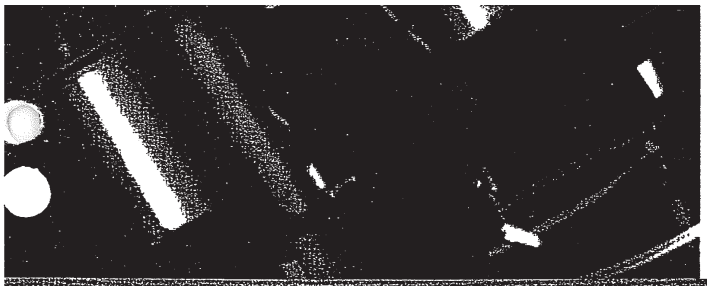
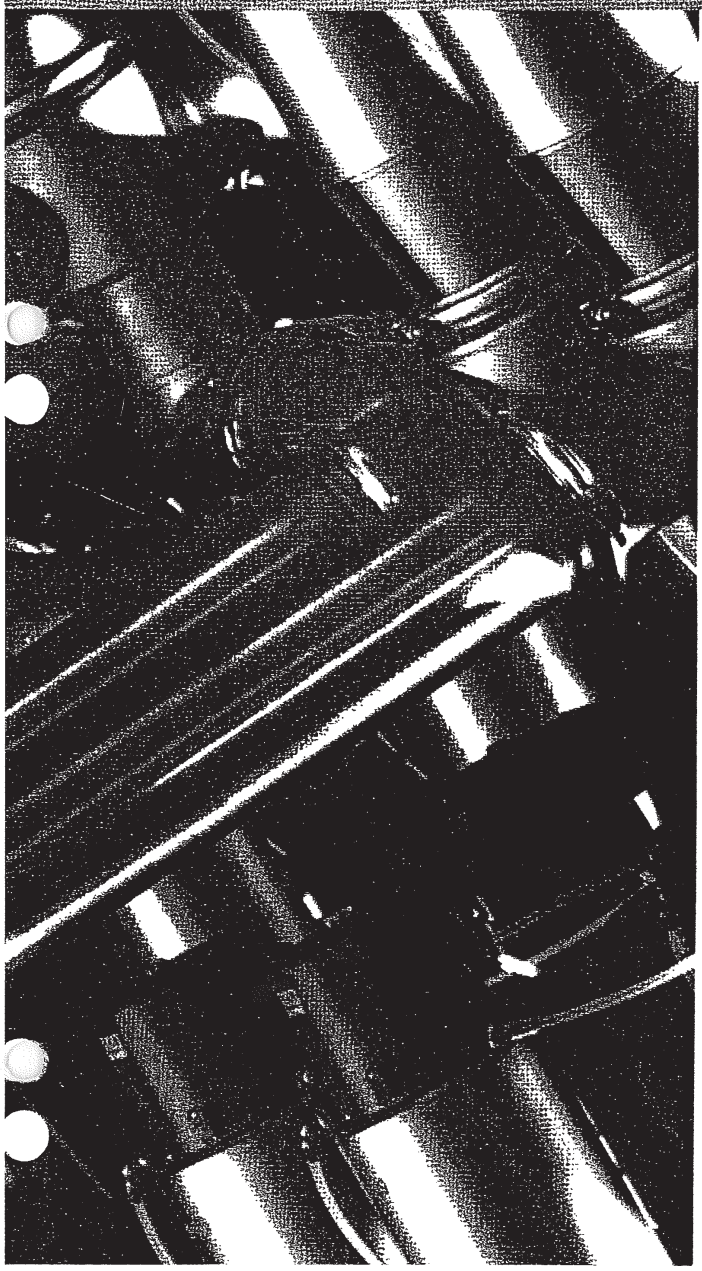
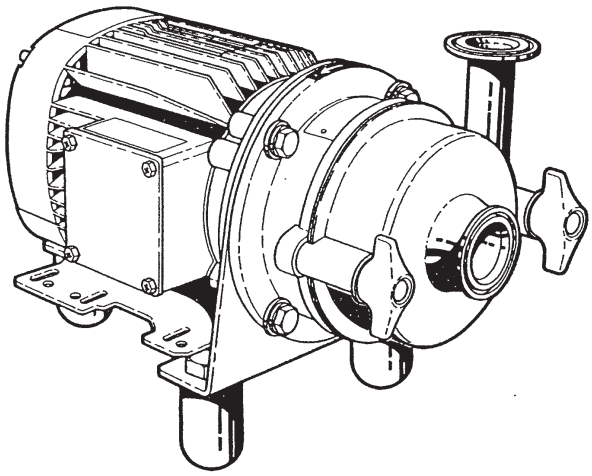


INSTRUCTION
MANUAL

GHC-00
CENTRIFUGAL PUMP





IM 70023-US7 S
9709

G&H RESERVE THE RIGHT TO
MINOR CHANGES IN DESIGN
AND FUNCTION

Introduction

Thank you for purchasing a G&H product.

This manual has been provided to instruct you how to operate and service this product correctly and safely. Be sure to follow all directions and instructions; failure to do so could result in personal injury or equipment damage.

This manual should be considered part of this product and should remain with it at all times for reference. (If you sell it, please be sure to include this manual with it).

Warranty is provided as part of G&H Products Corp.´s commitment to our customers who operate and maintain their equipment as this manual dictates. Failure to do so may result in loss of warranty.

Where defects appear on the product during the warranty period, G&H Products Corp. will back the product and correct the problem. Should the equipment be modified or not kept in the manner prescribed within this manual, the warranty will become null and void.

Table of Contents

This manual is divided into main sections. - See below.

Please note that the drawing on page 17 can support the reading of the manual.

Safety

Throughout each of G&H Product Corp's instruction manuals, certain safety signal words and symbols will appear. These are in the form of, warning, caution or note

WARNING! : Indicates that special procedures **must** be followed to avoid severe personal injury.

CAUTION! : Indicates that special procedures **must** be followed to avoid damage to the equipment.

NOTE! : Denotes actions or procedures to follow for optimum, safe use of equipment.

Follow Safety Directions

Read this manual thoroughly before working on equipment.

Leave all safety stickers on equipment and keep them maintained in legible condition. In the event that stickers become damaged or are missing, contact G&H Products Corp. for replacements.

Maintain equipment in good working condition.

Do Not Make Machine Modifications

G&H Products Corp. offers a full range of products to suit all of your needs. Therefore, product modification is never necessary.

Keep Maintenance Safe

Replace damaged or worn parts immediately. Never allow old product, debris, or any lubricants to build up on equipment. Never operate unless equipment is in proper working order.

Before attempting to service the machine, disconnect all power and compressed air. Allow machine to come to a complete stop. Never service a machine while it is operating. Keep all limbs away from moving equipment. Be sure that product pressure has been relieved before beginning maintenance.

1. Warning Signs

 : General warning.

 : Dangerous electrical voltage.

 : Caustic agents.

All warnings in the manual are summarized on this page.

Pay special attention to the instructions below so that severe personal injury or damage to the pump are avoided.

2. Safety Precautions

Installation:

: **Always** observe the technical data (see page 16).

: The pump **must** be electrically connected by authorized personnel (see the motor instructions).

: GHC-00 with impeller of AISI 316L (optional)
- **Always** remove the impeller before checking the direction of rotation.
- **Never** start the pump if the impeller is fitted and the pump casing removed.

Operation:

: **Always** observe the technical data (see page 16).

: **Never** touch the pump or the pipelines when pumping hot liquids or when sterilizing.

: **Never** run the pump with both the suction side and the pressure side blocked.

: **Always** handle caustic and acid with great care.

Maintenance:

: **Always** observe the technical data (see page 16).

: **Always** disconnect the power supply when the pump is serviced.

: - The pump must **never** be hot when serviced.
- The pump and the pipelines must **never** be pressurized when the pump is serviced.

Installation

The instruction manual is part of the delivery.
Read the instructions carefully.

GHC-00:Impeller and collets of fiberglass reinforced plastic.
Option: Impeller of AISI 316L and yoke of AISI 304.
The standard delivery does not include the test certificate. This can be supplied on request.

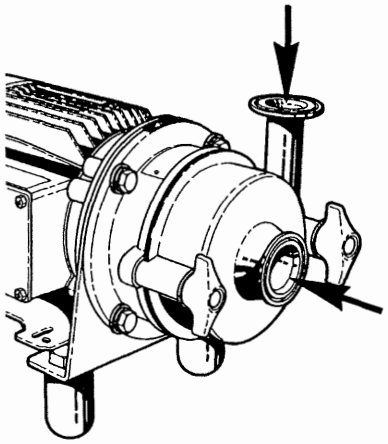
1. Unpacking/Delivery

1

NOTE!
G&H cannot be held responsible for incorrect unpacking.

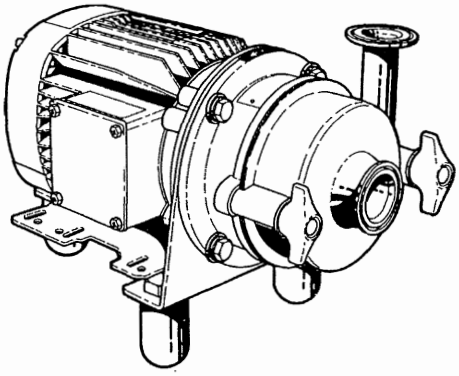
Check the delivery:
1. Complete pump, GHC-00.
2. Packing list.
3. Instruction manual.
4. Motor instructions.
5. Test certificate, IF ORDERED!

2



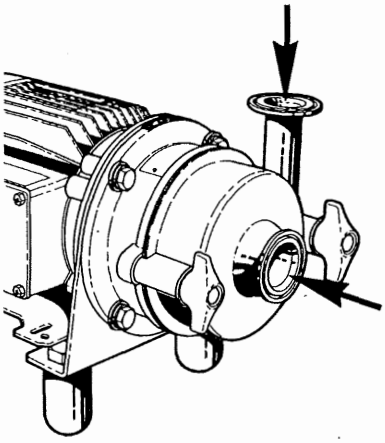
Clean the inlet and the outlet from possible packing materials.

3



Inspect the pump for visible transport damage.

4



Avoid damaging the inlet and the outlet.

Read the instructions carefully and pay special attention to the warnings!

Always check the pump before operation.
- See pre-use check on page 6.
***NOTICE:** Please notice that the drawings below only show the principle.*

2. Installation

1

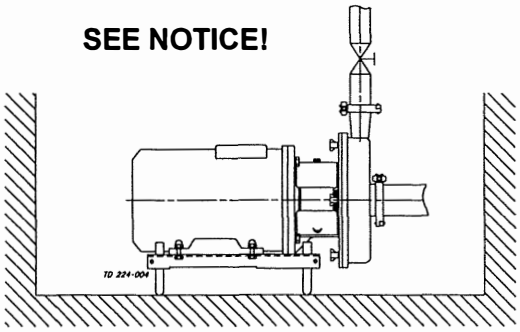
Always observe the technical data (see page 16).

The pump **must** be electrically connected by authorized personnel (see the motor instructions).

NOTE!
G&H cannot be held responsible for incorrect installation.

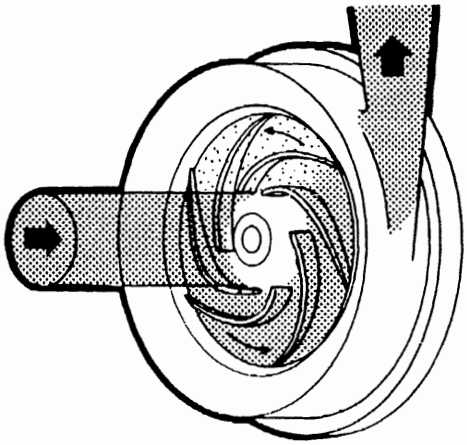
2

SEE NOTICE!



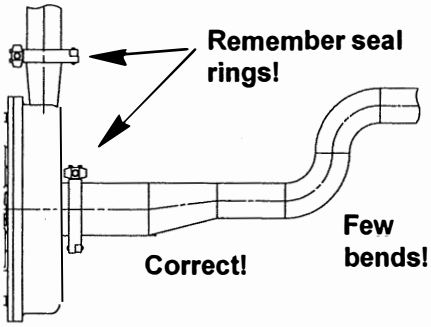
Ensure that there is sufficient clearance around the pump (min. 2 ft).

3



4

SEE NOTICE!



Ensure that the flow direction is correct.

1. Ensure that the pipelines are routed correctly.
2. Ensure that the connections are tight.

5

Risk of damage!

Avoid stressing the pump.
Pay special attention to:
- Vibrations.
- Thermal expansion of the tubes.
- Excessive welding.
- Overloading of the pipelines.

Read the instructions carefully and pay special attention to the warnings!
GHC-00:Impeller and collets of fiberglass reinforced plastic.
Optional:Impeller and yoke of stainless steel.

Check the direction of rotation of pump shaft/motor fan before operation.
- See the indication label on the pump.
***NOTICE:** Please notice that the drawings below only show the principle*

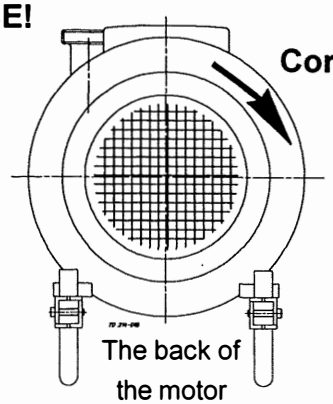
3. Pre-Use Check - GHC-00 with impeller of fiberglass reinforced plastic (std.)

See the indication label!

CAUTION!
Never check the direction of rotation with liquid in the pump.

1. Start and stop the motor momentarily.
2. Ensure that the direction of rotation of the motor fan is **clockwise** as viewed from the back of the motor.

SEE NOTICE!



3. Pre-Use Check - GHC-00 with impeller of AISI 316L (optional)

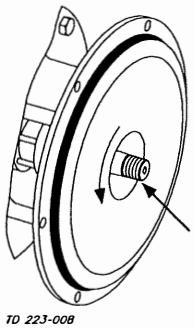
1

⚠
- **Always** remove the impeller before checking the direction of rotation.
- **Never** start the pump if the impeller is fitted and the pump casing removed.

2

Disassemble the pump in accordance with instructions 1, 2,3 and 5 on page 12.

3 **SEE NOTICE!**



See the indication label!

1. Start and stop the motor momentarily.
2. Ensure that the direction of rotation of pump shaft (26) is **counterclockwise** as viewed from the inlet side.

4

Assemble the pump in accordance with instruction 3,4,5,7 and 8 on page 15.

Read the instructions carefully and pay special attention to the warnings!

The pump is fitted with a warning label indicating correct throttling.
***NOTICE:** Please notice that the drawings below only show the principle.*

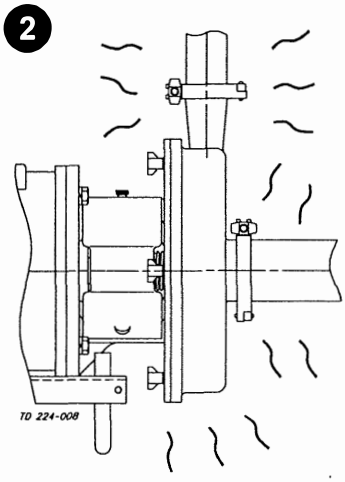
1. Operation/Control

1

⚠ **Always** observe the technical data (see page 16).

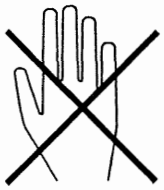
NOTE!
G&H cannot be held responsible for incorrect operation/control.

2



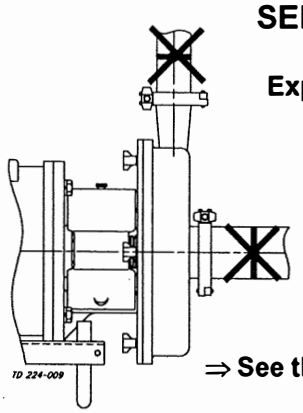
SEE NOTICE!

Burning danger!



⚠ **Never** touch the pump or the pipelines when pumping hot liquids or when sterilizing.

3



SEE NOTICE!

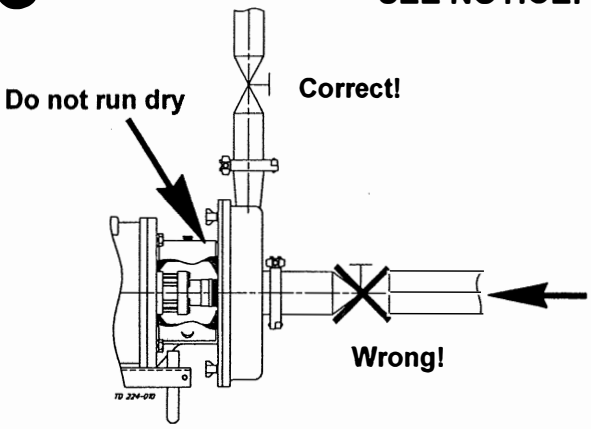
Explosion danger!

⇒ **See the warning label!**

⚠ **Never** run the pump with both the suction side and the pressure side blocked.

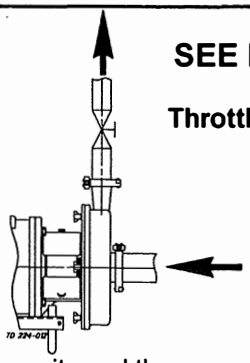
4

SEE NOTICE!



CAUTION!
- The shaft seal must not run dry.
- Never throttle the inlet side.

5



SEE NOTICE!

Throttling!

Control:
Reduce the capacity and the power consumption by means of:
- Throttling the pressure side of the pump.
- Reducing the impeller diameter.
- Speed control of the motor.

Pay attention to possible faults.

Read the instructions carefully.

2. Troubleshooting

NOTE!
Read the maintenance instructions carefully before replacing worn parts. - See Spare Part List!

Problem	Cause/Result	Repair
Overloaded motor	- Pumping of viscous liquids - Pumping of liquids with high density - Low outlet pressure (counter pressure)	- Reduce impeller diameter. - Increase counter pressure (throttling)
Cavitation: - Damage - Pressure reduction (or total loss of pressure) (sometimes to zero) - Elevate noise level	- Low inlet pressure - High liquid temperature	- Increase the inlet pressure - Reduce the liquid temperature - Reduce the pressure drop be-before the pump
Leaking shaft seal	- Dry run (See page 7) - Incorrect seal elastomer choice - Abrasive particles in the liquid	**Replace:** All wearing parts (See Spare Part List) - Select alternative elastomer - Select stationary and rotating seal ring in Silicon Carbide/ Silicon Carbide
Leaking seals	- Incorrect seal elastomer choice	Select an alternative elastomer

The pump is designed for cleaning in place (CIP).
CIP = Cleaning In Place.
Read the instructions carefully and pay special attention to the warnings!

3. Recommended Cleaning

1

Caustic danger!

Always use rubber gloves!

Always use protective goggles!

Always handle caustic and acid with great care.

3

Examples of cleaning agents:
Use clean water, free from chlorides.

1. 1% by weight NaOH at 158°F.

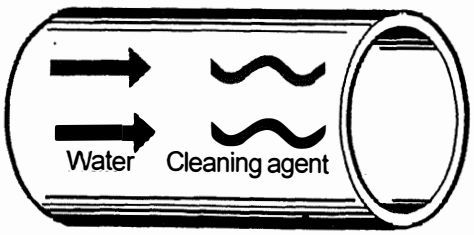
1 kg NaOH	+	100 l water	= Cleaning agent.
2.2 l 33%NaOH	+	100 l water	= Cleaning agent.

2. 0.5% by weight HNO_3 at 158°F.

0.7 l 53% HNO_3	+	100 l water	= Cleaning agent.

5

Always rinse!

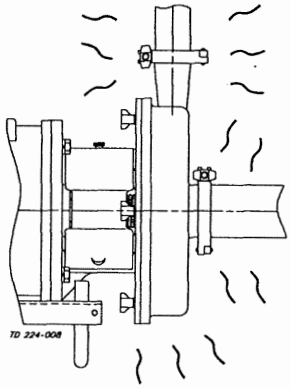


Always rinse well with clean water after the cleaning.

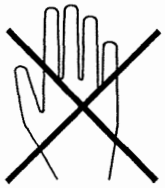
NaOH = Caustic Soda.
HNO_3 = Nitric acid.
***NOTICE**: Please notice that the drawing below only show the principle.*

2

SEE NOTICE!



Burning danger!



Never touch the pump or the pipelines when sterilizing.

4

1. Avoid excessive concentration of the cleaning agent

   ⇒ **Dose gradually!**

2. Adjust the cleaning flow to the process

   Milk sterilization/viscous liquids

   ⇒ **Increase the cleaning flow!**

6

NOTE!
The cleaning agents must be stored/discharged in accordance with current rules/directives.

Maintenance

Maintain the pump carefully.
Read the instructions carefully and pay special attention to the warnings!

Always keep spare shaft seals and rubber seals in stock.
See separate motor instructions.
***NOTICE**: Please notice that the drawings below only show the principle.*

1. General Maintenance

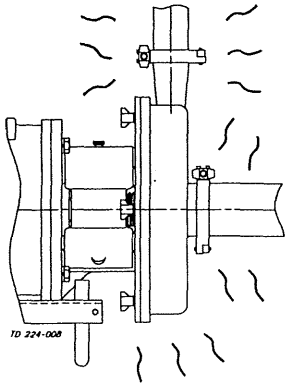
1

⚠ **Always** observe the technical data (see page 16).

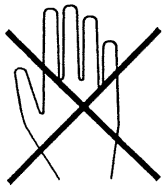
⚠ **Always** disconnect the power supply when the pump is serviced.

NOTE!
All scrap must be stored/discharged in accordance with current rules/directives.

2 **SEE NOTICE!**



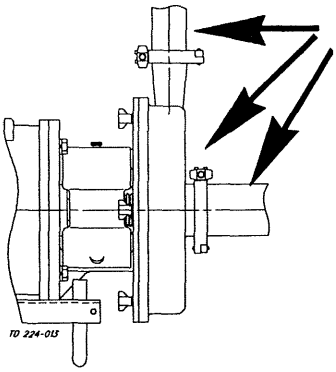
Burning danger!



⚠ The pump must **never** be hot when serviced.

3 **SEE NOTICE!**

Atmospheric pressure required!



⚠ The pump and the pipelines must **never** be pressurized when the pump is serviced.

4

CAUTION!
Fit the electrical connections correctly if they have been removed from the motor during service (see pre-use check on page 6).

Pay special attention to the warnings!

Ordering spare parts

- Contact the Sales Department.
- Order from the Spare Parts List.

Recommended spare parts: Service kits (see Spare Parts List).

Maintain the pump carefully.
Read the instructions carefully.

Always keep spare shaft seals and rubber seals in stock.
See separate motor instructions.
Check the pump for smooth operation after service.

1. General Maintenance

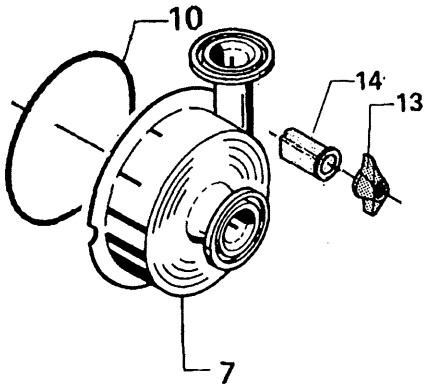
	Shaft seal	Rubber seals	Motor bearings
Preventive maintenance	**Replace after 12 months:** (one-shift) Complete shaft seal	Replace when replacing the shaft seal	
Maintenance after leakage (leakage normally starts slowly)	**Replace at the end of the day:** Complete shaft seal	Replace when replacing the shaft seal	
Planned maintenance	- Regular inspection for leakage and smooth operation - Keep a record of the pump - Use the statistics for planning of inspections **Replace after leakage:** Complete shaft seal	Replace when replacing the shaft seal	Yearly inspection is recommended - Replace complete bearing if worn
Lubrication	**Before fitting** Lubricate the O-rings with silicone grease or silicone oil (not the sealing surfaces)	**Before fitting** Silicone grease or silicone oil	**None** The bearings are per-permanently lubricated

Read the instructions carefully.
The items refer to the drawings and the parts list on pages 17-19.

Handle scrap correctly.

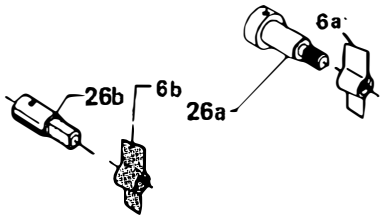
2. Disassembly of Pump/Removing the Shaft Seal (1-5✱)

1 ✱



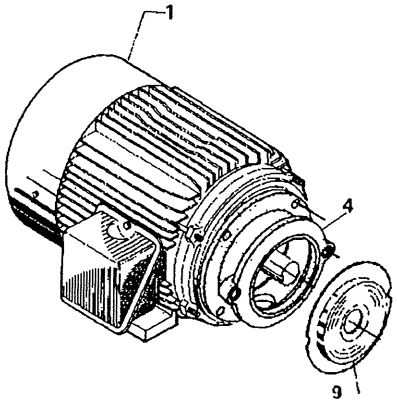
1. Remove handles (13).
2. Remove collets 14.
3. Remove pump casing (7) and O-ring (10), (use a plastic hammer, if necessary).

2 ✱



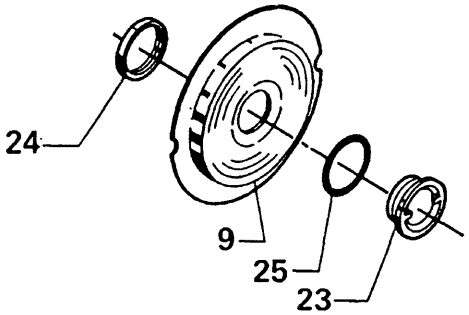
GHC-00 std.:
Remove impeller (6b) by pulling it off pump-shaft (26b).
GHC-00 with impeller of AISI 316L (optional).:
Turn impeller (6a) counterclockwise and remove it from the pump shaft (26a).
Use a plastic hammer if necessary.

3 ✱



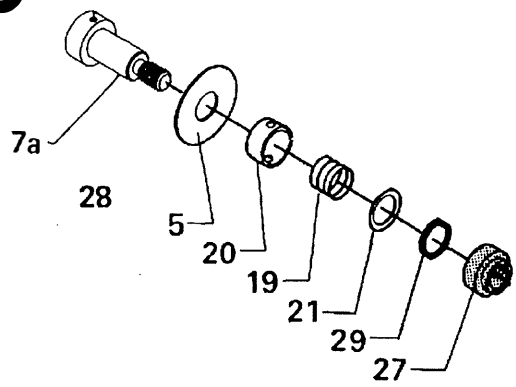
1. Remove back plate (9).
2. The shaft seal is now accessible.

4 ✱



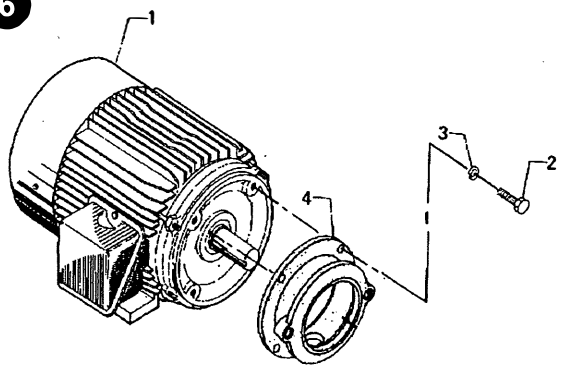
1. Turn nut (24) **clockwise** and remove it from stationary seal ring (23).
2. Remove stationary seal ring (23) and seal (25) from back plate (9).

5 ✱



Remove the rest of the shaft seal from pump shaft

6



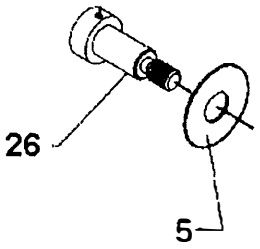
1. Remove screws (2) and washers (3).

Read the instructions carefully.
The items refer to the drawings and the parts list on pages 17-19.

Handle scrap correctly.

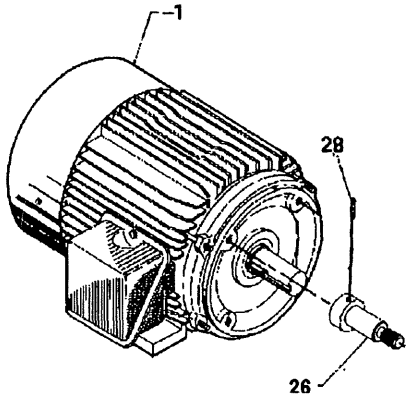
2. Disassembly of Pump/Removing the Shaft Seal (1-5✱)

7



2. Remove adaptor (4) from the motor.

8



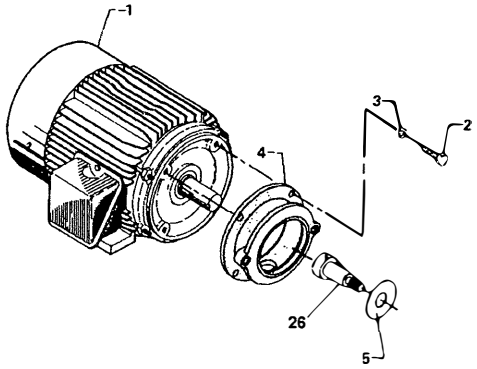
Remove thrower (5) from pump shaft (26).
1. Loosen set screw (28).
2. Pull off pump shaft (26).

Read the instructions carefully.
The items refer to the drawings and the parts list on pages 17-19.

Lubricate the rubber seals before fitting them.

3. Assembly of Pump/Fitting the Shaft Seal (3-8✱)

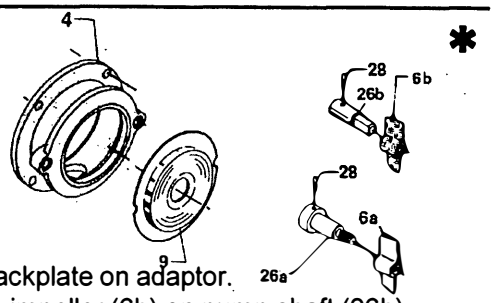
1



1. Fit pump shaft (26) on the motor shaft.
2. Fit thrower (5) on pump shaft (26).
3. Fit adaptor (4) washers (3) and screws (2).

NOTE!
Ensure that the adaptor drain hole is turned downwards.

2 ✱



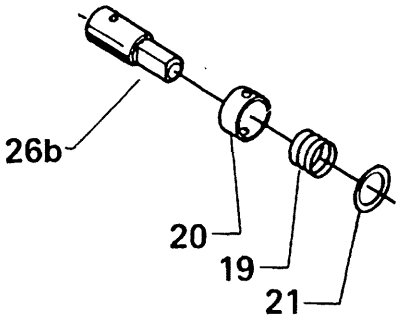
1. Fit backplate on adaptor.

2a. Push impeller (6b) on pump shaft (26b). GHC-00 with impeller af AISI 316L (optional)

2b. Fit impeller (6a) on pump shaft (26a), turn it clockwise and tighten. Check the clearance between backplate (9) and the impeller (0.031-0.039) inch.

3. Tighten the set screws (28).
4. Remove the backplate, and impeller for assembly of seal.

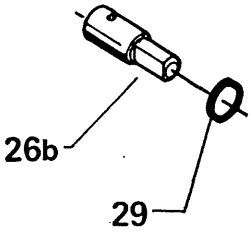
3 ✱



1. Lubricate the external surface of the pump shaft.

Fit spring (19), spacer (20) and washer (21) on pump shaft (26).

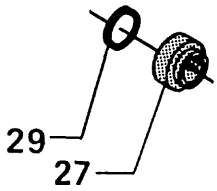
4



Fit O-ring (29) on pump shaft (26).

NOTE!
Ensure correct position of the joint when Teflon O-rings are used.

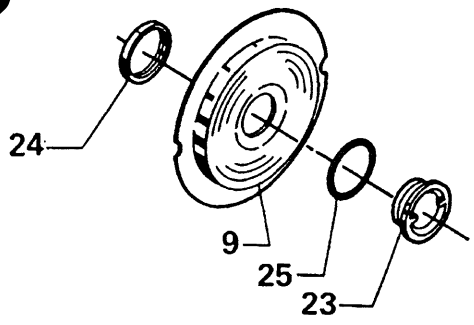
5 ✱



Push seal ring (27) as far as possible over O-ring (29).

NOTE!
Push and pull until the O-ring is correctly positioned.

6 ✱



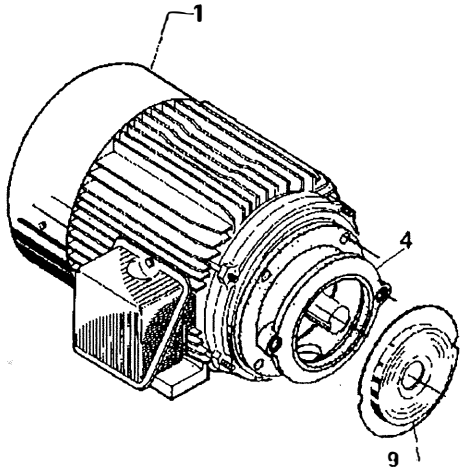
1. Fit seal (25) and stationary seal ring (23) in back plate (9).
2. Fit nut (24), turn it **counterclockwise** and tighten.

Read the instructions carefully.
The items refer to the drawings and the parts list on pages 17-19.

Lubricate the rubber seals before fitting them.

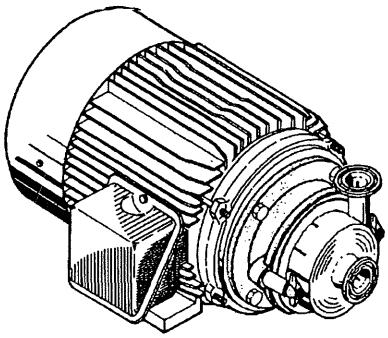
3. Assembly of Pump/Fitting the Shaft Seal (3-8✱)

7 ✱



Fit the back plate on adaptor (4).

8 ✱



1. Fit impeller (6) on pump shaft (26), check the clearance between backplate (9) and the impeller (0.031"-0.039")
2. Fit O-ring (10) and pump casing (7) on back plate (9).
3. Fit collets (14).
4. Fit and tighten handles (13).

It is important to observe the technical data during installation, operation and maintenance.

Inform the personnel about the technical data.

1. Technical Data

Data

Max. inlet pressure	58 PSI
Temperature range,	+14° F to + 176°F
	+14°F to + 284°F (EPDM)
Impeller diameter,	3.74 inch.
Noise level	max. 70 dB(A)

Materials

Product wetted steel parts	AISI 316L
Other steel parts	AISI 304
Impeller,	Fiberglass reinforced Nylon (standard) or AISI 316L
Adaptor,	Plastic (POM) (standard) or
	Cast iron, zinc sprayed and coated with two-component lacquer
Collets,	Fiberglass reinforced Noryl
Product wetted seals	Nitrile (standard)
Alternative seals	EPDM, Fluorinated Rubber (FPM) and Teflon (PTFE)
Finish	150 Grit Polished

Shaft seal

Seal types	Single seal mechanical
Material, stationary seal ring	AISI 329 with sealing surface of Silicon Carbide
Material, rotating seal ring	Carbon (standard) or Silicon Carbide
Material, O-rings	Nitrile (standard)
Alternative material, O-rings	EPDM, Fluorinated Rubber (FPM) and Teflon (PTFE)

Motor

Standard C-faced foot mounted motor according to NEMA standard, 3600/1800 RPM 60Hz, 3 phase.

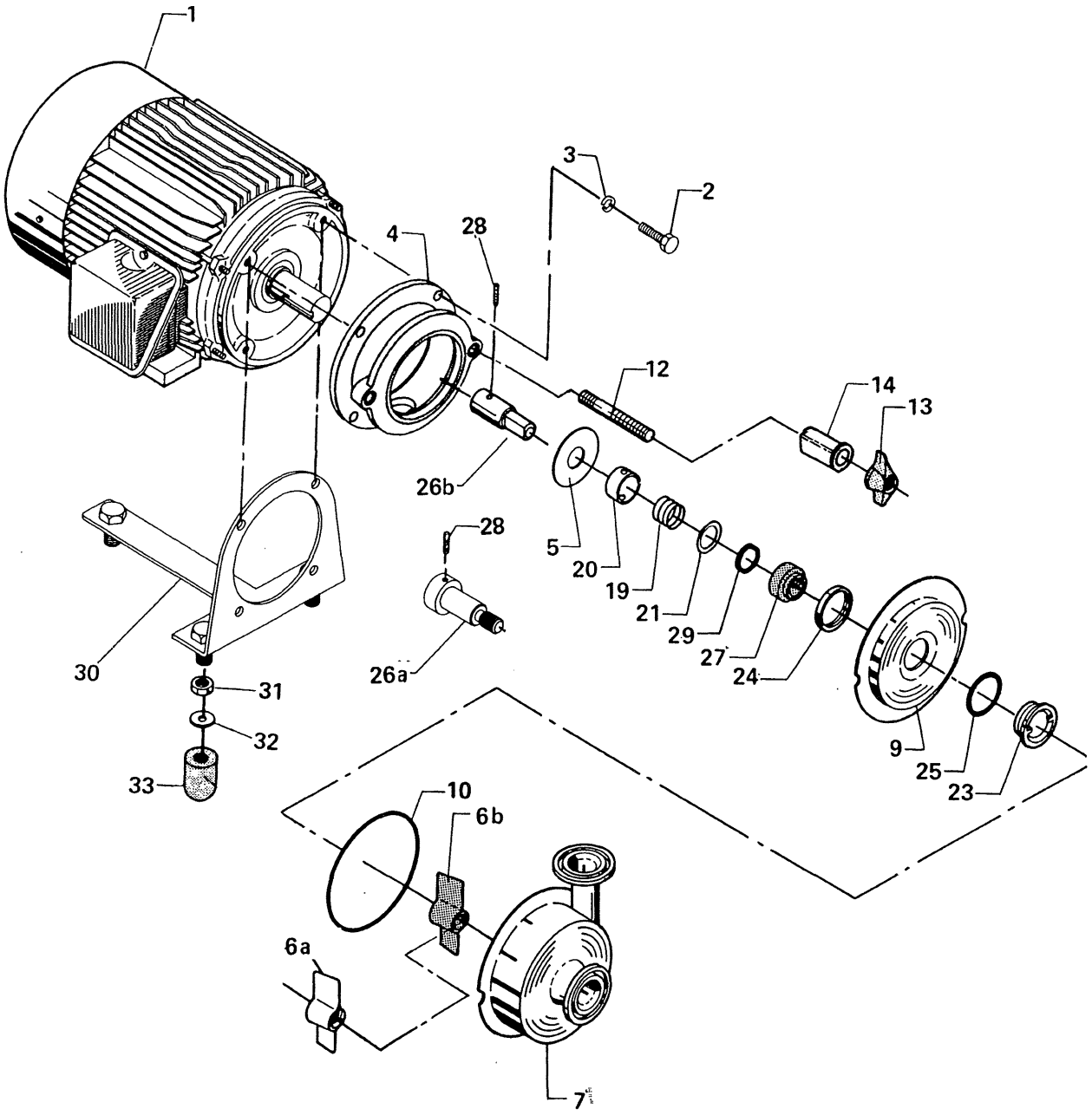
Voltage and frequency	60Hz, 230-460V Std.
Motor sizes (HP), 60Hz	1/2, 3/4, 1.

* Other voltage and frequencies available upon request.

This page shows an exploded drawing of GHC-00.
GHC-00: Impeller and collets of fiberglass reinforced plastic.
Optional: Impeller and yoke of stainless steel.

The drawing includes all items of the pump.
They are identical with the items in the Spare Parts List.

GHC-00



Drawing/Parts List

The drawing and the parts list include all items of the pump.

The items are identical with the items in the Spare Parts List.
When ordering spare parts, please use the Spare Parts List!

Parts List

Pos.	Qty.	Description
1	1	Motor
2	4	Screw
3	4	Washer
4	1	Adaptor
5	1	Thrower
7	1	Pump casing
9	1	Black plate
6a	1	2 bladed impeller, stainless steel
6b	1	2 bladed impeller, glasfibre reinforced plastic
10 Δ	1	O-ring
12	2	Stud bolt
13	2	Handles
14	2	Collet
19 Δ	1	Spring
20 Δ	1	Spacer
21 Δ	1	Washer
23 Δ	1	Stationary seal ring
24	1	Nut
25 Δ	1	Seal
26a	1	Pump shaft
26b	1	Pump shaft
27 Δ	1	Rotating seal ring
28	1	Set screw
29 Δ	1	O-ring
30	1	Frame
31	3	Nut
32	3	Washer
33	3	Legs

Δ : Service kit - EPDM, NBR, FPM, PTFE
(See Spare Parts list)

The drawing shows GHC-00.

The items refer to the parts list on page 18.