

# TUF Pumpset



# FORBES



PLASTICS TANKS AND  
ENVIRONMENTAL TECHNOLOGIES

# TUF Pumpset

## WHY PUMP?

Risk assessments by works safety officers are increasingly concluding that bulk consignments of hazardous chemicals such as concentrated acids should change from pressurised to pumped discharge.

The prime attraction of pressurised delivery has been its apparent cheapness compared with pumping. Available pump systems were vulnerable to corrosion and required costly maintenance.

Growing awareness of the hazards of pressurised working has focused attention on Health and Safety and environmental considerations, in particular the need for thorough (and more costly) scrubbing of the 'pad air' as the last of the liquid passes into the storage tank.

Another problem is that the inlet pipework of some pressurised systems can be vulnerable when embrittled by cold conditions. **Leakage during pressurised delivery cannot be immediately stopped.**

Significantly the whole principle of pressurising hazardous chemicals is causing concern to those with responsibility for safety - and EU directives could be interpreted that storage tanks receiving pressurised deliveries may be classified as pressure vessels.

**With Forbes TUF Pumpsets, safe working is now easy and economical. Corrosion free, maintenance free and controllable, the message must be - TO BE SAFE, GET TUF!**

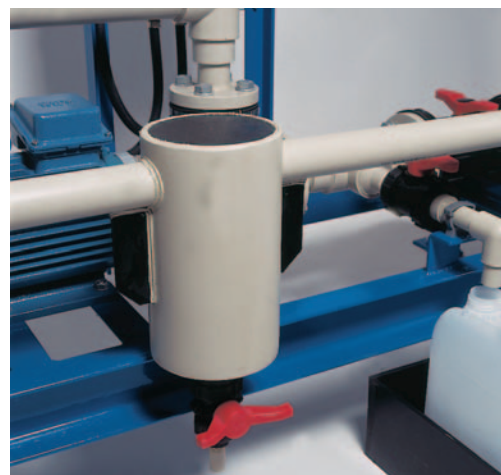
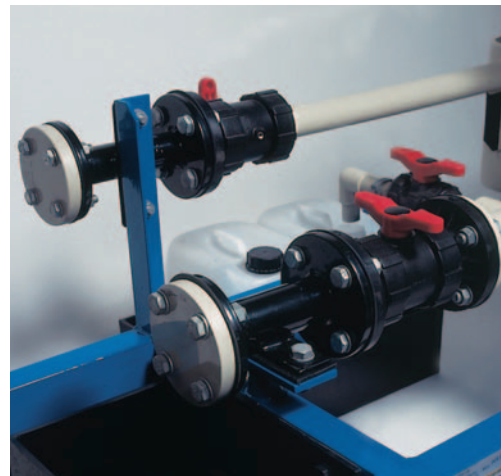
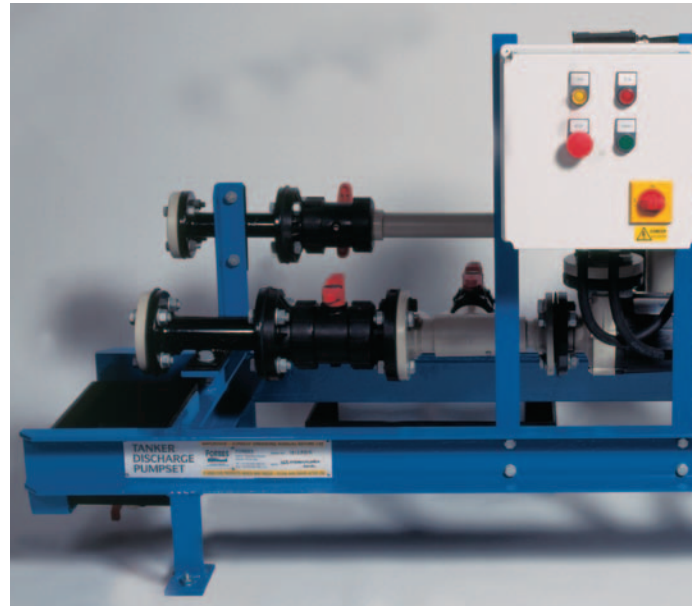
## ENVIRONMENTAL PRESSURES

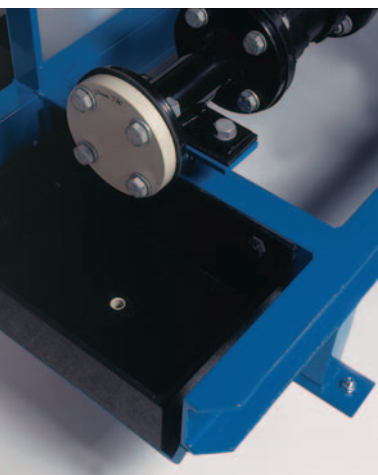
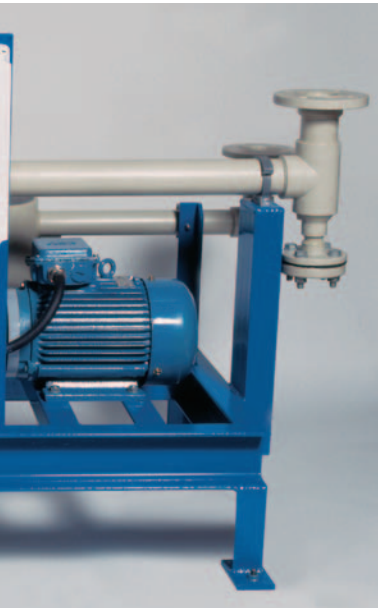
The widespread use of pressurised delivery systems owes much to the fact that pumping has not been generally satisfactory - mainly because of corrosion problems and high maintenance costs. The large volume of vapour being discharged at the end of pressurised delivery cycles has however been a severe hazard particularly when handling hydrochloric acid, and has required the installation of large and expensive scrubbing systems. Moreover, the oil vapour and compressed exhaust gases generated when using compressors can cause levels of contamination unacceptable in many cases where the purity of the product is particularly important.

The advent of large capacity glandless pumps has enabled Forbes to offer chemical users the ability to respond safely and economically to the ever-increasing environmental pressures upon them.

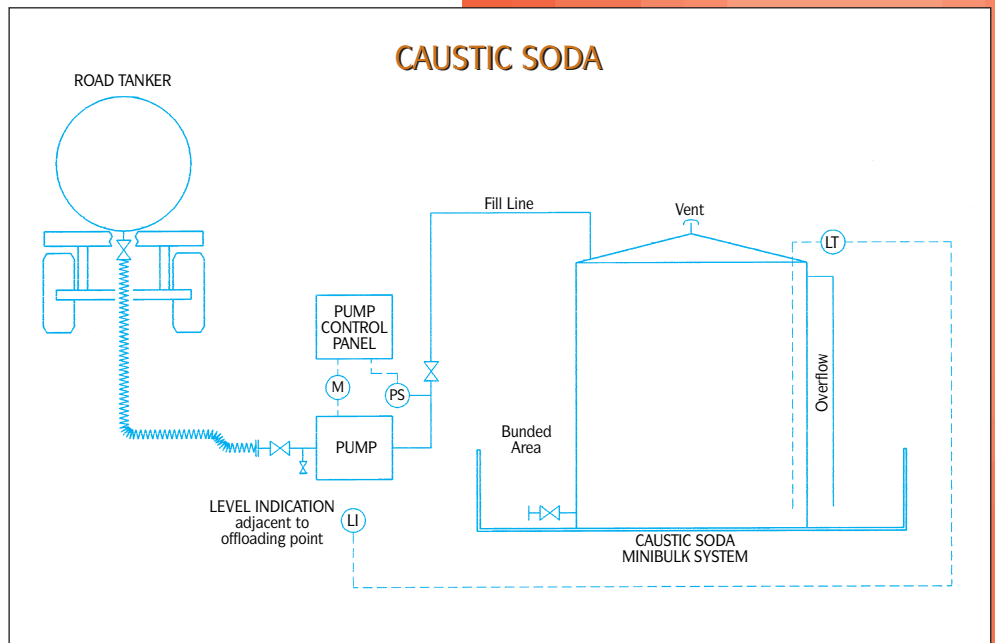
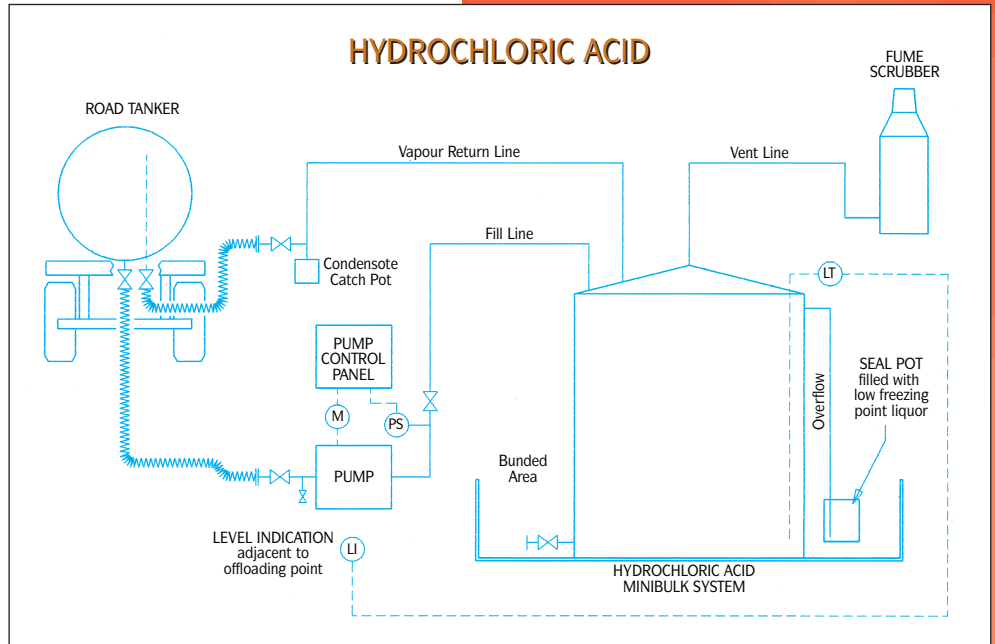
## CORROSION FREE, MAINTENANCE FREE

More than 30 years' experience in the containment, processing and handling of chemicals has enabled Forbes to design a pumpset to a high specification, using polypropylene pipework throughout (PVDF and titanium are available options) and a sealed glandless magnetic drive pump unit. Leaking seals and the maintenance problems traditionally associated with pumpsets are virtually eliminated. The steel frame is protected from corrosion by a generous epoxy coating.





# SCHEMATIC LAYOUTS FOR TUF PUMPSET INSTALLATIONS



These are two typical applications. Please discuss your other requirements with us.





## VERSATILE DESIGN

The Forbes TUF Pumpset is particularly suitable for handling hydrochloric acid and ammonia which characteristically release quantities of noxious vapour. In these cases the units are fitted with connections for a vapour return line. TUF Pumpsets can also be supplied for a wide range of other chemical products, including caustic soda, sodium hypochlorite, sulphuric acid etc.

Pumpsets supplied for caustic soda should be flushed after use to prevent freezing and crystallisation. Suitability for specific duties should be checked with Forbes.

The units can be supplied 'handed' left or right as required.

## SAFETY

At the end of a pressurised delivery the whole system is subject to reverberation or 'hammer' which can damage pipework installations. The use of a Forbes pumpset not only avoids 'hammer' and the danger of pressurisation of the pipework, tank and the delivery vehicle, but the controllability of the unit also allows operators to stop the discharge immediately.

All Forbes pumpsets are provided with automatic shut off to protect from damage due to dry running, with catchpots for cleaning and drain down, and with drip trays beneath the tanker connection and drain valve to prevent any damage to plinths etc.

## Performance

Nominal pump capacity is 23 cubic metres per hour (13m head, SG1.18)

## Connections

Pumpsets are supplied as standard for 415v 3-phase connection, and are rated at 3kw. Tanker connection is 2" BST'E' plastic coated steel flanged fitting or to suit your supplier. Outlet connection is 2" BST'E' polypropylene flanged fitting.

## Weight

150kgs.

## Controls

The control panel is provided as standard with an isolator switch, start and stop buttons and 'run' and 'trip' indicator lamps. Connections for the optional tank level switches are provided.

# PRODUCT RANGE

- ◆ Thermoplastics Tanks
- ◆ Tanks, Vessels & Fabrications  
GRP/THERMOPLASTICS DUAL LAMINATES
- ◆ Tanks, Vessels & Silos  
GRP COMPOSITES
- ◆ MINIBULK® Chemical Storage Systems
- ◆ Sectional Tanks
- ◆ Silos FOR SOLIDS & LIQUIDS
- ◆ Salt Saturators
- ◆ Pressure and Vacuum Vessels

- ◆ Fume and Odour Scrubbing Systems
- ◆ Vent Scrubbers
- ◆ CO<sub>2</sub> Degassers
- ◆ Stripping Towers
- ◆ Carbon Adsorption Units
- ◆ Bio Treatment Systems

- ◆ Ancillary Steelwork
- ◆ Skid Mounted Modules
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