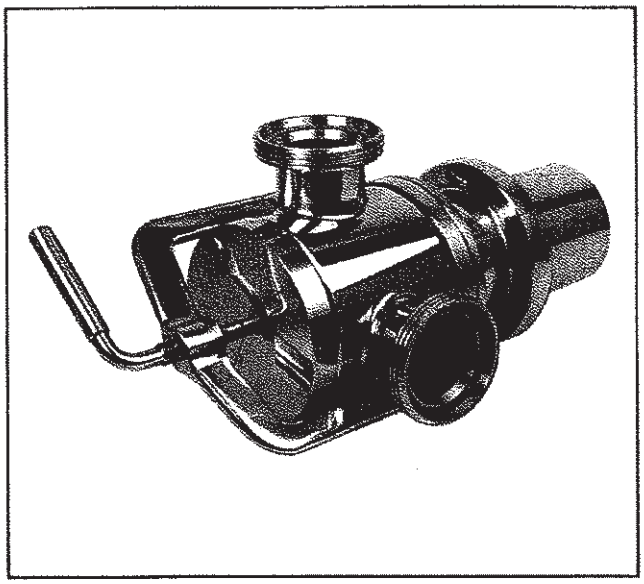
TANKERMASTER Milk Tanker Pump

HYGIENIC STAINLESS - STEEL ROAD TANKER PUMPS



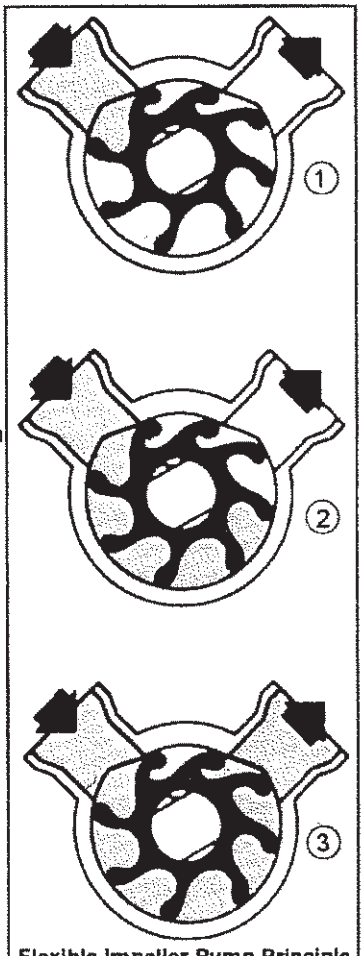
The Tankermaster milk tanker pump from Jabsco is the perfect choice for transfer of milk from farm bulk storage tanks to road collection tanker. Mounted on vehicles around the world for over 30 years and now available with even larger flow rates, the flexible impeller pump is the industry-standard. With a proven record of simplicity, hygiene and reliability, the Tankermaster pump is attractive to vehicle manufacturers and fleet operators as well as drivers and dairies.

Each pump utilises the flexible impeller pumping principle invented and patented by Jabsco (see right) having a hygienic rubber impeller rotating within a 316 grade stainless steel housing.

TANKERMASTER BENEFITS

When combined with a high standard of design and manufacture this gives a unique combination of benefits, including:-

- **SELF PRIMING ACTION:** Will operate above or below farm tank liquid level. Will purge pipes to reduce waste and simplify accurate sampling.
- **HIGH FLOW AT LOW SPEEDS:** Fast tanker loading and long pump life.
- **SMOOTH, STEADY FLOW:** Does not entrain air, allowing easy separation and accurate metering.
- **GENTLE PUMPING:** Less damage to milk.
- **REVERSIBLE:** Can unload as well as load if required.
- **RESILIENT RUBBER IMPELLER:** Not damaged by grit or stones
- **HYGIENIC MATERIALS:** Does not impart taste or odour. Meets requirements of US 3A standard
- **EASY TO CLEAN:** N.B. 3A option to include Elastomers : EPDM and Neoprene. Ports : Tri-Clamp, IDF, 3A and DIN11851.
- **SIMPLE TO SERVICE :** Low bacteria and fast turn-round. Quick strip means less time off the road.



Flexible Impeller Pump Principle
On start -up, air in inlet pipe is displaced and milk is drawn into pump [1] then carried through [2] to be discharged at a steady flow rate [3]. This action combines gentle pumping with true dry priming capability

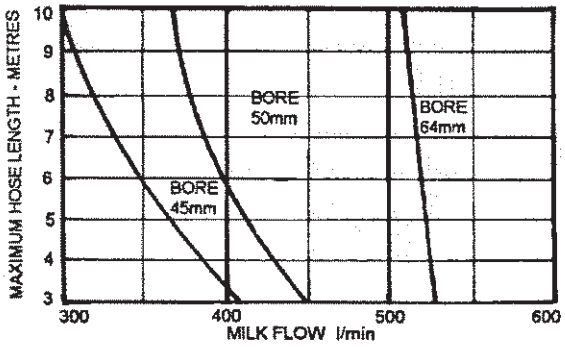
ROTARY LOBE PUMPS
Jabsco also manufacture lobe pumps to suit higher flow rates, high pressures, very low temperatures, viscous fluids.

OTHER APPLICATIONS:
Tankermaster flexible impeller pumps are intended primarily for loading milk collection tankers. For other applications please contact your Jabsco distributor who can supply pumps for:
Low and high viscosity fluids
On-farm milk transfer
Dairy and food processing
Chemical, pharmaceutical and other industrial uses

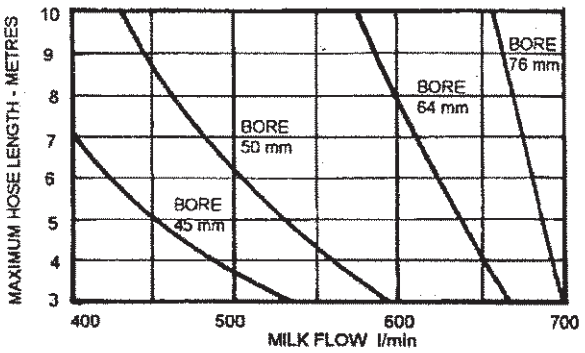
CHOOSING THE CORRECT SIZE PUMP

The size of Tankermaster pump appropriate for each installation, and the maximum flow which that pump will generate, are determined by: the suction hose length and bore diameter,and restrictions on the outlet side of the pump.
Use the graphs below to relate suction hose length and diameter limitations to the desired flow rate during milk pick-up.
These graphs are based on: 50mm (2 inch) diameter farm tank outlet.
One elbow between suction hose and pump inlet.
Farm tank milk level 0.5m below pump level on vehicle.
A small number of larger diameter fittings on inlet side of pump will permit higher flows. A large number of smaller diameter fittings or a suction lift greater than 0.5m will limit flow. See also "Installation" on following pages.

SUCTION HOSE LENGTH LIMIT - 500 SIZE

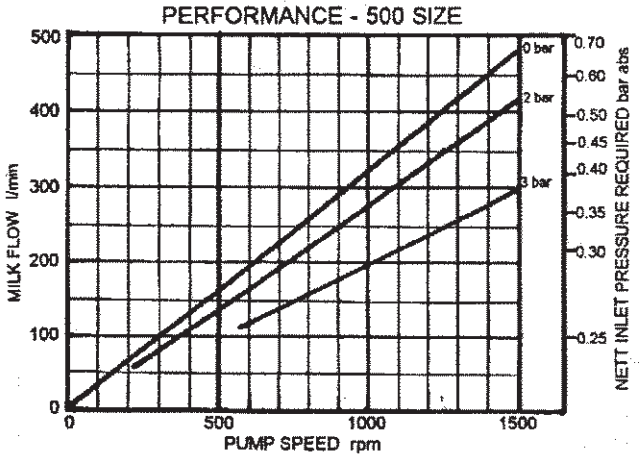


SUCTION HOSE LENGTH LIMIT - 700 SIZE

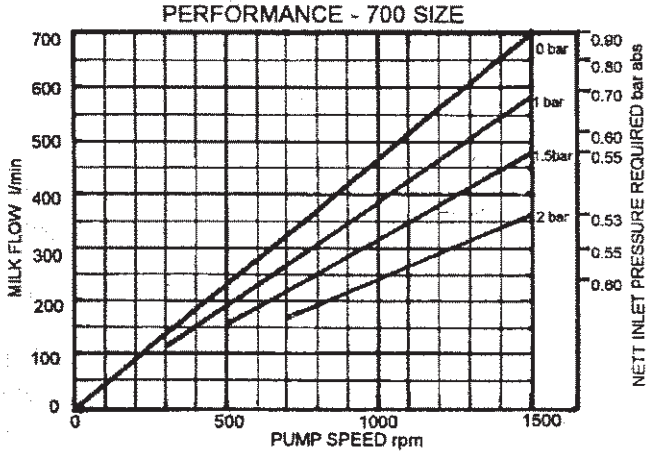


Use the graphs below to relate pump speed to the desired flow rate. The continuous lines show differential pressure. See following pages for starting torque requirements and to determine motor power.
Milk collection pumps typically work at 1 bar differential pressure. To determine exact pressure, add together effects of inlet and outlet pipe restrictions plus effect of total vertical lift. If in doubt, consult Jabsco or your local authorised distributor.

PERFORMANCE - 500 SIZE



PERFORMANCE - 700 SIZE



Flow figures given are for a typical new pump and can vary by up to ±15%

DRIVE AND MOUNTING OPTIONS

The Tankermaster range is available in variants to meet all operating requirements:
BULKHEAD MOUNTING : With a flange to fit to cabinet wall:Keeps drive motor outside with only the stainless steel pump head inside.
PEDESTAL MOUNTING : With a foot to mount on cabinet floor or rigid framework.
HEAD KIT: Complete with adaptor to fit directly to an electric motor face.
SPECIAL VARIANTS: To suit individual customer's requirements.
DRIVE OPTIONS: Pumps can be driven by a variety of prime movers including ; Electric Motor Hydraulic Motor ; Belt Drive,direct from PTO [Power Take Off],combination e.g. Electric Motor motor + hydraulic motor.

TANKERMASTER PUMP MODEL NUMBERS;- where no model is shown contact Jabsco.
Other variations and port types are available to special order.

Port Connections		Bulkhead Mount		Head Kit		Pedestal Mount	
Type	Size	500 Size	700 Size	500Size	700Size	500 Size	700 Size
TRI CLAMP	2-1/2"	22060-1125	23930-1115	28620-1125		28600-1125	
IDF/ISS	63.5 mm	22060-3215	23930-3115	28620-3125		28600-3125	
RJT BS1864	2-1/2"	22060-10	23930-4115	28620-4125		28600-4125	
3A BEVEL SEAT	2-1/2"	22060-5125	23930-5115	28620-5125		28600-5125	
DIN 11851	65 mm	22060-6125	23930-6115	28620-6125		28600-6125	
SMS 1146	63.5 mm	22060-7125	23930-7115	28620-7125		28600-7125	

TANKERMASTER MILK TANKER PUMP MODEL: 23930 SERIES						
SIZE: 700				MOUNTING: BULKHEAD		
PERFORMANCE AND POWER AT 1 bar DIFFERENTIAL PRESSURE	RPM	L/M	kW	PORT SIZE: 65mm / 2-1/2 inch		
	1500	580	4.2	STARTING TORQUE	FORWARD	38 Nm
	1250	480	3.4		REVERSE	60 Nm
	1000	385	2.7			
	750	285	1.9			

SAFETY

o The pump must be adequately supported by its flange or foot to resist weight of pump, loads imposed by attached pipework, drive forces and vibration.

o The drive shaft and transmission must be guarded to BS5304 "Code of practice for safeguarding machinery" or appropriate local legislation. This applies if pump is driven via coupling or belt.

IMPORTANT:

Pump relies partly on attached pipework to prevent rotation of body. Pipework connected to one or both ports must be rigid and securely fixed at least 30cm from pump.

o Hydraulic Drives - Hydraulic motors operate at extremely high oil pressures: take care when working on motors, pumps and pipework.

o Electric Motors - All electrical wiring must be connected by a competent electrician in accordance with relevant standards, regulations and codes of practice. All equipment must be adequately protected against environment and overload conditions.

INSTALLATION

o Drive couplings should be correctly aligned to avoid putting undue stress on pump and drive components.

o Drive belts should be correctly aligned and tensioned.

o You may wish to seal pump flange to cabinet wall with a suitable sealant, e.g. silicone mastic.

o Pump head can be rotated 360° to suit pipework.

o If pump is to be mounted vertically, ensure seal housing system (items 19,20,21,22) is fitted. See page 28.13.204.

o Pipework must be adequately supported - see safety instructions above.

o Pipes should be as large as possible in diameter, smooth bore, as short as possible and with a minimum number of bends. This is especially important on the suction side - excessive restriction to flow will cause cavitation resulting in reduced flow, noise and short impeller life. Refer to page 28.13.202 for guidance on pipe sizes.

o Position pump as low as possible on vehicle to aid priming and reduce cavitation.

o If a filter is required, install in discharge pipework, e.g. between pump and flow meter.

o Drive motor must be high-starting torque type - see table above for torque and power requirements.

o Ensure all pipe joints are air tight.

o Install a speed limit device, e.g. a hydraulic oil by-pass to prevent running at excessive speed. Once maximum flow has been achieved, a further increase in speed will result in a reduction in flow and will cause damage to impeller and pump, due to cavitation.

o Inlet hose must be crush proof vacuum hose with smooth bore.

OPERATION

o Before starting, ensure all guards are in place. Do not rotate pump with end cover removed.

o If pump will not start, remove impeller (see service instructions) and refit with a twisting motion in direction of desired rotation so all blades are "trailing", OR, reverse body complete with impeller.

o NEVER loosen end cover clamp whilst pump is running.

o Operate pump at slowest speed at which desired flow rate is achieved. Some collection points will require a lower speed due to restrictions through farm tank outlet. Excessive speed will not increase flow and will reduce pump life.

o DO NOT RUN DRY: Do not run for more than 30 seconds without liquid in pump; impeller will be damaged.

o Before first use, thoroughly clean pump.

o Do not allow liquid to freeze in pump. Isolate pump drive and loosen end cover to drain.

CLEANING

o Pump can be cleaned in place by flushing through with standard cleaning solutions used in accordance with their manufacturer's instructions.

o Impeller should only be run at high temperatures for short periods - keep cleaning times and temperatures to a minimum.

o If using a separate pump to circulate CIP fluids, Tankermaster pump must also be rotated to allow CIP fluids to pass through. Alternatively, fit bypass endcover during cleaning: Refer to data sheet SD3008. This allows the pump to be cleaned without the need to run the vehicle engine (Hydraulic drive pumps) and eliminates the risk of running dry.

N.B. Do not clean with Phosphoric Acid.

REPAIRS AND SERVICING

Before commencing any servicing, isolate drive to prevent pump from starting unexpectedly, e.g. if vehicle engine is started.

All figures in brackets refer to components on drawing overleaf.

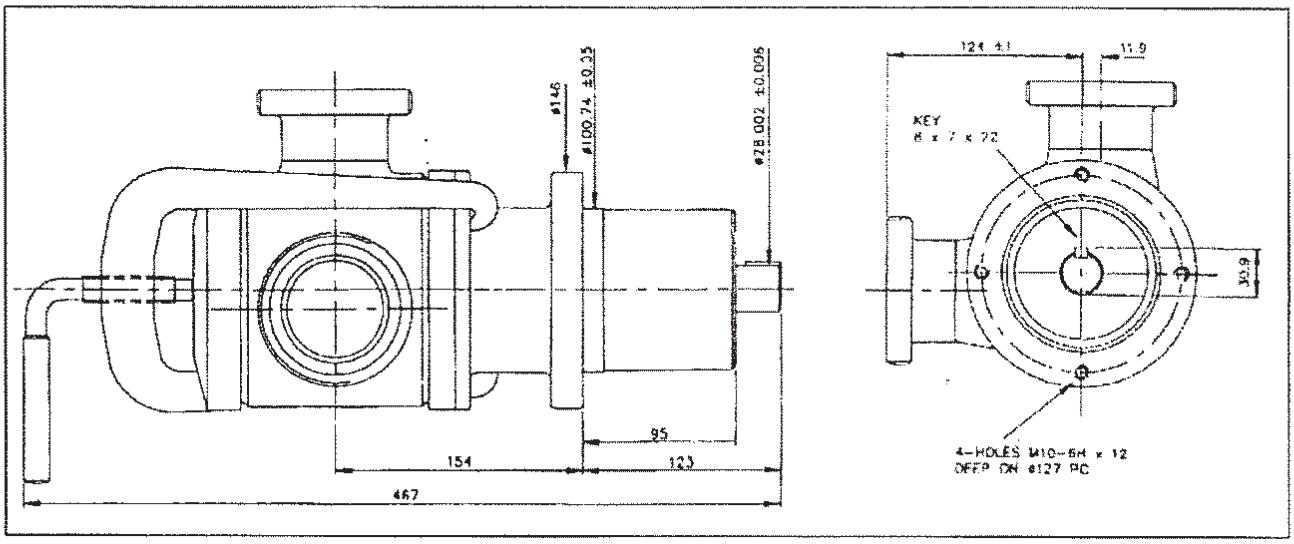
o IMPELLER - To remove, disconnect pipes and remove clamp [8] and end cover [5]. Withdraw body [6] from shaft [11] and push out impeller [1].

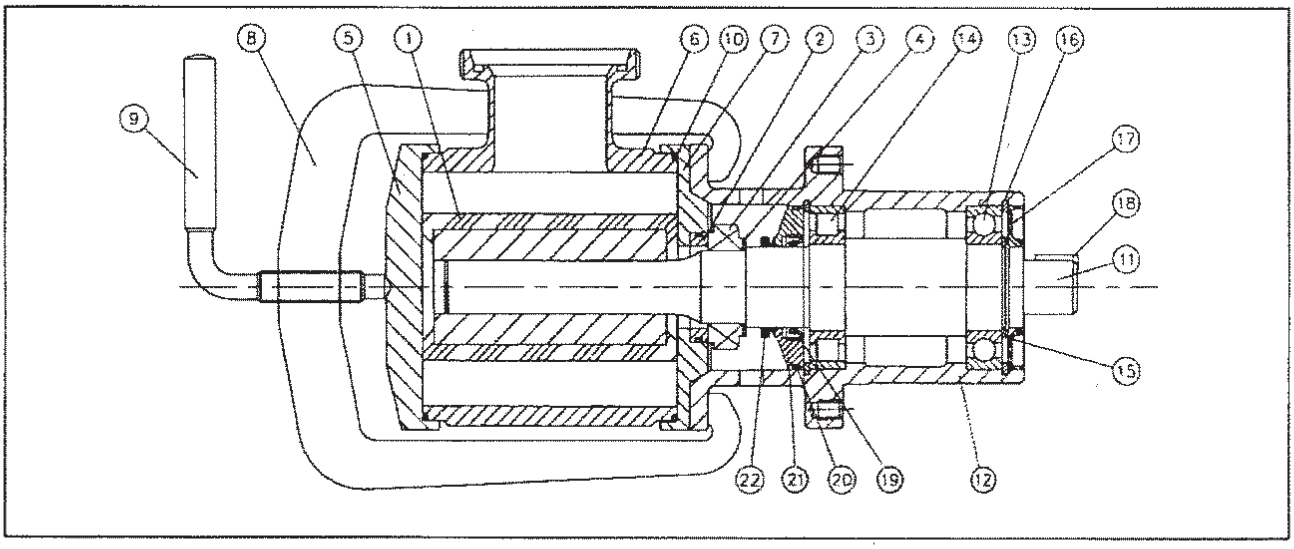
To refit, lubricate bore of body with a suitable food grade lubricant. Push in impeller with a twisting motion in direction of desired rotation so all blades are "trailing". Rotate pump shaft so flats align with bore of impeller. Ensure O-rings [10] are in place. Lubricate face of wearplate [7] and end cover. Slide body + impeller onto shaft and fit end cover. Fit and tighten clamp and re-attach pipes before re-starting.

o SEAL - To remove seal, first remove body as above. Remove wearplate [7] and push out seal seat [2]. Pull seal [3] and abutment washer [4] off shaft. To refit, lubricate shaft in seal area with a suitable food grade lubricant. Push on abutment washer and seal up to shoulder. Lubricate seal bore in wearplate and push in seal seat correct way round, i.e. with smooth lapped face exposed. Carefully slide wearplate onto shaft then re-assemble as above.

If fitting a new seal, always replace as a complete assembly - do not run a new seal on an old seal seat.

o BEARING HOUSING - This can be repaired using conventional workshop tools including a press to remove/refit bearings. On re-assembly, lubricate bearings with grease and fill space between bearings only 2/3rds full of grease. Fit new lip seals with springs facing outwards to prevent ingress of water.





Key No.	Description	Qty	Part Number
1	Impeller	1	8700-0005B
2	Seal Seat	1	22644-6000
3	Seal		
4	Washer		
5	End Cover	1	22007
6	Body	1	See Table
7	Wearplate	1	21937
8	Clamp	1	28709-0000
9	Clamp Screw	1	21908
10	O-Ring	2	SP2000-1213
11	Shaft	1	28707-0000

Key No.	Description	Qty	Part Number
12	Bearing Hsg	1	22064-0100
13	Bearing-Rear	1	SP2601-45
14	Bearing-Front	1	SP2601-46
15	Retaining Ring	1	SP1700-2870
16	Retaining Ring	2	SP1701-4391
17	Lip Seal	1	SP2701-88
18	Key	1	X4000-461A
*19	Lip Seal	1	X5280-011
*20	O-Ring	1	X4020-379A
*21	Seal Housing	1	23933-0000
*22	V-Ring	1	X5280-015

BODY (6) PART NUMBER VARIES ACCORDING TO PUMP MODEL			
Pump Model	Port Type	Port Size	Body Part Number
23930-1115	TRI-CLAMP	2-½"	28704-1000
23930-3115	IDF/ISS	63.5mm	28704-3000
23930-4115	RJT	2-½"	28704-4000
23930-5115	3A BEVEL SEAT	2-½"	28704-5000
23930-6115	DIN 11851	65 mm	28704-6000
23930-7115	SMS 1145	63.5 mm	28704-7000

*MODIFIED SEAL HOUSING – 500 and 700 size pumps built prior to October 1996, had 1 x Lip Seal SP2701-88 in place of Items 19, 20, 21, 22. Consult Jabsco for information on modification of these pumps to current specification.

CIP ENDCOVER OPTION FOR TANKERMASTER 500 AND 700 PUMPS

See separate Data Sheet SD3008 for description of manual By-Pass CIP endcover for Jabsco Tankermaster pumps. Tankermaster pumps may be ordered with the manual by-pass already fitted. Alternatively this is available as a complete kit to convert existing 500 and 700 size pumps.

TANKERMASTER MILK TANKER PUMP MODEL: 22060 SERIES

SIZE: 500 — MOUNTING: BULKHEAD

PORT SIZE: 65mm / 2-1/2 inch

PERFORMANCE AND POWER AT 1 bar DIFFERENTIAL PRESSURE	RPM	L/M	kW
	1500	450	4
	1250	375	3.2
	1000	300	2.5
	750	225	1.8

STARTING TORQUE		
	FORWARD	32 Nm
	REVERSE	50 Nm

SAFETY

o The pump must be adequately supported by its flange or foot to resist weight of pump, loads imposed by attached pipework, drive forces and vibration.

o The drive shaft and transmission must be guarded to BS5304 "Code of practice for safeguarding machinery" or appropriate local legislation. This applies if pump is driven via coupling or belt.

IMPORTANT:

Pump relies partly on attached pipework to prevent rotation of body. Pipework connected to one or both ports must be rigid and securely fixed at least 30cm from pump.

o Hydraulic Drives - Hydraulic motors operate at extremely high oil pressures: take care when working on motors, pumps and pipework.

o Electric Motors - All electrical wiring must be connected by a competent electrician in accordance with relevant standards, regulations and codes of practice. All equipment must be adequately protected against environment and overload conditions.

INSTALLATION

o Drive couplings should be correctly aligned to avoid putting undue stress on pump and drive components.

o Drive belts should be correctly aligned and tensioned.

o You may wish to seal pump flange to cabinet wall with a suitable sealant, e.g. silicone mastic.

o Pump head can be rotated 360° to suit pipework.

o If pump is to be mounted vertically, ensure seal housing system (items 19,20,21,22) is fitted. See page 28.13.204.

o Pipework must be adequately supported - see safety instructions above.

o Pipes should be as large as possible in diameter, smooth bore, as short as possible and with a minimum number of bends. This is especially important on the suction side - excessive restriction to flow will cause cavitation resulting in reduced flow, noise and short impeller life. Refer to page 28.13.202 for guidance on pipe sizes.

o Position pump as low as possible on vehicle to aid priming and reduce cavitation.

o If a filter is required, install in discharge pipework, e.g. between pump and flow meter.

o Drive motor must be high-starting torque type - see table above for torque and power requirements.

o Ensure all pipe joints are air tight.

o Install a speed limit device, e.g. a hydraulic oil by-pass to prevent running at excessive speed. Once maximum flow has been achieved, a further increase in speed will result in a reduction in flow and will cause damage to impeller and pump, due to cavitation.

o Inlet hose must be crush proof vacuum hose with smooth bore.

OPERATION

o Before starting, ensure all guards are in place. Do not rotate pump with end cover removed.

o If pump will not start, remove impeller (see service instructions) and refit with a twisting motion in direction of desired rotation so all blades are "trailing", OR, reverse body complete with impeller.

o NEVER loosen end cover clamp whilst pump is running.

o Operate pump at slowest speed at which desired flow rate is achieved. Some collection points will require a lower speed due to restrictions through farm tank outlet. Excessive speed will not increase flow and will reduce pump life.

o DO NOT RUN DRY: Do not run for more than 30 seconds without liquid in pump; impeller will be damaged.

o Before first use, thoroughly clean pump.

o Do not allow liquid to freeze in pump. Isolate pump drive and loosen end cover to drain.

CLEANING

o Pump can be cleaned in place by flushing through with standard cleaning solutions used in accordance with their manufacturer's instructions.

o Impeller should only be run at high temperatures for short periods - keep cleaning times and temperatures to a minimum.

o If using a separate pump to circulate CIP fluids, Tankermaster pump must also be rotated to allow CIP fluids to pass through. Alternatively, fit bypass endcover during cleaning: Refer to data sheet SD3008. This allows the pump to be cleaned without the need to run the vehicle engine (Hydraulic drive pumps) and eliminates the risk of running dry.

N.B. Do not clean with Phosphoric Acid.

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All figures in brackets refer to components on drawing overleaf.

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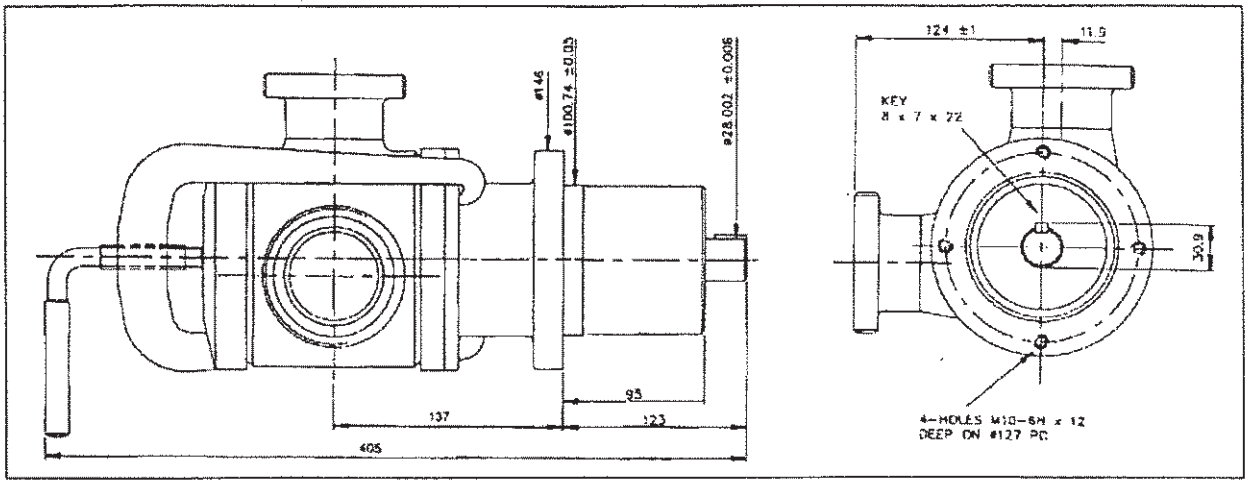
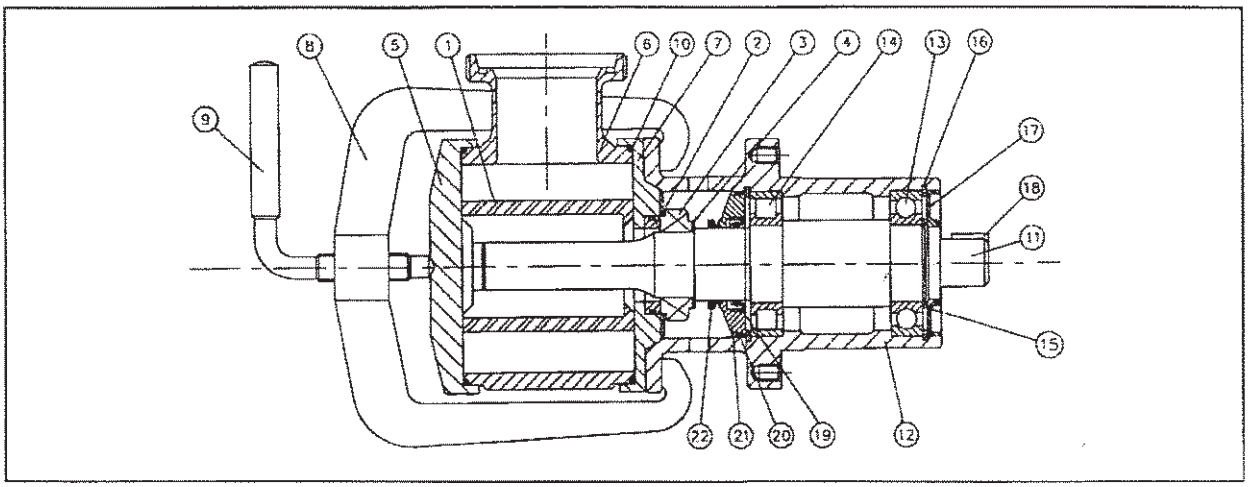
If fitting a new seal, always replace as a complete assembly - do not run a new seal on an old seal seat.

o BEARING HOUSING - This can be repaired using conventional workshop tools including a press to remove/refit bearings. On re-assembly, lubricate bearings with grease and fill space between bearings only 2/3rds full of grease. Fit new lip seals with springs facing outwards to prevent ingress of water.

28.13.206	TANKERMASTER 500 BULKHEAD PUMPS 22060	11/96





Key No.	Description	Qty	Part Number	Key No.	Description	Qty	Part Number
1	Impeller	1	21899-0005B	12	Bearing Hsg	1	22064-0100
2	Seal Seat	1	22644-6000	13	Bearing-Rear	1	SP2601-45
3	Seal			14	Bearing-Front	1	SP2601-46
4	Washer			15	Retaining Ring	1	SP1700-2870
5	End Cover	1	22007	16	Retaining Ring	2	SP1701-4391
6	Body	1	See Table	17	Lip Seal	1	SP2701-88
7	Wearplate	1	21937	18	Key	1	X4000-481A
8	Clamp	1	21909-0000	*19	Lip Seal	1	X5280-011
9	Clamp Screw	1	21908	*20	O-Ring	1	X4020-379A
10	O-Ring	2	SP2000-1213	*21	Seal Housing	1	23933-0000
11	Shaft	1	21978-0000	*22	V-Ring	1	X5280-015

BODY (6) PART NUMBER VARIES ACCORDING TO PUMP MODEL

Pump Model	Port Type	Port Size	Body Part Number
22060-1125	TRI-CLAMP	2-½"	22004-1001
22060-3125	IDF/ISS	63.5mm	22004-3001
22060-10	RJT	2-½"	22004-4001
22060-5125	3A BEVEL SEAT	2-½"	22004-5001
22060-6125	DIN 11851	65 mm	22004-6001
22060-7125	SMS 1145	63.5 mm	22004-7001

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