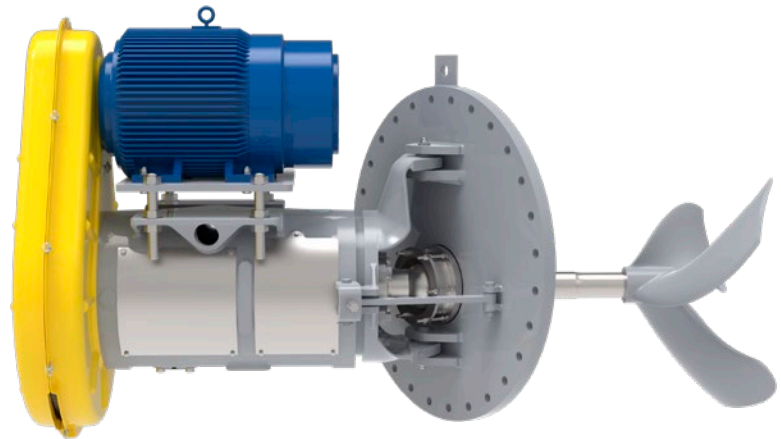


➤ **Philadelphia**[®]



SUPERIOR PETROLEUM STORAGE TANK MIXING

BSER Side Entry Mixers for Refining, Pipelines and Storage



SPXFLOW[®]

BSER AND ADVANCED PITCH PROPELLER



The BSER Mixer (Belt Side Entry Mixer for Rugged Environments) and Advanced Pitch Propeller are the next-generation innovations for petroleum storage tanks



Purpose Designed for 21st Century Oil Storage Needs

The BSER mixer was designed with and for operators to improve efficiency, blend product or oils more rapidly, and allow for timely and economical maintenance in the field. The patented Advanced Pitch Propeller is a breakthrough design that creates a superior directional or collimated flow in liquids. This allows mixing to occur faster with fewer individual mixers, and with less power than competitive products.

SPX FLOW's brand Philadelphia Mixing Solutions and its subsidiary Mixing Solutions Limited, lead the industry in optimizing in-tank mixing solutions to help customers improve mission-critical mixing processes. With operations in Palmyra, Pennsylvania, United States and Newbury, United Kingdom, Philadelphia Mixing Solutions provides innovative products, technical services and field support to customers around the world. Backed by 60 years of industry experience, Philadelphia Mixing Solutions' research and development teams use cutting edge process modeling, testing and field testing to create unique mixing solutions to meet the individual customer requirements.

ISO 9001 certified, ATEX compliant equipment (where applicable)



The BSER and Advanced Pitch Propeller are 21st Century designs to meet the needs of 21st Century customers.



ADVANCED PITCH PROPELLER



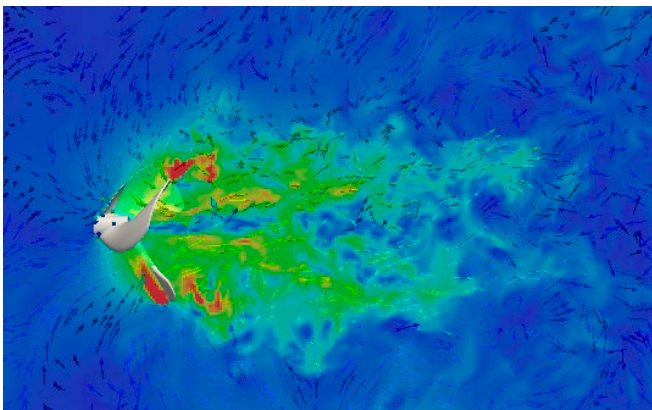
**Optimized Propeller
Design for Petroleum
Storage Tank**



Advanced Pitch Propeller

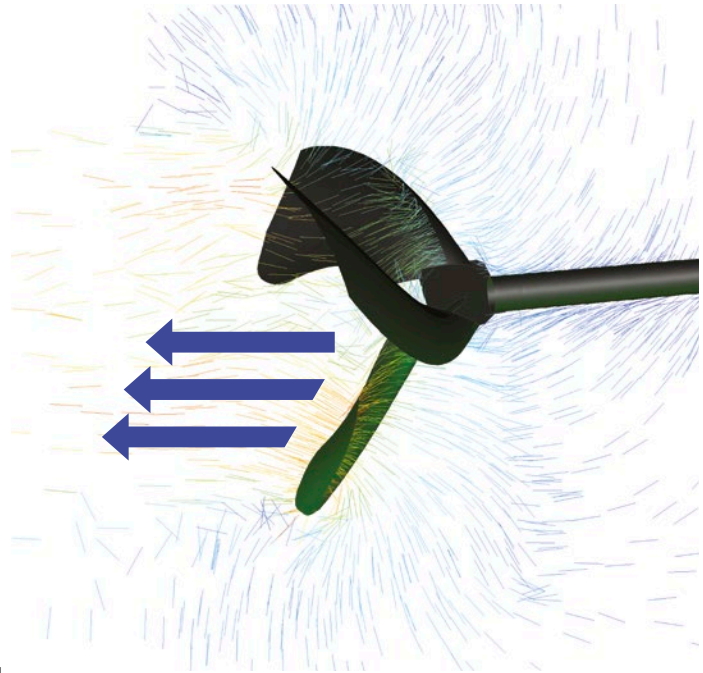
COMPARISON OF FLOW VECTOR PLOTS AT EQUAL POWER

The Advanced Pitch Propeller converts energy into axial flow for maximum efficiency

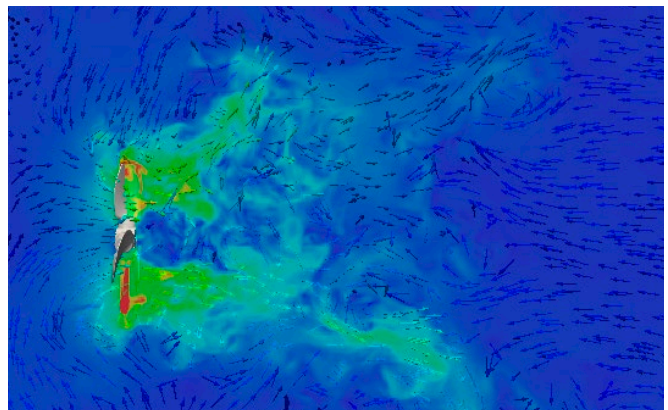


Purpose-designed for the demanding mixing applications

The Advanced Pitch Propeller is purpose-designed for the demanding mixing applications in Petroleum Storage tanks. Philadelphia Mixing Solutions reshaped the forward rake of the propeller to create a patented circular rake that produces superior collimated flow in crude oil. The collimated flow is strong enough to reach across a storage tank with velocity to lift solids off the tank floor. The Advanced Pitch Propeller outperforms leading competitive designs that can lose velocity in transit across a tank diameter.



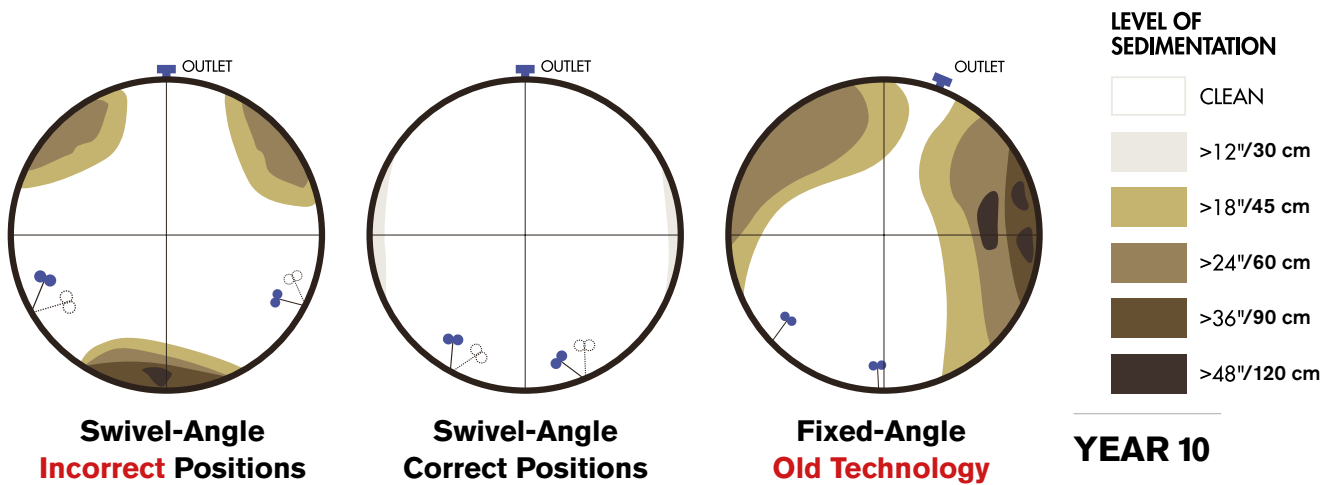
The competitor's propeller produces an unfocused radial and axial flow



THE BEST SOLUTION FOR BOTTOM SEDIMENTATION AND WATER CONTROL

Inadequate mixing can lead to tank failure

Sediment, water and wax can accumulate in storage tanks that are inadequately mixed. The Advanced Pitch Propeller solves this problem with a collimated flow that can sweep the floor of the tank, re-suspend sludge and clean the floor and tank shell. This reduces the risk of catastrophic failure in the tank and saves API 2016 tank cleaning expense during API 653 and EEMUA 159 inspections.



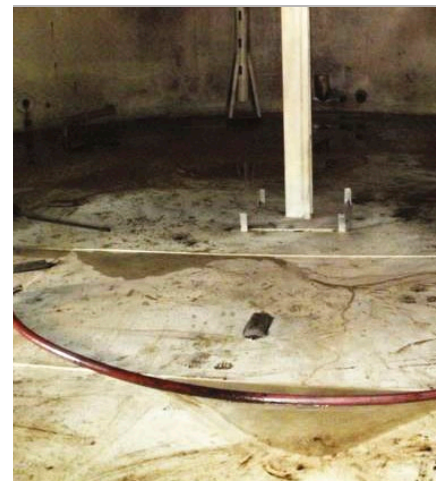
Oil Sludge



Corroded Tank Floor

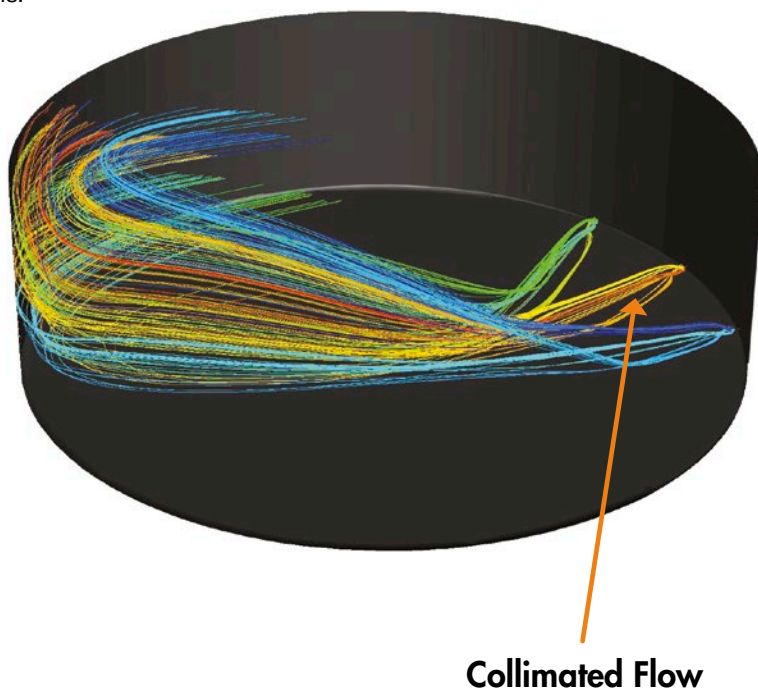


Clean Tank Floor



Three dimensional mixing

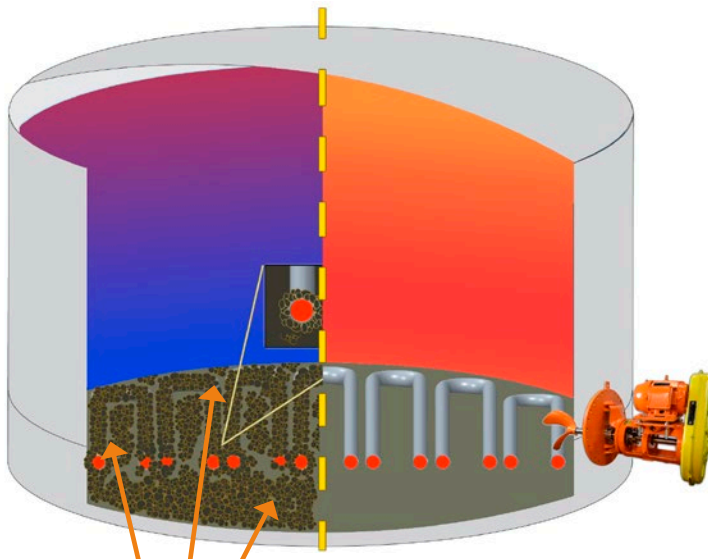
Whether blending different crude oils or mixing additives into intermediate or finished fuels, the best solution for oil or petroleum storage tanks is the Advanced Pitch Propeller. The high velocity flow of the mixers on a tank creates cross-tank and bottom-to-top-to-bottom mixing action in the product. This three-dimensional mixing action blends more efficiently and more rapidly than traditional propeller technology. The operators can blend and discharge their product more quickly, on specification and generate more tank turns during a year than with other options.



Better Blending and Mixture Homogeneity

Temperature uniformity

Higher velocity collimated flow generated by the propeller can penetrate highly viscous asphalt (bitumen) or fuel oil. The propeller thrust moves product through temperature zones in the tank to create uniformity (bottom-to-top-to-bottom) which readies the product for distribution. The Advanced Pitch Propeller creates fluid velocity that effectively eliminates coking on heating elements and tank floor.



Tank With Coking

Natural Convection

Deposition Free Tank

Fitted with BSE Side-Entry
Mixer

Optimum Temperature Control Performance

REDUCED EQUIPMENT REQUIREMENT ON STORAGE TANKS



The performance of the Advanced Pitch Propeller allows tank operations to be conducted with fewer mixers



Save on overall reduced equipment requirements

For example, a 750,000 bbls tank in heavy crude oil service could be mixed with four rather than five side entry mixers. Mixers are positioned so that the primary collimated flow combines into an entrained flow for more directional mixing in the tank. Swivel mixers can be choreographed to create a movable collimated flow pattern for better tank sedimentation control. In this example, the overall reduced equipment requirement saves the capital, installation (motor starters, cabling, structural support, ancillary equipment), operating, energy and maintenance costs equivalent to one mixer per tank.

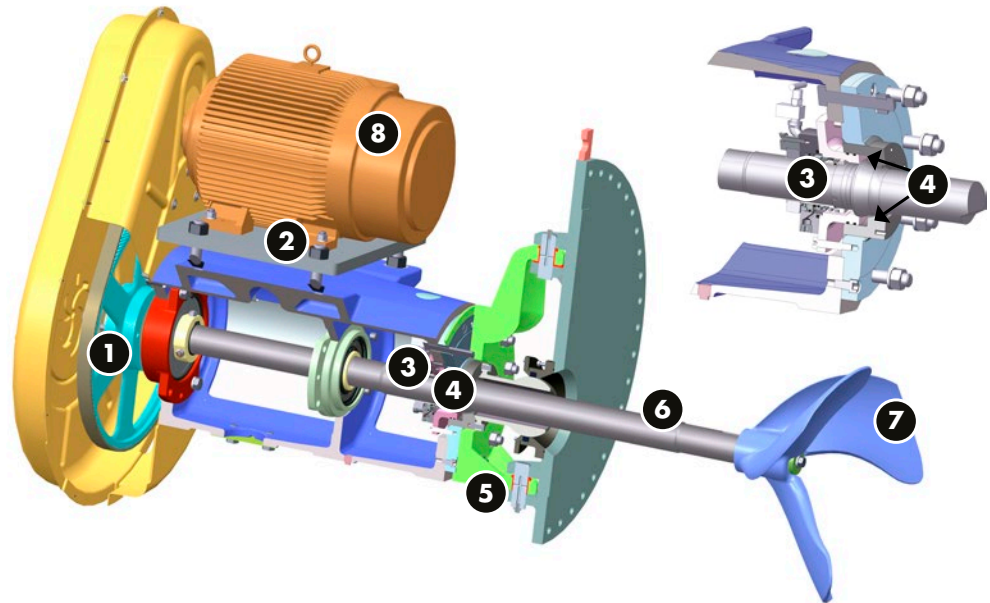
TYPICAL PRODUCT APPLICATIONS:

- Oil & Gas
- Biofuels Storage, Renewable Oils
- General Plant Wastewater & Water Treatment
- Chemicals Processing Industry
- Edible Oils
- Pulp & Paper



BSER MIXER: DESIGNED WITH THE USER IN MIND

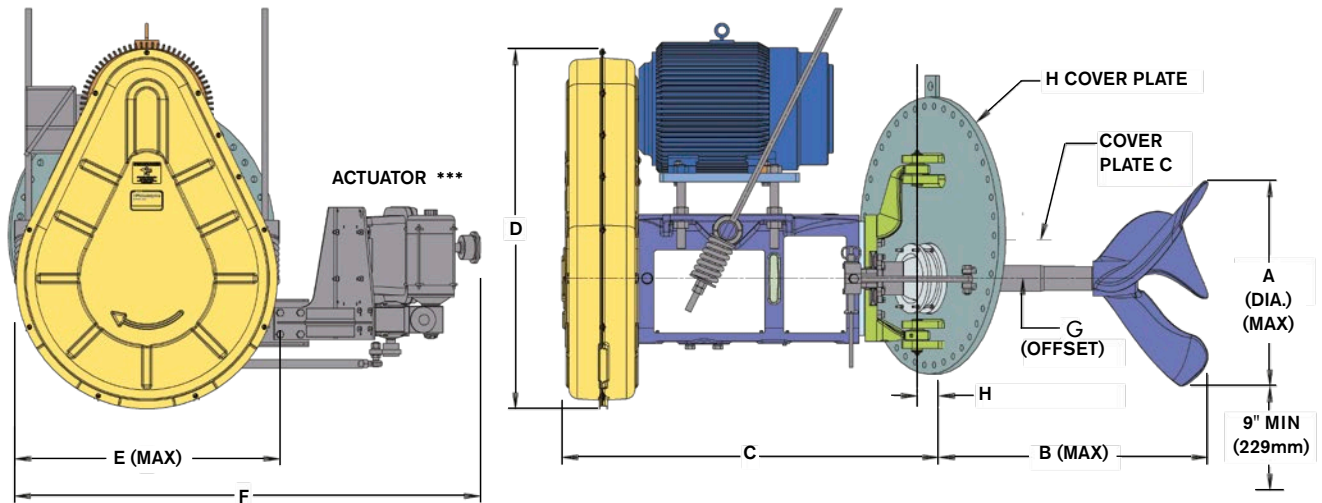
ALL MIXERS ARE BUILT TO CE SAFETY STANDARDS. ATEX CATEGORY 2 AND CATEGORY 3 AVAILABLE ON REQUEST



1. RUGGED TRANSMISSION	High-torque toothed belt drives provide long and trouble-free mixer operation.
2. DURABLE MOTOR MOUNT	Rigid motor mounting for better reliability and extended drive belt life.
3. CARTRIDGE SEAL	For ease of field replacement.
4. UNIQUE SHUT-OFF DEVICE	Positive locking, corrosion resistant, stainless steel metal-to-metal tapered seat faces to ensure ZERO leakage. Eliminates environmental spill risk and provides a safer work area for staff. No need to empty tank for routine maintenance.
5. SWIVEL ANGLE OPTION	60° rotation of mixer ensures the tank floor is scoured to effectively prevent BS&W build-ups. The swivel ball is sealed with a hydraulic ball seal for ZERO leakage.
6. STAINLESS STEEL SHAFT	This one piece design eliminates corrosion and maintains the integrity of the tank shutoff device.
7. SUPERIOR PROPELLER DESIGN	The Advanced Pitch Propeller utilizes the latest technology in propeller design. The patented geometry creates a stronger collimated flow across the tank to produce up to a 40% improvement in efficiency.
8. MOTOR OPTIONS	IEC/NEMA Frames, Cold Rated, Explosion Proof, Chemical Duty, UL, CUL or CSA Motors, IEEE 841, ATEX.
RAPID AND ECONOMICAL MAINTENANCE	Deep groove ball bearings mounted on sleeves protect the shaft from damage during operation and maintenance. These bearings have a minimum L-10 bearing life of 60,000 hours.
FIXED ANGLE DESIGN	The BSER is also available in fixed angle configurations for blending applications.
AUTOMATIC SWIVEL OPTION	Allows the mixer to be automatically adjusted to desired angles without manual adjustment.

BSER-S MIXER

Swivel Angle Side-Entry Mixer



MODEL		BSER-06 / BSER-08	BSER-10	BSER-12	COVER PLATE H	DIMENSION G
SHAFT DIA. AT SEAL		65MM	80MM	90MM		
A (dia)	in/mm	23.86/606	26.21/666	30.08/764	20"	3"/75mm
B	in/mm	29.5/749	34.4/874	37.5/953	24"	3-3.63"/ 75-92mm
C	in/mm	42.7/1085	52.7/1339	52.7/1339	30"	6"/150mm
D	in/mm	40.3/1024	50.3/1278	50.3/1278	36"	9"/229mm
E	in/mm	38.5/978	38.5/978	38.5/978		
F	in/mm	65.2-48.0/1656-1219	65.2-48.0/1656-1219	65.2-48.0/1656-1219		
H	in/mm	3.3/84	3.1/79	3.1/79		

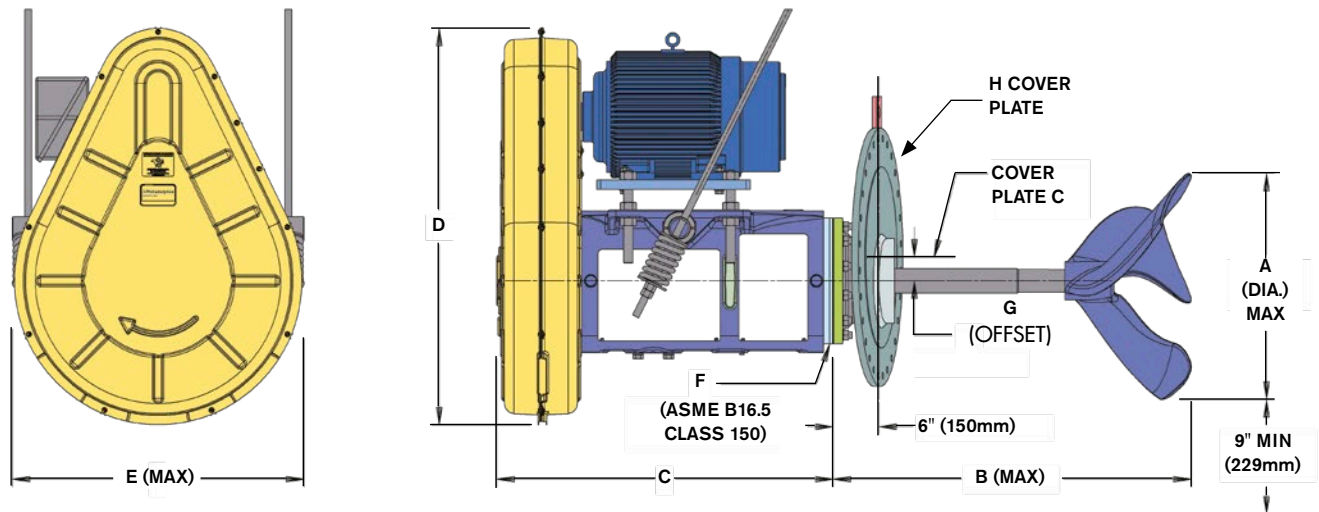
Dimensions are not to be used for construction

** Slings or caster support required on BSER-10 and BSER-12. Weld-on tank bracket is optional.

*** Actuator is optional.

BSER-F MIXER

Fixed Angle Side-Entry Mixer



MODEL		BSER 06-08	BSER-10	BSER-12	COVER PLATE	DIMENSION
SHAFT DIA. AT SEAL		65MM	80MM	90MM		
A (dia)	in/mm	23.86/606	26.21/666	30.08/764	20"	3"/75mm
B	in/mm	38.4/975	44.4/1128	47.6/1209	24"	3"/75mm
C	in/mm	32.8/833	42.8/1087	42.8/1087	30"	6"/150mm
D	in/mm	40.3/1024	50.3/1278	50.3/1278	36"	9"/229mm
E	in/mm	38.5/978	38.5/978	38.5/978		
F	in/mm	8/203	10/254	10/254		

Dimensions are not to be used for construction

** Slings or caster support required on BSER-10 and BSER-12. Weld-on tank bracket is optional.



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