

Installation, Operation, and Maintenance Manual

GTPH Series Multistage Horizontal External Mount Pumps

60 Hz
MODELS

GTPH 2T
GTPH 4T
GTPH 8T
GTPH 12T
GTPH 25T
GTPH 50T

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Please read this manual carefully before beginning installation and operation.

INTRODUCTION

This Installation, Operation, and Maintenance Manual is designed to help you get the best performance and longest life from your RAE pump.

This pump is a GTPH Series multistage horizontal centrifugal pump. This pump should be mounted externally during operation and primed before use.

GTPH Series pumps are intended for industrial use to carry fluids such as water, coolant, light oil and other clean, non-aggressive liquids.

Standard pump construction is stainless steel wetted parts.

If there are any questions regarding the pump or its applications which are not covered in this manual, or in other literature accompanying this unit, please contact your RAE Pumps distributor, or write:

RAE Pumps
1212 Streng Street
Cincinnati, OH 45223
513.779.3034
Info@RAEPumps.com
www.RAEPumps.com

For information or technical assistance on the power source, contact the power source manufacturer's local dealer or representative.

! DANGER !

This pump is not intended to transfer explosive liquids, such as gasoline, diesel oil and other similar liquids. It is only suitable for water, and diluted, low viscosity, non-corrosive cooling or lubricant liquids.

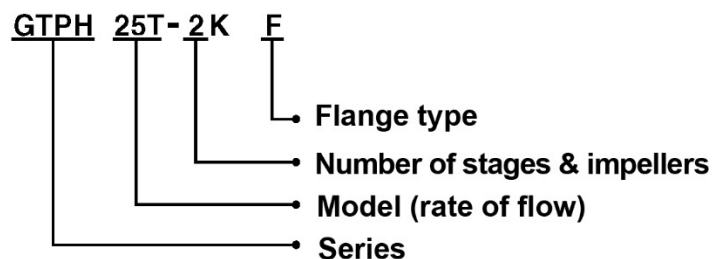
SPECIFICATIONS—SECTION A

MODEL CODE EXPLANATION

The pump models are coded based on the number of pump stages/impellers. Standard stages consist of both diffusers and impellers.

GTPH 25T and 50T models have an F at the end of the model code, indicating a flange type connection.

The pump model is shown on the pump nameplate.



OPERATING PARAMETERS

Ambient temperature: Max 104°F
Liquid temperature range: 32°F to 194°F
Operating pressure: Max 142 psi
Inlet pressure: Max 85 psi

	GTPH 2T	GTPH 4T
Flow (gpm):	4 to 16	8 to 36
Head (feet):	20 to 220	25 to 240

	GTPH 8T	GTPH 12T
Flow (gpm):	17 to 44	35 to 70
Head (feet):	40 to 160	10 to 210

	GTPH 25T	GTPH 50T
Flow (gpm):	65 to 200	130 to 380
Head (feet):	20 to 220	40 to 190

MOTOR DATA

Nominal speed: 3500 rpm at 60 Hz
Standard voltage: 3 phase; 230V/460V
Protection class: IP54
Insulation class: F

INSTALLATION—SECTION B

! WARNING !

When running, the motor surface temperature is extremely high. Mount pump in a safe place to avoid accidental touch.

INSTALLATION SITE

1. Select a dry and good ventilated site and provide accessible space around the pump for future maintenance and service.
2. Mount and bolt the pump base to the foundation.
3. Make sure the ambient temperature is below 104°F and the pumped liquid temperature does not exceed 194°F.
4. Do not operate the pump in an explosive environment.
5. Horizontal installation is recommended. When it is installed in other positions, rotate intake flange so that drain hole is at the lowest position.
6. Indoor: do not install the pump on ceiling, carpet, or near electrical appliances. Provide drain hole.
7. Outdoor: provide a suitable cover to protect pump from weather and frost, prevent debris from falling into the motor fan cover.

PIPING

1. The pump should be installed so that the suction pipe is as short as possible.
2. When you draw liquid from the same level of the pump suction inlet, allow a slope from the liquid source to the suction inlet to avoid air lock. If it is to pump liquid from a level lower than the pump suction inlet, a foot

valve check valve must be fitted to the end of the suction pipe.

3. Select the pipe size specified in the pump outline drawings in **DIMENSIONS SECTION-F**. Smaller piping will cause considerable pressure loss and affect pump efficiency.
4. All piping joints must be completely tight. Leakage in suction piping may result in the loss of the suction capability. Leakage in discharge piping may cause the "cycling" of the pump.
5. Prevent any foreign objects (chewing gum, dirt, and sand etc.) from falling into the pump or motor.
6. The pump lifting capacity is related to the temperature of the pumped liquid. Under normal liquid temperature (68°F – 86°F), it will lift up to 16Ft. At high temperature operation (over 140°F), the pump must be installed at the level lower than the liquid source or the pump inlet pressure must be higher than 15 psi.
7. It is extremely dangerous to run the pump against a closed discharge valve. Doing so will cause extremely high liquid flow temperature and damage the pump. Connect a bypass/a drain to the discharge pipe to allow a minimum liquid flow through the pump.
8. Metal piping is recommended when the operations require high lifting head or high liquid temperature.

ELECTRICAL CONNECTION– SECTION C

! WARNING !

Electrical installation should be carried out in accordance with the local electrical code. Make sure that the electricity supply has been switched off before electrical connection.

Use care when accessing pump electrical components.

SPECIFICATIONS

Electrical specifications (voltage, hertz) are shown on the pump nameplate. Verify that the power supply voltage and hertz match pump requirements. An external ON/OFF switch must be installed.

CONNECTION

Electrical connection should be in accordance with diagram shown on the connecting box, and motor current should be within rated amps as shown on nameplate. Three phase pump requires extra magnetic starter with protection.

ROTATION DIRECTION

On this three phase motor, rotating direction is critical. The rotating direction is indicated on the fan cover (counterclockwise viewing from fan cover end). Interchanging any two leads with power off can reverse the pump rotation.

POSITIONING CONNECTION BOX

The position of the motor connecting box is adjustable. The preset position from the factory is on top of the motor. It can be turned to either side before the pump is installed.

To change the position of the connection box, remove the bolts on the motor frame (4 bolts which are bolted into the chamber) and turn the stator housing to the required position (**Figure 1**). Replace the screws and tighten securely.

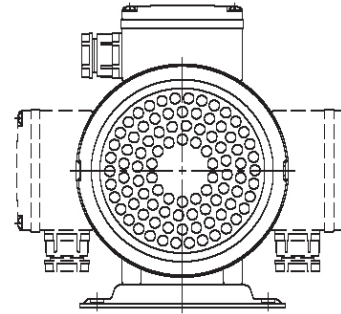
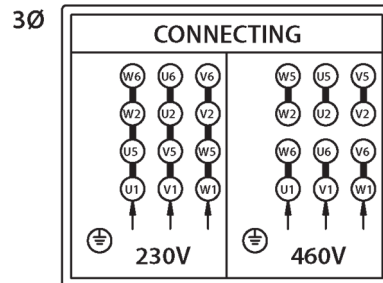
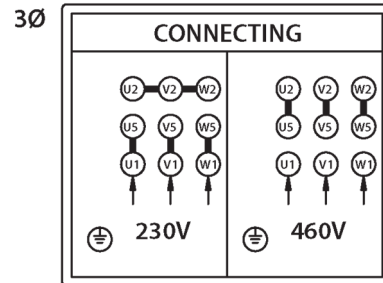


Figure 1

WIRING DIAGRAMS



OPERATION AND MAINTENANCE–SECTION D

! WARNING !

The pump cannot be operated with discharge outlet fully closed. Doing so will raise the liquid temperature abnormally, and damage the pump after 5 minutes.

! WARNING !

The pump cannot be used to transfer explosive liquids.

Extra protective gear is required if the working liquid temperature exceeds 140°F to avoid scald hazard.

The pump should not be used to transfer toxic or contaminated liquid. Warranty will be void if the pump application is not in compliance with the installation and operation procedures.

! CAUTION !

This pump must be primed before start up.

PRIMING

Booster systems and systems where the liquid level on the suction side is above the pump inlet:

1. Close the isolating valves either side of the pump.
2. Remove the priming plug (**Figure 2**).
3. Slowly open the suction valve and keep it open until a steady stream of liquid runs out the priming port.
4. Replace the priming plug and tighten.

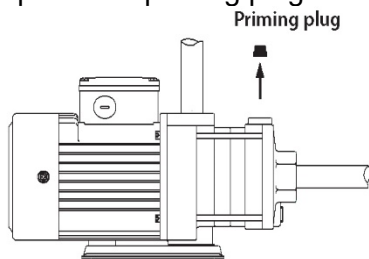


Figure 2

Pumping from tanks and wells where the liquid level on the suction side is below the pump inlet:

1. Close the discharge isolating valve.
2. Remove the priming plug (**Figure 3**).
3. Pour water through the priming port. Make sure that the suction pipe and pump are completely filled with liquid and vented.
4. Replace the priming plug and tighten.

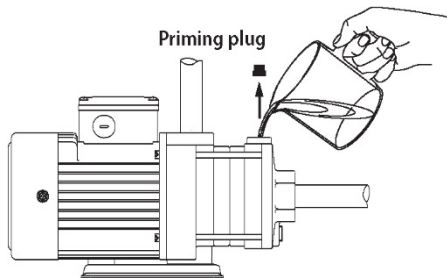


Figure 3

START UP

Start the pump and slowly open the discharge valve until it is fully open.

If there is no discharge flow after a few minutes, turn off the pump and repeat the priming process. Repeat as needed until pump is working normally.

When pump is operating normally, measure the motor current and check it with the nameplate value. If it exceeds the rated value, please reduce the lifting capacity or fully open the valve.

When pump is not in use for a period, it should be drained by removing the priming and drain plugs (**Figure 4**). For start up after long time inactivity, verify the impeller and mechanical seal are free of debris. Clean if locked up by sand, rust or other debris.

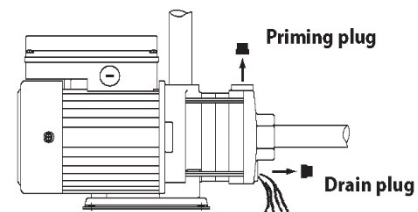


Figure 4

LUBRICATION

The mechanical seal and shaft sleeves inside the pump are lubricated by working liquid.

SUCTION FILTER

For maximum performance, the suction filter should be always kept clean and free from obstructions.

PERIODIC INSPECTION

The following checks should be carried out periodically to ensure normal operation:

1. Measure the discharge and output pressure.
2. Inspect piping and joints for leaks.
3. Examine the motor starter/container.

TROUBLE SHOOTING—SECTION E

! WARNING !

Verify electrical supply has been switched off before trouble shooting.

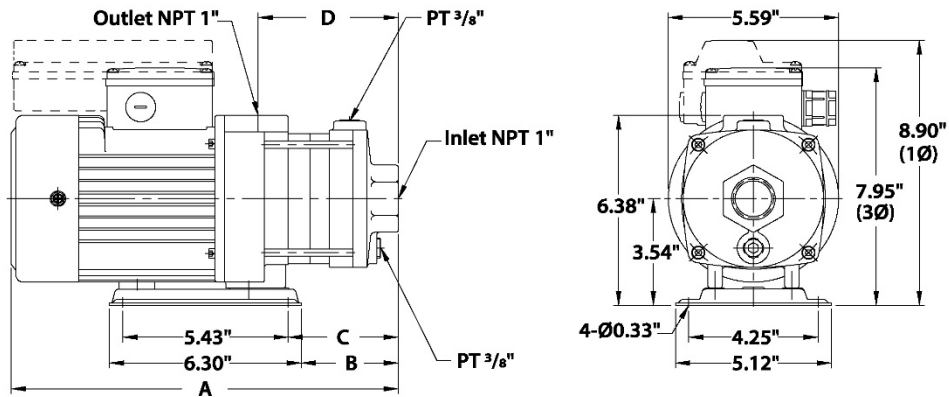
Fault	Possible Causes
Motor does not start	<ol style="list-style-type: none">1. Check if electrical power source, fuse or circuit breaker failed2. Check if pump is locked up by sand, rust, or foreign objects3. Check if motor is defective due to overload or other causes
Pump runs at reduced capacity or does not discharge liquid	<ol style="list-style-type: none">1. Verify rotation direction2. Check inlet source is sufficient, the suction lift is not too great, and the temperature is within normal range3. Check for leakage in suction pipe, verify normal valve operation, check mechanical seal for defects.
Pump stops during operation	<ol style="list-style-type: none">1. Motor overheated due to overload or other causes2. Control circuit has cut out (pressure switch or level controller)

DIMENSIONS AND WEIGHT—SECTION F

GTPH 2T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH2T2K	12.01	1.81	2.91	3.90	26.0
GTPH2T3K	12.72	3.19	3.62	4.61	26.2
GTPH2T4K	13.43	3.90	4.33	5.31	26.5
GTPH2T5K	15.71	4.61	5.04	6.05	29.8
GTPH2T6K	16.42	5.31	5.75	6.73	30.0

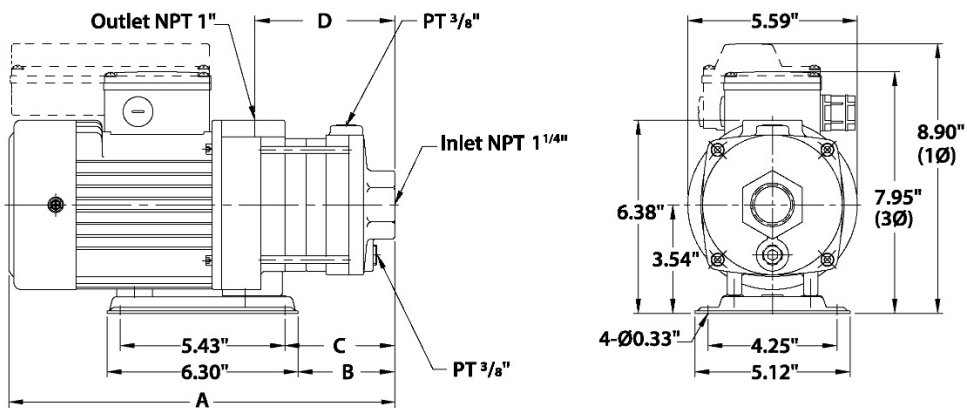
GTPH 2T



GTPH 4T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH4T2K	12.36	2.83	3.27	4.29	25.8
GTPH4T3K	15.00	3.90	4.33	5.31	29.3
GTPH4T4K	16.06	4.96	5.39	6.38	31.1
GTPH4T5K	17.13	6.02	6.46	7.44	31.3
GTPH4T6K	19.37	7.09	7.52	8.54	35.5

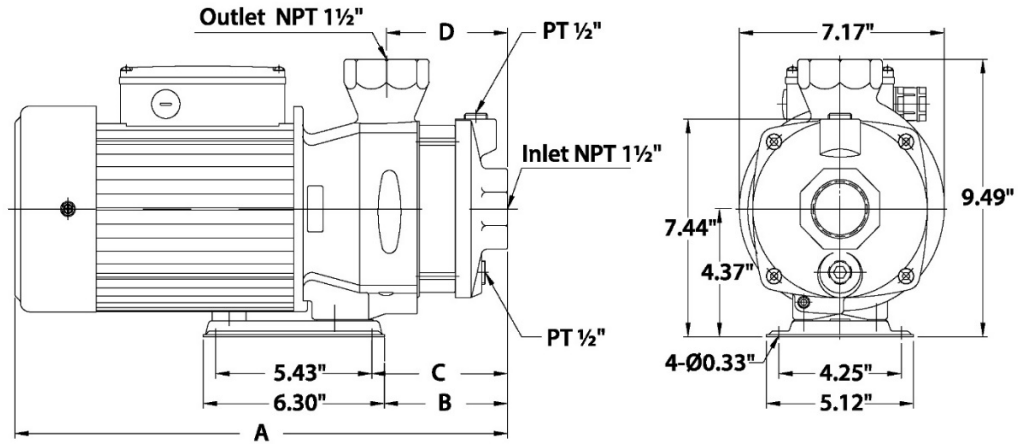
GTPH 4T



GTPH 8T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH8T2K	13.19	3.03	3.46	2.95	41.7
GTPH8T3K	16.02	4.29	4.72	4.21	43.0
GTPH8T4K	17.13	4.29	4.72	4.21	48.5
GTPH8T5K	18.46	5.63	6.06	5.55	57.5

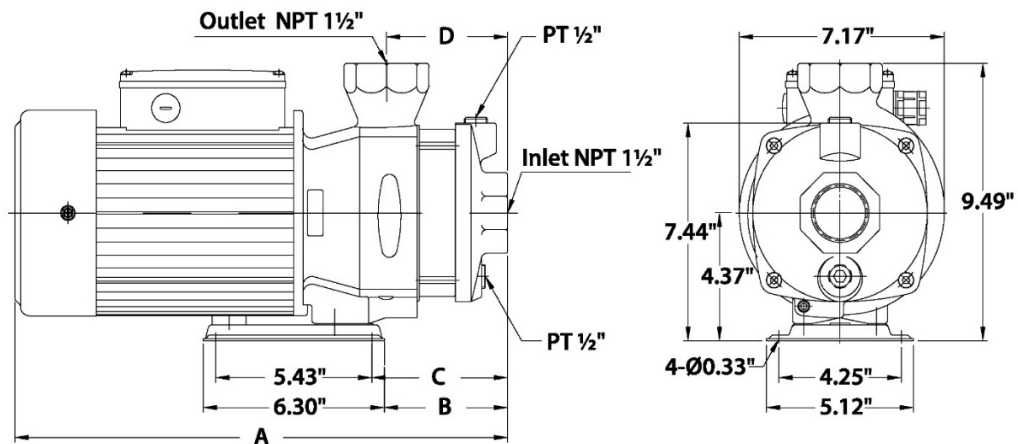
GTPH 8T



GTPH 12T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH12T1K	13.19	3.03	3.46	2.95	40.1
GTPH12T2K	14.76	3.03	3.46	2.95	43.4
GTPH12T3K	17.13	4.29	4.72	4.21	59.5
GTPH12T4K	17.13	4.29	4.72	4.21	63.9
GTPH12T5K	20.83	5.63	6.06	5.55	79.0

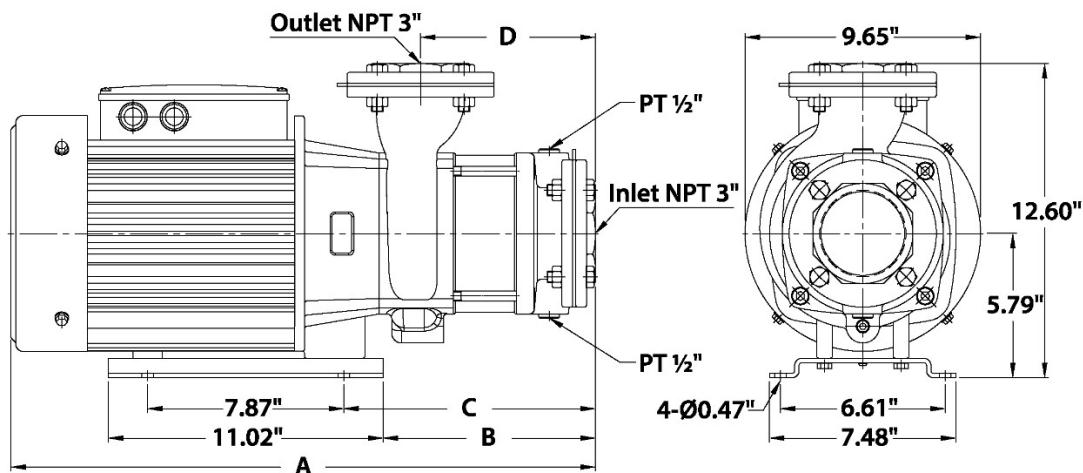
GTPH 12T



GTPH 25T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH25T2KF	21.16	6.24	7.81	4.72	112.3
GTPH25T3KF	23.52	8.60	10.18	7.09	125.1
GTPH25T4KF	23.52	8.60	10.18	7.09	125.6
GTPH25T5KF	27.85	10.96	12.54	9.45	151.5
GTPH25T6KF	27.85	10.96	12.54	9.45	152.0

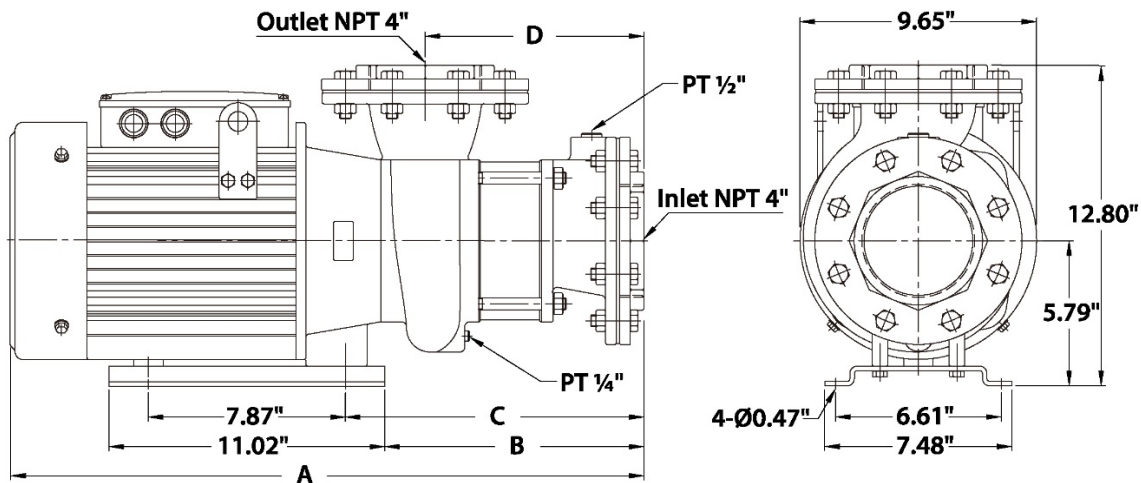
GTPH 25T



GTPH 50T

Model	A (inches)	B (inches)	C (inches)	D (inches)	Weight (pounds)
GTPH50T2.5KF	22.93	7.99	9.57	6.38	122.4
GTPH50T4KF	27.26	10.35	11.93	8.74	171.0
GTPH50T5KF	29.23	10.35	11.93	8.74	191.8

GTPH 50T



WARRANTY-SECTION G

RAE Pumps will replace, within one year of shipment from our plant, any pump that, in our judgment, has failed due to defects in materials or workmanship, provided the pump has been properly installed and maintained and has not been subject to abuse.

Modifications, including removal of pump tags or misapplication, void this warranty.

Pump must return to RAE Pumps with complete history of service for inspection and warranty consideration.

RAE Pumps does not accept the responsibility for transportation to and from our plant. Furthermore, we do not assume any responsibility for consequential damage or loss of production.