Spec Sheet 501-007

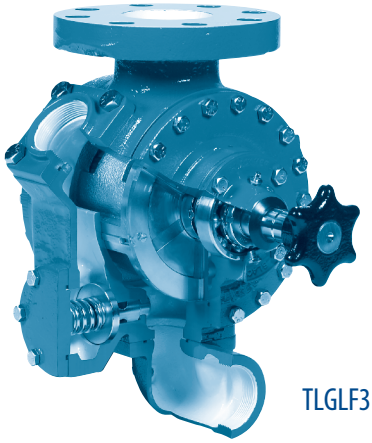
Section: 501

Effective: October 2017

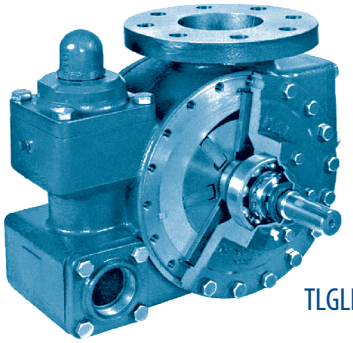
Replaces: October 2012

TLGLF Pumps and Bypass Valves for Mobile LPG Applications

TLGLF3 & TLGLF4 Pumps
Flange Mounted Pumps for Bobtails and Transports



TLGLF3 cutaway



TLGLF4 cutaway

Blackmer TLGLF3 and TLGLF4 pumps are designed to flange mount directly to a commercial internal control valve, in combination with the tank of a bobtail or transport. Direct mounting eliminates the need for inlet pipes, shut-off valve and external strainer which can restrict flow and cause vaporization problems. The result is smoother operation and longer pump life.

Both models are equipped with a double-ended drive shaft for clockwise or counterclockwise rotation by simply changing position of the pump. Each model also has an auxiliary intake port which can be used for emergency unloading of another tank or transport. In addition, these pumps have an internal relief valve, patented cavitation suppression liners to reduce noise, vibration and wear.

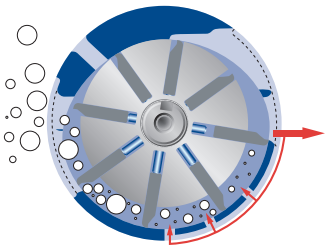
Standard construction materials for both models include Buna-N mechanical seals and Duravanes for handling both LP gas and anhydrous ammonia. The casing liner and end discs are replaceable for easy rebuilding of the pumping chamber if ever necessary.

The TLGLF3 is widely used on bobtails because of its compact mounting arrangement, with a 3-inch ANSI intake flange and 2-inch auxiliary intake and discharge ports. Capacities range from 60 to 129 U.S. gpm (227 to 488 L/min).

The TLGLF4 offers maximum output rates, and fast turnaround time for transports. It is designed with 4-inch ANSI intake flange, a 3-inch auxiliary intake port, and twin 2-inch discharge ports which permit the use of two hoses, if necessary, to reduce pressure loss when unloading into restrictive receiving systems. Capacities range from 200 to 350 U.S. gpm (757–1,325 L/min).

Maximum differential pressure for both models is 125 psi (8.62 bar).

Cavitation Suppression Liners Reduce Noise

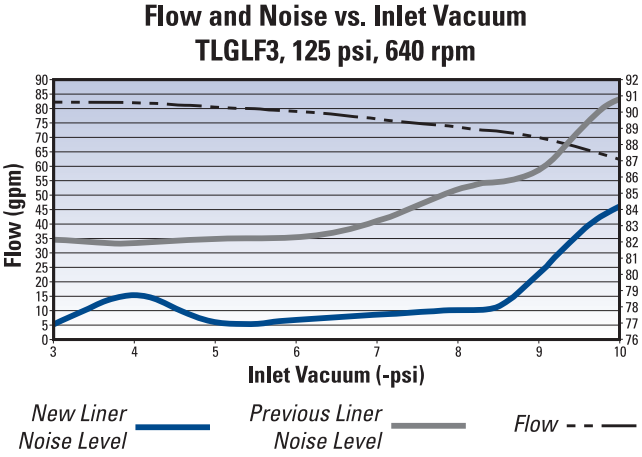


Blackmer TLGLF pumps feature noise suppression liners. This patented technology reduces noise at its source by reducing the amount of cavitation in the pump. Reducing the cavitation level also reduces vibration and wear.

The sudden collapse of vapor bubbles inside the pump is known as cavitation. By allowing a controlled amount of fluid at discharge pressure to bleed back toward the suction of the pump, the vapor bubbles are collapsed over a longer period time. The net result is less noise, less vibration and less wear.

As shown in the chart, the reduction in noise level can be quite dramatic. Similar noise reductions have been measured in the TLGLF4 pumps.

Patent number: 6,030,191



Hydraulic Drive Packages

Blackmer offers complete Hydraulic Drive packages for all LPG mobile applications. The Hydrive cooler by Mouvex®, a Dover® Company, forms the heart of the system. The stainless steel cooler offers up to 26 HP (19.4 kW) of actual heat dissipation. Hydraulic motor adapter kits are available for all Blackmer LPG mobile pumps.

Selection Data

Pump delivery and brake horsepower requirements are listed in the table below for various differential pressures. The same data for all pressures is provided in the performance curves below.

Standard Pump		Pump Speed rpm	Approximate Delivery of Propane at Differential Pressures and Pump Speeds Shown[1]												Maximum Differential Pressure		Maximum Working Pressure[2]	
			50 psi (3.45 bar)						100 psi (6.89 bar)									
Model	Factory Relief Valve Setting		gpm	L/min	BHp	kW	Torque ft-lb	Torque Kg-m	gpm	L/min	BHp	kW	Torque ft-lb	Torque Kg-m	psi	bar	psi	bar
TLGLF3	150 psi (10.34 bar)	870	129	488	6.5	4.8	45.9	6.3	119	450	10.9	8.1	72.5	10	125	8.62	350	24.13
		800	118	446	5.1	3.8	44.2	6.1	107	405	8.7	6.5	69.7	9.6	125	8.62	350	24.13
		650	93	352	4.3	3.2	40.4	5.6	83	314	7.9	5.9	63.7	8.8	125	8.62	350	24.13
		600	85	322	4	3	39.3	5.4	75	284	7.1	5.3	62.2	8.6	125	8.62	350	24.13
		500	70	265	3.6	2.7	37.4	5.2	68	257	6	4.5	61.5	8.5	125	8.62	350	24.13
		400	52	197	2.8	2.1	36.2	5	40	151	4.8	3.6	60.8	8.4	125	8.62	350	24.13
TLGLF4	150 psi (10.34 bar)	800	350	1,325	22	16	143	20	306	1,158	34	25	223	31	125	8.62	350	24.13
		650	280	1,060	15.5	11.6	125.2	17.3	245	927	25.0	18.6	201.9	27.9	125	8.62	350	24.13
		600	260	984	14.3	10.7	125.1	17.3	220	833	23.0	17.2	201.3	27.8	125	8.62	350	24.13
		500	210	795	11.9	8.9	125.0	17.3	170	644	19.0	14.2	199.5	27.6	125	8.62	350	24.13
		400	160	606	9.5	7.1	124.7	17.2	120	454	15.2	11.3	199.5	27.6	125	8.62	350	24.13

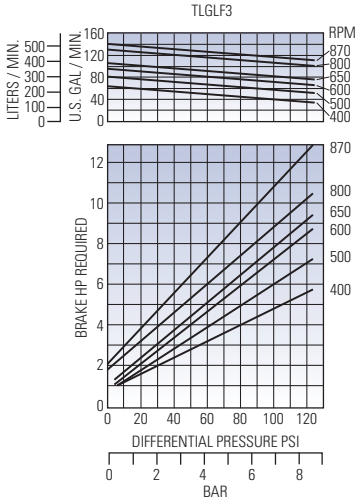
1 Check the pump's delivery and brake horsepower requirements in the performance curves below. See footnote with the curves which explains the factors that can cause delivery to vary.

2 Maximum rated working pressure is 350 psi (24.13 bar) for LPG and NH3 (limited by U.L. and N.F.P.A. 58).

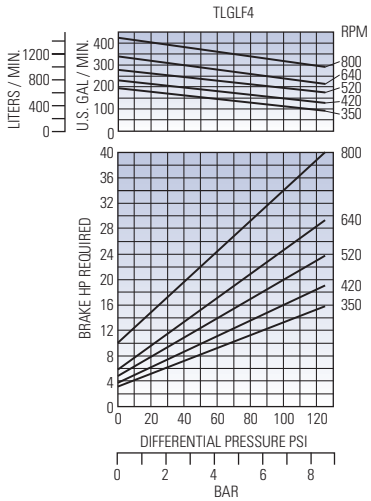
***Note:** Refer to back cover for external bypass valve information.*

Performance Curves

TLGLF3



TLGLF4



NOTE: Blackmer Characteristic Curves are based on Brake Horsepower (BHp). To determine Motor Horsepower, drive train inefficiencies must be added to the BHp.

These curves are based on approximate delivery rates when handling propane or anhydrous ammonia at 80ºF (26.7ºC). Line restrictions such as excess flow valves, elbows, etc., will adversely effect deliveries. For propane at 32ºF (0ºC), actual delivery will be further reduced to about 80% of nominal. Delivery of butane at 80ºF (26.7ºC) will be 60 to 70% of these values, and may run as low as 35 to 45% at 32ºF (0ºC). This loss of delivery is not a pump characteristic but is caused by natural thermodynamic phenomena of liquefied gases.

Available Companion Flanges and Flanged Elbows

Standard Pump	Discharge	Auxiliary Intake	Intake
TLGLF3	2" NPT Flanged Elbow	2" NPT Flanged	3" 300 lb. ANSI Mounting Flange
	2" NPT Flanged Elbow	2" NPT Flanged Elbow	
	2" Weld Flanged Elbow	2" Weld Flanged	
	2" Weld Flanged Elbow	2" Weld Flanged Elbow	
	Twin 2" NPT Flanges	Blanking Flange	
TLGLF4	Twin 2" NPT Flanges	3" NPT Flanged	4" 300 lb. ANSI Mounting Flange
	Twin 2" Weld Flanges	3" Weld Flanged	
	Twin 2" NPT Flanges	Blanking Flange	
	Twin 2" NPT Flanges	4" Weld Flanged	

LPG Pump Warranty – One Year Performance Assurance

Should any Blackmer LPG pump (LGL, TLGL, LG and LDF models) or bypass valve fail in the transfer of propane, butane and propane/butane mixture within one (1) year of the original installation or eighteen (18) months after shipment from the factory, regardless of cause (except for intentional or gross misuse), free replacement components will be provided to return the pump to as new performance.

This offer is limited to one claim per installation.

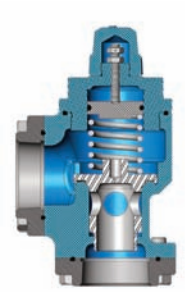
PLEASE NOTE: For the One Year Performance Assurance to be valid, a Blackmer Pump Warranty Registration must be supplied to Blackmer via web registration or postcard.

For additional information, see Blackmer LPG Pump Warranty page #001-004.

Bypass Valves Precise, On-Line Pressure Protection

BV0.75 / BV1

BV2



BV2 Cutaway

Selection Guide

Model BV0.75 (ports are ¾-inch NPT tapped)
Model BV1 (ports are 1-inch NPT tapped)

These models are commonly used for cylinder-filling system. Either valve can be used with 1¼ or 1 ½-inch Blackmer pump models.

Model BV1.25 (ports are 1-¼-inch NPT tapped)
Model BV1.5 (ports are 1-½-inch NPT tapped)

These models are normally used for bobtail trucks and smaller bulk plant systems. Either valve can be used with 2 or 3-inch Blackmer pump models. Both valves are available with optional springs for use with the LGL 158 or LGLH2.

Model BV2 (ports have 2-inch NPT companion flanges, 1-¼-inch and 1-½-inch NPT and WELD bolt-on flanges are available)

The BV2 model is widely used for transports or larger bulk plant systems. It is recommended for use with 3 and 4-inch Blackmer pump models. The BV2 is factory set at 125 psi (8.62 bar).

Blackmer differential bypass valves are designed to protect pumps and system components from excessive pressure damage, and no LP gas pump installation is complete without one. Blackmer offers five different models that provide full-flow pressure control to 250 U.S. gpm (946 L/min) at 120 psid (8.27 bar). Installation is easy with NPT tapped ports in sizes from 3⁄4" to 2". All models are suitable for both LP gas and anhydrous ammonia service.

Technical Assistance

In some applications, selecting the right pump or compressor may require more detailed information than can be presented in this bulletin. Your Blackmer representative can help you find the correct equipment to ensure the best performance possible for your specific application.

If you have a unique gas or fluid handling problem, please contact Blackmer at the telephone or fax number listed below.

Maximum Flow-Through Valve

Model	Maximum Rated Flow* - gpm (L/min) @			
	20 psi (1.38 bar)	50 psi (3.45 bar)	80 psi (5.52 bar)	120 psi (8.27 bar)
BV0.75 / BV1	25 (95)	40 (151)	50 (189)	60 (227)
BV1.25 / BV1.5	60 (227)	80 (303)	100 (379)	125 (473)
BV2	150 (568)	180 (681)	220 (833)	250 (946)

Normal maximum bypass flow rates without significantly exceeding the set pressure limit.

In operation, Blackmer valves provide exceptionally close pressure control, even under widely varying bypass flow conditions. The performance curve in Figure 4 below shows how a Blackmer valve maintains a virtually constant pressure of 100 psi (6.89 bar) even as the volume being bypassed rises from 10 gpm to 100 gpm (38-378 L/min). Although the curve is that of a BV1.5" valve, the precision it demonstrates is typical of any Blackmer valve.

Blackmer bypass valves have no small, easily plugged, sensing passages; and with only two moving parts, their operation is simple and reliable. They open precisely at the preset spring pressure, and they close smoothly and quietly, thanks to a patented dash-pot design. As shown in Figure 5, a small chamber in the valve stem fills with liquid when the valve opens. This liquid then provides a hydraulic cushion preventing the valve from slamming shut if pressure is suddenly released. It also minimizes chatter and valve seat wear when pressures hover around the crucial limit.

FIGURE 4. Bypass volume/pressure curve BV1.5

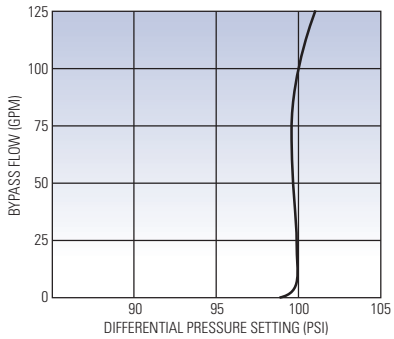
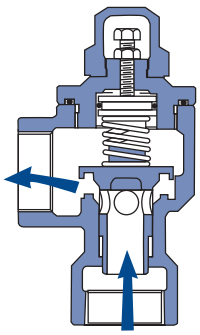


FIGURE 5. Bypass valve operation



Dash-pot chamber cushions closing of valve

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