Version: 1.2

CONTROL TO THE MAX

CT550 AC MANUAL

INSTALLATION OPERATION MAINTENANCE

Last update: September 2026

Serial N° : .....

Date of Installation: .....

IT IS IMPORTANT TO KEEP THIS MANUAL ON BOARD!

Address: Via Leonardo Da Vinci, n.6 20040 Cambiago (MI), Italy. Tell.: +39 02 3664 0684.

www.max-power.com

MAX POWER

Version: 1.2

MAX POWER

Version: 1.2

Table of Contents

1. Product Description....4
2.1 Single Joystick Connection....6
2.2 Double Joystick Connection....7
2.3 Joystick wiring....8
2.4 Main power connections....8
2.5 Wiring Switch, Short Circuit Switch, and Electronic Contactor....9
2.6 AC Reactor Specifications....9
2.7 Removing the Front Cover for Cable Connection....10
2.8 Protective Measures for the Inverter and the Motor....13
2.9 Input and Output Specifications 400 V Class (30– 160 kW)....14
2.10 Structure and Operating Environment Control....15
2.11 Inverter settings....16
2.12 Key Functions....17
6.3 Period of Coverage....30
6.4 Warranty Registration....30
6.5 Warranty Terms....30
6.6 Warranty Exclusions....30
6.7 Procedural Guidelines....31
7.1 Drive led exploded diagram....33

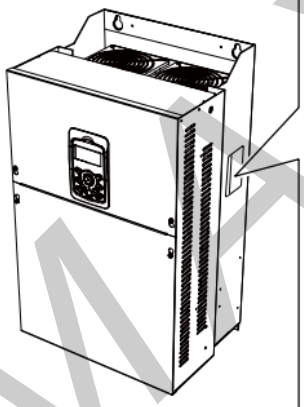
MAX POWER

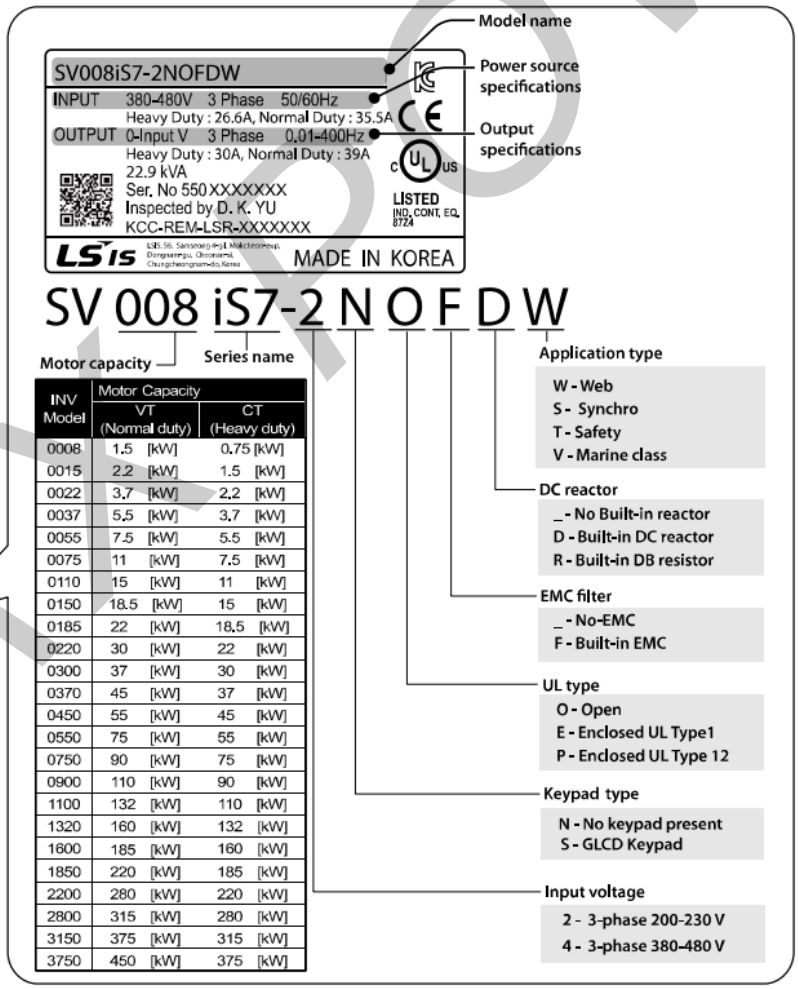
Version: 1.2

1. Product Description

CT550 AC Specifications	
Thrust	450 kgf / 992 lbf
Tunnel dimensions	Internal diameter Ø400mm, External diameter Ø428mm
Drive leg / Props material	Bronze / Aluminum Bronze (anodes present)
Motor specs	30kW, 2 Poles, 2950 RPM @ 50Hz (weight 226kg, induction type)
Starting current ratio	7.2
Motor connection	DELTA (Δ)
Duty	S1
Power factor (Cosϕ)	0.9
Power supply	380-420V, 3ph, 50Hz*
Nominal amperage	53 A
Thruster Installation(vertical/horizontal)	Both (vertical needs special support for motor weight)
Inverter Generator consumption	40HP/50HP 400V, Series iS7 SV0300iS7-4 SOD (weight 41kg) 35 - 40 kW (generator capacity to be 2x generator load)

If a different supply is used, it must comply with the specifications and wiring indicated on the motor nameplate and in the inverter table (page 9). The circuit breaker must be sized accordingly. For further information, contact Max Power.





INV Model	Motor Capacity VT (Normal duty)	Motor Capacity CT (Heavy duty)
0008	1.5 [kW]	0.75 [kW]
0015	2.2 [kW]	1.5 [kW]
0022	3.7 [kW]	2.2 [kW]
0037	5.5 [kW]	3.7 [kW]
0055	7.5 [kW]	5.5 [kW]
0075	11 [kW]	7.5 [kW]
0110	15 [kW]	11 [kW]
0150	18.5 [kW]	15 [kW]
0185	22 [kW]	18.5 [kW]
0220	30 [kW]	22 [kW]
0300	37 [kW]	30 [kW]
0370	45 [kW]	37 [kW]
0450	55 [kW]	45 [kW]
0550	75 [kW]	55 [kW]
0750	90 [kW]	75 [kW]
0900	110 [kW]	90 [kW]
1100	132 [kW]	110 [kW]
1320	160 [kW]	132 [kW]
1600	185 [kW]	160 [kW]
1850	220 [kW]	185 [kW]
2200	280 [kW]	220 [kW]
2800	315 [kW]	280 [kW]
3150	375 [kW]	315 [kW]
3750	450 [kW]	375 [kW]

MAX POWER

2. Electrical Installation

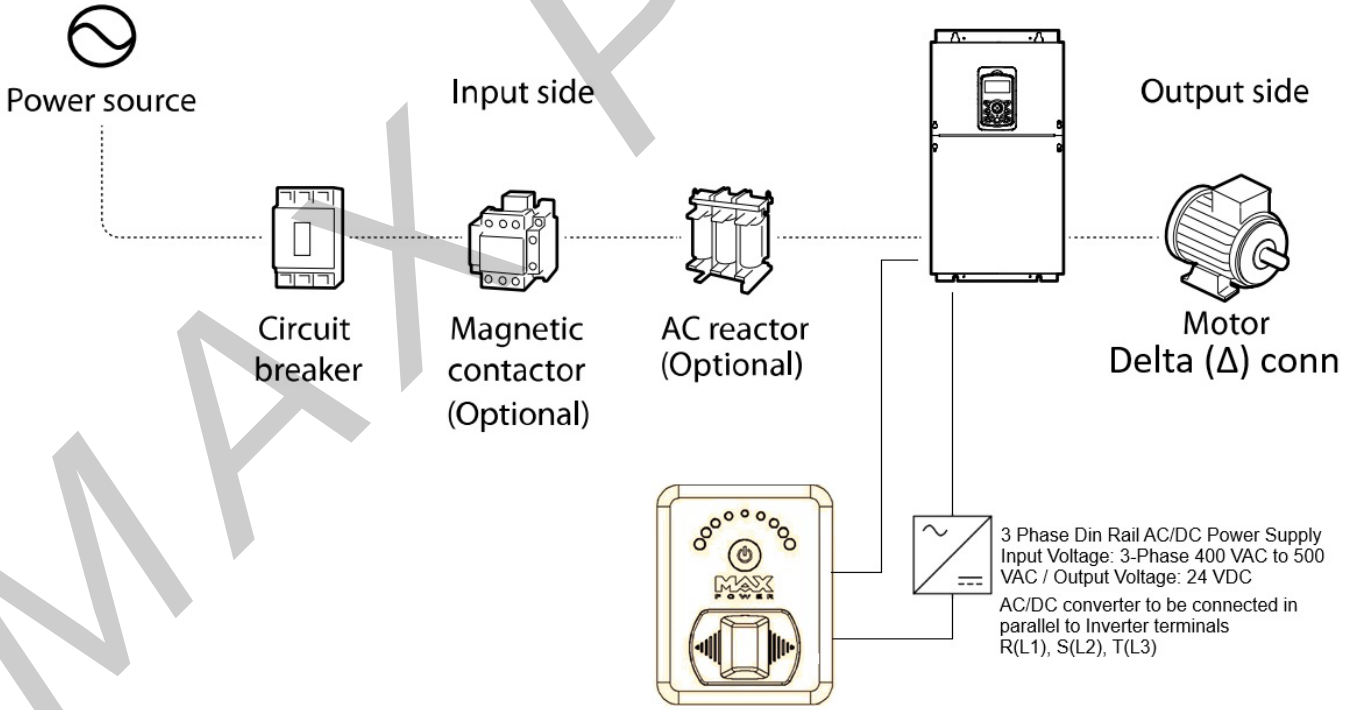
⚠ Warning

- This equipment must be grounded for safe and proper operation.
- Do not supply power to a faulty inverter. If you find that the inverter is faulty, disconnect the power supply and have the inverter professionally repaired.
- The inverter becomes hot during operation. Avoid touching the inverter until it has cooled to avoid burns.
- Do not allow foreign objects, such as screws, metal chips, debris, water, or oil, to get inside the inverter. Allowing foreign objects inside the inverter may cause the inverter to malfunction or result in a fire.
- Do not operate the inverter with wet hands. Doing so may result in electric shock.

⚠ Caution

- Do not modify the interior workings of the inverter. Doing so will void the warranty.
- Do not use cables with damages or cracks on the protective insulation when wiring the inverter. Damaged insulation may cause misoperation, an electric shock or a fire.
- Do not place heavy objects on top of electric cables. Doing so may damage the cable and result in an electric shock.

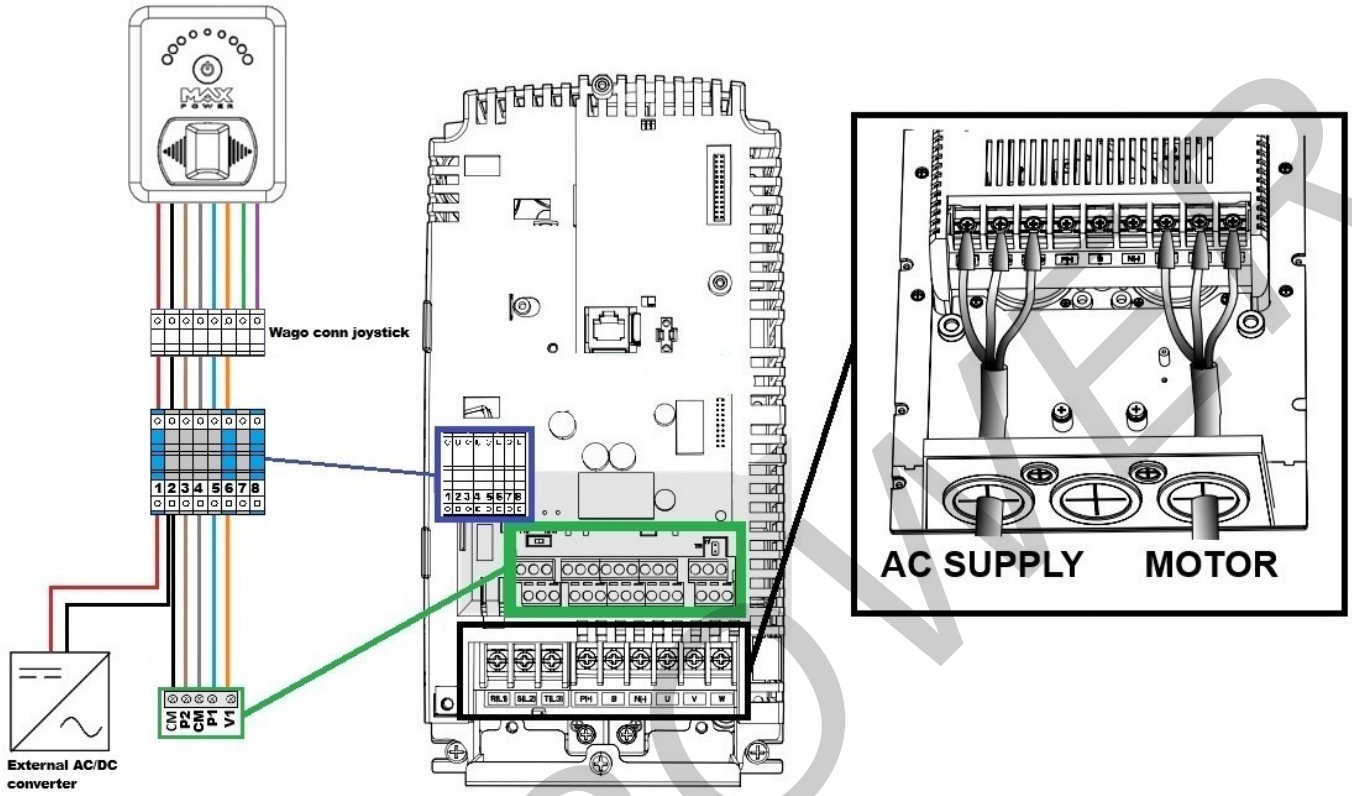
Connection Diagram



External DC reactor cannot be used with the inverter

MAX POWER

2.1 Single Joystick Connection



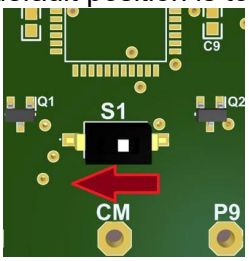
Source	Terminal block	Max Power joystick color cable	Function
External AC/DC converter	#1	RED	(+) 24V
External AC/DC converter	#2	BLACK	(-) 24V
Inverter terminal block **P2**	#3	BROWN	Left / Port thrust
Inverter terminal block **CM**	#4	GREY	
Inverter terminal block **P1**	#5	BLUE	Right / Starboard thrust
Inverter terminal block **V1**	#6	ORANGE	
Inverter extension module **P9**	#7	YELLOW	Only for 2nd Joystick
Inverter extension module **V2**	#8	ORANGE	Only for 2nd Joystick

MAX POWER

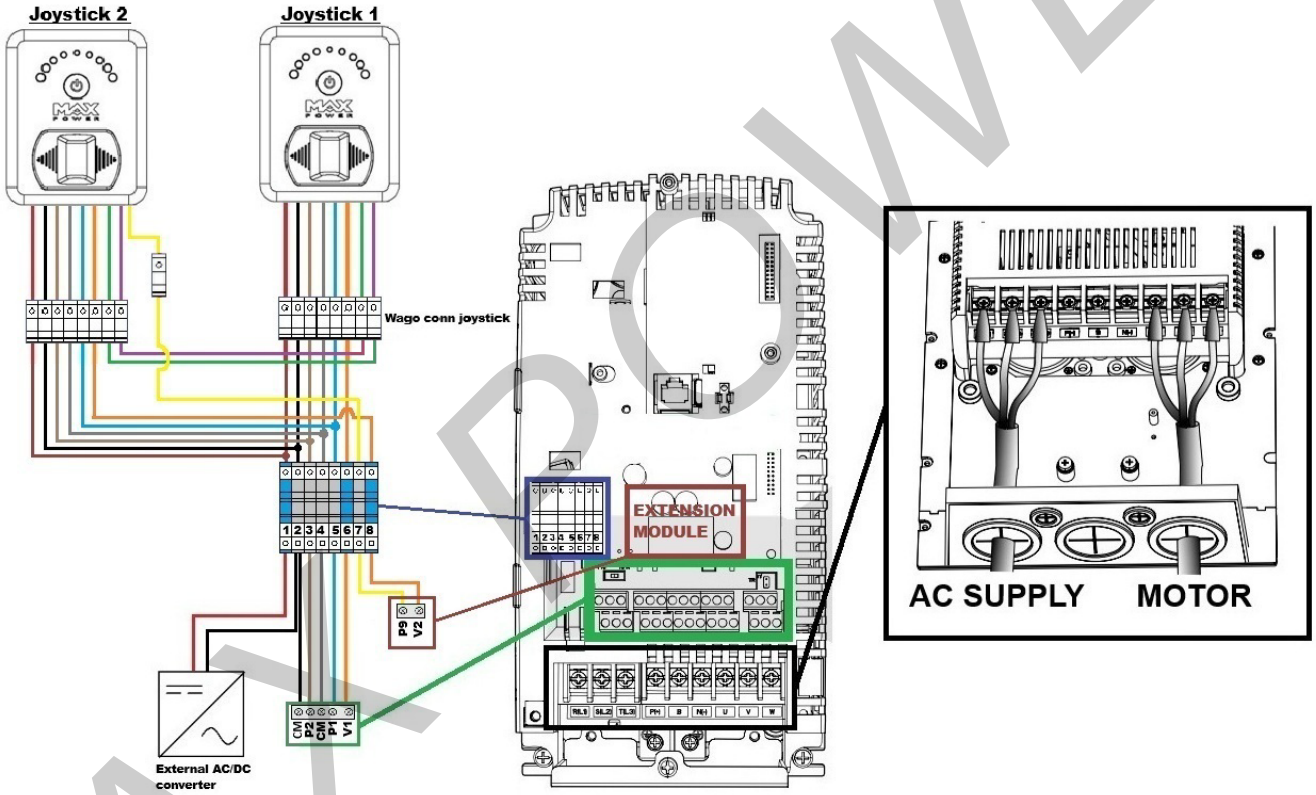
Version: 1.2

2.2 Double Joystick Connection

To connect a second joystick in parallel, first both joysticks must be opened, and the DIP Switch S1 on each joystick must be moved to the left position (the default position is to the right), as shown in the image below:



The wiring diagram for two joysticks will be following:



Source	Terminal block	Max Power joystick color cable	Function
External AC/DC converter	#1	RED	(+) 24V
External AC/DC converter	#2	BLACK	(-) 24V
Inverter terminal block **P2**	#3	BROWN	Left / Port thrust
Inverter terminal block **CM**	#4	GREY	
Inverter terminal block **P1**	#5	BLUE	Right / Starboard thrust
Inverter terminal block **V1**	#6	ORANGE	
Inverter extension module **P9**	#7	YELLOW	Only for 2nd Joystick
Inverter extension module **V2**	#8	ORANGE	Only for 2nd Joystick

IMPORTANT: The green wire of the 2nd Joystick is connected to the purple wire of the 1st Joystick, the purple wire of the 2nd Joystick is connected to the green wire of the 1st Joystick.

MAX POWER

GREEN & PURPLE CABLES ONLY FOR CONNECTING THE TWO JOYSTICKS

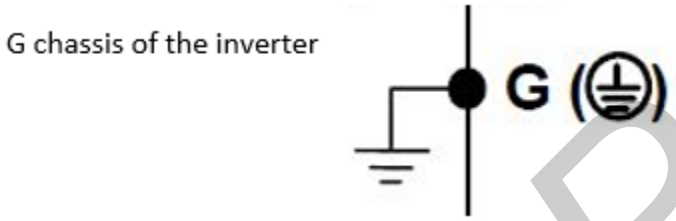
The setting for P9 (P9 Define) should be done as follows
For 1 Joystick, IN 73 should have the option 0 : None DC
For 2 Joysticks, IN 73 should have the option 15 : 2nd Source (check settings table 13)
Only for the second Joystick, connect it in parallel to Terminals #1-5 with the same cable colors.
Terminals #7 (Yellow wire of the second joystick) and #8 (Orange wire of the second joystick) are connected to the extension card. The green wire of the 2nd Joystick is connected to the purple wire of the 1st Joystick, the purple wire of the 2nd Joystick is connected to the green wire of the 1st Joystick.

2.3 Joystick wiring

The proportional joystick must be supplied with 24VDC from an external supply. The 24VDC supply of the Inverter must not be used as it is not adequate and the inverter will produce an error. For the 24VDC supply a AC/DC converter can be used with the following specs:
3 Phase Din Rail AC/DC Power Supply
Input Voltage: 3-Phase 400 VAC or 24V battery / Output Voltage: 24 VDC

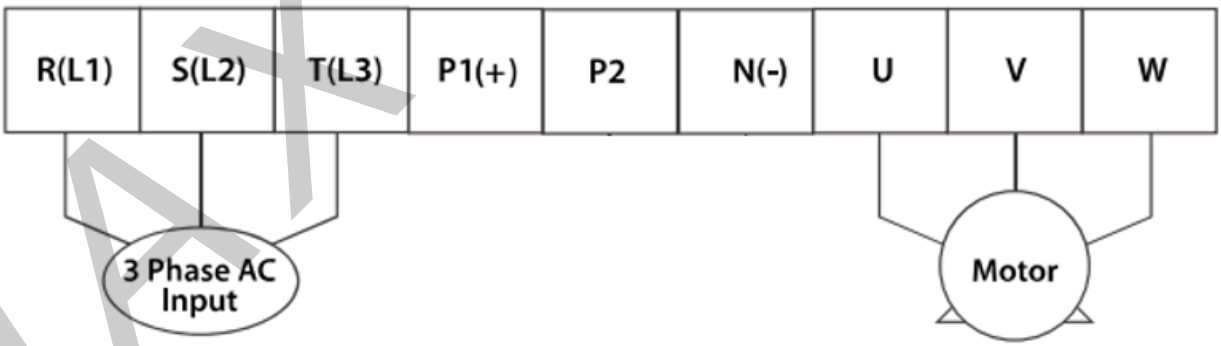
The connection of the joystick with the Inverter must be done by using a Shielded type cable for distance 30 – 40 meters without losses (for example **Shielded LiYCY** (6 × 0.5 mm² ή 6 × 0.75 mm²).

Shield Grounding: Connect the cable shield (the metallic braid) to ground (GND) **only at the inverter side**.



IMPORTANT: If it is connected at both ends, it will create a ground loop, resulting in increased electrical noise.

2.4 Main power connections



Connect the power cables to the input (R, S, T) and output (U, V, W) terminals. Then, tighten the terminal screws

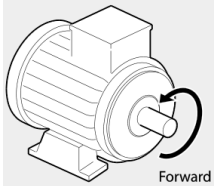
⚠ Use shielded cables to connect the inverter to the motor.

MAX POWER

Terminal Symbol	Terminal Name	Description
R (L1), S (L2), T (L3)	AC power supply input terminals	AC input terminals
P1 (+)	(+) DC voltage terminal	Not used
P2, N (-)	Dynamic brake resistor terminal / DC common*	Not used
N (-)	(-) DC voltage terminal	Not used
U, V, W	Inverter output terminals	Output terminals to a 3-phase induction motor

Note

If the forward command (Fx) is turned on, the motor should rotate counterclockwise when viewed from the load side of the motor. If the motor rotates in the reverse direction, switch the cables at the U and V terminals.



Forward operation

2.5 Wiring Switch, Short Circuit Switch, and Electronic Contactor

Inverter Capacity	Wiring Switch				Short Circuit Switch		Electronic Contactor	
	METASOL		SUSOL					
	Model	Rated current[A]	Model	Rated current[A]	Model	Rated current[A]	Model	Rated current[A]
0300iS7-4	ABS103c	125	UTS150	125	EBS203c	125	MC-100a	105

Caution

Only use Class H or RK5 UL listed input fuses and UL listed breakers. See the table above for the voltage and current ratings for the fuses and breakers.

2.6 AC Reactor Specifications

You can install an AC reactor to prevent the capacitors and generators from overheating or being damaged when the power source voltage is unbalanced.
When you install an AC reactor, connect the AC reactor cables to the R, S, and T terminals on the inverter.
Refer to the following specifications tables to choose an appropriate AC reactor for your application

Inverter capacity	AC reactor specifications			
	Heavy duty		Normal duty	
	mH	A	mH	A
0300iS7-2	0.07	160	0.05	200

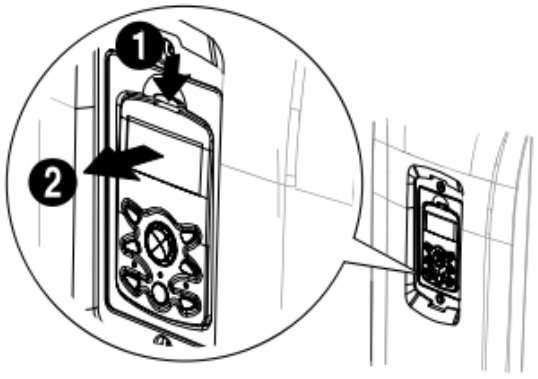
MAX POWER

2.7 Removing the Front Cover for Cable Connection

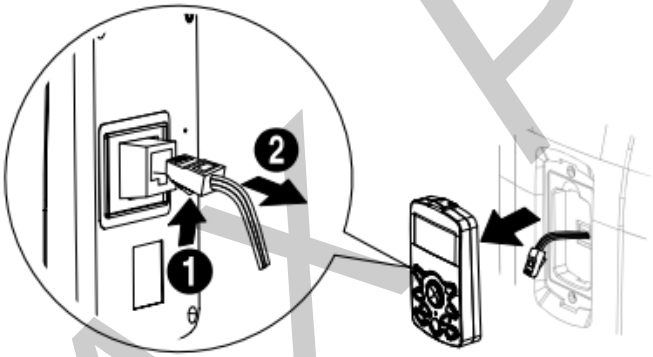
⚠ Danger

Wait at least 10 minutes before opening the covers and exposing the terminal connections. Before working on the inverter, test the connections to ensure the DC voltage has been fully discharged. Personal injury or death by electric shock may result if the DC voltage has not been discharged.

1 Depress the tab at the top of the keypad and gently lift the keypad from the inverter to remove it. Be careful not to damage the keypad cable.

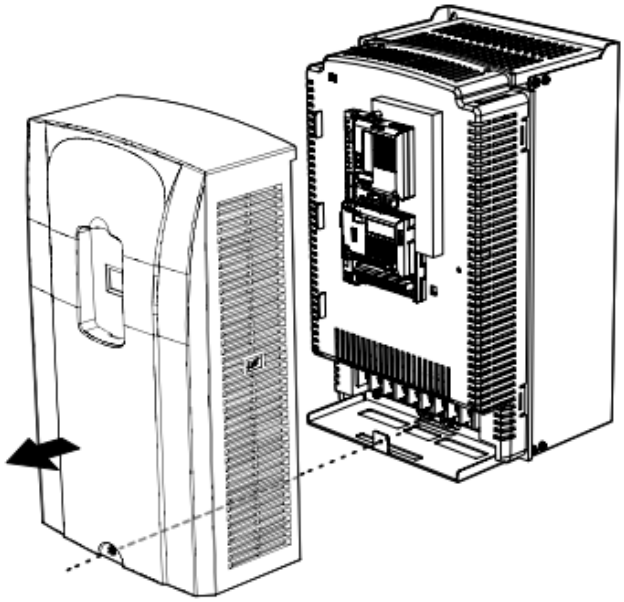


2 Depress the tab on the keypad cable connector and disconnect the cable from the back of the keypad.



MAX POWER

3 Loosen the screw from the bottom part of the front cover, and then remove the front cover.



⚠ Warning

- Do not connect power to the inverter until installation has been fully completed and the inverter is ready to be operated. Doing so may result in electric shock.
- Wiring and inspection of wiring must be performed by an authorized engineer.

⚠ Warning

Install ground connections for the inverter and the motor by following the correct specifications to ensure safe and accurate operation. Using the inverter and the motor without the specified grounding connections may result in electric shock.

⚠ Caution

- Do not use the ground terminal as the signal (control) ground.
- Do not share the ground connection with other machines that consume a large amount of power, such as a welding machine.
- Connect the ground cable to the nearest earth contact and keep the cable length as short as possible.

Because the inverter is a high-frequency switching device, leakage current may occur during operation. To avoid the danger of electrocution due to current leakage, the inverter must be properly grounded. Ground connection must be made to the specified ground terminal on the inverter. Do not connect ground cables to chassis screws.

MAX POWER

Caution

Power supply cables must be connected to the R, S, and T terminals. Connecting power cables to other terminals will damage the inverter.

Note

The motor will rotate in the opposite direction if the U, V, and W terminals are connected in a wrong phase order.

- 400V inverter require Special Class 3 grounding. Resistance to ground must be<= 10 Ω.
- Grounding wire size for 400V class is 16 (mm^2).
- Ensure that all electrical connections are correctly tightened.
- Under no circumstances should any flammable products be stored next to the electrical components of the system.

Inverter capacity		Terminal screw size	Screw torque[1] (Kgf·cm)	Cable[2]				Exterior fuse	
				mm²		AWG or kcmil			
				R,S,T	U,V,W	R,S,T	U,V,W	Current	Voltage
400V	30 kW	M8	61.2–91.8	25	25	4	4	125 A	500 V

1) Apply rated torques to the terminal screws. Loose screws may cause the terminals to short circuit and malfunction.
2) Only use copper wires with a 600 V, 75℃ rating for the power terminal wiring.
The maximum cable lengths of the inverter and the motor are listed in <Table 1) Maximum cable length by inverter capacity. Make sure that the total cable length does not exceed 495 ft (150 m). Long cable runs can cause reduced motor torque in low frequency applications due to voltage drop. Long cable runs also increase a circuit's susceptibility to stray capacitance and may trigger over-current protection devices, or result in the malfunction of equipment connected to the inverter.

<Table 1) Maximum Cable Length by Inverter Capacity>

Inverter capacity	Up to 3.7 kW	5.5 kW or more
Maximum cable length	< 164 ft (50 m)	< 492 ft (150 m)

The following table lists maximum carrier frequencies available for model types with a rated capacity of 5.5 kW or more.

<Table 2) Maximum Carrier Frequency according to Cable Length>

Distance	< 165 ft (50 m)	< 330 ft (100 m)	> 330 ft (100 m)
Allowed Carrier Frequency	<15 kHz	<5 kHz	<2.5 kHz

Depending on the system layout and operating conditions at the installation site, high peak output voltage may result.
a) If the output peak voltage is too high even when the motor cable length is shorter than the maximum recommended cable length for the inverter capacity:
- use a motor with a high insulation rating.

MAX POWER

- install an output circuit filter (micro surge filter).
- install a dv/dt filter, or a sine wave filter.

b) If the cable length is too long:
- use thicker cables to prevent voltage drop.

[Voltage Drop (V) = [√3 X cable resistance (mΩ/m) X cable length (m) X current (A)] / 1000] - do not use 3-core cables.
- use a lower carrier frequency

2.8 Protective Measures for the Inverter and the Motor

The inverter output voltage pulse, regardless of the actual output frequency, is identical to the DC link voltage pulse, which has a very short rising time. When the power is transmitted through the output cables, the output peak voltage can rise up to twice the total DC link voltage (2.8 times the main power voltage).
If a switching device (a magnetic contactor or relay) is connected to the output side of the inverter, high-voltage surges may result whenever a switch is made, regardless of the length of the motor cable.
Such high-voltage surges can damage the inverter's output components (such as the current sensor), motor cables, and the motor itself. To protect the inverter and the motor from such damage caused by a high-voltage surge, do not install switching devices in the output side of the inverter. You can install an output reactor, dv/dt filter, or sine wave filter to protect the inverter and motor from a surge voltage.
An output surge with a high switching frequency and fast rising time causes a motor shaft current that runs through the motor bearing. It slowly corrodes the surface of the motor bearing, eventually seizing up the motor.
To decrease the motor shaft current and protect the motor insulation, refer to <Table 1) Maximum cable length by inverter capacity>. Install a dv/dt filter or sine wave filter if possible, regardless of the length of the motor cable

Caution:

Only use Class H or RKS UL listed input fuses and UL listed breakers. See that table above for the voltage and current ratings for the fuses and breakers.

MAX POWER

2.9 Input and Output Specifications 400 V Class (30– 160 kW)

Model SV xxx iS7-2x			0300
Applied Motor	Normal load	HP	50
		kW	37
	Heavy load	HP	40
		kW	30
	Rated Capacity (kVA)		46
Rated output	Rated Current (A)	Normal load	75
		Heavy load	61
	Output Frequency		0–400 Hz (Sensorless-1: 0–300 Hz, Sensorless-2, Vector: 0.1–120 Hz)
	Output Voltage (V)		3-Phase 380–480 V
	Working Voltage (V)		3-Phase 380–480 VAC (-15%–+10%)
	Input Frequency		50–60 Hz (±5%)
Rated input	Rated Current (A)	Normal load	67.5
		Heavy load	55.5

- The standard used for 400 V inverters is based on a 440 V supply voltage.
- The rated output current is limited based on the carrier frequency set at CON-04.
- The output frequency is limited to 0–300 Hz if DRV-09 (control mode) is set to "3 (Sensorless-1)," and to 0–120 Hz if DRV-09 (control mode) is set to "4 (Sensorless-3)."
- The maximum output voltage cannot exceed the input voltage of the power source.

MAX POWER

2.10 Structure and Operating Environment Control

Items		Description
Structure/ operating environment	Cooling type	Inhalation cooling: 30–375 kW (400 V class)
	Protection structure	Open type IP 00, the inverter must be installed in a dry, well-ventilated environment with adequate cooling and away from any flammable materials.
	Ambient temperature	• CT load (heavy duty): -10–50℃ • VT load (normal duty): -10–40℃

Items		Description
		- No ice or frost should be present. - Working under normal load at 50℃ (122°F), it is recommended that less than 80% load is applied. • IP54 product: -10–40℃ - No ice or frost should be present.
	Storage temperature.	-20°C–65°C (-4–149°F)
	Ambient humidity	Relative humidity less than 95% RH (to prevent condensation from forming)
	Operation altitude	Maximum 1000m above sea level for standard operation. From 1000 to 4000m, the rated input voltage and rated output current of the drive must be derated by 1% for every 100m.
	Oscillation	Less than 5.9 m/sec^2 (0.6 G).
	Surrounding environment	Prevent contact with corrosive gases, inflammable gases, oil stains, dust, and other pollutants (Pollution Degree 2 Environment).

- Inverter must be always standing, in a well ventilated and dry Environment
- Connect all grounds
- Installer will need to install manual circuit breaker, contactor and reactor according to installation needs (inverter does not include EMC filter).
- SWITCH motor rotation, either by switching sides to U,V motor terminals on inverter or swap P1-Blue (FWR-Inverter) and P2-Brown (REV-Inverter) cables to inverter (Blue is right/starboard direction, Brown is left/port direction).

MAX POWER

2.11 Inverter settings

Depending on the number of joysticks needed for the thruster the following settings must be applied to the inverter. The inverter is set from the factory for single joystick installation. The only parameters that need to be configured for a double joystick installation are #40 and #73. With the electrical installation of the inverter and the joystick(s) concluded, monitor the voltage at V1max (for 1st joystick) and V2max (for 2nd joystick) and set the threshold of the parameter #10 and #40 accordingly.

Inverter settings for one (1x) Joystick			
Inverter parameter		Description	Value
DRV	03	Acceleration Time	1,5 sec
	04	Deceleration Time	1,5 sec
	06	Start-stop control mode	FX/RX-1
	07	Frequency control mode	V1
	14	Rated motor power	30 kW
	18	Rated motor frequency	50 Hz
	20	Maximum frequency	50 Hz
BAS	04	Second option of start-stop control	FX/RX-1
	05	Second option of frequency control	V2
	10	Power supply network frequency	50 Hz
	13	Rated motor current	55 A
	15	Rated motor voltage	400 V
	19	Supply network voltage	400 V
IN	01	Maximum frequency (corresponds to 100%) when controlled via analog inputs	50 Hz
	05	Voltage display at analog input V1	---
	08	Minimum voltage V1 (V1min)	0 V
	09	Frequency (%) for V1min	0 %
	10	Maximum voltage V1 (V1max)	9,5 V
	11	Frequency (%) for V1max	100 %
	73	Digital input mode selection P9	None DC
	87	Selection of closed or open contact for the digital inputs (NO or NC)	00100000000
		Switch I/0 extension	PNP

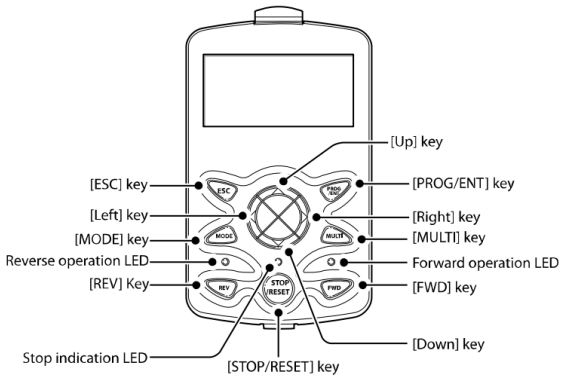
Inverter settings for two (2x) Joysticks			
Inverter parameter		Description	Value
DRV	03	Acceleration Time	1,5 sec
	04	Deceleration Time	1,5 sec
	06	Start-stop control mode	FX/RX-1
	07	Frequency control mode	V1
	14	Rated motor power	30 kW
	18	Rated motor frequency	50 Hz
	20	Maximum frequency	50 Hz
BAS	04	Second option of start-stop control	FX/RX-1
	05	Second option of frequency control	V2
	10	Power supply network frequency	50 Hz
	13	Rated motor current	55 A
	15	Rated motor voltage	400 V
	19	Supply network voltage	400 V
IN	01	Maximum frequency (corresponds to 100%) when controlled via analog inputs	50 Hz
	05	Voltage display at analog input V1	---
	08	Minimum voltage V1 (V1min)	0 V
	09	Frequency (%) for V1min	0 %
	10	Maximum voltage V1 (V1max)	9,5 V
	11	Frequency (%) for V1max	100 %
	40	Max voltage V2 (V2max)	9,4 V
	73	Digital input mode selection P9	2nd Source
	87	Selection of closed or open contact for the digital inputs (NO or NC)	00100000000
		Switch I/0 extension	PNP

IMPORTANT: Apart from parameters #40 and #73, none of the other inverter settings may be changed without prior approval from Max Power, as any unauthorized changes may void the warranty.

MAX POWER

2.12 Key Functions

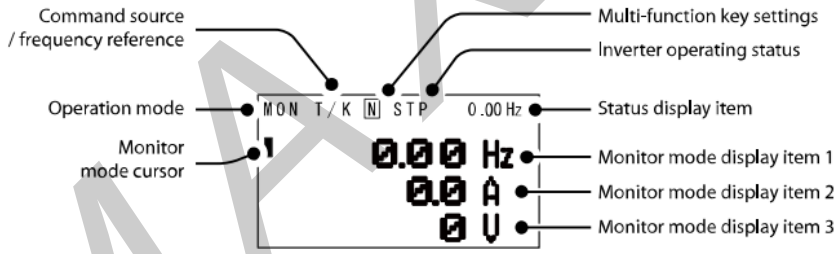
The following table lists the names and functions of the keypad's operation keys:



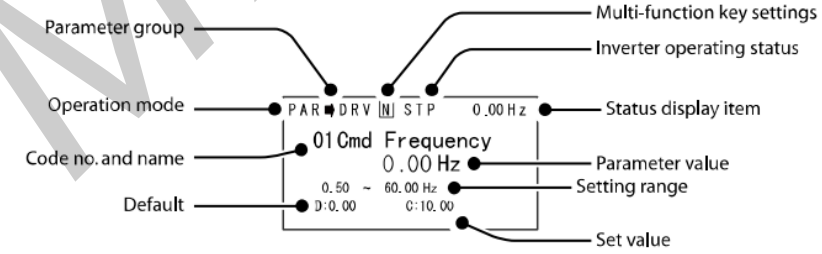
Section	Buttons	Key Name	Function Description
KEY	MODE	[MODE] key	Used to switch between modes.
	PROG ENT	[PROG/ENT] key	If this button is pressed once, the parameter can be edited at the status of the editable parameter code. If this button is pressed after modification, it will save the modified data.
		[Up] key	Switch between codes, or increase or decrease parameter values.
		[Down] key	
		[Left] key	Switch between groups or move the cursor during parameter setup or modification.
		[Right] key	
	MULTI	[MULTI] key	Used to register jog or user codes.
	ESC	[ESC] key	If you press this key before pressing the [PROG / ENT] key, it will revert the parameter value to the previous value. If you press this key while editing the codes in any function group, the keypad will display the first code of the function group. If you press this key while moving through the modes, the keypad will display Monitor mode.
	FWD	[FWD] key	Used to operate the motor in the forward direction.
	REV	[REV] key	Used to operate the motor in the reverse direction.
	STOP RESET	[STOP/RESET] key	Used to stop the operation and release a fault.

Using the Keypad

Monitor mode:

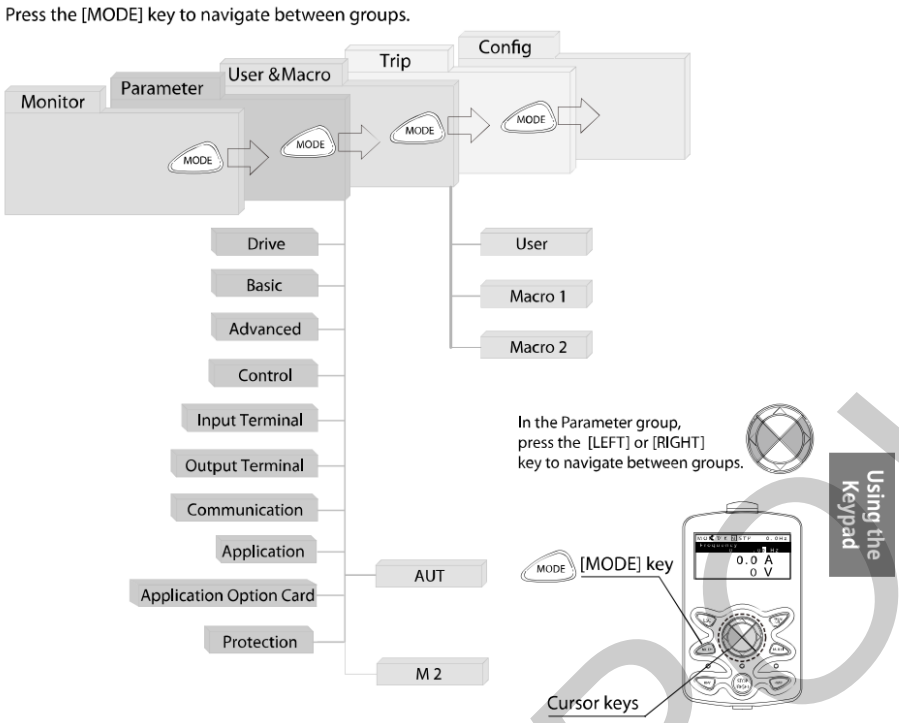


Parameter mode:

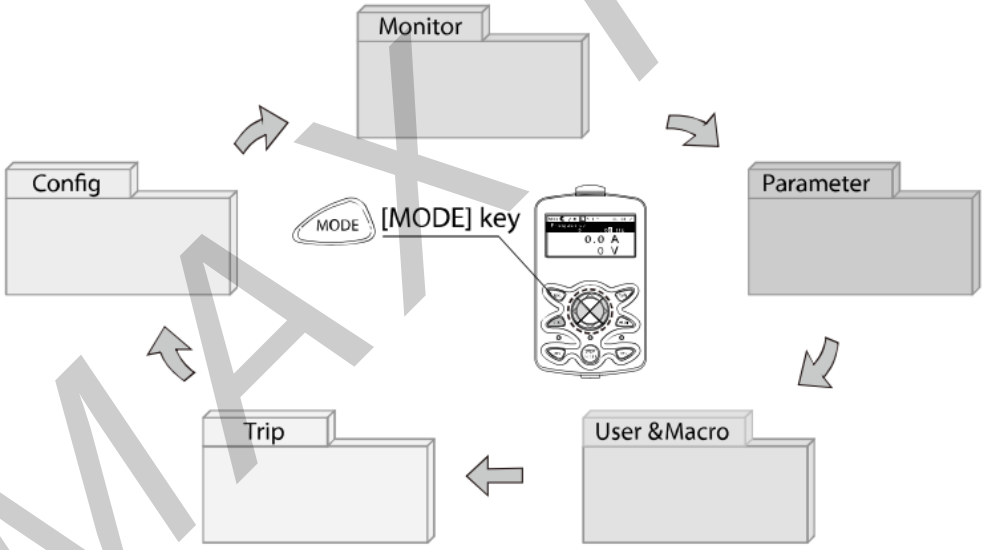


MAX POWER

The SV-iS7 series inverter uses 5 modes to monitor or configure different functions. Each mode has its own function items suitable for the desired properties. The parameters in Parameter mode and User & Macro mode are divided into smaller groups of relevant functions.



Navigating modes:

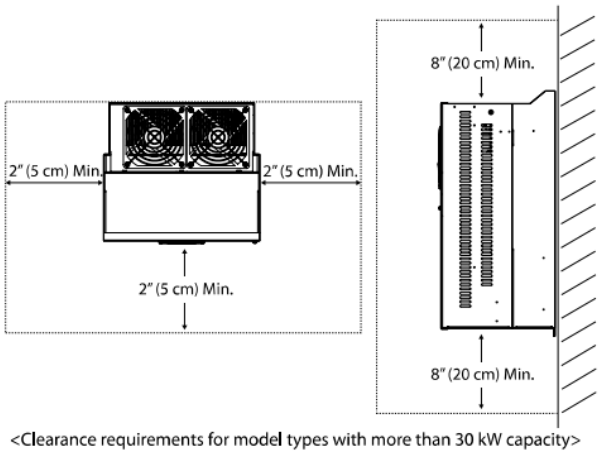


IMPORTANT: The Inverter is delivered with the functions preset from the factory, modifications of these functions without the approval of Max Power will void the warranty. For more information about Inverter configuration please advise the manual of Inverter Series iS7 SV0300iS7-4 SOD by LG.

MAX POWER

3. Installation considerations

3.1 Inverter



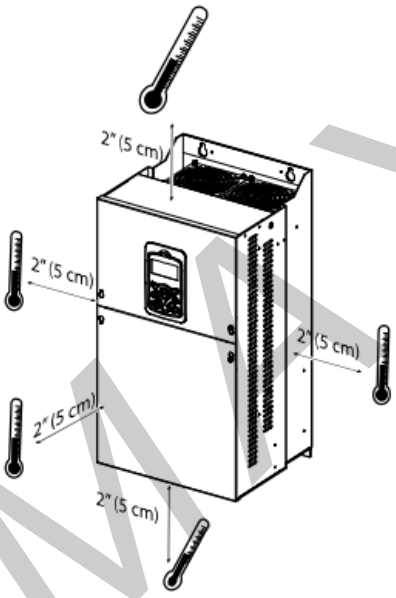
<Clearance requirements for model types with more than 30 kW capacity>

Caution

Install the inverter on a non-flammable surface, and do not place flammable material near the inverter. Otherwise, a fire may result.

Note

Model types with capacities of 30 kW or more require a minimum of 8" clearance above and below the unit.

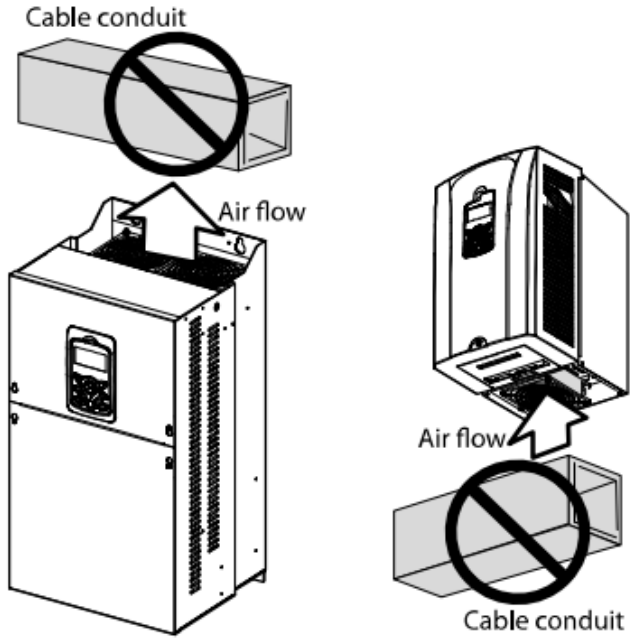


Caution

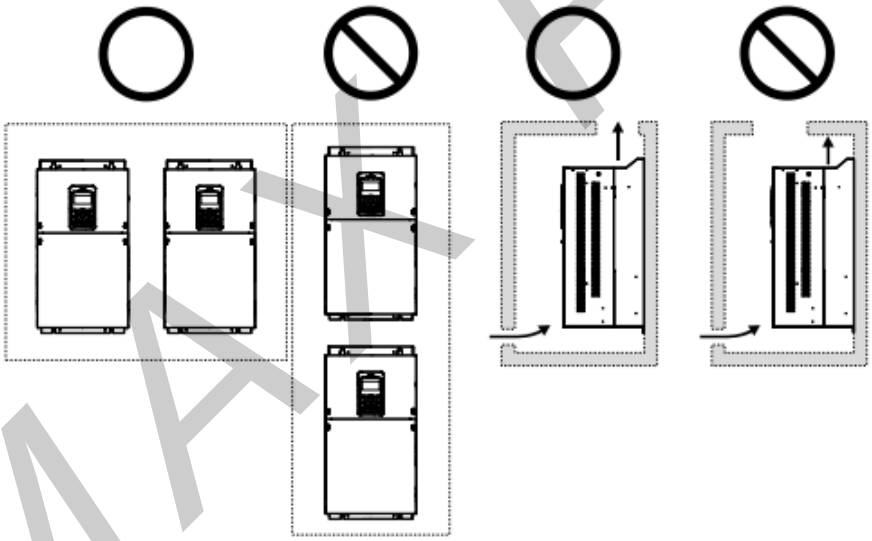
Do not allow the ambient temperature to exceed the allowable range while operating the inverter.

MTX POWER

- Ensure that the cable conduits do not obstruct the air flow to and from the cooling fan.



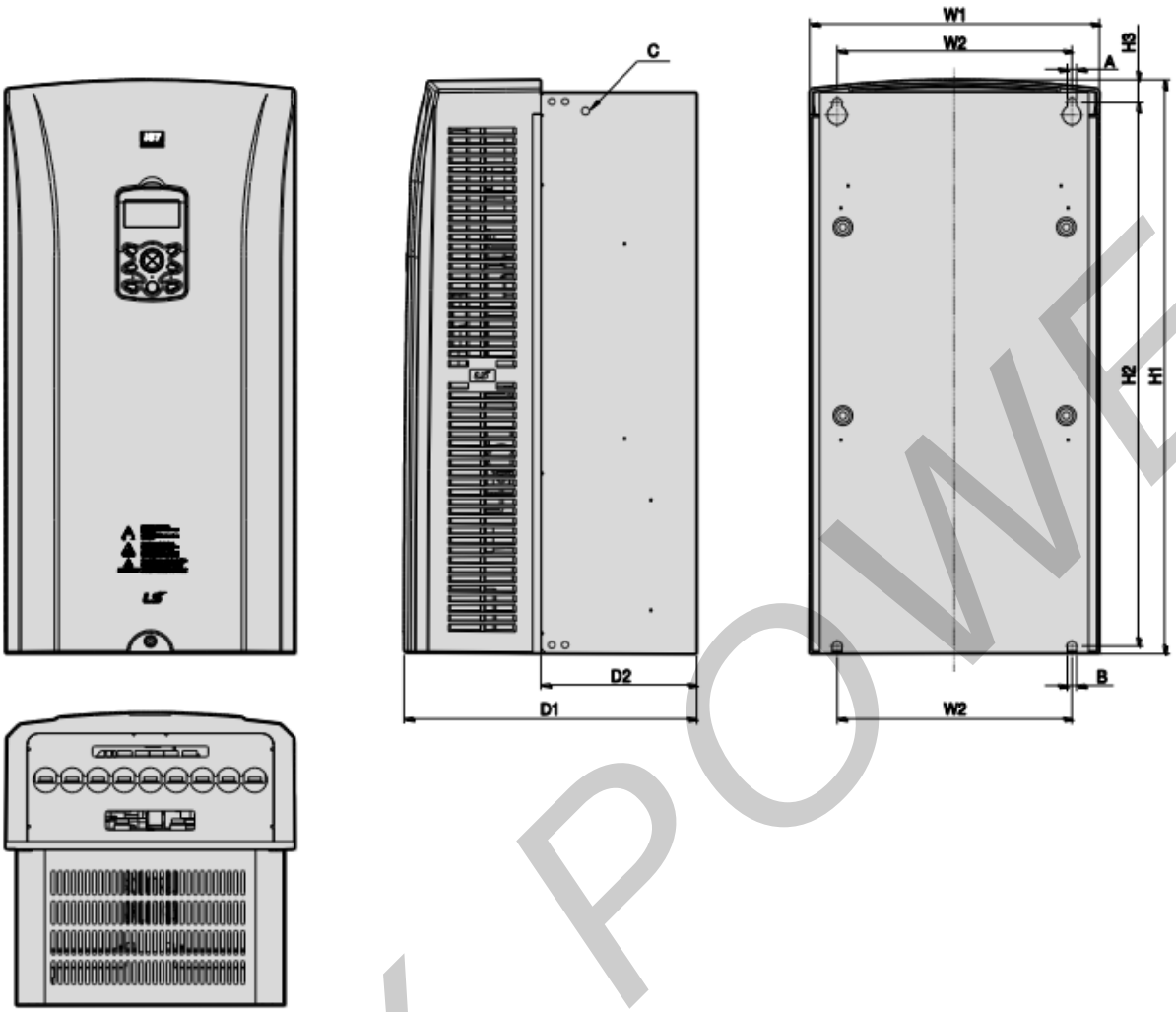
- Ensure sufficient air circulation is provided around the inverter when it is installed. If the inverter is to be installed inside a panel, enclosure, or cabinet rack, carefully consider the position of the inverter's cooling fan and vents. The cooling fan must be positioned to efficiently dissipate the heat generated by the operation of the inverter.



MAX POWER

Version: 1.2

SV0300-0450iS7 (400 V)

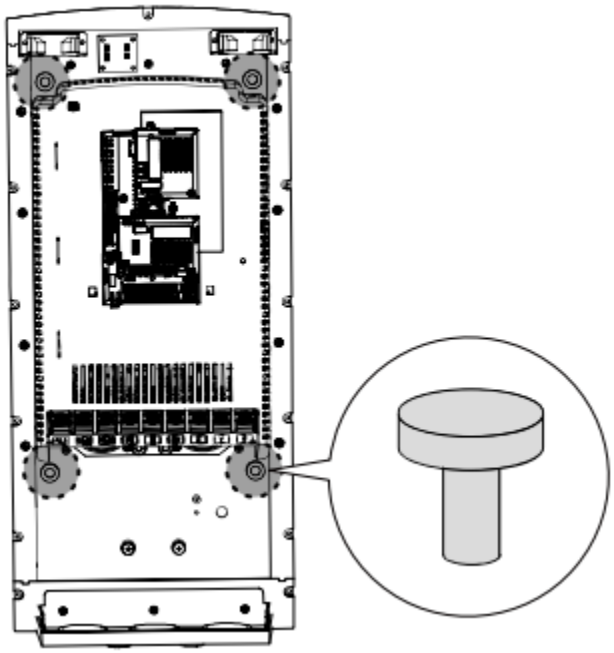


Units: mm (inch)

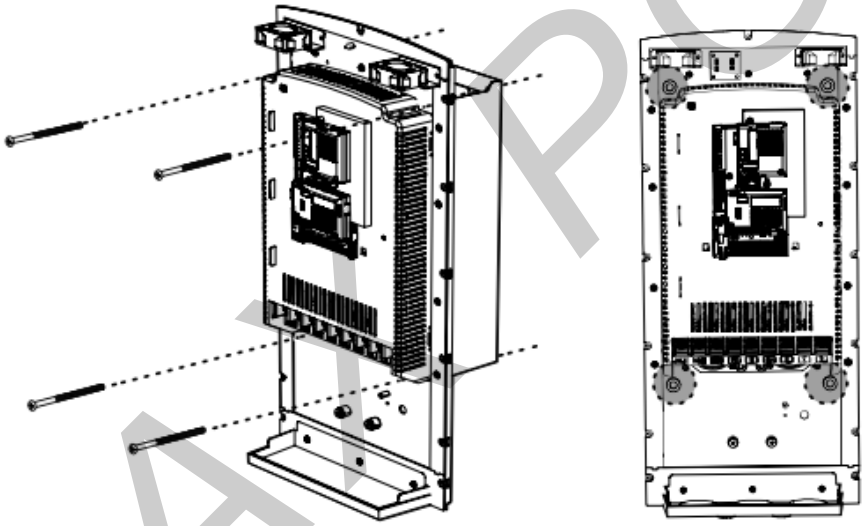
Inverter Capacity	W1	W2	H1	H2	H3	D1	D2	A	B	C
SV300–450 iS7-4	300.1 (11.81)	242.8 (9.55)	594.1 (23.38)	562 (22.12)	24.1 (0.94)	DCR type		10 (0.39)	10 (0.39)	M8
						303.2 (11.93)	161 (6.33)			
						Non-DCR type				
						271.2 (10.67)	129 (5.78)			

MAX POWER

1 Remove the 4 rubber feet from the corners.



2 Place the inverter on a flat wall or in a cabinet, and use 4 screws or bolts to securely fix the inverter to the surface.



MAP POWER

3.2 Proportional Joystick



1. Proportional Input to the inverter
2. Visual thrust LED indication
3. IP66 rating
4. Plug & Play installation
7. Child proof activation protection
8. Auto power off after 10 minutes' idle state
9. 2sec delay switch between port and starboard thrust

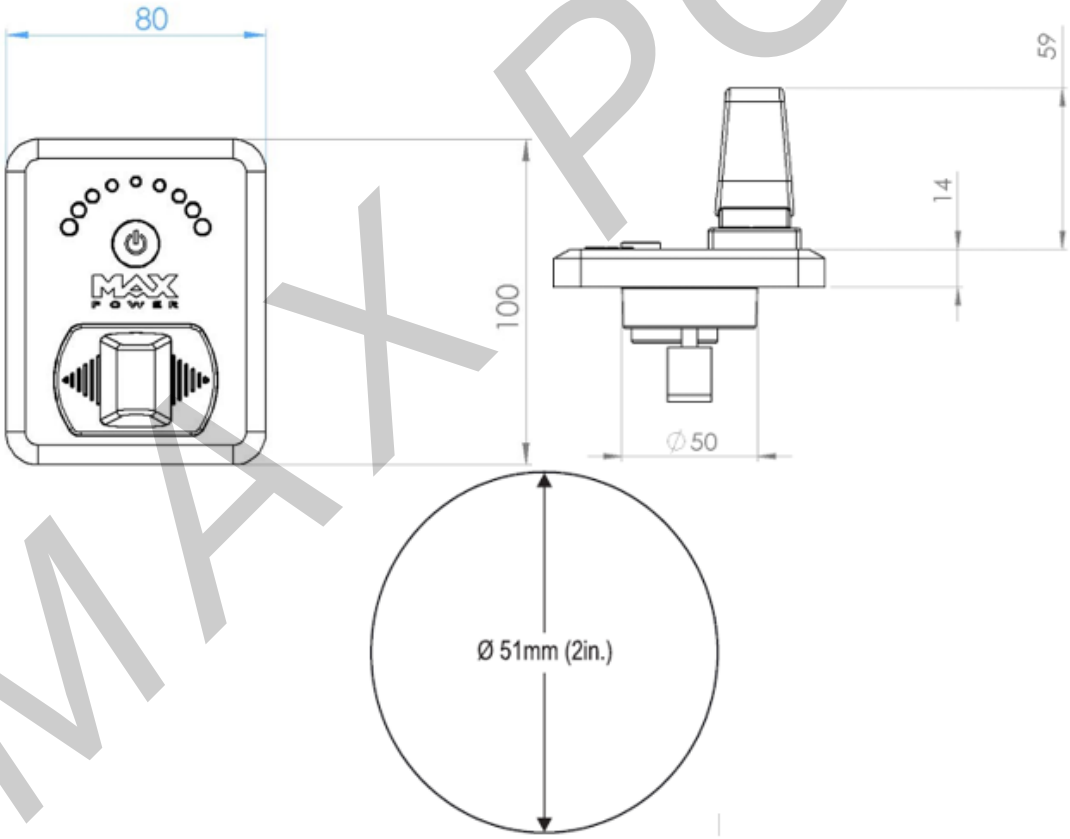
Joystick Installation and Guidelines

Joystick should be protected from the natural elements while the thruster is not in use. Install the Joystick in easily accessible positions, without obstructing the main engine and/or steering controls.

When fixing the joystick with the stainless steel screws, make sure to install the pre-cut rubber seal, as supplied with the panel, ensuring that it is in the correct place.

Please note that Joystick is only fully waterproof in its front face, if a proper installation takes place. However, the area behind the dashboard should be kept dry to avoid the risk of oxidization of the cable's connecter contacts.

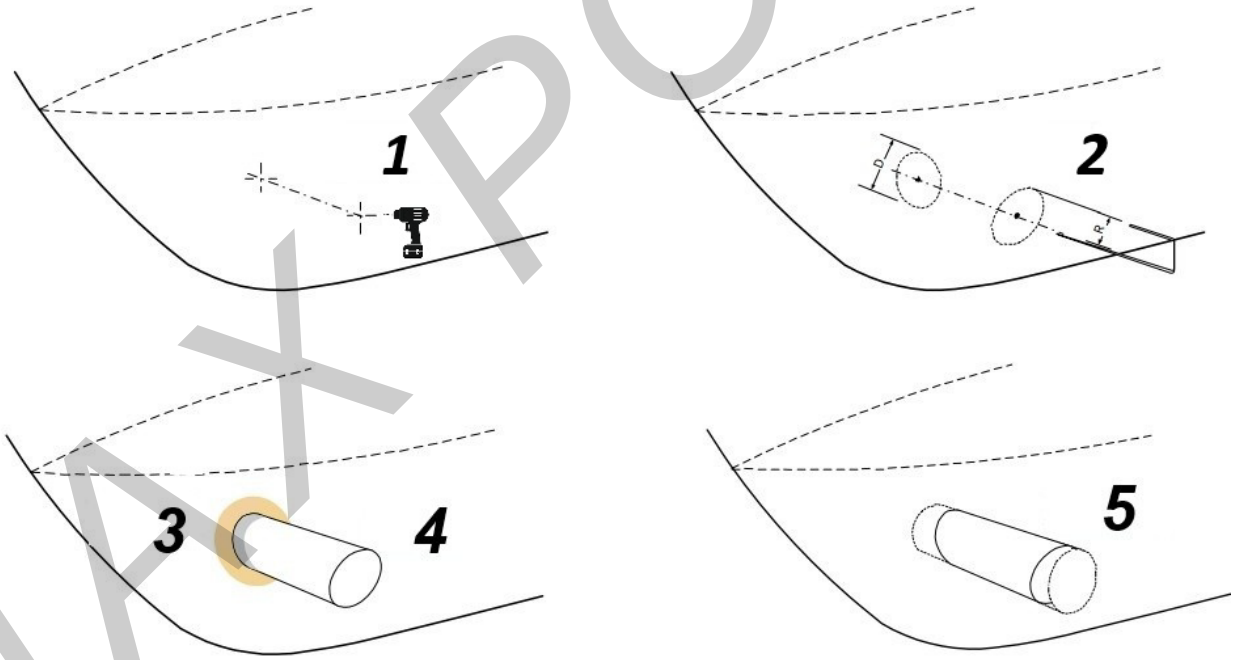
The bellow illustration is for measurements usage only. Use external template when mounting (dimensions in mm):

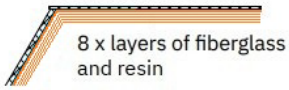


MAX POWER

3.3 Tunnel Installation

We recommend that the tunnel installation and the required fiberglass, steel, or aluminum work to be carried out by a qualified professional. The following instructions are intended as general guidelines only and do not cover the specific details or requirements of fiberglass, steel, or aluminum fabrication and installation. Any problems or damage resulting from improper or faulty installation of the tunnel shall be the sole responsibility of the installer.
The thruster must be installed on the longitudinal axis of the boat in the furthest forward (bow thruster) or aft (stern thruster) position, in which the ideal immersion depth of 1x tunnel diameter (⌀400mm) is achieved. The tunnel must not be longer than twice the tunnel's diameter, and this within a variation of + / - 6%, the propellers must not protrude beyond the hull line. In the regarding position the thruster assembly must also fit with provision to be accessible for maintenance and service.
IMPORTANT: When using tunnels of different thickness (example: steel tunnel) it is imperative that the area between the drive leg/gasket and the motor support, matches the thickness as indicated in the second picture in page 24 or this manual. If you have less than 12 mm thickness, you will require an extra hard rubber gasket between the motor support and the tunnel.
When the final tunnel position is determined (and all dimensions have been checked), mark the center of the tunnel's position and drill a Ø 10 mm hole. Make up a metal compass from 8 mm rod with 212 mm radius. Fit compass into the Ø 10 mm holes and trace the form of the tunnel on to the hull (elliptical). After cutting out the elliptic hole, disc the interior surface of the hull, by approx. 10 to 15 cm around the holes. The outside surface of the tunnel is then ready to be fiber-glassed.
Note: Do not laminate or apply fiberglass in the area where the thruster unit will be installed.



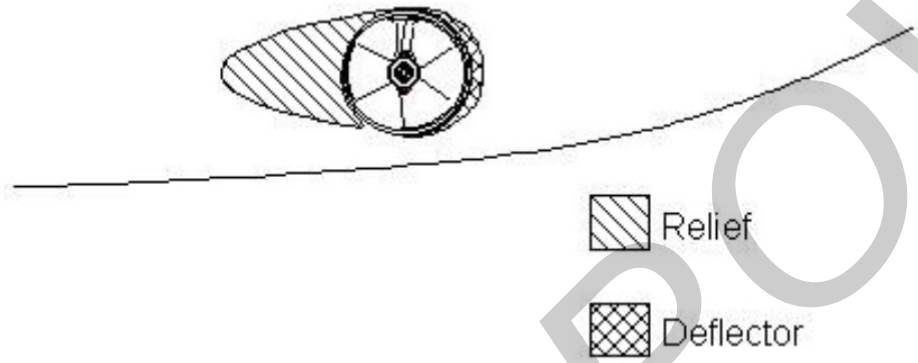


MAXPOWER

Fit the tunnel and mark the areas to be fiber-glassed. Sand these areas inside and out.
In certain installations it is preferable to drill the position of the thruster support before the installation of the tunnel.
Refit the tunnel. Apply reinforced fiberglass filler to all areas, taking care that you fill the gap between hull and tunnel.
Bond the tunnel to the inside of the hull using a minimum of eight layers of 300 g fiberglass and resin, preferably alternating mat and woven roving, it is possible to simply apply reinforced filler. Ensure all gaps between the tunnel and the hull are completely filled with fiberglass and resin.

CAUTION: Do not fiber glass the area of the motor support. It is recommended to lightly sand down the area where the motor support is fitted.

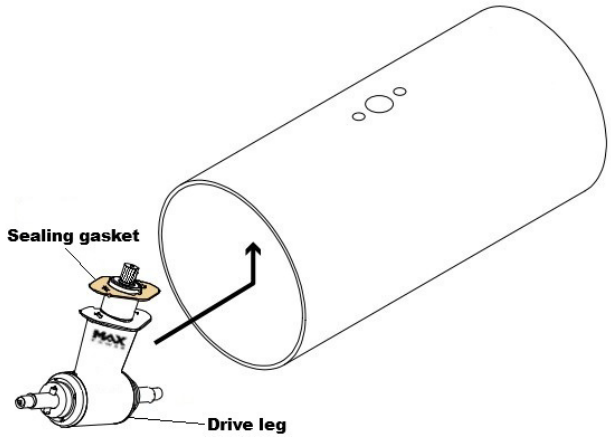
On the outside, when the ISOPHTALIQUE RESIN has set, finish with an application of resin and material, followed with an additional coat on the hull, in the tunnel area. To optimize the flow of water while sailing, deflectors & a relief should be fashioned. These can be made up with several coats of reinforced filler in order to obtain the required hydrodynamic lines. To achieve a 10% radius at the tunnel ends, apply additional layers internally to maintain the required hull thickness.

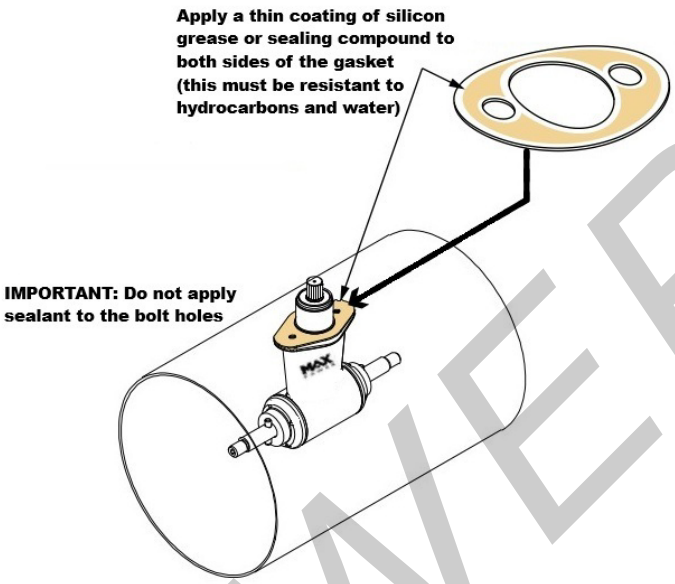


Once all fiberglass work is complete, apply a coat of epoxy or gel-coat to waterproof the entire area. Ensure all gaps between the tunnel and the hull are completely filled with fiberglass and resin.

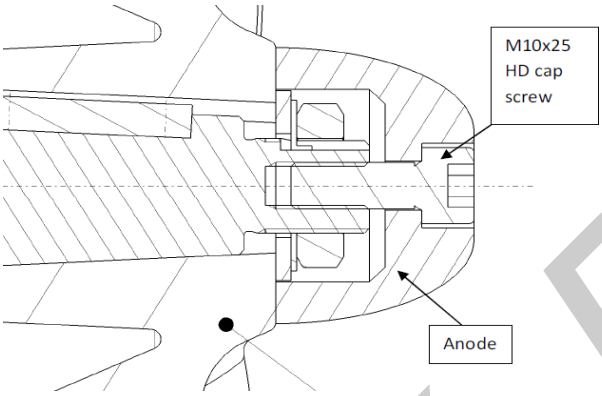
MAX POWER

Version: 1.2

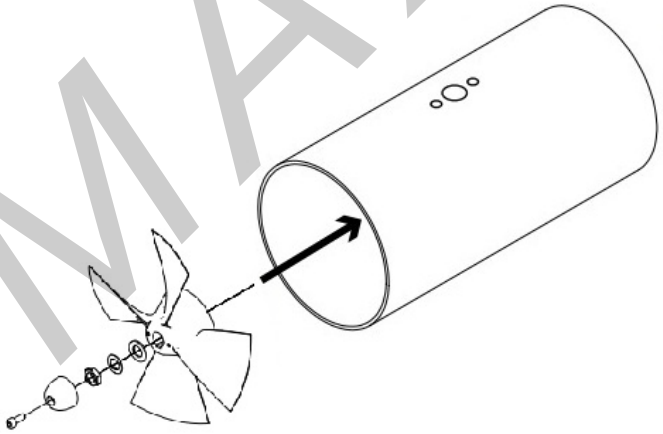


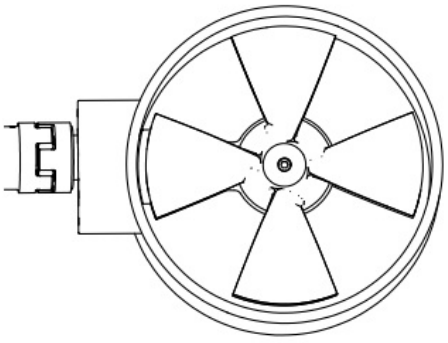


Propeller installation



1) Insert the key into the keys of the propeller shaft.
2) Insert the washer for M20 into the shaft, this washer is to center the anode. Center the washer on the propeller shaft.
3) Insert the lock washer into the slot of the propeller shaft.
4) Use Loctite 243 medium grade on the thread of the propeller shaft.
5) Insert the nut M20 on the propeller shaft and tighten it. **Max 180Nm tightening torque**. Once tightened, ensure that the propeller/s turn freely without touching the tunnel
6) Insert the anode on the shaft. The anode in centered by the washer M20. Then tighten the HD cap screw M10x25 on the propeller shaft putting on the thread of the screw a few quantity of Loctite 243 medium grade.



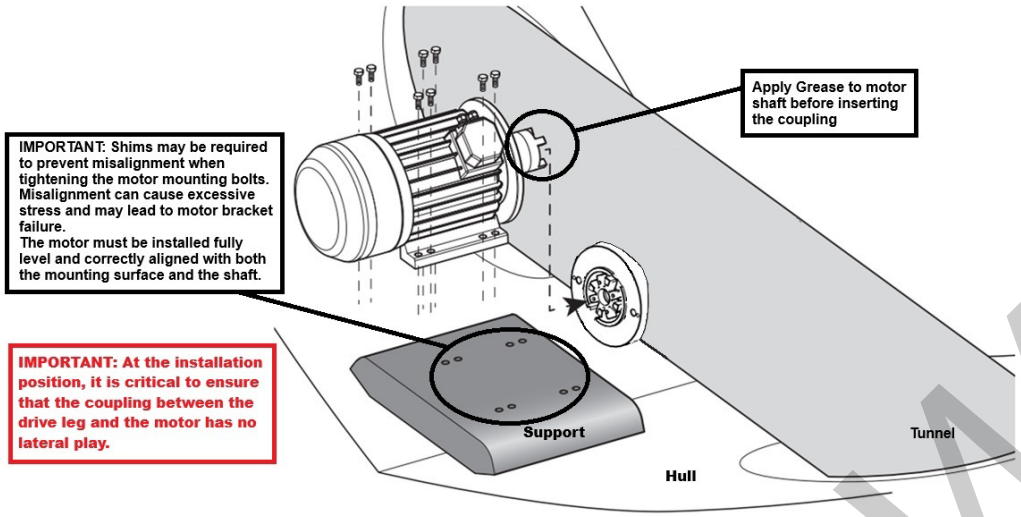


Rotate the propellers by hand to verify that they do not contact the tunnel

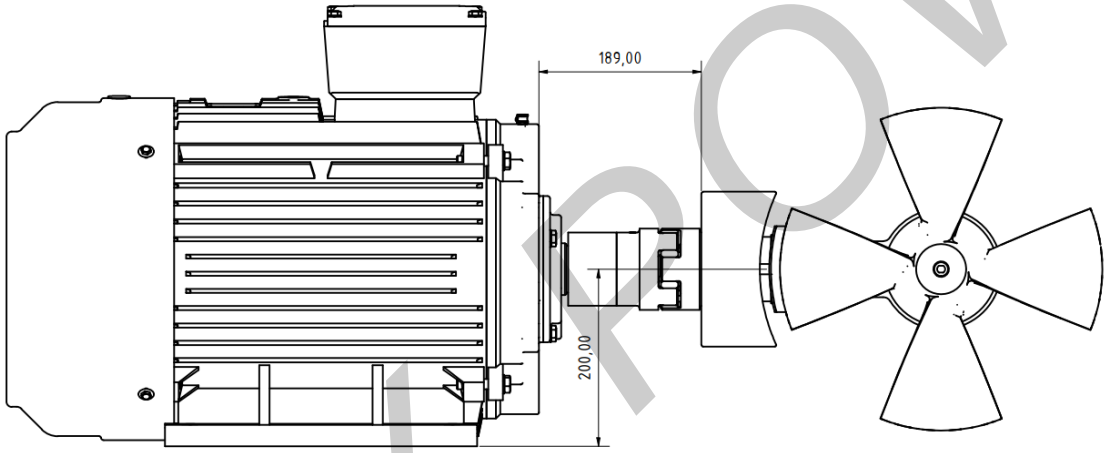
MAX POWER

Version: 1.2

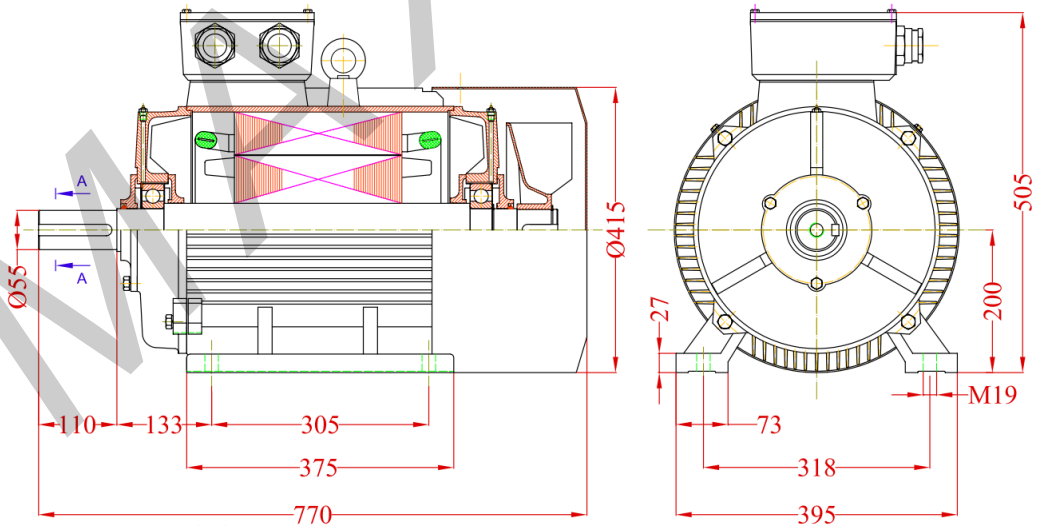
The motor must be mounted on separate bedding placed according to. The bedding must be rigid and dimensioned to support the weight and torque specified in the technical data of the product. The motor is supplied with support feet, which are already fitted.



Important distances (mm) to be respected in the installation onboard:

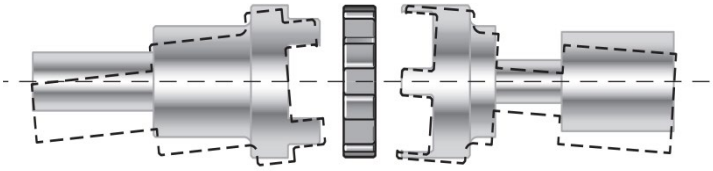


Below the dimensions (mm) of the electric motor for the correct fabrication of the mounting support:



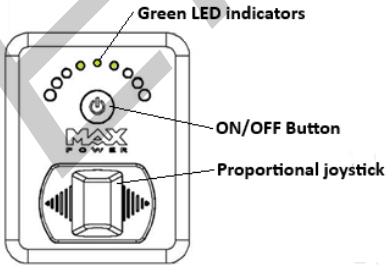
MAX POWER

With the couplings installed in both ends, the angle between the two shafts (gearbox/drive leg and motor) shall not exceed +/- 1.5°, with the motor positioned the coupling must not have lateral play on the shaft:



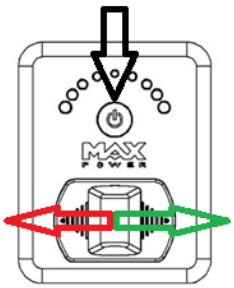
4. Thruster operation / Joystick function

4.1 Switch thruster On/Off



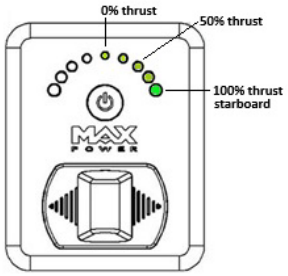
To switch the thruster ON or OFF press the power button and simultaneously move the joystick to the port or starboard direction for 1 second.
When the system switches ON the Joystick will beep once and the green LED in the center of the panel will light up.
When the system switches OFF the control panel will beep twice and the green LED in the center of the panel will fade out.
If the thruster has not been used for a period of 10 minutes it will automatically switches itself of.

4.2 Thrust Port/Starboard



Use the joystick to thrust fully proportionally to either port or starboard direction, depending on the direction in which the joystick is deflected and the angle/power chosen, the green LED indicators will be laminated accordingly in the same direction. The Joystick provides a time delay between port and starboard thrust, in order to avoid rapid direction changes, which may cause damage to the drive leg. There is no delay when thrusting to same side.

4.3 Hold function



With the thruster activated, the hold function can be engaged by deflecting the joystick to the desired angle/power and direction (Port/Starboard) and simultaneously press once the On/Off button. Depending on the angle/power of the thruster the green LED indicators will be laminated to the corresponding side. After the hold function has been engaged the user can leave the joystick and the LEDs will remain lit, indicating the “hold function” remains engaged. To turn off the hold function you can simply press the On/off button once.

4.4 Operation

Switch on the joystick, as previously described in the manual.
Push slowly the joystick to the left/port and the boat moves proportionally to port.
Push slowly the joystick to the right/starboard and the boat moves proportionally to starboard.
If, during tests the boat moves in the opposite direction, change the supply cables from motor to inverter or command cables from joystick to inverter (advise pages 4, 12). Auto power off after 10 minutes’ idle state.
When maneuvering, remember that the boat’s momentum continues after you release the joystick, therefore remember to release the control in advance before reaching your desired position.

MAX POWER

Attention must be paid not to use the thruster in areas where people may be swimming or near to floating debris.

5. Annual Maintenance

The thruster requires a minimum of ongoing maintenance:
1. Joystick should be protected from the natural elements while the thruster is not in use.
2. In order to prevent chalky deposits, which cause damage to the oil seals, we recommend cleaning the shaft and the oil seals first, then applying a layer of silicon oil on the propeller shaft
3. Check the condition of the tunnel, clean if needed.
4. Check the condition of the anodes, replace anodes if needed.
5. Check the condition of the lubrication oil inside the drive leg (Shell Spirax S6 AXME 75W90, quantity 1000 ml).
6. Check the condition and tightness of all connections frequently.
7. All electrical components of the thruster (motor, inverter, etc), must be protected against humidity and water contact.
8. Remove the motor and clean out dust with compressed air.
NOTE: All maintenance should be carried out by qualified and authorized personnel.

6. Warranty Terms and Conditions

6.1 Introduction

The purpose of this document is to set out the terms of warranty cover offered in relation to products purchased by the End User from Max Power or its approved network of resellers.
This document will adhere to the following format: -

Section 1 Definitions
Section 2 Period of Coverage
Section 3 Warranty Registration
Section 4 Warranty Terms
Section 5 Warranty Exclusions
Section 6 Procedural Guidelines
Section 7 Service Centers

6.2 Definitions

Authorized Repair Number – The number given by Max Power on reporting a fault with your thruster
Dealer – An authorized Max Power sales center
End User – The boat supplied with supplied equipment and the owner thereof *Installer* – The authorized center responsible for the installation of your thruster *Manufacturer* – supplier of the equipment under warranty
Pleasure Craft – Vessels used for owner's personal use that have no commercial use (i.e Charter boats or work boats)
Resellers – Max Power approved distributors and dealers
Serial Number – Number in upper right hand corner of Warranty document
Supplier – The manufacturer (Max Power)
Warranty – The terms and conditions that are covered by the manufacturer

MAX POWER

6.3 Period of Coverage

The equipment manufactured by the Supplier is guaranteed to be free from defective workmanship, components and materials under normal usage conditions for a period of two years from the date of purchase by the End User. This warranty is transferable to subsequent owners of this equipment during the period of coverage.

6.4 Warranty Registration

In order to register your product and activate its warranty you have to follow the link below which addresses you to the warranty registration form:

https://www.max-power.com/warranty

6.5 Warranty Terms

After registering your product your will receive a pdf file which includes all the terms relevant to the warranty.

6.6 Warranty Exclusions

Damage due to modifications or installation contrary to published specifications Cost of hauling the boat
Damage due to repairs performed by an unauthorized service center Damage due to lack of normal maintenance services
Damage due to water
Parts replaced due to normal wear and tear
Repairs performed without knowledge of manufacturer (please contact dealer to receive Repair Authorization Number)
Tampering of equipment by the End User Cost of travel to and from the job site
Cost of economic loss, including injury to any person, damage to property, loss of income or profit, communication, lodging, inconvenience
Consequential damage due to failure, including those arising from collision with other vessels or objects.

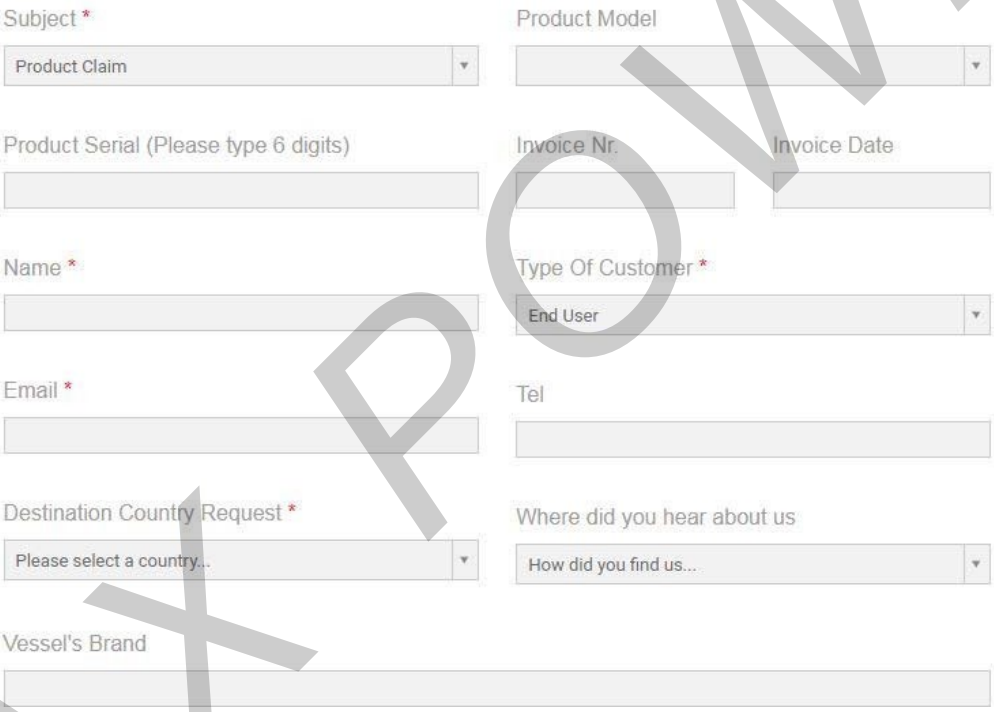
MAX POWER

6.7 Procedural Guidelines

Please, firstly check that all the wiring connections have been done with respect to the wiring diagram which can be seen in page 12 in chapter 8 “Total Wiring Diagram Electric Tunnel Thrusters”.

If all the wiring connections are correct according to the figure in page 12, then please follow the link: https://www.max-power.com/contact

Then fill the empty fields by choosing “product claim” and your details as the form below including a detailed description of the issue that you are facing with the product. After that you will receive a ticket number which addresses your issue and our expertise personnel will contact you.

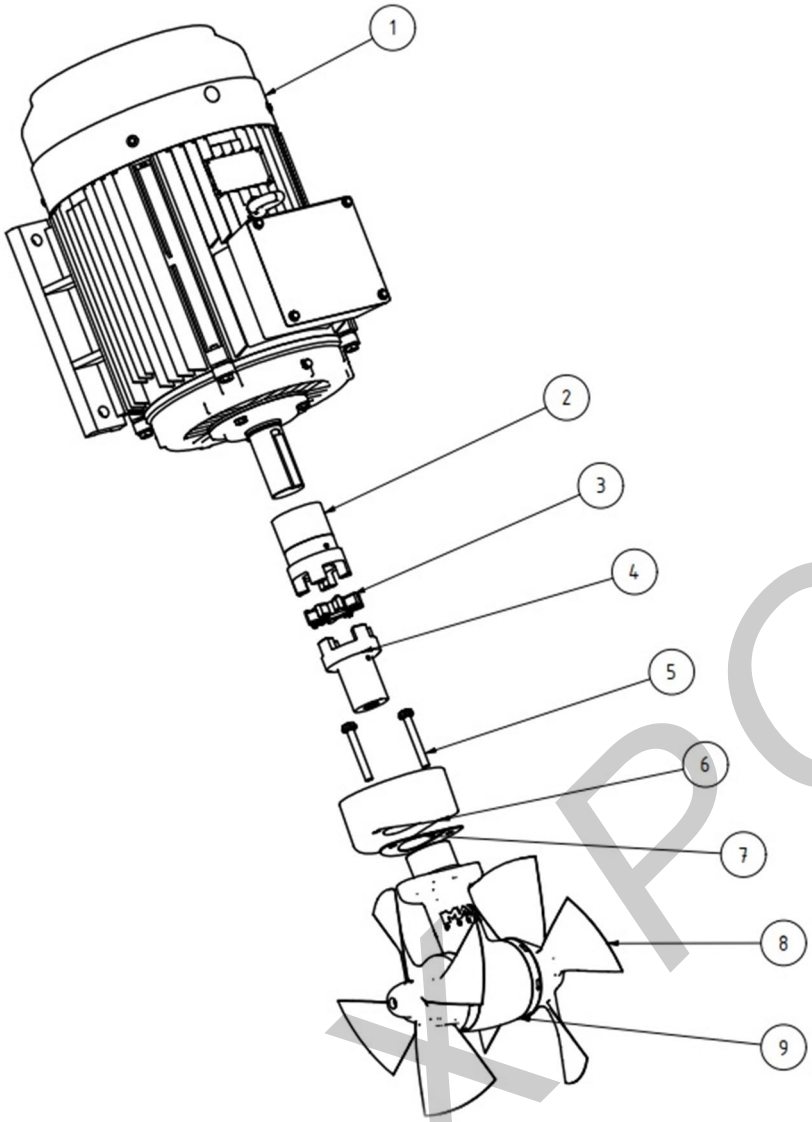


The warranty as outlined above is only applicable to Max Power manufactured thrusters and optional equipment as used in marine pleasure industry. The supplier holds the exclusive right to test the product and determine whether it is defective

To locate the nearest Max Power distributor, please consult the section "Worldwide Distribution" on our website: www.max-power.com

MAX POWER

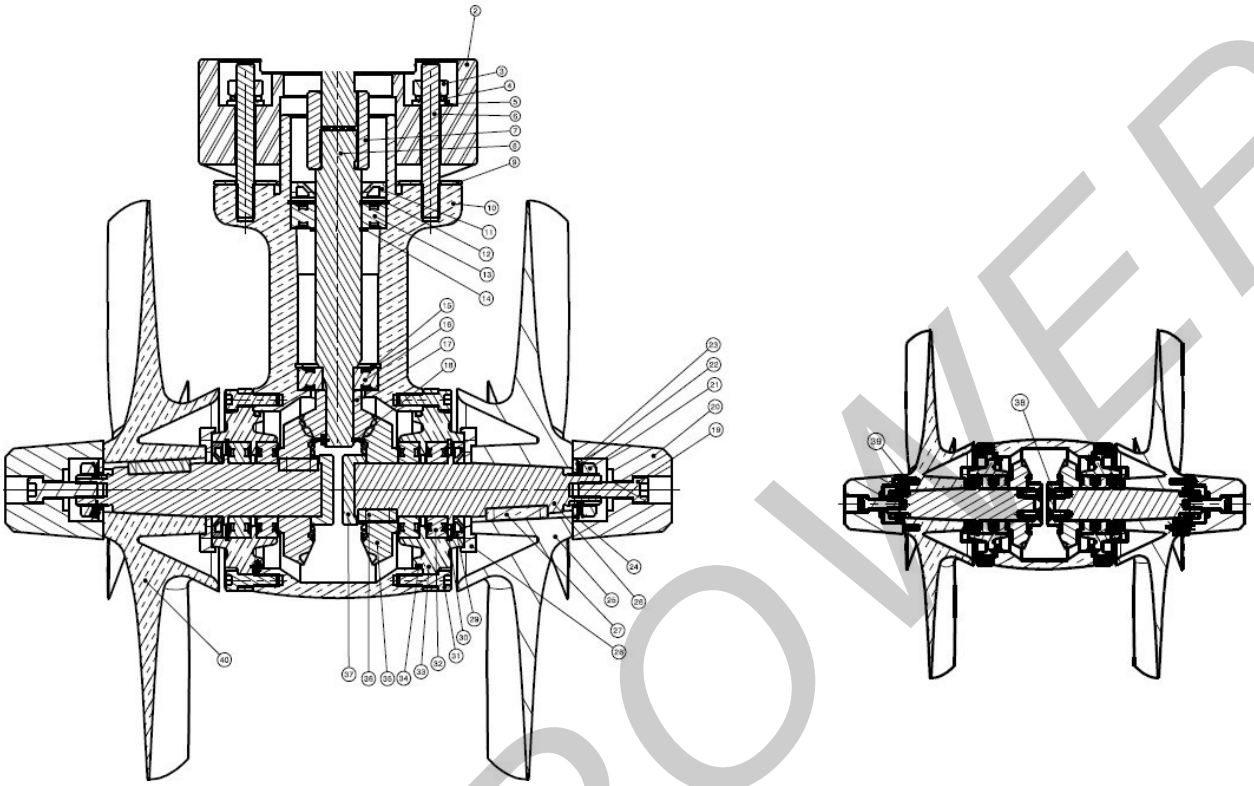
7. Exploded diagram



CT550 AC 30Kw Table List			
PN #	**Description**	**Quantity**	**Code**
1	AC induction motor 30Kw 400V 3ph 50Hz 2P	1	06304
2	Motor coupling	1	06307
3	Flexible coupling	1	06307
4	Drive leg coupling	1	06307
5	Stud M12x100 A4	2	636224
6	Tunnel support	1	636244
7	Tunnel gasket	1	636236
8	Propeller	2	L: 636242 R: 636243
9	Drive leg assembly (with oil)	1	636256
10	Inverter	1	06306
11	Inverter extension module (for 2nd joystick)	1	01075
12	Proportional joystick	1	600139

MAX POWER

7.1 Drive led exploded diagram



PN#	Description	Quantity	Code
3	NUT M12	2	**631790**
4	SPRING WASHER M12	2	**636225**
5	WASHER M12	2	**634876**
6	STUD M12	2	**636224**
7	COUPLING	1	**313365**
8	MOTOR SHAFT	1	**636241**
9	GASKET	1	**636236**
10	DRIVELEG	1	**636218**
11	SEAL	1	**630859**
12	CIRCLIP	1	**635232**
13	BEARING	1	**631753**
14	CIRCLIP	2	**635425**
15	CIRCLIP	1	**636136**

MAX POWER

16	BEARING	1	**636131**
17	PINION	1	**636239**
18	CIRCLIP	1	**636136**
19	SCREW M10	2	**633637**
20	ANODE	2	**636138**
21	NUT M20	2	**636141**
22	WASHER	2	**636142**
23	WASHER	2	**636222**
24	WASHER	2	**636140**
25	PROPELLER RH	1	**636243**
26	PROPELLER SHAFT	2	**636237**
27	KEY	2	**632050**
28	SEAL shield	2	**636235**
29	SEAL	2	**630859**
30	CIRCLIP	2	**635232**
31	SCREW M8	12	**635721**
32	BEARING	4	**631744**
33	COVER	2	**636219**
34	O RING	2	**634578**
35	GEAR	2	**636238**
36	KEY	2	**632049**
37	CAP	2	**636415**
38	COUNTERSUNK SCREW	4	**N/A**
39	ALLEN SCREW	2	**N/A**
40	PROPELLER LH	1	**636242**

MAX POWER