CRESTPUMPS

SURGE RANGE

SIZES 2-6

VERTICAL SEALLESS THERMOPLASTIC CENTRIFUGAL PUMPS

INSTALLATION, OPERATION & MAINTENANCE MANUAL

www.crestpumps.co.uk | 01425 627700

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1. GENERAL

1.1 INTRODUCTION

This manual is supplied to acquaint you with the easiest and most practical way to **INSTALL, OPERATE & MAINTAIN** this pump.

We suggest that all personnel responsible for the pump read this manual carefully and keep it handy for future reference. Additional information may be obtained direct from **CREST PUMPS LIMITED.**

Equipment cannot operate well without proper care. To keep this unit at top efficiency, correct procedures for installing and maintaining must be followed. The **CREST PUMPS LIMITED** organisation can give helpful advice when installing this unit so that maximum machine life can be attained with the minimum downtime.

NOTE: The description and instructions in this book include the standard design of the equipment and common deviations, when possible. This manual does not cover all design details and variation, nor does it provide for every possible contingency which may be encountered. When information cannot be found in this book contact **CREST PUMPS LIMITED** direct.

1.2 GUARANTEE

All pumps are tested prior to despatch so that a trouble-free operation of the pump is warranted.

The resistance of material can be guaranteed only if the specific operating conditions were known by **CREST PUMPS LIMITED** before commencement of the order.

The guarantee period is specified in our General Terms and Conditions of sale.

1.3 CONTACT ADDRESS

Crest Pumps Ltd
7 Queensway
Stem Lane Ind Estate
New Milton
Hampshire
BH25 5NN
Telephone:- 01425 627700
Email :- info@crestpumps.co.uk

1.4 NOISE

Depending upon the motor size fitted to this pump, the likely noise level can be found in the chart below. Please note that at certain installations and operation points on the pump curve, the noise level 70dB can be exceeded. Hearing protecting devices should be used in case of long exposure to noise.

Motor Power (kW)	Noise level at 1m dB(A)
0.55	58
0.75	58
1.1	61

1.5	61
3	66
5.5	69
7.5	70

1.5 WARNINGS AGAINST MISUSE

Safety instructions given in this manual non-compliance with which would affect personnel safety are identified by the following symbol :-

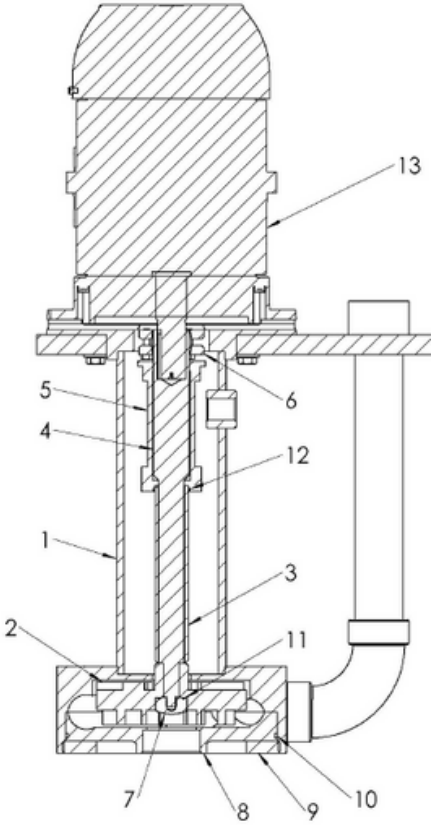
or where electrical safety is involved, with :-

Safety instructions which shall be considered for reasons of safe operation of the pump or pump unit and / or protection of the pump or pump unit itself are marked by the sign :-

ATTENTION

1.6 SUPPLEMENTARY INSTRUCTIONS

Supplementary components such as the motor for example, must be used in accordance with the relevant instructions supplied with the pump's documents.



SURGE RANGE
2-6

PARTS LIST

1. BODY
2. IMPELLER
3. IMPELLER SLEEVE
4. SHAFT
5. SHAFT SLEEVE
6. COUPLING
7. LOCKNUT
8. COVER PLATE
9. LOCKING RING
10. O-RING
11. O-RING
12. O-RING
13. MOTOR

CRESTPUMPS

3. DESCRIPTION

Pumps of the Surge series are vertical, immersible, single stage pumps designed to handle corrosive liquids and built to the highest possible standards of design, workmanship and materials.

The materials of construction have been selected for the temperature and liquid specified in your order. Before the pump is operated with other liquids or at other temperatures, it is essential that the manufacturer be consulted.

Each pump is tailored to the customer's exact requirements in terms of generated head at the specific capacity and both the mechanical and hydraulic performance of the pump is checked before despatch.

ATTENTION

This pump must not be run against a closed head

ATTENTION

As per BS EN 13463-1:2009, item 6.7.5 c., for Atex Zone 1 and Zone 2 Ex installations, the surface area of non-conductive parts has been minimised as best possible. But due to the corrosive nature of the liquid pumped and the requirement for this corrosion resistant material to be used, it is not possible to totally eliminate the danger of ignition by electrostatic discharges. When quoted for an ATEX application, this pump will be fitted with a conductive stainless steel mounting plate cover that must be bonded at the earthing boss.

4. INSTALLATION OF THE PUMP

4.1 RECEIVING THE PUMP

1. UNLOAD AND HANDLE WITH CARE

2. CHECK FOR SHORTAGES AND DAMAGE IMMEDIATELY AS YOU TAKE POSSESSION OF THE PUMP.

Prompt reporting of discrepancies to the carrier's agent, with notations made on the Bill of Freight, will expedite satisfactory remedial action by either the carrier or the manufacturer.

4.2 TEMPORARY STORAGE

If the pump is not required for immediate installation and operation, store in a clean, dry place at a consistent ambient temperature and ensure that all openings are protected to prevent the ingress of foreign matter.

Storage requirements vary depending on the length of storage and climate conditions. For storage periods longer than three months or advice on storage temperature, please contact **CREST PUMPS LIMITED.**

4.3 WIRING

The electrical installation must be carried out by a competent person. All relevant practices and regulations should be adhered to. The motor wiring should be carried out to the manufacturer's instructions which can usually be found in the motor terminal box or supplied with the motor. A wiring diagram can be found in the terminal box or on the motor nameplate. Thermal overload protections should be used but is not supplied with the motor. Ensure that rotations is in the correct direction as shown by arrows on either the motor or pump (See 5.1). If required, earthing bosses are supplied and should be used.

4.4 INSTALLATION

The Surge range of pumps must be mounted vertically but may be installed either internally or externally. When the pump is mounted externally it is important to plumb the drain hole back into the tank. The pump is mounted from the mounting plate, (See fig. 1 & 2) and should be adequately supported.

N.b. Fitting of a non-return valve at the discharge port is recommended to prevent liquid surging back into the pump and bearing housing as the pump is switched off. See fig. 3

ATTENTION

4.5 MAXIMUM IMMERSION DEPTH

Ensure that the pump is installed so that the liquid level will not rise above the overflow port in the side of the upper body. This port must always be left open or piped back into the tank with no rise or restriction in diameter otherwise damage will result.

ATTENTION

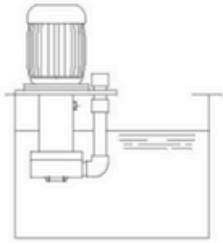
4.5 EXTENDED SUCTION PIPEWORK

The Crest Surge range pipework is supplied in standard lengths; however, it is possible for pumps to empty deeper tanks and sumps. Inlet extensions may be added up to 2.5 metres long with the effect that the unit will continue pumping until the liquid level drops below the inlet extensions and air is drawn in.

Should the installation require the pump to come into operation before the liquid level rises back above the pump casing, then a foot valve will need to be fitted to the inlet extension. This will prevent liquid draining out of the pump body and the pump will be maintained in a primed condition. See fig. 3.

When a foot valve is installed as in the previous example, it is necessary to install a check valve at the discharge port. This will prevent the liquid in the discharge line flowing back into the pump and rising up the inside of the pump body when the pump is halted. See fig. 3.

Figure 1.
Internal Installation



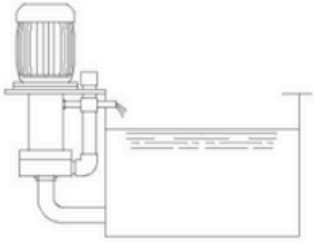
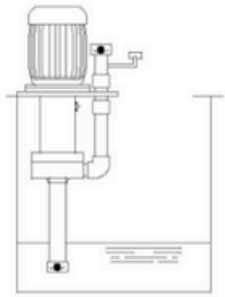


Figure 2.
External Installation
(Plumbed in drain hole)

Figure 3.
Extended pipework



5. OPERATION

5.1 PRE-START CHECKS

Before initial start-up of the pump, make the following inspection:

(a) Check all connections to motor and starting device for correct installation. Also, voltage, phase and frequency are as motor nameplate for the circuit being used.

(b) Turn rotating element by hand to ensure it rotates freely.

(c) Check rotation by giving the motor a 2 second burst maximum. If incorrect, change wiring to give correct rotation.

Pump must operate in the direction indicated by the arrows on motor and pump adaptor. Serious damage can result if the pump is operated with the incorrect rotation. Always check rotation each time the motor or starter have been disconnected.

(d) Check discharge piping and any other connections (e.g. pressure gauge, temperature and flow control instruments) for correct operation.

5.2 STARTING

(a) Close any drain valves in discharge line.

(b) Open fully all valves in suction line.

(c) Prime Pump. If the pump does not prime properly or loses prime start up, it should be shut down and condition corrected before the procedure is repeated.

Repeated trial start-ups can overheat the motor. Starting currents are several time full load current - heating varies as the SQUARE of the current. Allow winding time to cool between starts.

(d) For pumps moving high temperature liquids it is advisable to warm the pump prior to starting to avoid thermal shock on the materials used in the construction of the pump head e.g., impeller, casing and backplate.

(e) Start pump prime mover.

The discharge line valve should always be set to achieve the pump's minimum flow requirement usually achieved with a cracked discharge valve open slightly when pump is started. The excessive current required by the motor to start under full load will, in time, cause motor trouble.

(f) When pump is operating at full speed open the discharge valve slowly.

5.3 OPERATING CHECKS

(a) check pump and piping leaks.

(b) Check and record pressure readings for future reference.

(c) Check and record voltage, amperage per phase and kW.

(d) Check temperature at various points on the pump to make sure that the pump is not overheating.

Make all pump output adjustments with discharge valve. DO NOT throttle suction line to adjust pump output.

(e) When the pump is operated with a Variable Speed Drive, the operating speed range must be no lower than 50% of the rated speed and no higher than the rated speed.

5.4 SHUTDOWN

(a) When stopping the pump always close the discharge valve first. Pump should never run dry for any length of time with this valve shut or the suction valve closed or both closed, due to the damage of overheating and causing a meltdown of plastic parts of the pump.

(b) In severe climate conditions the pump should be protected from freezing conditions when shut down by one of the following methods:

i. Drain pump and remove all liquid from casing if this liquid is liable to freeze solid.

ii. Keep fluid moving in the pump and pipework to insulate to prevent freezing.

iii. Heat pump and pipework to prevent freezing.

If heat is used to keep pump from freezing do not let temperature rise above 60 degrees centigrade unless permission to do so has been obtained from CREST PUMPS LIMITED.

ATTENTION

In freezing conditions, it is important to keep pipework from freezing. A blockage in the pipe can result in overheating the pump.

6. MAINTENANCE

6.1 PREVENTIVE MAINTENANCE

A pump properly installed and operated will require a minimum of maintenance. For the best overall performance, be sure to adhere to the instructions in this manual.

Operating conditions vary so widely that to recommend one schedule of preventative maintenance for all duties covered by our pumps is not possible. Keep a permanent record of the periodic inspection and maintenance performed on the pump.

The recognition of maintenance procedure will keep the pump in good working condition and prevent costly breakdowns.

One of the best rules to follow in proper maintenance is to keep a record of actual operations data and hours of operation. The length of this operation period will vary with different applications and can only be determined from experience. The next inspection can be scheduled based on the condition of the components at the first inspection. This system can be followed until a maximum period of operation is reached, which should be considered the operating schedule between inspections. A guide for performing periodic inspections on the pump follows:

PERIOD	INSPECTION
Monthly	Check bearing in motor and bearing pedestal when fitted for temperature and wear. A bearing that has become noisy is obviously showing signs on wear.
3 Monthly	Monthly checks plus check for leaks from pump and pipework and repair as required.
6 Monthly	Monthly and 3 monthly checks. Inspect operations of all valves and instrumentation for correct operation. Special attention to be paid to non-return and foot valves, if fitted, as poor operation of these valves can result in poor performance of the pump.
Yearly	All previous checks, also remove rotating element and inspect for damage and wear, ordering replacement parts if necessary. Remove any deposit or scaling. Measure total dynamic suction and discharge head as a test of pipe connections. Record figures and compare them with the figures of the next test. This is important especially where the fluid being pumped tends to form a deposit on internal surfaces.

Recommended 2 Year Spares

Please refer to the parts list (2:1) for the exact part number for your pump. It is recommended to the following parts are replaced every two years: all o-rings.

6.2 DISMANTLING INSTRUCTIONS

A. Never attempt to dismantle the pump unit until it has been disconnected from the mains electricity supply.

B. Release the discharge pipework.

C. Ensure that the pump is thoroughly de-contaminated of the fluid it has been pumping.

D. Remove the pump to a safe and clean working area.

1. Unscrew the locking ring using locking ring removal tool (Right hand thread).

2. Remove front cover plate and O-ring by threading a suitably sized pipe into inlet and pulling alternative sides.

3. Remove the impeller locknut and O-ring. (Right hand thread).

4. Pull the impeller free from the shaft. If stiff, a lever tool can be placed either side between the back vanes.

5. Remove nuts and bolts holding body to motor flange, removing body from flange.

6. Remove the shaft sleeve with O-ring from shaft.

7. Slacked the coupling bolts and separate coupling halves with suitable drift.

8. Pull pump shaft off motor shaft.

The pump is now in a totally dismantled state and parts should be replaced as required. We recommend that o-rings are renewed each time the pump is stripped down.

The pumps may now be re-assembled in reverse order.

6.3 REPLACEMENT PARTS

Pumps are designed and built with all wearing parts replaceable. A recommended inventory of spare parts is dependent upon installation and the importance of continued operation.

Parts should be ordered as far in advance as possible since circumstances beyond the control of the Company may reduce existing stock. Not all parts are stocked as some must be manufactured for each order.

When ordering spare parts always include the following information:

Part serial number and/or pump type
Part number obtained from drawing/parts list
Name of part and quantity of part required
Material desired (if different from original material)
Full company details including delivery/invoice address
Order number

NOTE Parts will be supplied in the original materials unless specified as a material change. All material substitutions should be discussed with CREST PUMPS LIMITED.

T : 01425 627700
W : www.crestpumps.co.uk
A : 7 Queensway, New Milton, Hampshire, BH25 5NN

CRESTPUMPS

Pump Return Form

All pumps returned to us must be accompanied with this completed form stating what product the pump has been handling and that the pump has been thoroughly cleaned. This documentation should be securely attached to the returned item and be clearly visible. If not, the shipment shall be rejected and returned to the sender.

Date Sent:		Company Name:	
Contact Name:		Tel No:	
Email Address:			
Pump Type:		Serial Number:	
Liquid(s) this pump has been handling (please supply MSDS where possible)			
Are they a health hazard?	Yes / No	Do they give off dangerous products after thermal decomposition?	Yes / No
If yes to either of the above, please provide further information:			
Reason for return:			

Legally Valid Declaration: I, as the undersigned, have the skills to judge and confirm this pump has been safely cleaned and drained before despatch. If not adequately cleaned, we accept the pump may be rejected and/or we will be liable for the chemical cleaning and waste disposal costs. We commit to exempting Crest Pumps Ltd from any claim for damages by third parties that have occurred due to incomplete or erroneous information. We are aware that, independently from this statement, we are directly accountable to third parties, particularly with respect to Crest Pumps Ltd personnel responsible for handling or repairing the product.

Name of authorised person (please print):

Date: Signature:

Please return to: Crest Pumps Ltd, 7 Queensway, New Milton, Hampshire, BH25 5NN

Please note that if we do not receive a response within 60 days of our inspection report/quote, we reserve the right to scrap the pump without further notice.

CRESTPUMPS

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8 Normanton Park
Ripley Drive
Normanton
West Yorkshire
WF6 1QT

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