TOWLE WHITNEY LLC

TW1000-75G-40 FLAG FRAME
VARIABLE SPEED BOOSTER PUMP SYSTEM

TOWLE WHITNEY LLC

TW1000-75G-40 FLAG FRAME

The ***TW1000-75G-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 75 *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: Stainless Steel
- Relief valve: LF Brass or SS
- Pressure Gauge: Stainless Steel
- Transducer: Stainless Steel
- Check valve LF Brass or SS
- Fittings: LF Copper or SS

*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:

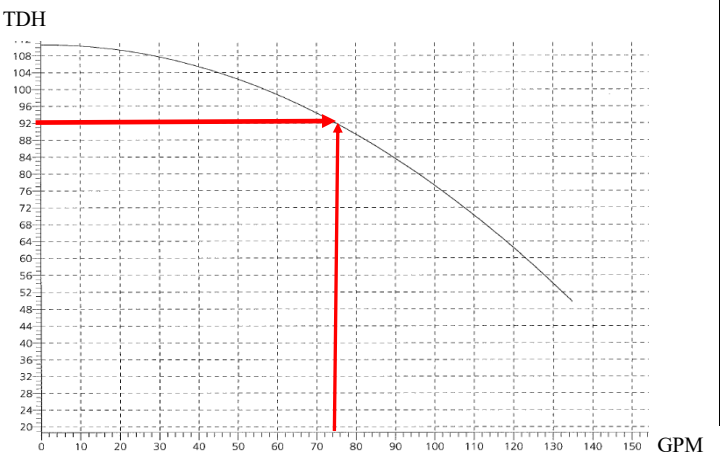
Pump: Gould 2MS
Horse Power: 3 HP
Controller: Vacon 40 - NEMA 1 Rating
Flow Rate: 75 GPM
Boost: 40 PSI Overboost
Suction: 1 1/2 inch
Discharge: 1 1/4 inch
Tank: 14 Gallon [PLT-35]
Frame Size: 19" W x 25" H x 17" D
Decibel rating: <80 db @ 3500 RPM
Weight: 65 lbs (approx.)

SPECIFY WHEN ORDERING

1. Discharge Pressure: _____ PSI
2. Power: Independent circuit recommended

Options	Input Current (Amps)
208-220V/1	22.1
208-220V/3	13.4
360-480V/3	5.6

Pump performance curve



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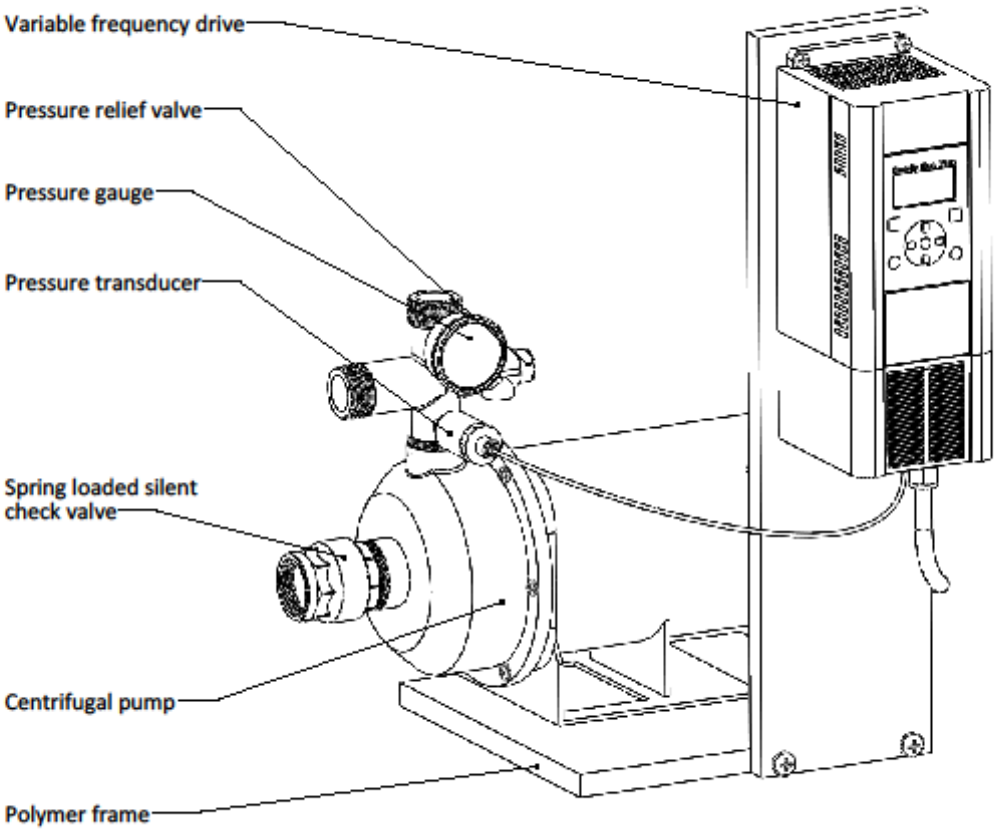

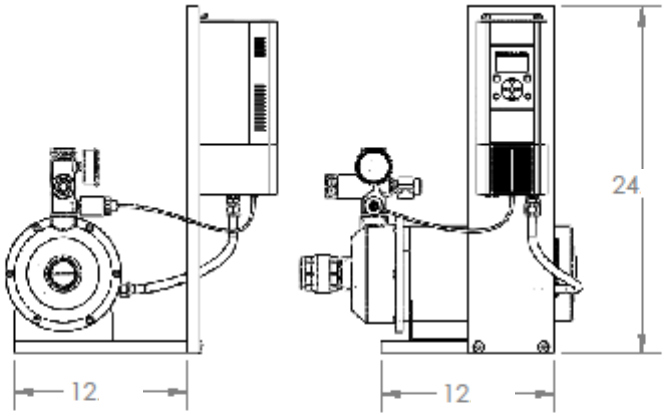

TOWLE WHITNEY LLC

3HP Simplex Variable Speed Booster System

	NAME	DATE
DRAWN	VID	2/3/16
CHECKED		

COMMENTS:

SIZE A | DWG. NO. 232016A | REV.

SCALE:1:10 | WEIGHT: | SHEET 1 OF 1

DIMENSIONS ARE SUBJECT TO CHANGE
DO NOT USE FOR CONSTRUCTION
UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

DO NOT SCALE DRAWING

TOWLE WHITNEY LLC

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 304 stainless steel casing with impellers.
- 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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VACON 20 - NEMA 1 RATING

Supply voltage	AC drive type	Output Power and Current High Overload (150%)		
		HP	kW	I_N (A)
110-120 VAC, 1-phase	VACON0020-1L-0001-1-R02	0.33	0.25	1.7
	VACON0020-1L-0002-1-R02	0.5	0.37	2.4
	VACON0020-1L-0003-1-R02	0.75	0.55	2.8
	VACON0020-1L-0004-1-R02	1	0.75	3.7
	VACON0020-1L-0005-1-R02	1.5	1.1	4.8
208-240 VAC, 1-phase	VACON0020-1L-0001-2-R02	0.33	0.25	1.7
	VACON0020-1L-0002-2-R02	0.5	0.37	2.4
	VACON0020-1L-0003-2-R02	0.75	0.55	2.8
	VACON0020-1L-0004-2-R02	1	0.75	3.7
	VACON0020-1L-0005-2-R02	1.5	1.1	4.8
	VACON0020-1L-0007-2-R02	2	1.5	7
	VACON0020-1L-0009-2-R02	3	2.2	9.6
208-240 VAC, 3-phase	VACON0020-3L-0001-2-R02	0.33	0.25	1.7
	VACON0020-3L-0002-2-R02	0.5	0.37	2.4
	VACON0020-3L-0003-2-R02	0.75	0.55	2.8
	VACON0020-3L-0004-2-R02	1	0.75	3.7
	VACON0020-3L-0005-2-R02	1.5	1.1	4.8
	VACON0020-3L-0007-2-R02	2	1.5	7
	VACON0020-3L-0011-2-R02	3	2.2	11
	VACON0020-3L-0017-2-R02	5	4	17.5
	VACON0020-3L-0025-2-R02	7.5	5.5	25
	VACON0020-3L-0031-2-R02	10	7.5	31
	VACON0020-3L-0038-2-R02	15	11	38
380-480 VAC, 3-phase	VACON0020-3L-0001-4-R02	0.5	0.37	1.3
	VACON0020-3L-0002-4-R02	0.75	0.55	1.9
	VACON0020-3L-0003-4-R02	1	0.75	2.4
	VACON0020-3L-0004-4-R02	1.5	1.1	3.3
	VACON0020-3L-0005-4-R02	2	1.5	4.3
	VACON0020-3L-0006-4-R02	3	2.2	5.6
	VACON0020-3L-0008-4-R02	5	3	7.6
	VACON0020-3L-0009-4-R02	6	4	9
	VACON0020-3L-0012-4-R02	7.5	5.5	12
	VACON0020-3L-0016-4-R02	10	7.5	16
	VACON0020-3L-0023-4-R02	15	11	23
	VACON0020-3L-0031-4-R02	20	15	31
	VACON0020-3L-0038-4-R02	25	18.5	38

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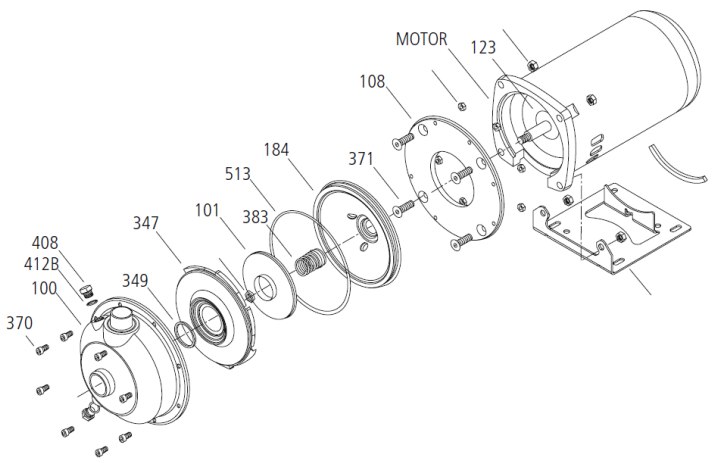
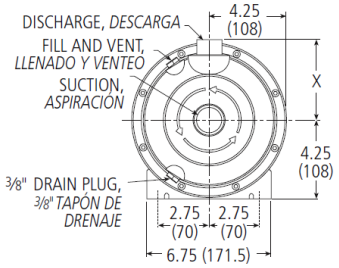
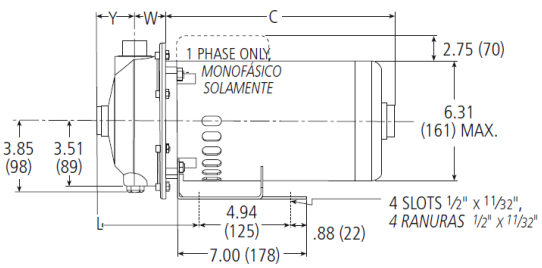
MCS Close Coupled Pump Major Components: Materials of Construction
Materiales de construcción de los principales componentes de la bomba MCS de acoplamiento cerrado



Item No., *Parte No.*	Description, *Descripción*	Materials, *Materiales*
100	Casing, *Carcasa*	AISI 316L SS, *AISI 316L Acero inoxidable*
101	Impeller, *Impulsor*	
108	Motor adapter, *Adaptador del motor*	Aluminum, *Aluminio*
123	Deflector, *Deflector*	BUNA-N
184	Seal housing, *Alojamiento del sello*	AISI 316L SS, *AISI 316L Acero inoxidable*
347	Guidevane, *Difusor*	
349	Seal ring, guidevane; *Anillo del sello, difusor*	BUNA-N
370	Socket head screws, casing; *Encajes de tornillos, carcasa*	AISI 410 SS, *AISI 410 Acero inoxidable*
371	Bolts, motor; *Bulones, motor*	Steel, *Acero*
383	Mechanical seal, *Sello mecánico*	see chart, *ver tabla*
408	Drain and vent plug, casing; *Tapones de drenaje y ventilación, carcasa*	AISI 316L SS, *AISI 316L Acero inoxidable*
412B	O-ring, drain and vent plug; *Anillo 'O', tapón de drenaje y ventilación*	Viton
513	O-ring, casing; *Anillo 'O', carcasa*	
Motor *Motor*	NEMA standard, 56Y flange; *NEMA estándar, brida 56Y*	

MCS Close Coupled – Dimensions, Weights and Specifications
MCS Acople Cerrado – Dimensiones, pesos y especificaciones





Clockwise rotation viewed from drive end. *Rotación en dirección de las agujas del reloj visto desde el extremo del motor.*

NOTES:

1. Pumps will be shipped with top vertical discharge as standard. For other orientations, remove casing screws, rotate to desired position, and tighten 6mm screws to 5 – 6 lbs./ft.(6.8-8 N•m).
2. Dimensions in inches and millimeters (mm). Weight in pounds and kilograms (kg).
3. Motor dimensions may vary with motor manufacturer.
4. Not to be used for construction purposes unless certified.

NOTAS:

1. *Las bombas se entregan con la descarga vertical superior estándar; para una orientación diferente, retirar los tornillos de la carcasa, hacer girar hasta la posición deseada y ajustar los bulones de 6 mm a 5-6 libras/pie (6,8-8 N-m).*
2. *Dimensiones en pulgadas y milímetros (mm), peso en libras y kilogramos (kg).*
3. *Las dimensiones del motor pueden variar de acuerdo al fabricante.*
4. *No utilizar para fines de construcción a menos que estén certificadas.*

Dimensions and Weights – Determined by Pump, *Dimensiones y peso – Determinados por la bomba*

Pump, *Bomba*	Suct., *Aspiración*	Disch., *Descarga*	HP	W	X	Y	L	Wt. Less Motor, *Peso sin motor*
1 MS	1.25 (32)	1.00 (25)	½-3	1.65 (42)	4.38 (111)	2.00 (51)	5.38 (137)	6 (2.7)
2 MS	1.50 (38)	1.25 (32)	¾-5	2.09 (53)	4.50 (114)	2.12 (54)	5.94 (151)	7 (3.2)
3 MS	2.00 (51)	1.50 (38)	1-5	2.09 (53)	4.62 (117)	2.12 (54)	5.12 (130)	7 (3.2)

Dimensions and Weights – Determined by Motor, *Dimensiones y peso – Determinados por el motor*

HP	Motor Length and Weights, *Longitud y peso del motor*							
	1 Phase, *Monofásicos*				3 Phase, *Trifásicos*			
	ODP		TEFC		ODP		TEFC	
	C	Weight, *Peso*	C	Weight, *Peso*	C	Weight, *Peso*	C	Weight, *Peso*
½	10.88 (276)	24 (10.9)	11.56 (294)	30 (13.6)	10.38 (264)	24 (10.9)	10.31 (262)	19 (8.6)
¾	10.88 (276)	26 (11.8)	12.38 (315)	33 (14.9)	10.62 (270)	25 (11.3)	11.06 (281)	21 (9.5)
1	11.62 (295)	27 (12.2)	12.31 (313)	37 (16.8)	11.12 (282)	26 (11.8)	11.06 (281)	23 (10.4)
1½	13.62 (346)	28 (12.7)	13.56 (344)	40 (18.1)	11.62 (295)	28 (12.7)	11.38 (289)	29 (13.1)
2	12.62 (321)	30 (13.6)	13.56 (344)	42 (19)	11.62 (295)	31 (14)	12.81 (327)	36 (16.3)
3	12.44 (316)	36 (16.3)	14.31 (363)	48 (21.7)	12.38 (315)	34 (15.4)	15.06 (383)	40 (18.1)
5	14.03 (356)	48 (21.7)	—	—	14.03 (356)	46 (20.8)	—	—

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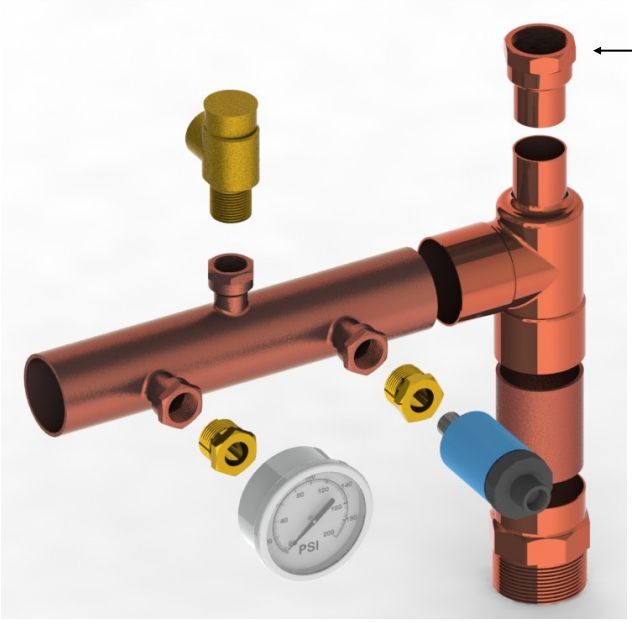
TOWLE WHITNEY LLC

PNEUMATIC TANK

IS-PLT-35

Discharge Manifold



Tank Attaches here and can be placed where convenient

PLT-35

NSF Certifed to ANSI/NSF 61 (73°F/23°C)

Pressure — Temperature

PLT-35 Order No. 0067373

Max. Pressure: 150 psi
Max. Temp: 200 °F (93°C)
Tank Volume: 14.0 gal. (53 liters)
Tank Acceptance: 5.6 gal. (21.2 liters)
Air Pre-charge: 20psi (138 kPa)
Connections Size: 1" (25mm)
Diameter: 16.0" (406mm)
Length: 21.7" (551mm)
Weight: 32 lbs. (15 kgs.)

Acceptance Volume

AIR SIDE PRE-PRESSURE		WATER SIDE VOLUME AT 150 psi (gallons)
psi	kPa/bar	PLT -35
20	138 kPa	10.7
40	276 kPa	9.2
60	413 kPa	7.6
80	551 kPa	6.1

⚠ WARNING!

Improper installation, adjustment, alteration, service or maintenance may cause property damage, serious bodily injury or death. Read instructions completely before proceeding with installation. Only qualified personnel should install or service this equipment in accordance with local codes and ordinances.

This Expansion Tank is designed and intended for water storage at a maximum pressure of 150psi (10.3 bar) and a maximum temperature of 200°F. (93°C) Any use other than for potable water or at a sustained or instantaneous pressure in excess of 150psi or 200°F is **UNSAFE** and may cause property damage, serious bodily injury or result in death.

Do not exceed 80psi (5.5 bar) air charge. Air charge pressures exceeding 80psi (5.5 bar) could become hazardous and will void any and all warranties, either written or implied. Failure to follow these instructions may cause property damage, serious bodily injury or death.

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: This Expansion Tank, like all Expansion Tanks, may eventually leak. Do not install without adequate drainage provisions where water flow will cause damage.

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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.
- Adjusting drive parameters without consulting factory.

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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