TOWLE WHITNEY LLC

TW1000-40W-40 FLAG FRAME
VARIABLE SPEED BOOSTER SYSTEM

TOWLE WHITNEY LLC

TW1000-40W-40 FLAG FRAME

The ***TW1000-40W-40 Flag Frame Booster System*** is equipped with a centrifugal pump regulated by a variable frequency drive that controls the pump operation to maintain constant pressure regardless of varying demand or fluctuation in incoming pressure. This system will supply 40 *GPM with a 40 PSI* overboost.

Features and Benefits:

- Residential & Commercial application
- Quiet, Compact & Powerful
- Variable Frequency Drive controlled pump
- Energy efficient operation
- Prewired & Factory Tested

Lead-Free* (Wetted) components:

- Centrifugal Pump: SS and Cast Iron
- Relief valve: Lead Free Brass
- Pressure Gauge: Lead Free Brass
- Transducer: Stainless Steel
- Tee Lead Free Brass
- Check valve Lead Free Brass
- Fittings: Stainless Steel

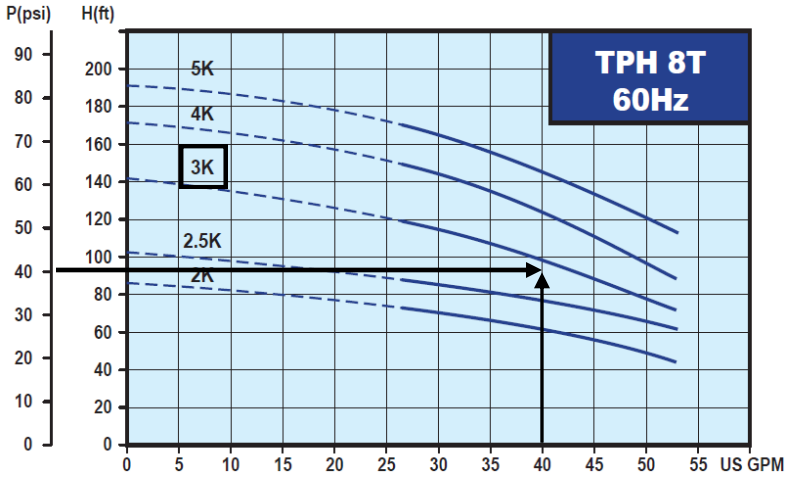
*All lead-free brass shall contain <.25% Pb

All parts shown are included in the system
Actual system components may vary
Some assembly required

Technical Specifications:

Pump: Walrus of America [8T-3K]
Controller: Emerson or equal
Flow Rate: 40 GPM
Boost: 40 PSI Overboost
Horse Power: 1 1/2 HP
Suction: 1 1/2 inch
Discharge: 1 1/2 inch
Tank: 8.5 Gallon [PLT-12]
Frame Size: 20”W x 17”H x 17”D
Decibel rating: <80 db @ 3500 RPM
Power Options: Independent circuit required
208-220V 1 / 3 PH
360-480V/3PH

Pump performance curve



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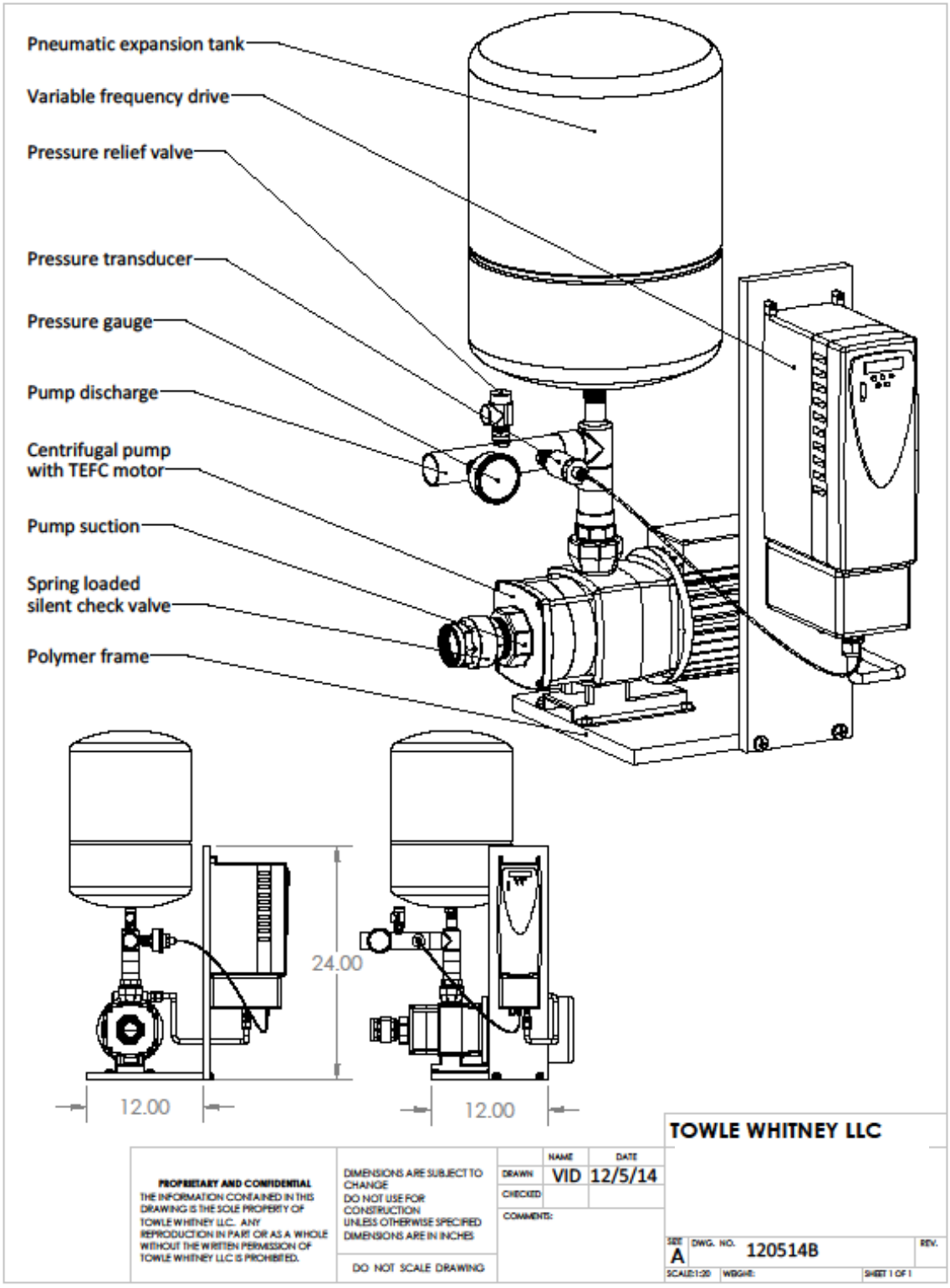
BOOSTER SYSTEM DIMENSIONS



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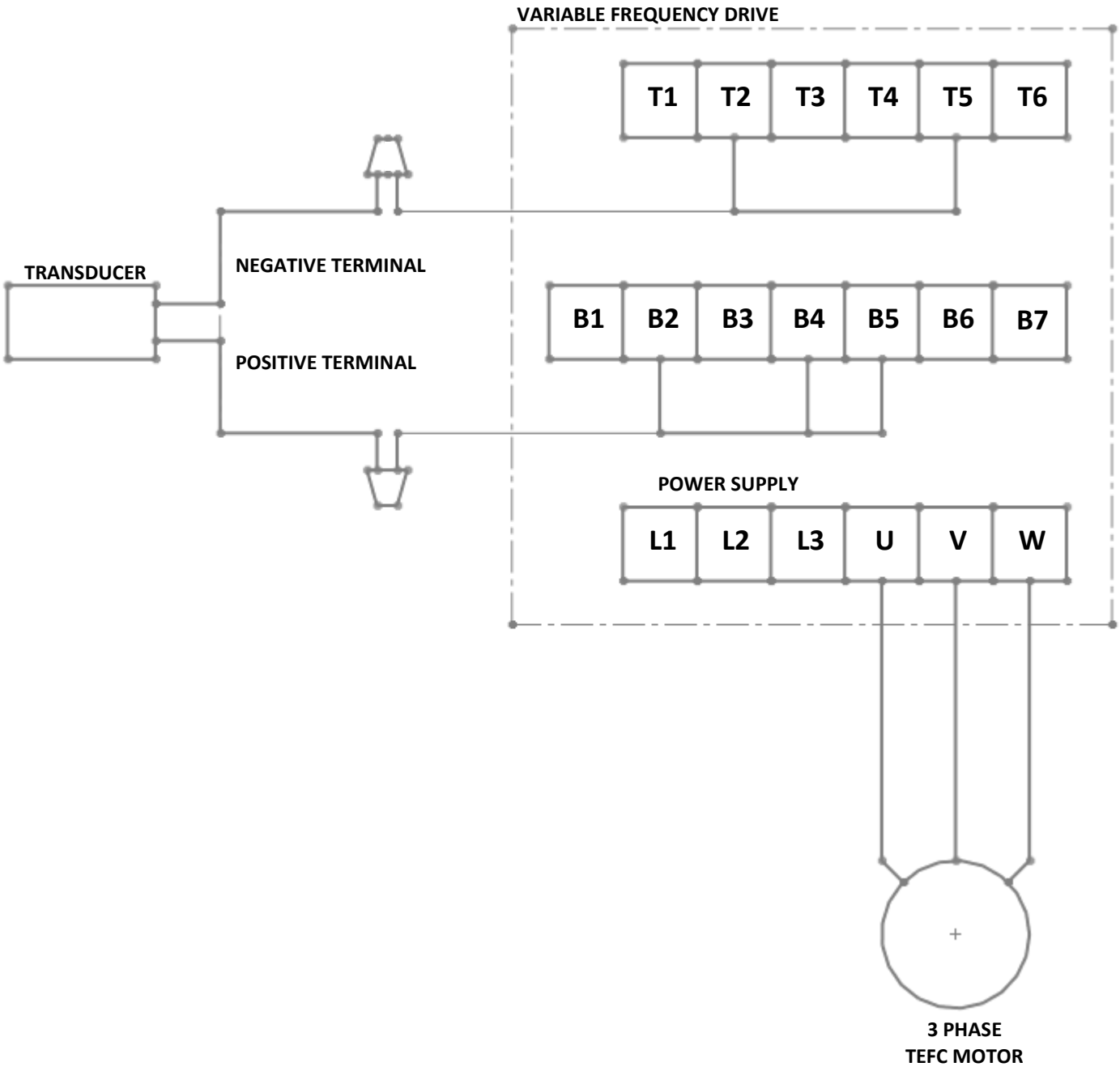
GENERAL WIRING DIAGRAM



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GENERAL SPECIFICATIONS

Assembled Units:

- All "wetted surfaces" shall be lead free (<.25% Pb) in conformance with the 1/4/14 federal law
- Shall have a variable frequency drive (VFD) with a pressure transducer, pressure gauge, and relief valve
- Each system shall have a properly sized air charged pneumatic tank
- Pump shall be connected to a separate and independent disconnect box [supplied by others]

Variable Frequency Drive (VFD) shall:

- Shall be rated using specified power requirement, efficiency shall be 98% or better at full speed
- All factory preset values and/or last saved data values must remain available to the operator in the event of a complete power outage
- NEMA 1 rated conduit enclosure
- Operate to a program that protects the pump against damaging hydraulic conditions such as:
  - Motor overload, pump overflow surges, loss of prime due to incoming water supply interruption, hunting, overload through frequency/current optimization, hydraulic damage by restricting the pumps to operate beyond their published end of curve
- Automatically restart after an over-current, over-voltage, under-voltage or loss of input signal protective trip
- Have an operator control panel [keypad] for customization of parameters
- Include a feature to upload / download parameters into an external device to be used with another drive or the same drive
- Have a removable non-volatile memory device
- Be capable of accepting individual analog inputs from transducer. All transducer inputs must be wired to the variable frequency drive for continuous scan and comparison function
- Utilize a proportional ladder logic program - integral - derivative control function
- Display the following values:
  - Pump running/standby, pump speed in Hz, user adjustable parameters such as PID set points
  - Motor frequency, motor current, threshold set points for PID error, minimum operating frequency
  - Troubleshooting and diagnostics of faults

Transducer:

- Shall be provided to supply all pressure signals to the variable frequency drive
- Shall be rated for required system pressure and shall be 4-20 mA analog

Centrifugal pump:

- Shall have cast iron casing with 304 stainless steel impellers. (All Stainless steel pump is an available upgrade)
- Shall have a 316 stainless steel shaft sleeve and a replaceable tungsten carbide + HNBR mechanical seal
- Mechanical seal shall be rated to withstand pressure of up to 142 PSI
- Motor shall be totally enclosed fan cooled (TEFC) and manufactured in compliance with CE, RoHS and CSA

Pneumatic expansion tank:

- Shall be rated for use with potable water with an operating pressure of a maximum 125 PSI
- Shall be pre-charged to a pressure of 10 PSI below system operating pressure

Valves and fittings:

- Shall be sized appropriately to allow water velocity not exceeding 10 ft/sec, to minimize cavitation and turbulence
- Check valve shall be spring-loaded and silent

Installation:

- Equipment shall be installed in accordance with applicable local building, electrical and plumbing codes
- Shall be installed indoors (unless otherwise specified) and protected from water spray

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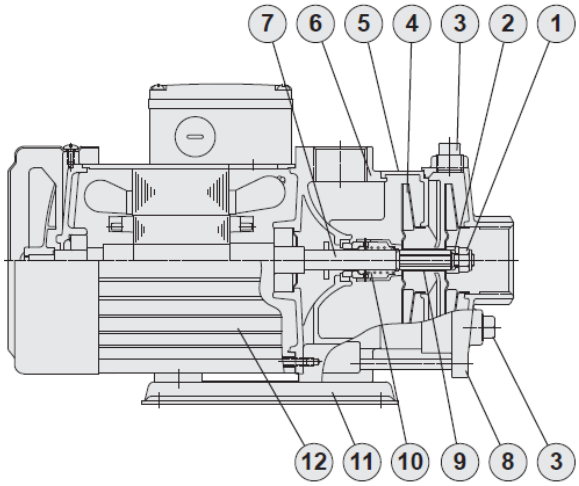
PUMP SPECIFICATION

MULTISTAGE CENTRIFUGAL PUMP

TPH2T/4T/8T/12T



Motors:

- The pump is coupled with (TEFC) Totally Enclosed Fan Cooled, squirrel-cage motor.
- Nominal speed: 3500 rpm at 60Hz
- Protection class: IP54
- Insulation class: F

Pumps:

- Horizontal multi-stage centrifugal pump
- Non self-priming
- close coupled design
- Impellers mounted on extended motor shaft.

Materials

No.	Part name	Material		
		Standard	S series	N series
1	Lock Nut	SUS 316	SUS 316	SUS 316
2	Sleeve(Shaft End)	SUS 304	SUS 304	SUS 316
3	Water Plug	FC 20	SUS 304	SUS 316
4	Impeller	SUS 304	SUS 304	SUS 316
5	Intermediate Chamber	SUS 304	SUS 304	SUS 316
6	Pump Casing	FC 20	SUS 304	SUS 316
7	Shaft	SUS 304	SUS 304	SUS 316
8	Suction Chamber	FC 20	SUS 304	SUS 316
9	Sleeve	SUS 304	SUS 304	SUS 316
10	Mechanical Seal	Tungsten carbide + HNBR		
11	Mounted Base	Coating Steel		SUS 316
12	Motor Shell	Aluminum alloy		

SUS 304 may be replaced by SUS316 depended on stock availability.

Operating Limits:

- Ambient temperature: Max. 104°F (40°C)
- Liquid temperature range: 32°F (0°C) to 194°F (90°C)
- Operating pressure: Max. 142 psi
- Inlet pressure: Max 85 psi

Suitable Liquids:

- Clean or other non-corrosive liquids

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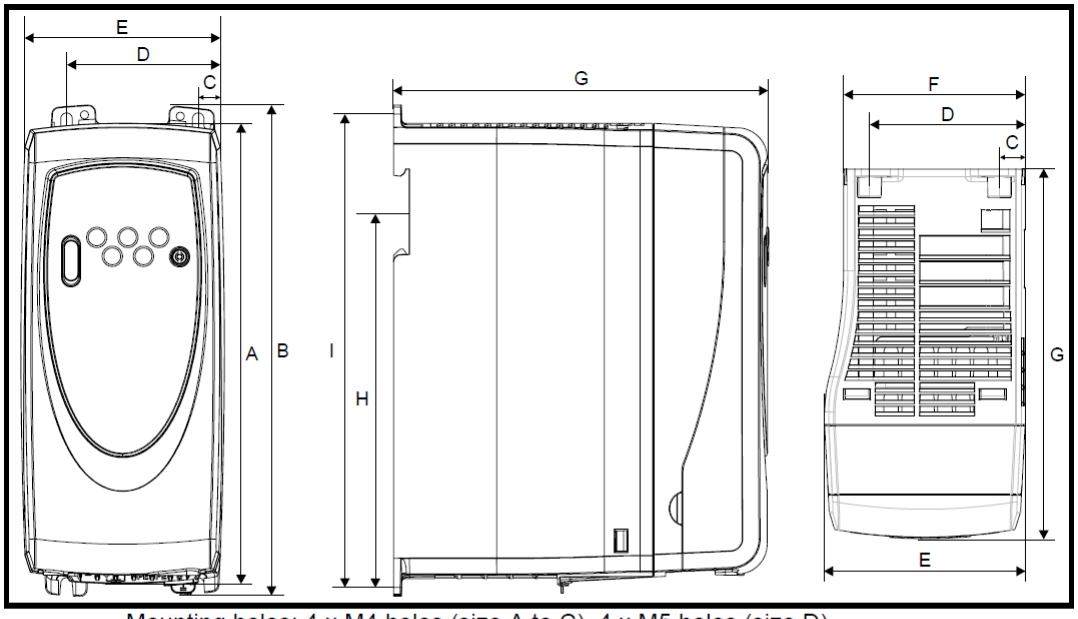

Mounting holes: 4 x M4 holes (size A to C), 4 x M5 holes (size D)

Table 3-1 Commander SK dimensions

Drive size	A		B		C		D		E		F		G		H*		I	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
A	140	5.51	154	6.06	11	0.43	64	2.52	75	2.95			145	5.71	104	4.09	143	5.63
B	190	7.48	205	8.07	10.9	0.43	65.9	2.6	85	3.35	77	3.0	156	6.15	155.5	6.12	194	7.64
C	240	9.45	258	10.16	10.4	0.41	81.1	3.2	100	3.94	91.9	3.62	173	6.81			244	9.61
D	300	11.81	335	13.19	14.5	0.57	100.5	3.96	115	4.53			198	7.80			315	12.4

Frame Size	200 / 240 VAC +/- 10% 1 phase	Normal Duty			Heavy Duty		
	Order Code	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)
A	SKA1200025				1.7	0.25	0.33
	SKA1200037				2.2	0.37	0.5
	SKA1200055				3	0.55	0.75
	SKA1200075				4	0.75	1
B	SKBD200110				5.2	1.1	1.5
	SKBD200150				7	1.5	2
C	SKCD200220				9.6	2.2	3
D	SKDD200300				12.6	3	3

Frame Size	380 / 480 VAC +/- 10% 3 phase	Normal Duty			Heavy Duty		
	Order Code	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)
B	SKB3400037				1.3	0.37	0.5
	SKB3400055				1.7	0.55	0.75
	SKB3400075				2.1	0.75	1
	SKB3400110				2.8	1.1	1.5
	SKB3400150				3.8	1.5	2
C	SKC3400220				5.1	2.2	3
	SKC3400300				7.2	3	3
	SKC3400400				9	4	5
D	SKD3400550				13	5.5	7.5
	SKD3400750				16.5	7.5	10

Frame Size	200 / 240 VAC +/- 10% 3 phase	Normal Duty			Heavy Duty		
	Order Code	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)	Max Continuous Current (A)	Typical Output (kW)	Motor Power (HP)
B	SKBD200110				5.2	1.1	1.5
	SKBD200150				7	1.5	2
C	SKCD200220				9.6	2.2	3
D	SKDD200300				12.6	3	3
	SKD3200400				17	4	5

* Drive selection for centrifugal pump is based on amperage [not on HP or KW]

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PNEUMATIC EXPANSION TANK SPECIFICATIONS

Air Side Pre-pressure (psi)	(bar)	Water Side Volume at 150psi (10.3 bar) (gallons) PLT-5	PLT-12	PLT-20
20	(1.4)	1.48	3.42	7.102
40	(2.8)	1.26	2.88	5.882
60	(4.1)	1.0	2.49	4.705
80	(5.5)	.80	1.85	4.009

Description	PLT-5 Order No. 0067370	PLT-12 Order No. 0067371	PLT-20 Order No. 0067372
Max. Pressure - psi	150	150	150
Max. Temp. - °F	200	200	200
Tank Volume - gal.	2.1	4.5	8.5
Tank Acceptance - gal.	1.26	2.8	3.4
Air Pre-charge - psi	20	20	20
Connections Size - in.	¾ male	¾ male	¾ male
Diameter - in.	8	10.5	12½
Length - in.	11	13.5	19 3/16
Weight - lbs.	5.5	10	15

Certified to ANSI/NSF 61 (73°F/23°C)

Listed by IAPMO

CALIFORNIA PROPOSITION 65 WARNING

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. (California law requires this warning to be given to customers in the State of California.)

For more information: www.watts.com/prop65

Disclaimer: The manufacturer of this tank does not accept any liability or other responsibility for personal injury or property damage resulting from improper use, installation or operation of this tank or the system of which it is a part.

Notice: The expansion tank, piping and your connections may in time leak. Select a location to install the expansion tank where a water leak will not damage the surrounding area. The manufacturer is not responsible for any water damage in connection with this expansion tank.

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Booster Pump Systems

Three Year Limited Warranty

This warranty applies to booster pump systems built by Towle Whitney LLC, and shall:

- Exist 36 months from the date of shipment.
- Be in effect only after installation photographs are received by Towle-Whitney LLC.

Towle-Whitney LLC liability under this warranty shall be limited to the repair or replacement of any part or parts found to be defective (material or workmanship) within the warranty period. Towle-Whitney LLC shall determine whether the part needs to be returned, or field scrapped. The warranty excludes:

- Any water damage or consequential damage.
- Transducers.
- Pump Seals.
- Debris in water causing internal pump damage.
- Systems not installed in accordance with Installation and Maintenance Instructions.
- Labor, transportation, and related costs incurred by the customer.
- Misuse, negligence, inappropriate chemicals or additives in water.
- Inadequate protection from freezing.
- Lightning, high voltage spikes, accidents, floods, or acts of God.
- Re-Installation costs of repaired or replacement equipment.
- Re-Imbursement for the loss caused by interruption of service.

This warranty applies to all states and territories of the United States and Canada only. There are no express or implied warranties, including merchantability or fitness for a particular purpose, which extend beyond those warranties described or referred to above.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages and some jurisdictions do not allow limit actions on how long implied warranties may last. Therefore, the above limitations or exclusions may not apply. This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

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