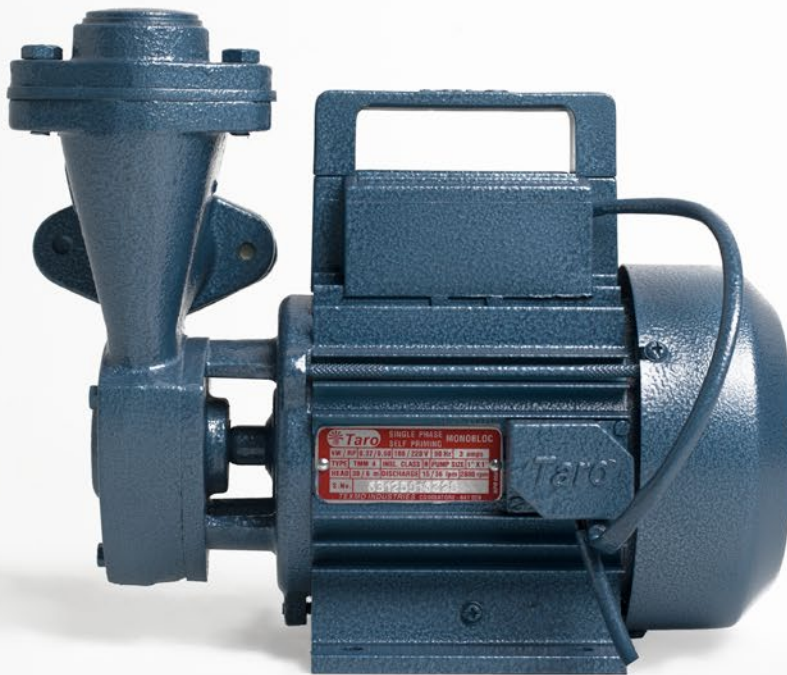


# Single Phase Domestic and Mini Monoblocks

Instruction &  
Operating Manual



**Texmo  
Industries**  
Est. 1956







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# 1. Introduction

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Thank you for choosing a quality product manufactured by Texmo Industries. We request you to read this manual carefully to ensure that the system you have purchased will be operated correctly.

This manual is intended to provide you with information on your product and information on installation and operation. You will also find information on how you could contact Texmo Industries, should you need further information or help and support.

# 2. Warranty information

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Please refer to your warranty card or visit **[www.taropumps.com](http://www.taropumps.com)** for more information on your warranty.

# 3. Complying with standards

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IS 996: Single Phase a.c. Induction Motors for General Purpose

IS 3043: Code of practice for earthing: specification

IS 8472: Pumps – regenerative for clear, cold water: specification

IS 13730: Specifications for particular types of winding wires

# 4. Contents of the packing box

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Based on the model you have purchased, your single phase self-priming monoblocks are packed along with the instruction manual and warranty card in a corrugated box.

## 5. Information about your pump

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Taro Single Phase Self-Priming Monoblocks are manufactured using high quality raw materials and components using state-of-the-art manufacturing facilities and will give trouble-free performance if properly installed and maintained. These Self-Priming Monoblocks are compact pumping systems with the pump and motor mounted on a common shaft. As a coupling is not required, alignment of the pump and motor is assured. Installation therefore is quick. Self-Priming Monoblocks find wide application for water supply to houses, residential colonies and factories.

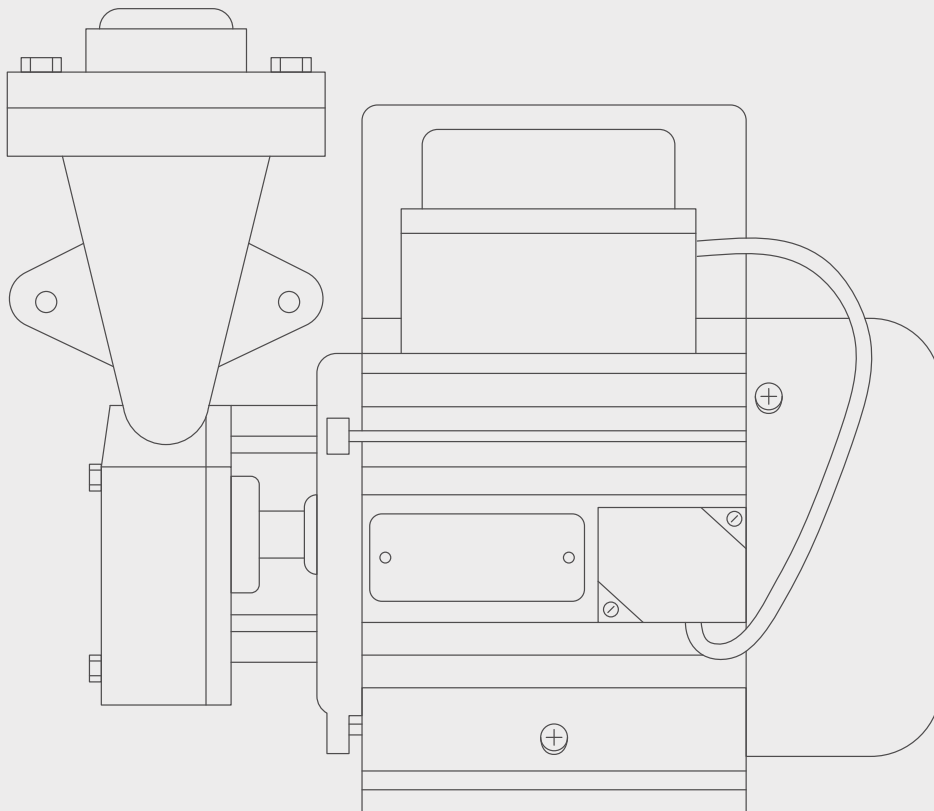
Prior to installation, go through this manual thoroughly and follow the instructions for installation and maintenance to ensure reliable operation. The Self-Priming Monoblock should be installed by technically qualified personnel in compliance with national and local electrical codes and as per our instructions in order to avoid electrical shocks, unsatisfactory performance and / or equipment failure.

## 6. Schematic drawing

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View of a Single Phase Domestic and Mini Monoblocks is shown below in Fig. 1:

**Fig. 1 View of Single Phase Domestic and Mini Monoblocks**



## 7. Key specifications & features

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Standard Specification of Single Phase Domestic and Mini Monoblock is shown below in TABLE 1:

Phase	Single
Power	0.5 - 1.0 HP
Motor Type	Squirrel-cage Induction Motor
	TSP 1: CSCR
	TSP 2, TSP 3: CSIR
	TRH, TMM, TSH, TGH: CSR
Starting method	DOL
Operating Voltage	180 – 240V
Frequency	50 Hz
Speed	2900 rpm
Duty	S1 Continuous
Insulation Class	B
Type of Enclosure	TEFC
Impeller Type	Radial
Max. Fluid Temperature	33°C
Thermal Overload Protection (TOP)	Provided in TRH, TMM, TSH and TGH Series

### Product Performance Specification

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Texmo Industries has a wide variety of Single Phase Self-Priming Monoblocks to meet your requirements. Please consult our Sales Team / your nearest dealer to meet your specific requirements.

## Key features

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- ✓ The motor houses shielded type Deep Groove Ball Bearings, pre-filled with grease, to take up the radial and axial thrust loads
- ✓ The rotors are dynamically balanced
- ✓ Adequate motor surface area is provided for effective cooling
- ✓ Energy efficient motor for low power consumption
- ✓ To protect the motor from overload, Thermal Overload Protector (TOP) is provided in TRH, TMM, TSH and TGH Series
- ✓ Brass forged impellers
- ✓ Stainless steel shaft for long life
- ✓ In case of leak past the mechanical seal, a water slinger, assembled on the shaft and in the space between the mechanical seal and front bearing, prevents water entry into the motor
- ✓ To reduce friction, the stuffing box – gland assembly is replaced with a mechanical seal

## ELECTRICAL CONNECTION

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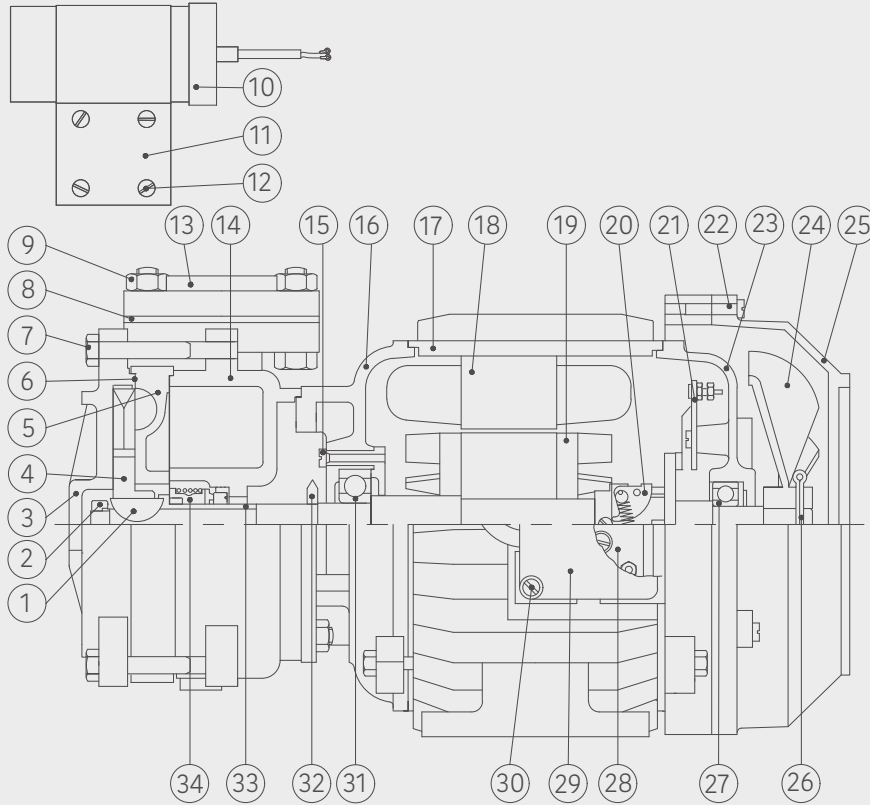
- ✓ The motors are internally wired and pre-connected with the capacitor leads
- ✓ Connect phase and neutral to the terminal board



# 8. Cross-section view

Cross-section view of a Single Phase Slow-Speed Self-Priming Monoblock, TSP Series, is shown below in Fig. 2:

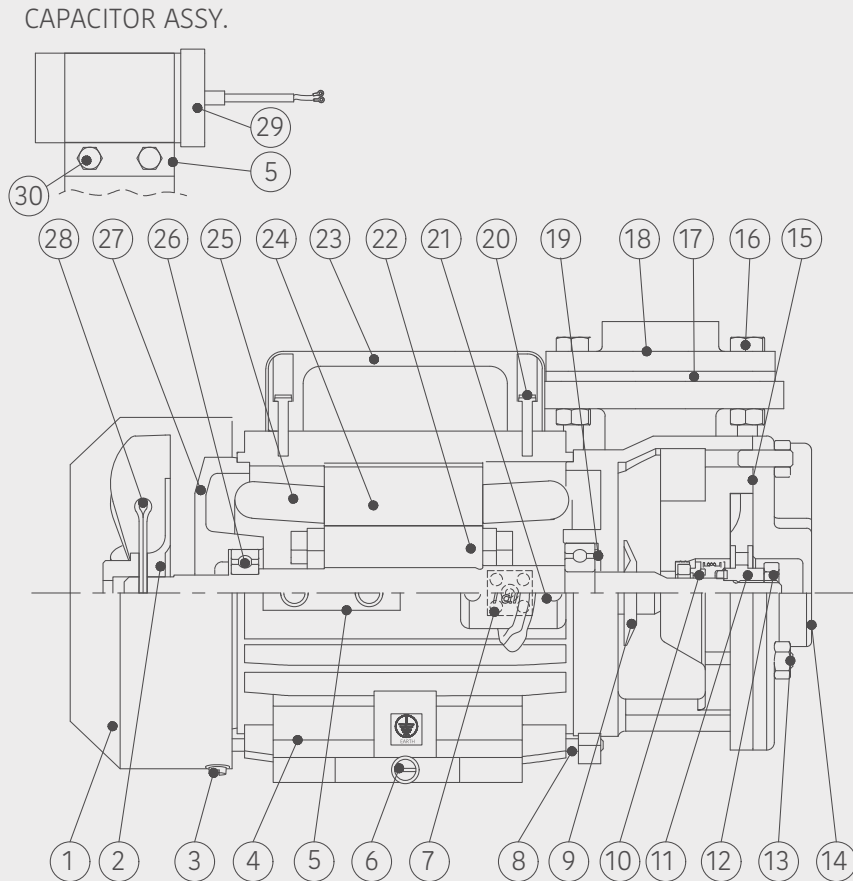
**Fig. 2 Cross-section view of 1Ø slow speed self-priming monoblock - TSP**



No.	PART NAME	No.	PART NAME	No.	PART NAME
1	Woodruff key	13	Flange oval	25	Fan shield
2	Lock nut	14	Casing	26	Split cotter pin
3	Casing cover	15	C.H. Screw	27	Ball bearing
4	Impeller	16	Cover dome	28	Terminal board
5	S.D chamber	17	Body	29	Terminal box
6	Hex. Bolt	18	Stator stack	30	C.H. Screw
7	Flange oval	19	Rotor with shaft	31	Ball bearing
8	Gasket oval	20	Governor	32	Water slinger
9	Hex. Bolt & nut	21	Centrifugal switch	33	Sleeve
10	Capacitor	22	Hex. Bolt	34	Mechanical seal
11	Capacitor clamp	23	Rear cover		
12	C.H. Serew	24	Cooling fan		

Cross-section view of a Single Phase High-Speed Self-Priming Monoblock, TRH Series, is shown below in Fig. 3:

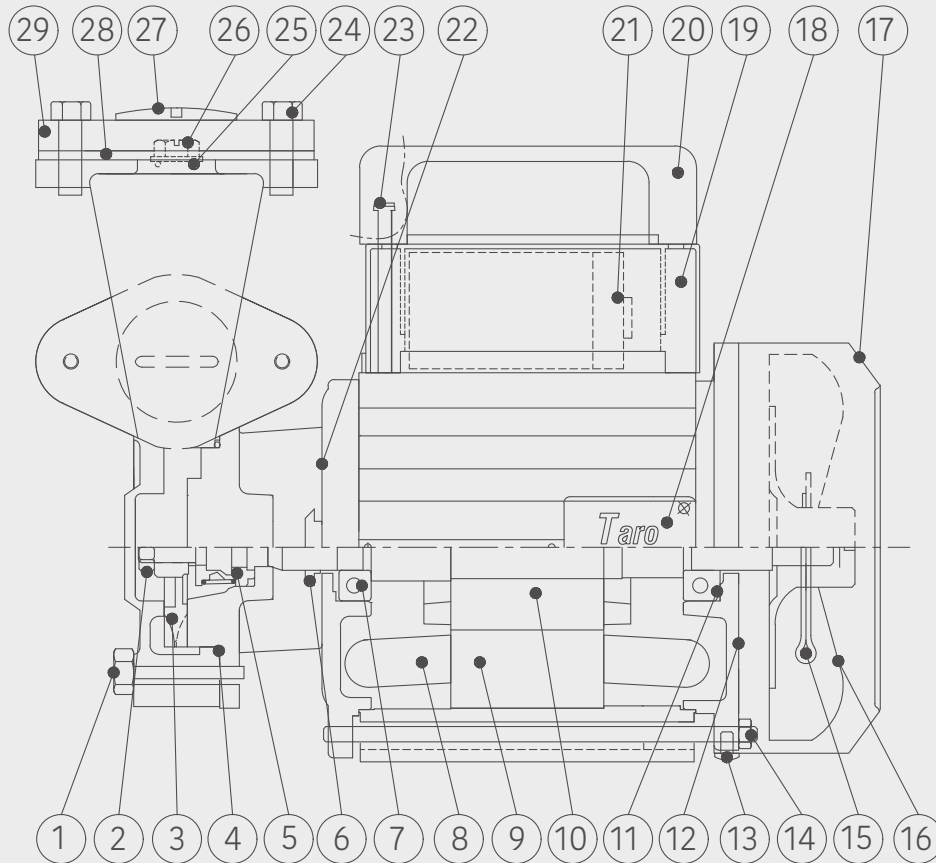
**Fig. 3 Cross-section view of 1Ø high speed self-priming monoblock - TRH**



No.	PART NAME	No.	PART NAME	No.	PART NAME
1	Fan shield	11	Impeller	21	Terminal box
2	Fan	12	Hex. Nut	22	Rotor with shaft
3	C.H screw & washer	13	Stud & hex. nut	23	Handle
4	Body	14	S.D chamber	24	Stator stack
5	Capacitor clamp	15	Gasket-circular	25	Coil
6	C.H screw & washer	16	Hex. Bolt & nut	26	Deep groove ball bearing
7	Terminal board	17	Gasket-oval	27	Rear cover
8	Stud	18	Flange-oval	28	Split cotter pin
9	Water slinger	19	Pre loading washer	29	Capacitor
10	Mech.seal set	20	C.H screw	30	Hex. Bolt, nut & washer

Cross-section view of a Single Phase High-Speed Self-Priming Monoblock, TMM / TSH Series, is shown below in Fig. 4:

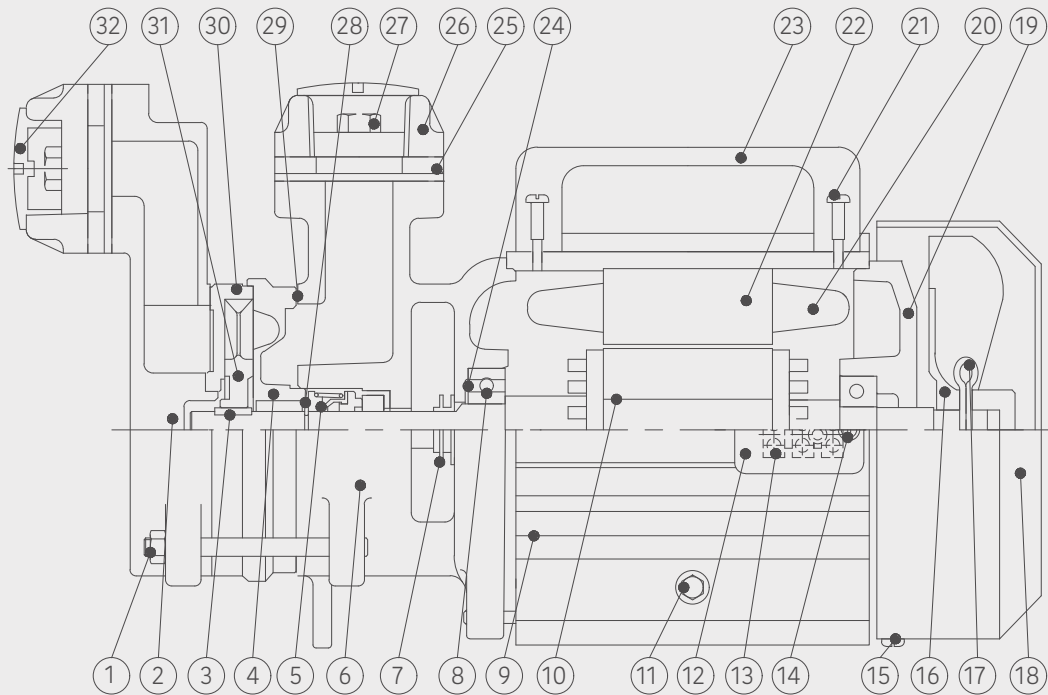
**Fig. 4 Cross-section view of 1Ø high speed self-priming monoblock – TMM / TSH**



No.	PART NAME	No.	PART NAME	No.	PART NAME
1	Hexagon head bolt	11	Pre loading washer	21	Capacitor
2	Hexagon nut	12	Rear cover	22	Cover dome
3	Impeller	13	C.H screw & washer	23	C.H screw
4	O-ring	14	Stud & nut	24	Hexagon head bolt
5	Mech seal set	15	Split cotter pin	25	O-ring
6	Water slinger	16	Fan	26	Drain plug
7	Deep groove ball bearing	17	Fan shield	27	Plug
8	Coil	18	Terminal box	28	Gasket-oval
9	Stator stack	19	Capacitor box	29	Flange-oval
10	Rotor with shaft	20	Handle		

Cross-section view of a Single Phase High-Speed Self-Priming Monoblock, TGH Series, is shown below in Fig. 5:

**Fig. 5 Cross-section view of 1Ø high speed self-priming monoblock - TGH**



No.	PART NAME	No.	PART NAME	No.	PART NAME
1	Stud & hex nut	12	Terminal box	23	Handle
2	Suction chamber	13	Terminal board	24	Pre loading washer
3	Parallel key	14	C.H screw	25	Gasket-oval
4	Casing	15	C.H screw & washer	26	Flange-oval
5	Mech seal set	16	Fan	27	Hexagon head bolt
6	Delivery chamber	17	Split cotter pin	28	Circlip
7	Water slinger	18	Fan shield	29	Gasket-circular
8	Deep groove ball bearing	19	Rear cover	30	Casing cover
9	Body	20	Coil	31	Impeller
10	Rotor with shaft	21	C.H screw	32	Plug
11	Hex bolt & washer	22	Stator stack		

# 9. Pre-installation requirements

## Arrangement for Installation

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- ✓ Use the services of a professional and trained mechanic with experience in erecting Single Phase Self-Priming Monoblocks
- ✓ Ensure proper safety during installation
- ✓ Ensure that a level foundation is ready before erection of the Single Phase Self-Priming Monoblock. Contact the dealer from where the Single Phase Self-Priming Monoblock was purchased for the motor mounting details for preparing the foundation

## General Installation Precautions

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- ✓ Open the packaging and note down the Serial number and Model for future reference
- ✓ The pump casing is filled with anti-corrosive liquid and supplied. Drain this liquid. Refill with fresh water and drain prior to installation
- ✓ Ensure all fasteners are tightened properly
- ✓ Use prescribed pipe sizes as mentioned on the product nameplate
- ✓ Fit the strainer provided
- ✓ After installation, prime the set before starting the pump
- ✓ Do not install the Single Phase Self-Priming Monoblock with high static suction lift
- ✓ It is recommended to assemble the Single Phase Self-Priming Monoblock on a level base with foundation bolts to prevent the pump and piping from getting stressed
- ✓ As the Single Phase Self-Priming Monoblock is air cooled, ensure that air flow to the cooling fan, located at the rear side of the motor, is not blocked
- ✓ Use a single power cable from the power source to the Single Phase Self-Priming Monoblock. Do not use a power cable with large number of joints as this can result in a significant voltage drop
- ✓ During installation, ensure the Single Phase Self-Priming Monoblock is not subject to shock loads which can damage the pumpset parts



 Note	If you detect damage or discrepancy in the product, contact the dealer from whom the pump was purchased
 Warning	Do not use this pump for oil, toxic, corrosive and flammable liquids. Pumping flammable liquids could cause explosion
 Caution	Ensure suitable precautions are taken while lifting and lowering the product
 Caution	Use trained professionals to install the Single Phase Self-Priming Monoblock
 Warning	Use a power supply cable that has sufficient rating. Factor in low-voltage operation
 Warning	Provide proper Earthing. Improper Earthing can cause electrical shock
 Caution	Use a Megger to verify the insulation resistance of the motor. Insulation resistance should be 20MΩ minimum
 Caution	Do not place the Single Phase Self-Priming Monoblock in a location subject to flooding as water can enter the motor and damage the windings and bearings
 Warning	Mount the pump with its axis horizontal

## Operation Precautions

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Caution

The pump casing houses a mechanical seal. Do not attempt to run the pump dry as the mechanical seal can get damaged during dry operation. Ensure the pump is primed and then only run it

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Warning

Switch OFF the power before working on electrical lines

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Caution

Do not use this pump for pumping liquid exceeding 33°C as this may lead to product failure

# 10. Installation procedure

Please follow the below procedure to assemble the Single Phase Self-Priming Monoblock:



Caution

The supply voltage should be within the specified voltage range.  
Water temperature for operation of the pump should not exceed 33°C  
Failure to observe the precautions given above could cause the pump to malfunction and may lead to current leakage or electrical shock



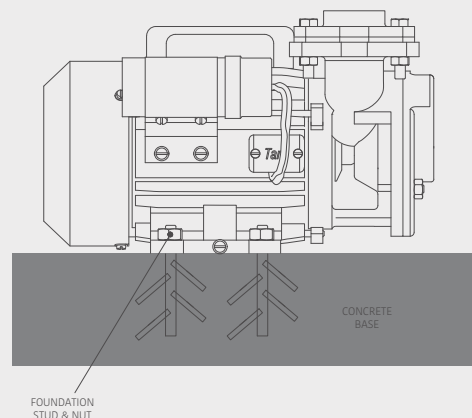
Warning

If you find any abnormalities like vibration, noise, smell, etc. from the pump during trial operation, switch OFF the pump and contact the dealer where this pump was purchased

## Installation:

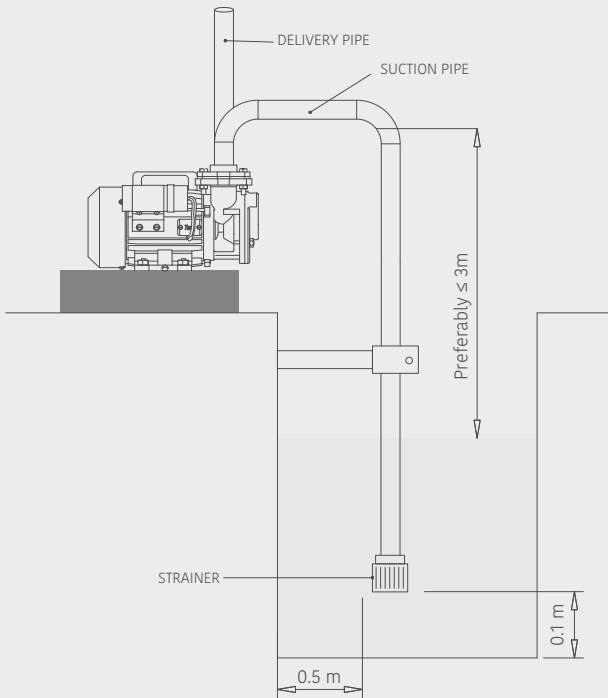
The following steps are executed prior to installation

- ✓ Measure the Insulation Resistance using a Megger of 500 VDC
- ✓ Ensure contact points are clean
- ✓ Connect the measuring cable to the ground conductor
- ✓ Connect the other measuring cable to phase terminal
- ✓ Ensure that the insulation resistance, as shown on the Megger, is a minimum of 20MΩ
- ✓ Prepare a level concrete foundation for mounting the Single Phase Self-Priming Monoblock and tighten the motor base using the foundation bolts as shown in Fig. 6 below:



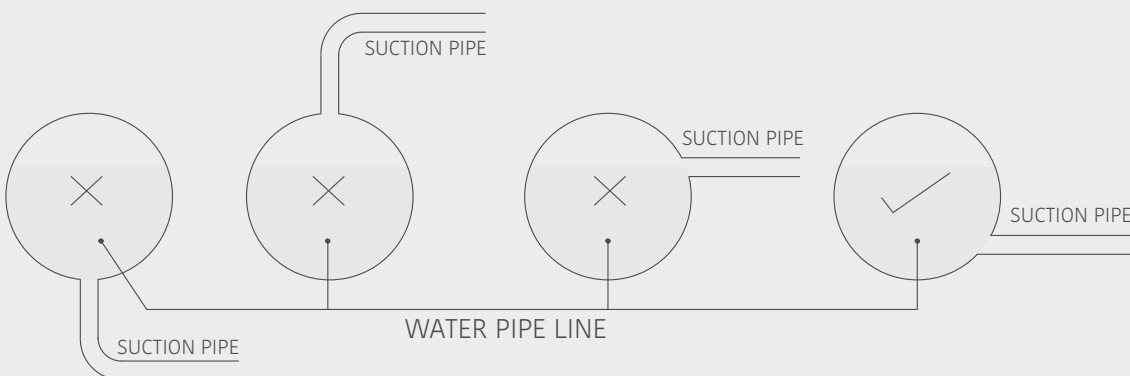
➤ **Fig. 6 Self - priming monoblock on a concrete foundation - installation**

- ✓ Use prescribed pipe sizes as mentioned on the product nameplate
- ✓ Locate the pump centre line as close as possible to the water surface. Ensure the strainer is fixed to the end of suction pipe located inside the sump / well. Refer Fig. 7, shown below, for recommendations:



◀ **Fig. 7 Recommendations for locating the self-priming pump and strainer**

- ✓ Use as few pipe fittings as possible in the suction line. Prefer using a bend in place of elbow
- ✓ Use a good quality strainer to reduce suction losses
- ✓ During priming, check the pump suction pipe for leakages
- ✓ In case the pump is used to draw water from a water line, follow the recommended suction pipe orientation shown in Fig. 8 below.



▲ **Fig. 8 Preferred orientation of suction pipe for pumping from a water line**

## Electrical Installation

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- ✓ Check the power supply voltage and frequency and compare with the product requirements specified on the name plate
- ✓ Observe relevant EB regulations while giving power supply to the motor
- ✓ Ground the monoblock using the two earth screws provided on the leg of the motor body
- ✓ Ensure electrical joints, if any, are properly and adequately insulated
- ✓ Connect the cable properly to the starter terminals to avoid loose connections
- ✓ Factor in low voltage operation while selecting cable size

## Electrical wiring work

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Warning

All electrical work must be performed by an authorised electrician in compliance with local electrical equipment standards and internal wiring codes. Improper wiring can lead to current leakage, electrical shock, or fire.

## Earthing

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Warning

Be sure to install the ground wire securely. Failure to observe this precaution could damage the pump and cause current leakage, which may lead to electrical shock.






Caution

Do not connect the ground wire to a gas pipe, water pipe, lightning rod, or telephone ground wire. Improper grounding could cause electrical shock.






## Connecting the Power Supply

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	Observe relevant Electricity Board regulations while powering up the pump set
	Before connecting the wires to the terminal board, make sure the power supply is properly disconnected. Failure to do so may lead to electrical shock, short, or injury caused by the unintended starting of the pump
	Do not use damaged cables, power plugs, or loose power outlets. Failure to observe this precaution could lead to electrical shock, short circuit or fire

## Supply connection to single phase monoblock

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-  The motors are internally wired and pre-connected with the capacitor
-  Connect phase and neutral to the terminal board
-  In case of clarification, please refer to the Connection Diagram displayed in the inner side of the terminal box cover

## Checking direction of rotation

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Danger

Hazardous voltage will cause death, serious injury, electrocution.  
All electrical work must be performed by an authorised electrician, in compliance with local electrical equipment standards and internal wiring codes.



Ensure pump is primed



The direction of rotation is clockwise looking from the rear end



In case the direction of rotation does not clockwise, return the set back to the dealer from where it was purchased

# 11. Basic troubleshooting



Warning

To prevent serious accidents, disconnect the power supply before inspecting the pump.

Go through this manual thoroughly before requesting repair. Contact the dealer from whom this equipment was purchased. Servicing and troubleshooting must be handled by qualified persons with proper tools and equipment. Common faults, root cause for these and suggested actions are provided in TABLE 2 below:

Fault	Possible causes	Suggested actions
Pump does not discharge water	Faulty foot valve / strainer	Check and replace
	Pump not primed	Prime the pump
	Air leakage on the suction side	Check and correct for leakages
	Suction lift too high	Reduce the static suction lift
	Foot valve not sufficiently submerged	Lower the foot valve and ensure that the foot valve is submerged at least 1 metre below the free surface of water
	Motor coil burnt	Rewind the motor
	Low-voltage operation	Operate in the recommended voltage range
Less discharge from pump	Low voltage operation	Operate in the recommended voltage range
	Wrong direction of rotation	Repair in the nearest authorized service centre
	Static suction lift high	Position the pump within recommended suction lift
	Total head higher than specified	Ensure delivery head within specified value
	Leaky pipes	Check the piping system and rectify the faults
	Smaller pipe size used when compared to nameplate recommendations	Use recommended size of pipes

<b>Fault</b>	<b>Possible causes</b>	<b>Suggested actions</b>
Less discharge from pump	Discharge pipe internally coated with depositions	Clean the pipe
	Foreign bodies lodged in impellers	Check the impellers and remove the foreign bodies
	The valve in the discharge pipe is partly closed / blocked	Check and clean / replace the valves, if necessary
	Impeller is worn out	Check and replace
Total head developed is too low	Weak capacitor	Replace capacitor
	Running at low-voltage	Operate in the recommended voltage range
	Defective rotor	Change the rotor
	Rotor rubbing against stator ID due to bend.	Check and replace the rotor
Pump runs rough and noisy	Bearings worn out	Dismantle and replace worn out bearings
	Pump cavitating due to high suction lift	Reduce static suction lift
	Pump not grouted	Grout the pump
	Rotor shaft is bent, resulting in rotor rubbing against stator bore	Replace rotor shaft
	Impeller rubbing against pump casing	Check rotor run out at location of impeller. If excessive, replace rotor
Pump leaks excessively	Mechanical seal damaged	Replace mechanical seal
	Casing Gaskets / Delivery Flange gasket damaged	Check and replace gaskets
	Pipe line / pipe fittings damaged	Check and replace piping



Note

Conduct trial operation after maintenance



Note

Dispose replaced components and oil with appropriate care so as to protect the environment



Warning

Do not try to solve unspecified troubles of Single Phase Self-Priming Monoblocks as it may lead to severe damage to the pump or injury to personnel. Contact the dealer where this pump was purchased







# 12. Preventive maintenance checks

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## PRECAUTIONS TO BE TAKEN



Warning

Disconnect the power supply before starting maintenance or inspection of the pump to avoid electrical shock



Note

If you find any damages or abnormalities, switch OFF the pump and report the problem to the dealer from whom the set was purchased

NOTE: The manufacturer assumes no responsibility for damage or injury due to disassembly in the field.

A definite schedule of preventive maintenance inspections should be established to avoid breakdown, serious damage and / or extensive downtime. The schedule will depend on operating conditions and experience with similar equipment. Below checklist does not represent an exhaustive survey of maintenance steps necessary to ensure safe operation of the Single Phase Self-Priming Monoblock.



Warning

The pump must never be operated with the delivery valve shut-off as the current drawn is maximum at shut-off conditions, resulting in damage to the motor



Warning

Utilise the services of an electrician to carry out electrical measurements / checking the function

It is good practice to monitor the conditions and performance of the Single Phase Self-Priming Monobloc. Diagnosis may be carried out by checking the following:

- ✓ Checking the current drawn by the pump at the duty flow rate.
- ✓ Both these data should be compared to corresponding data recorded when the unit was initially installed.
- ✓ Any increase in motor current at duty flow rate indicates a possible overload condition, possibly due to rotating impeller rubbing against the stationary pump casing.
- ✓ Measure the insulation resistance of the winding to check the condition of the motor.
- ✓ Check for leakage from the Mechanical Seal location.
- ✓ Check the capacitance of the capacitor.

## 13. Do's and don'ts

Do's	Don'ts
Use a quality foot valve with strainer	Do not install the pump with high static suction lift
Ensure leak proof joints on the suction side to prevent air entry and therefore loss of priming	Do not use piping smaller than what is mentioned on the nameplate
Use as few joints as possible on the suction line	Provide sufficient space around the pumpset so as to ensure proper airflow
After installation, prime the pump	Restrict the number of joints on the cable. More the cable joints, more will be the voltage drop
Rotate the shaft to ensure that pump is not jammed	Do not place the strainer right near the bottom of the well / tank as there is possibility for solids to be entrained with water
Ensure proper earthing is provided	Do not restrict the space behind the cooling cover as this will obstruct the flow of air required for cooling of the motor
Mount the pumpset on a level foundation / surface	Do not use to pump corrosive and flammable liquids
While powering up the pumpset, ensure the direction of rotation of the shaft, looking from the cooling fan side, is clockwise	Do not earth to a water line or gas line
Rubber gaskets assembled on the pumpset do not have a central hole. Cut out the central hole and reinstall	Do not cover the product as this will prevent effective cooling of the motor
Check all fasteners are tight	Do not keep the pump suction tapering down towards the pump suction to prevent air lock
Motor portion of pumpset is IP44 protected. Provide protection from rain	Do not operate the pump at shut-off conditions
Operate the pump in the specified operating head range	As far as possible, avoid the usage of elbows. Prefer long radius bends

Do's	Don'ts
Pump shall be used for clear water	Do not use flexible pipes on the suction side as they can get pinched and thereby affect the flow
When water is to be pumped from a pipeline, ensure the strainer gasket is fixed between the pump suction flange and corresponding mating portion of the pump casing	Do not operate the pump at very low heads as there is a possibility for the rotating impeller to rub against the casing
The pumpset is to be used for pumping cold clear water	When pumping from a pipeline, never connect the pump suction to the pipe bottom or top or to the air space



# 14. Important safety instructions

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Only qualified personnel should be involved for inspection, maintenance and repairs. The successful and safe operation of such a product depends on proper handling, installation and maintenance. It is suggested that in case of non-functioning of the product, the customer is requested to contact the dealer through whom the purchase was made.



Danger

Hazardous voltage will cause death, serious injury, electrocution.  
Disconnect all power before working on this equipment.  
Maintenance should be performed by only qualified personnel.

# 15. Storage & handling

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The Single Phase Self-Priming Monoblock, filled with anti-corrosive liquid in casing, is supplied from the factory in proper packing in which they should remain until they are to be installed



The product should be stored in a closed, dry and well ventilated room



Do not store the products under direct sunlight



Handle the pumps with care and do not expose the product to unnecessary impact and shocks



During unpacking and prior to installation, care must be taken when handling the pump to ensure that the product is not subjected to shock loads



If the product has been stored for a very long period, check the condition of the rubber components like suction and delivery flange gaskets and those with the mechanical seal



Caution

If the motors are stored, the shaft must be turned by hand at least once a month



Caution

If the motor has been stored for more than one year before installation, dismantle the motor and check the rotating parts before use. Re-assemble and check for free rotation of shaft



Caution

The pump casing houses a mechanical seal. Do not attempt to run the pump dry as the mechanical seal can get damaged. Ensure the pump is primed and then only run it

# 16. Company contact information

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For most up to date information on Texmo Industries, please visit [www.taropumps.com](http://www.taropumps.com)



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