdc, 70vdc, 90vdc, 105vdc, 150vdc, 210vdc, 260vdc. Other voltages optional.

Bollard Output
17lbf (7.7kgf) forward, 7lbf (3.2kgf) reverse, using RH & LH investment cast stainless steel propellers.

Input
475w at 24vdc, 48vdc, 70vdc, 90vdc, 105vdc, 150vdc, 210vdc or 260vdc, +/-5v analog speed control.

Weight
2.2-3.1lbs (1-1.4kg) in air, 1.8-2.8lbs (.8-1.3kg) 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 300 is one of the smaller DC brushless thrusters manufactured by Tecnadyne and is ideally suited for use on small inspection ROV's and smaller AUV's.

Magnetic Propeller Coupling

As with all Tecnadyne thrusters, the propeller of the Model 300 is magnetically coupled. With this design, a magnet array is fitted inside the hub of the propeller; and is driven by a 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 300 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 300 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.

Highly Efficient Propeller & Nozzle

The Model 300 comes standard with investment cast stainless steel propellers and these are available in either right hand or left hand rotation. The propeller operates in a Nylon 6/6 Kort nozzle for maximum thrust and efficiency.

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 300 is available for operation at voltages of 24vdc, 48vdc, 70vdc, 90vdc, 105vdc, 150vdc, 210vdc 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 300 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. In addition, the thruster can be supplied with a separate digital speed feedback signal.

Other Options

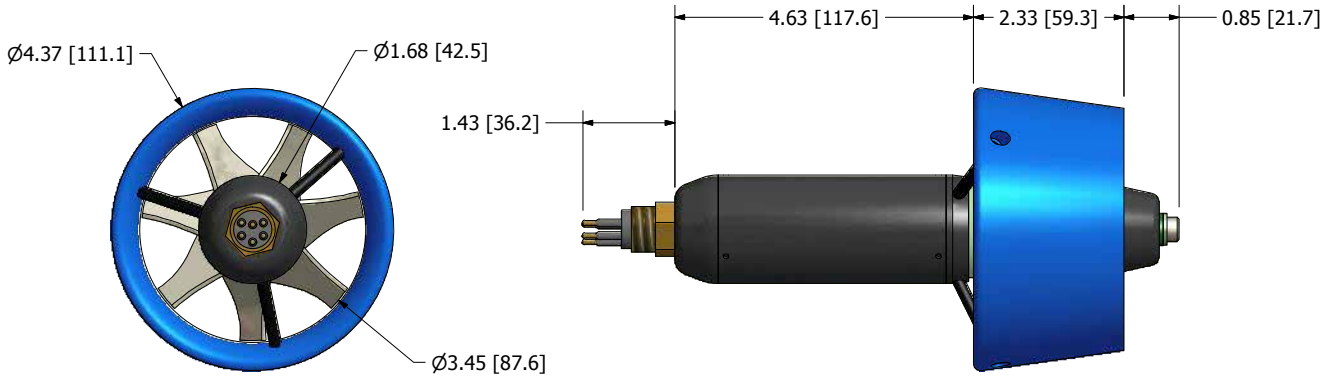
Optional configurations include: the 8 available buss voltage choices previously mentioned; housings made from hard anodized aluminum (standard), Type 316 stainless steel or 6Al4V titanium; several bulkhead type or cable end subsea connectors; and RH or LH rotation propellers.

Custom propellers and Kort nozzles can be developed to suit specific operating requirements.

Please note that the specifications are subject to change without notice. Additionally, Model 300 thrusters for operation to depths greater than 1,000 meters are subject to U.S. Government export controls.

MODEL 300

300-AAA-MCBH6M-XX-0850-AL-SCLX-SM-RH-UK



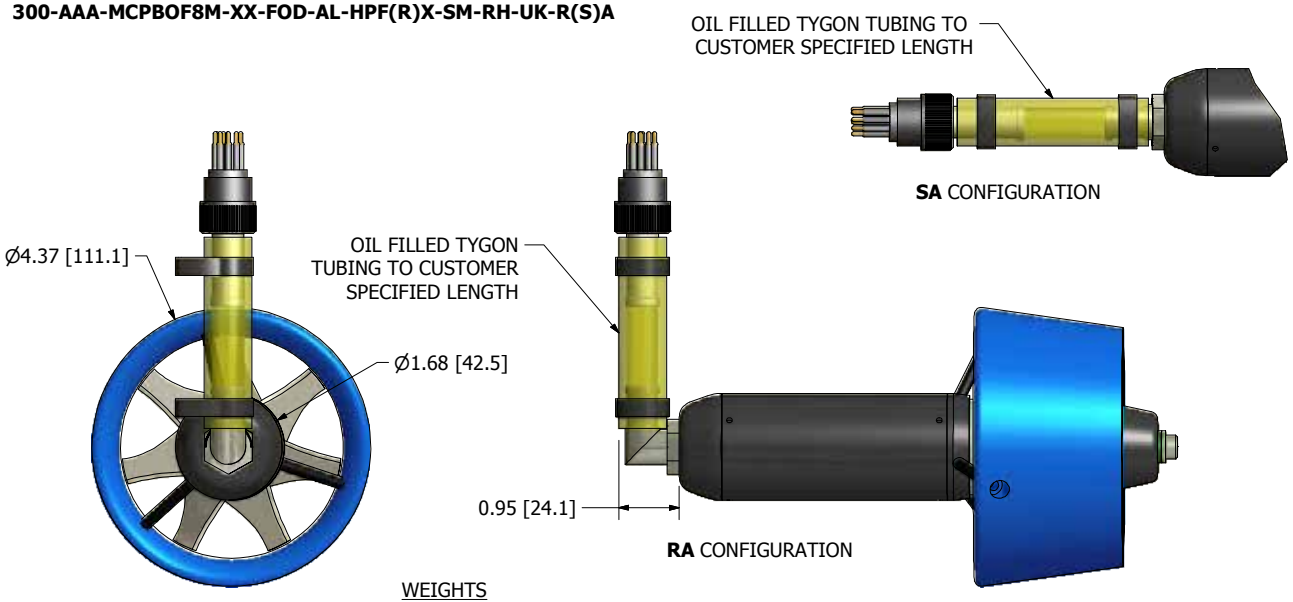
WEIGHTS
2.2lb [1.0kg] in air
1.6lb [0.7kg] in water

SCALE 1:3

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

MODEL 300

300-AAA-MCPBOF8M-XX-FOD-AL-HPF(R)X-SM-RH-UK-R(S)A



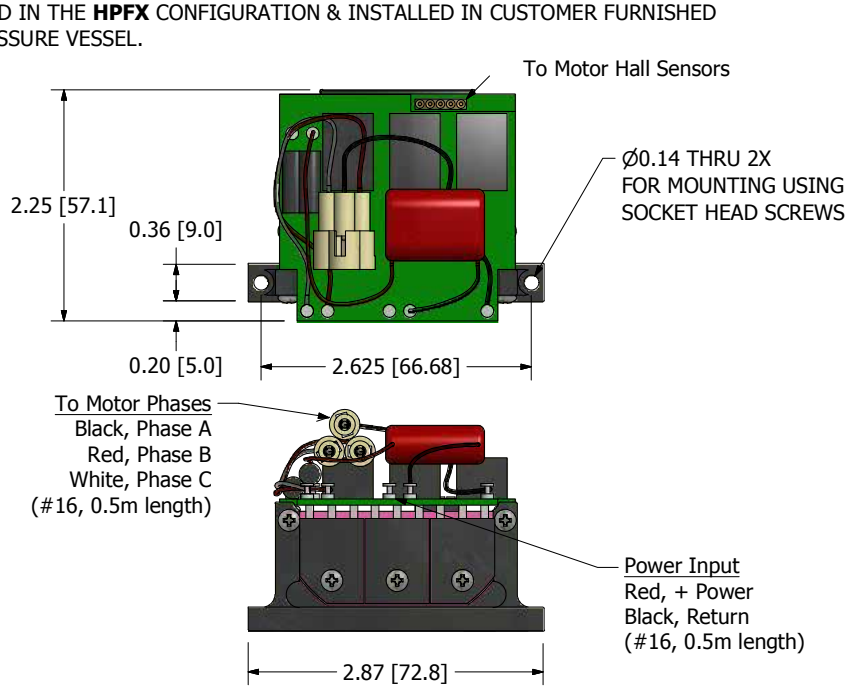
WEIGHTS
2.4lb [1.1kg] in air
1.8lb [0.8kg] in water

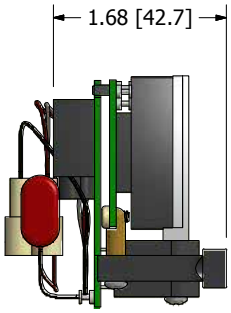
SCALE 1:3

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.





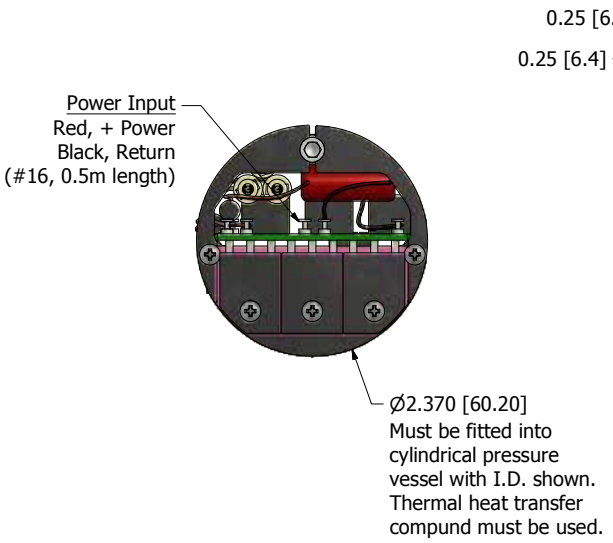
Control Signal Input
White, +/-5v Analog Control Signal
Blue, Isolated Control Signal Return
(#20, 0.5m length)
Optional Feedback Signal
Purple, Digital Speed Feedback Signal

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.



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

300 - AAA - BBBBB - XX - CCCC - DD - EEEE - FF - HH - JJ - KK

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

24 - *24vdc*	**70** - *70vdc*	**105** - *105vdc*	**210** - *210vdc*
48 - *48vdc*	**90** - *90vdc*	**150** - *150vdc*	**260** - *260vdc*

BBBBB - *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*
MCBH5M - *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*

FF - *Mounting Option*

SM - *Saddle Mount (only option available at this time)*

HH - *Propeller Handing Option*

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

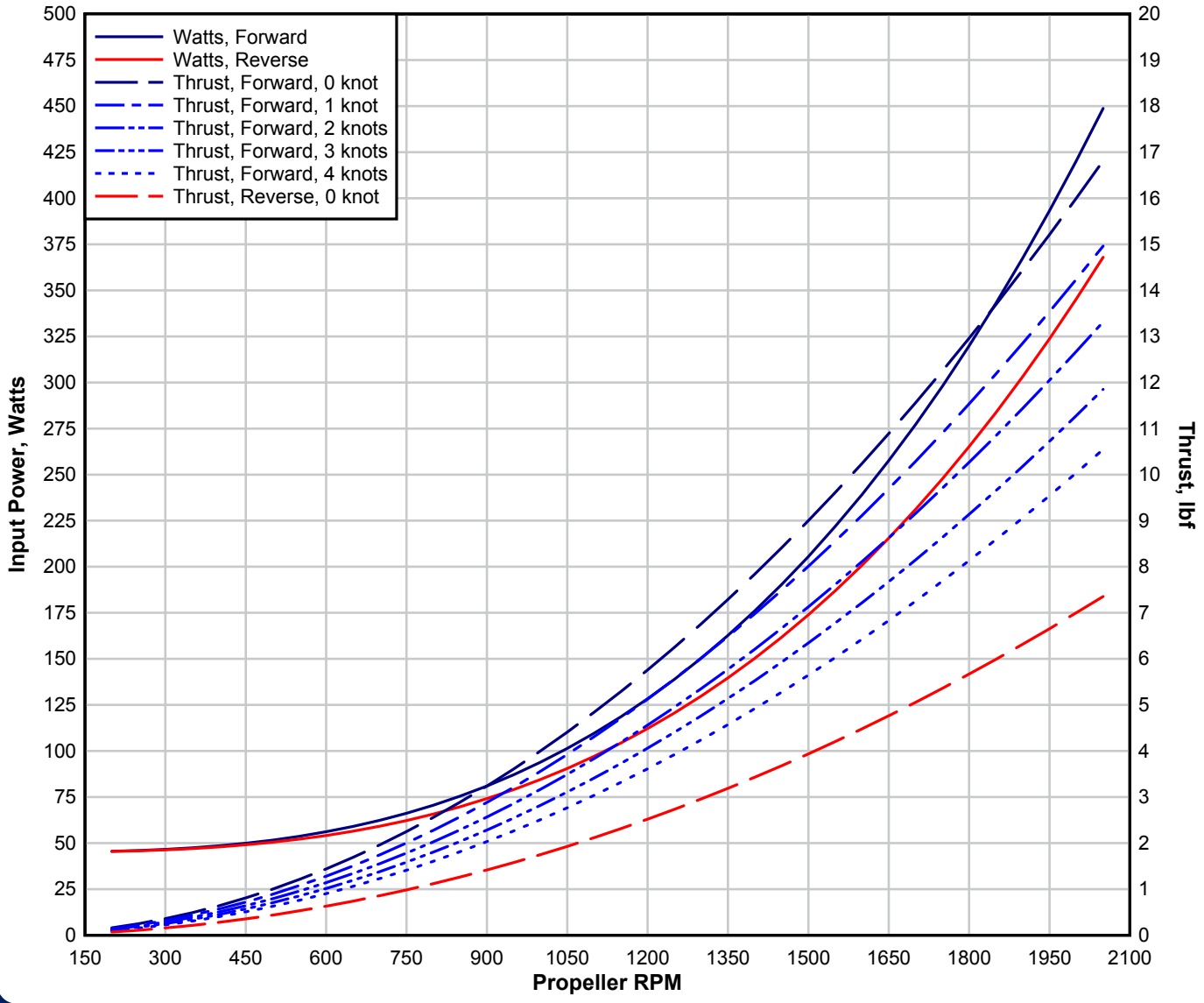
JJ - *Nozzle Options*

BK - *Black*
UK - *Blue (extra cost option)*

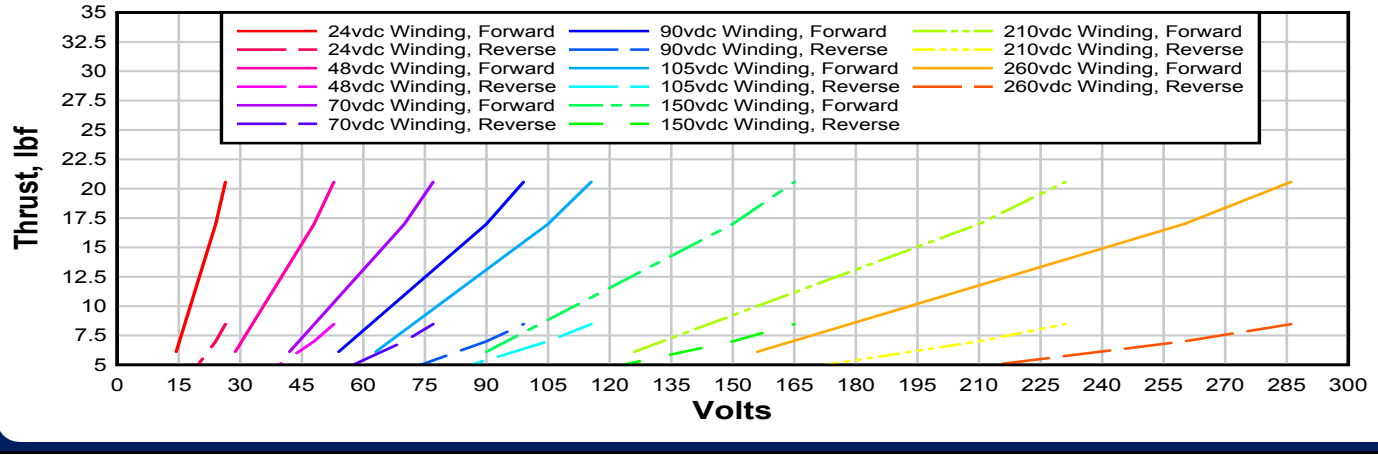
KK - *Hose Nipple Options (only with HPFX & HPRX options, otherwise leave blank)*

RA - *Right Angle Hose Nipple*
SA - *Straight Hose Nipple*

Model 300 Thruster
Input Power & Thrust vs. Propeller RPM



Model 300 Thruster
Thrust vs. Voltage Change



WHAT WERE YOU DOING 30 YEARS AGO?

In 1985 Tecnadyne 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, Tecnadyne'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. Tecnadyne is constantly developing and releasing new thruster models, with 4 new models released in 2010 and 4 models being released in 2013.
It is Tecnadyne'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 Tecnadyne 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 Tecnadyne thrusters. You, your operators, your technicians and your customers will be glad you did – for the next 30 years.

QUALITY ASSURANCE

Tecnadyne 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 Tecnadyne 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 Tecnadyne are warranted to the original Purchaser for a period of one year from the date of shipment from the factory to conform to Tecnadyne'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 Tecnadyne's instructions as listed in the Operations & Maintenance Manual accompanying the thrusters.

Except for the express warranty set forth herein, Tecnadyne 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.

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