

Appleton & Howard

VCS Design Limits

Capacities to: 3,300m³/hr
 Heads to: 60m
 Temperatures: 200°C
 Lengths: 2.5m

Whilst the above criteria are correct for the general range of VCS pumps, the use of casing tailpipes can increase the effective pumping length. Alternatively by engineering special bearing assemblies, higher temperatures and/or longer lengths can be accommodated.

Our design personnel are well qualified to assist in applications outside these parameters.

ETM Design Limits

Capacities to: 180m³/h
 Heads to: 125m
 Temperatures to: 200°C

All ETM pumps are custom engineered to suit the application, and whilst the limits above are indicative of the overall range available, Appleton & Howard should be consulted for conditions outside of these limits. Similarly, variations on standard designs, such as steam jacketing or steam coils, can be considered on application.

Typical Services for VCS and ETM Pumps are:

- Chemical service
- Pharmaceuticals
- Dyestuffs
- Effluent and pollution treatment
- Bleach processes
- Fertilizer production
- Metal pickling and finishing

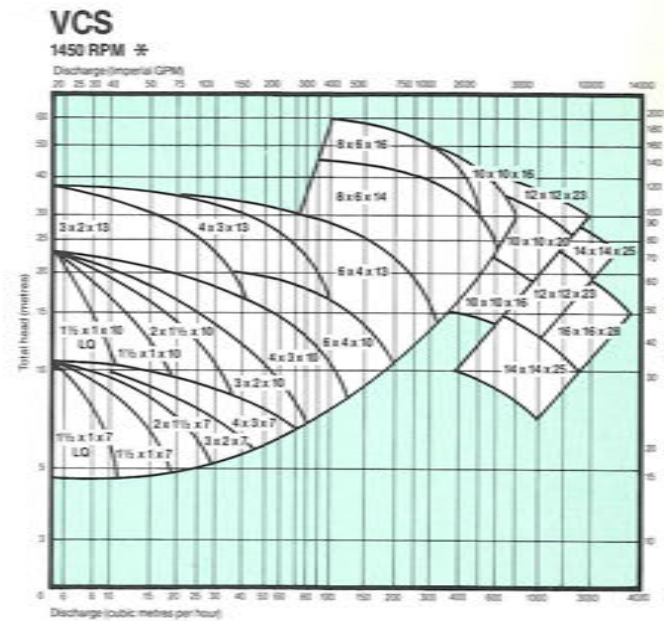
Installation and Service

One of the contributory factors to the world-wide success of Appleton & Howard is the exceptionally high standard of service that is part of every installation.

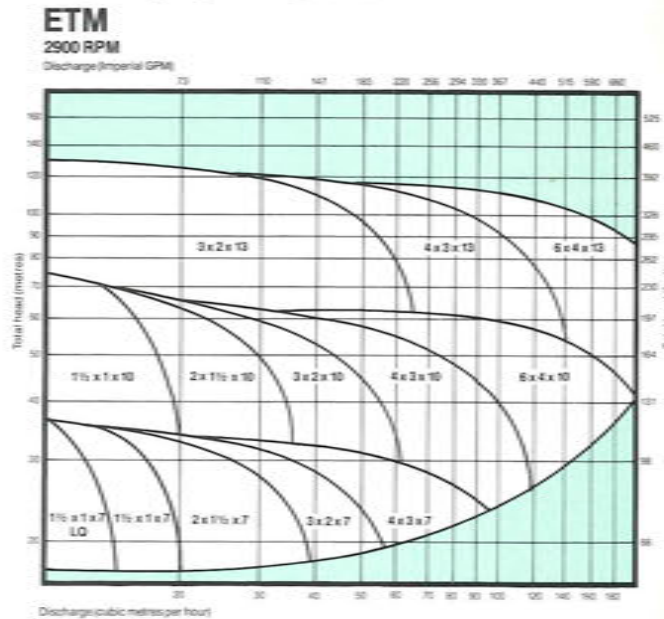
What does this service cover? Just about anything you can think of to do with our products. This means installation, commissioning, trouble shooting on site, reconditioning and repairs, spares, technical advice, testing facilities and many others. It can vary from advice on the telephone by a field service engineer to organising shipment of pumps back to our Works for reconditioning and testing under load conditions.

Every Appleton & Howard pump is designed to work with the minimum of maintenance. Occasionally however things do go wrong, but no matter how remote the locality, modern communications will bring a field service engineer within hours.

Standard range selection charts

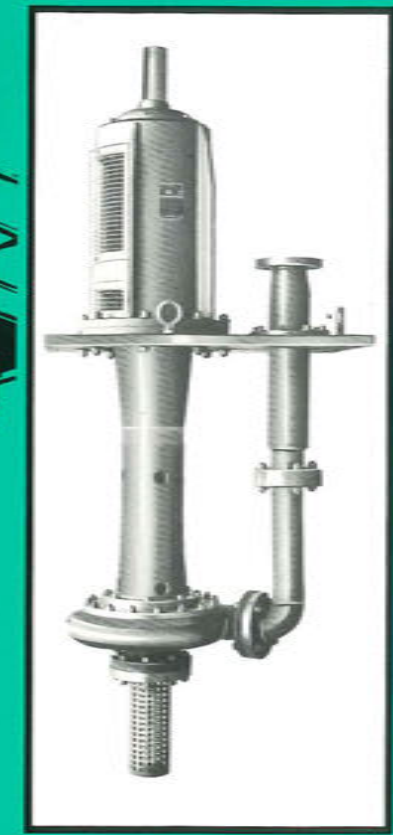


* Speed may vary according to pump size.



VCS
RANGE

ETM
RANGE



Appleton & Howard

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VCS

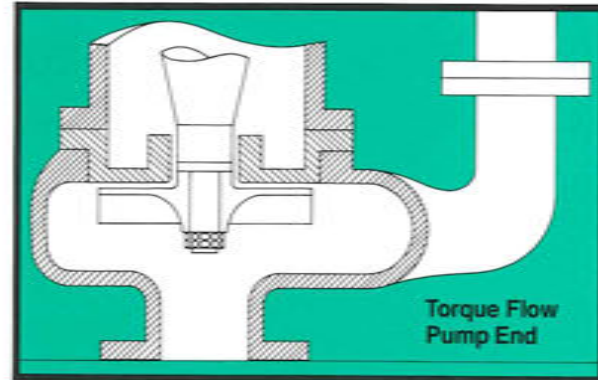
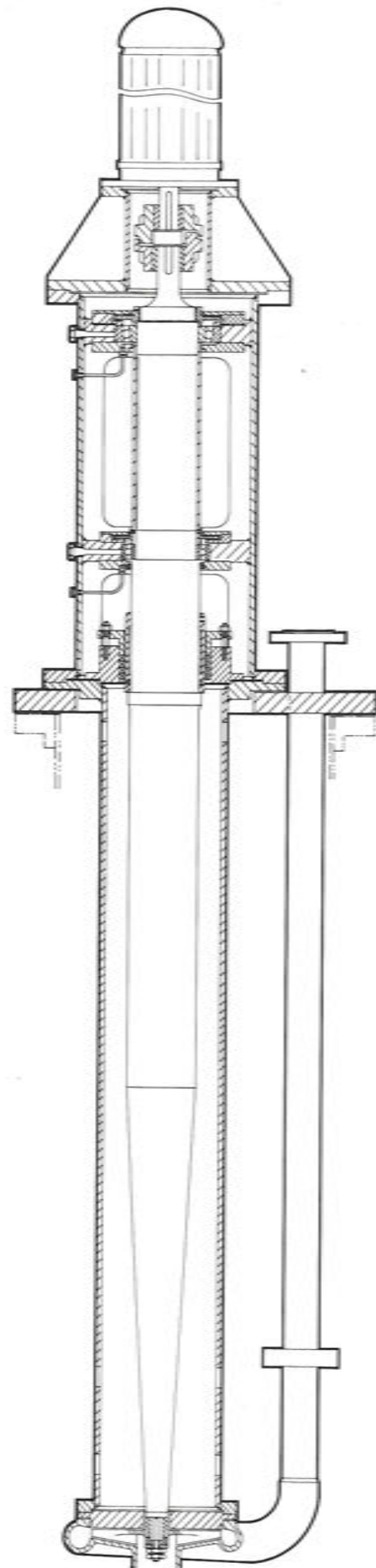
The Appleton & Howard VCS

The Appleton and Howard VCS range of vertical submerged pumps is specifically designed for corrosive and/or erosive applications, and each pump is "custom engineered" around client's individual process applications. The principal feature of the VCS range is its use of a cantilever shaft arrangement which eliminates the need for immersed shaft bearings. Thus if it is desired to pump liquors which have a tendency to crystallise or become viscous, or if contamination of the liquor by immersed bearings cannot be tolerated, the VCS pump is the solution.

The VCS design also satisfies those applications where a 'dry running' requirement exists.

The pumps can be supplied in a sophisticated range of materials, e.g. Stainless Steel, Hastelloy, Duplex Steel Titanium, Incoloy etc.

All pumps in the VCS range are constructed to heavy engineering standards. They incorporate liberal corrosion/erosion



allowances together with maintenance saving features, thus ensuring a long trouble free life.

The top housing bearing arrangement is generally designed around a ball race thrust bearing and a ball race axial bearing which are engineered for maximum operational life. When specified, ball/roller or taper roller/taper-roller assemblies can also be utilised.

An open impeller is standard design on the VCS range, but mixed flow, torque flow and closed impellers can be utilised. For particularly aggressive applications maintenance costs can be reduced by utilising wear rings or casing wear plates.

ETM

The Appleton & Howard ETM

The Appleton and Howard ETM vertical glandless pump is a design specifically engineered for applications requiring a unit mounted externally to the vessel.

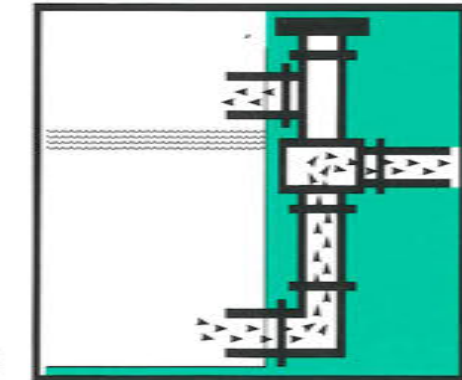
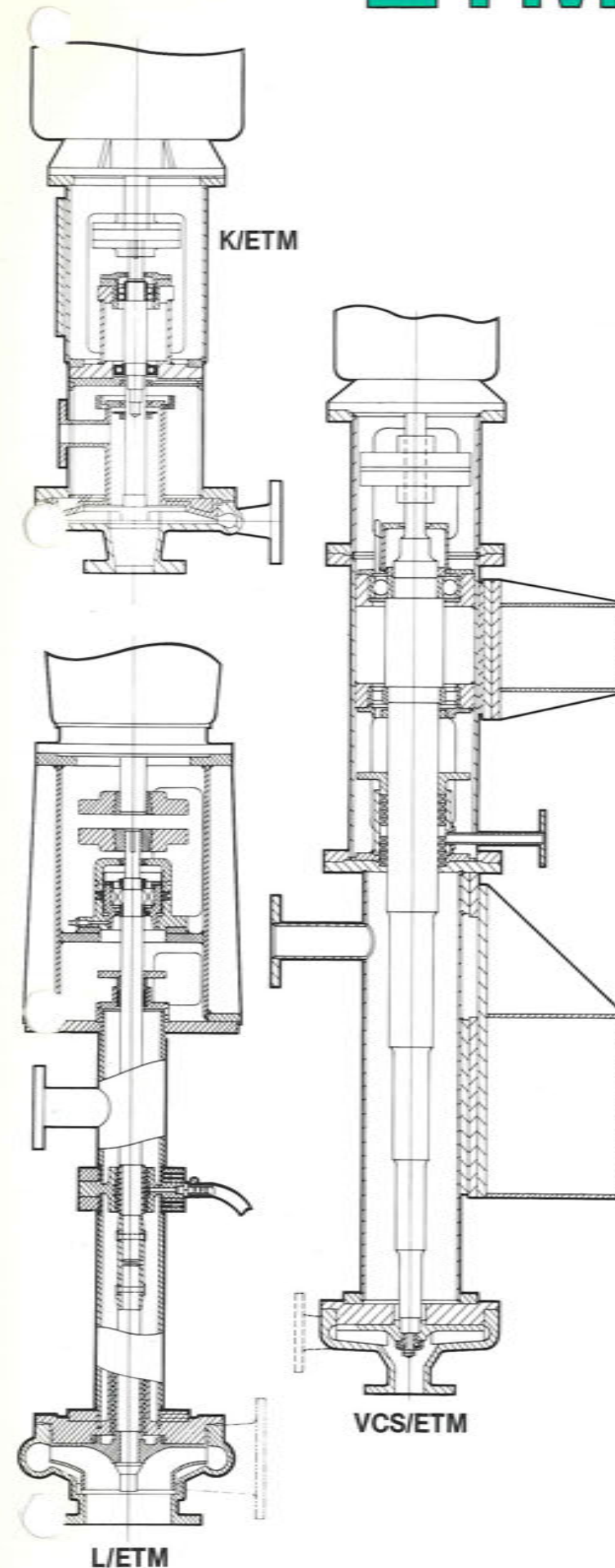
Where in-tank mounting is not possible the ETM is ideal and enables the pumps to be quickly and effectively maintained without the need for lifting gear.

Principal of Operation

Where aggressive chemicals are to be pumped which are corrosive and/or erosive, toxic or hazardous in other ways, there are significant advantages in using an ETM pump.

Appleton and Howard ETM pumps are glandless units, located externally to the suction vessel, and by correct positioning of the pump and the provision of an overflow connection, sealing is eliminated. Only a vapour seal is required to contain gases and prevent the ingress of dirt and foreign bodies.

The L/ETM version is manufactured in lengths up to 9 metres and uses intermediate



bearings. Therefore it is only possible to run these units dry if a liquid feed is applied to the bearings.

Glandless Design

Both the VCS and ETM ranges of pumps are essentially glandless in design. When shaft sealing is demanded by the application, only vapour seals are required.

The VCS utilises a separate discharge pipe, and sealing in the shaft/support tube area would be confined to the prevention of vapour escape or the entry of air.

By incorporating a product overflow back to the suction vessel, again, the ETM requires only vapour/air protection.