

EASTERN Centrichem[®]

Installation Operation Maintenance Instruction

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A Unit of IDEX Corporation

Manufacturers of Quality Pumps,
Controls and Systems.

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PUMP MODEL # _____

INTRODUCTION

Eastern Centrichem single and multi-stage pumps are continuous duty industrial grade pumps capable of handling a wide range of service applications. These pumps are primarily employed where viscosities range up to 100 centipoise with a maximum operating temperature of 250°F.

Each pump is close coupled to provide greater strength and compact design. This eliminates the need for special base plate mountings, couplings or complicated drives. It also makes them easily adaptable where space and portability are factors.

The single stage pumps have no internal, wetted bearings. This along with open clearances enable long troublefree life while handling corrosive liquids containing low percentages of abrasive solids. Remember when pumping fluids with abrasives, seal life will be reduced. Multiple stage pumps use internal, carbon graphite, wetted bearings. **Important, the pumped fluid must contain no abrasives or solids.**

The materials of construction for Eastern Centrichem pumps include:

- 316 Stainless Steel
- 316 Stainless Steel(Picked & Passivated)
- Alloy C

Consult Eastern's Liquid List for correct selection of metallurgy and shaft seal combinations.

Eastern has selected Type 21 and Type 9 seals to cover the widest range of fluid services. Both seals are dimensionally interchangeable and operate in the same manner, utilizing spring tension to keep their stationary and rotating seal faces in contact. Primary sealing is accomplished by interaction of the lapped stationary and rotating faces. Secondary sealing is performed at the shaft by means of a tightfitting bellows in the Type 21 design or a unique teflon wedge in the Type 9 seal arrangement. The final sealing point occurs at the static member by means of either an elastomeric O-ring or a Teflon seal ring.

These seals are designed to handle most liquids over an extremely wide operating range of temperatures from -10°F to +250°F and pressures from 25 inches of mercury vacuum to +150 psig. Both the materials and design of the pump must be considered when operating at extreme temperatures and pressures. Pumping fluids with a low specific gravity can affect successful seal operation. Therefore, any liquid whose specific gravity is less than .63 should be considered as exceptional and your Eastern Distributor should be consulted.

Eastern offers a variety of seal arrangements providing the best selection of mating face and seal materials to handle a wide range of corrosive liquids. Seals can be supplied with optional configurations. The fundamental objective is the maintenance of a clean liquid film between the sealing faces. This greatly affects the seal life expectancy.

Optional configurations available on some models include double seals, product recirculation and flushing. Double seals provide for the use of a barrier fluid to isolate the product being pumped from the atmosphere. This is necessary when pumping some fluids that are hazardous to health or crystallize when contacting the atmosphere, forming abrasives. The product recirculation feature is accomplished by providing for a by-pass connection from the pump discharge to a tapped opening in the seal housing. The recirculated product helps to prevent the formation of vapor around the seal faces when handling highly volatile liquids. Also, it tends to prevent accumulation of any solids which might normally collect in the dead ended area of the seal housing at the critical seal mating faces. The flushing option includes an inlet and outlet connection in the seal housing. This feature is useful for flushing fluids out of the seal area that might solidify or crystallize during periods of shutdown.

To assure successful seal selection and operation, careful consideration must be given to service and operating conditions of each specific application.

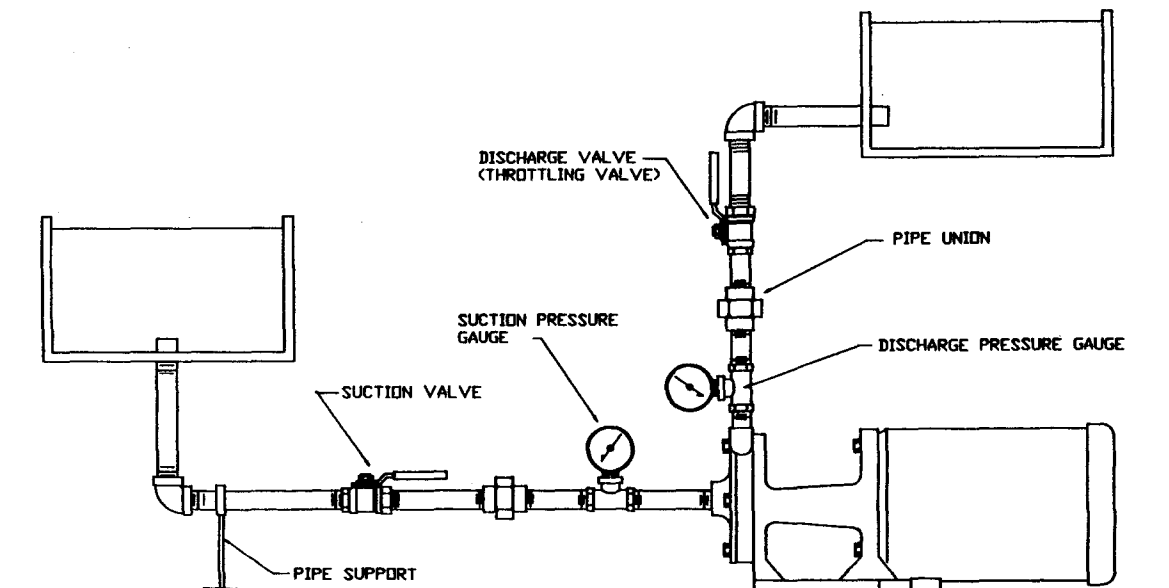
EQUIPMENT INSPECTION

1. Check all equipment for completeness against the order and for any evidence of shipping damage. **Shortages or damage should be reported immediately to the carrier and to your Eastern distributor.**
2. If the pump is not going to be installed immediately, the following steps should be taken.
 - * Leave pump in original shipping carton.
 - * Store indoors in a dry ambient atmosphere. Avoid temperature variations.
 - * Leave all shipping plugs in place.
 - * Contact the motor manufacturer for specific motor storage information.
3. Occasionally during shipment, possible misalignment or other damage such as cracked mechanical seal faces can occur. For this reason it is recommended that each unit be tested with water in some convenient area prior to piping into the actual process system.

4. These instructions should be read carefully by the personnel responsible for installation, operation and maintenance of the equipment and kept in a convenient place for ready reference. It is recommended that a copy of the Eastern order be kept with this manual as well as a written record of the pump model number which is on the name tag attached to the pump motor adaptor. A space has been provided inside the front cover of the manual to record this number.

INSTALLATION (SEE FIGURE 1)

1. Pump installation site should provide easy access for routine maintenance and where possible to protect the pump from the elements and from leaks or drips from nearby process equipment.
2. Bolt pump down firmly to mounting surface. Provide for air movement over electric motor.
3. Looking at the pump from the drive end, proper rotation is as follows:
 - D & J Series CCW
 - C & H Series CWAn arrow is provided on the front cover.



TYPICAL PUMP INSTALLATION
FIG. 1

4. To check system operation, installation of vacuum/pressure gauges in the suction and discharge lines is recommended.
5. Keep suction lines short and straight to minimize friction loss to the pump. Make sure that the pump will not starve or run dry. Flooded suction or gravity feed of fluid to pump inlet is generally preferred and eliminates manual priming.
6. Use only full-bore ball valves or gate valves in the suction piping. If suction strainers are used, size them to minimize pressure drop and select those of a type that are easily cleaned.
7. Arrange all suction piping and fittings to prevent formation of air pockets. Make sure all joints are air tight.
8. Flush and blow out all suction lines prior to mating up to pump. Use nipples and unions, for ease of maintenance.
9. Do not spring piping, either suction or discharge when mating up to the pump. Use supports or hangers at intervals as required. When necessary, provide for thermal expansion and contraction so no strain is placed upon the pump.
10. Check all bolts and nuts for tightness. Correct any conditions which could cause destructive vibration or leakage.
11. Where required, provide proper system for seal flush and/or drain.
12. If start-up screens are used, be sure they do not clog and starve suction. Start up screens should be removed prior to placing system into regular operation.
13. If flexible suction lines are used, be sure their selection and installation will prevent wall collapse and thus a starved suction condition.
14. When taking suction from a tank or vessel, avoid entry of sludge, solids, etc. into suction line by placing suction line inlet above maximum expected level of solids.
15. When a by-pass system is used to control flow from the pump, the by-passed fluid should be piped back to the suction vessel to prevent heat build-up due to recirculation. If it is absolutely necessary to pipe by-pass back to the pump suction line, the point of entry should be at least 10 pipe diameters away from the suction inlet. Provision for cooling should be made in the event of excessive heat buildup through fluid recirculation.
16. Where pumped fluids may solidify, crystallize, precipitate etc., provision should be made to thoroughly flush pump and piping prior to periods of shutdown. Pay particular attention to proper flushing of seal area.

MECHANICAL SEALS

Two basic seal configurations are offered, single and double seals. All mechanical seals require cooling and lubrication. For long and trouble free seal life:

1. Do not run pump dry. Make sure pump is primed, suction is not starved and sufficient NPSH is available. If a seal flush system is used, make sure that it is operating while the pump is running. Double seals require a seal flush.
2. Keep abrasives out of the seal area. Dirty flush streams, whether piped from the pump discharge or from a separate source, will destroy the rotating and stationary seal mating surfaces.
3. Determine that seal materials of construction are compatible with the pumped fluid. Be sure to check with equipment supplier if changing application.

OPERATION

1. Prior to operation, recheck the suction system to be sure NPSH available to the pump is adequate. Make sure all suction piping is air tight and clean. Turn pump over by hand. If any mechanical binding or other trouble is detected, determine cause and correct. Check that electrical service to motor agrees with name plate ratings. Jog to check rotation and reconnect motor if necessary. Use proper care near exposed rotating parts.
2. Centrichem pumps are designed to handle clear fluids at viscosities no greater than 100 cps.
 - * No centrifugal pump should be run dry. Damage to seal mating surfaces will result.
 - * In the case of single stage pumps equipped with a double mechanical seal, the pump itself may be run "dry" as long as the flush stream to the seal area is maintained in order to keep the seal surfaces wet.
 - * Multiple stage pumps have internal bearings and should never be run dry or pump fluids containing abrasives, as bearing damage will occur.
3. All centrifugal pumps must be primed before operation and any air must be vented from the casing. If foot valves are used, the valve should be of the flapper type and sized to minimize friction loss. Threaded and plugged vents can be provided as an option on some pump models.
4. Check mechanical seal flush arrangements where used. Flush streams, whether from pump discharge or a separate source must be clean. Where a double seal is used, flush stream to seal area must operate at 10 to 15 psi above pump discharge pressure.
5. Centrifugal pumps are able to operate against a closed discharge valve without overloading the drive. However, heat builds up very quickly. Do not operate against a closed discharge valve for more than one minute. Where requirements dictate operating close to shut off, check for excessive temperature rise in pump chamber and seal area. A by-pass system is recommended rather than a heavily throttled pump.
6. Start pump with discharge valve slightly open and check for proper operation. Check flush streams for proper operating pressure and flow. If pump seal area feels hot, shut down and determine cause. Excessive noise or vibration is an indication of harmful cavitation which is due to insufficient NPSH.

MAINTENANCE

The timing for maintenance of the pump is established primarily on past performance. Each installation is different. Therefore detailed maintenance records of past performance can be invaluable for determining future preventative maintenance intervals. During routine pump inspections pay particular attention to the mechanical seal and bearing areas because those areas will determine future maintenance intervals. For motor maintenance instructions consult the motor manufacturer.

CAUTION

Before performing any maintenance requiring pump disassembly, be sure to flush pump thoroughly with a neutralizing fluid. Wear protective clothing and handle equipment with proper care.

1. When changing a pump from one service to another, be sure to check that all wetted parts of the pump (including seals) are compatible with the fluid to be handled and that the motor is sufficiently sized for the application. If in doubt contact your Eastern distributor.

2. All Eastern Centrichem pumps have the pump shaft coupled to the drive shaft by means of a telescopic fit. The pump shaft is bored to receive the drive shaft, and when adjusted, is secured to the drive shaft with two or three dog point setscrews depending on model. The setscrews bear down in the drive shaft keyway and hold the pump shaft in position. The mounting face of any drive motors used must conform to NEMA standards for 56C or 145TC electric motors depending on model.

3. Mechanical Seal Design

Standard Type 21 single mechanical seals used in Eastern Centrichem pumps use a stationary seal seat mounted in the rear housing and a rotating seal head fixed to the shaft by friction. The optional Type 9 seal head is fixed to the shaft by either setscrews or pins.

A double seal configuration is available as an option with the C, H and J Series pumps. Seal seats are stationary and the double seal head rotates with the shaft.

The standard material of construction for metallic parts of the seal head is the same as the construction of the pump.

4. Mechanical Seal Maintenance

For proper seal functioning, the following conditions must be met:

- a. The seal faces must be smooth, free of cracks, chips, or ridges and free of score marks particularly those which emanate radially. Seal faces showing only light scratches or marks may be relapped. Eastern lapping standards are smooth and flat to 3 helium light bands. Avoid touching sealing faces.

- b. The seal faces must be

perpendicular to the shaft axis and run true. A bent shaft can prevent proper sealing.

- c. Secondary sealing elements such as O-rings, elastomer bellows and teflon wedges must be installed so as not to pinch, cut or damage them. The use of a "bullet" to introduce the seal head onto the shaft helps prevent damage. Also the use of a lubricant that is compatible with the fluid being pumped is helpful.

- d. The shaft must be free of nicks and scratches in the sealing area, particularly spiral scratches. When reinstalling a Type 9 seal head with setscrews, make sure the setscrews are backed out so as not to damage the shaft when sliding the seal on. The Type 21 seal head has an elastomer bellows and will not damage the shaft.

- e. Shaft must not have excessive run out or endplay. Maximum allowable run out at any point along the shaft is .002 inch. Pump maximum allowable endplay is .005 inch.

- f. Install the seal with the correct compressive contact. Dimensions and directions are given for each model in the Reassembly Section.

- g. A seal flush must be used for all double seal installations. The flush must be clean and introduced at a pressure about 10 to 15 psi higher than discharge pump pressure. For best results the flush inlet should be connected to the lowest of the two flush connections.

5. The significant model number stamped on the pump name plate, identifies the pump type, the seal arrangement, and other details. Refer to the significant model number chart in this manual if you are unsure of exactly what type of pump or seal you have.

Always refer to the full model number in any correspondence with your Eastern distributor. Drawings and a composite parts list for each Eastern Centrichem pump are included in this manual. Recommended spare parts are denoted on the composite parts list.

MODEL D SERIES

Reference Drawings: PLE-002
PLE-005

DISASSEMBLY

1. Close discharge and suction valves.
2. Disconnect power source to motor.
3. Flush and drain pump then remove pump from the piping.
4. Remove front cover bolts (Item 12) and front cover (Item 2).
5. Loosen setscrew (Item 13) in impeller (Item 3) and slide the impeller off the pump shaft (Item 4).
6. Remove seal head (Item 5). This is accomplished by pulling the rear pump housing (Item 1) from the motor adaptor (Item 10) which in turn will pull the seal head off the pump shaft. Type 9 seals require that two rotary seal pins (Item 9) be removed from the shaft before the seal head is pulled off. Usually compressing the Type 9 seal about 1/16 inch will cause the pins to fall free of the shaft.
7. Visually inspect seal seat (Item 6) in rear housing. Remove only if replacing as this part may break during removal.
8. Do not remove pump shaft unless its condition requires replacement. This will aid in reassembly later. The pump shaft is removed by loosening the two pump shaft setscrews (Item 14).
9. Thoroughly clean all parts before reassembly.

REASSEMBLY

1. Install seal seat (Item 6) in the rear pump housing (Item 1) if it was previously removed. The use of a lubricant compatible with the fluid being pumped is recommended for seal seat and seal head installation to ease assembly. Install the seal seat with the smooth, lapped side towards the impeller by gently pressing it into place. **Be careful not to scratch the lapped surface.** With Type 9 seal seats take care to line up the grooves on the back of the seal seat with the rotary seal pin (Item 8) protruding into the seal cavity.
2. If the pump shaft (Item 4) was previously removed proceed as follows. Slide the pump shaft onto the motor shaft with the shaft setscrews (Item 14) aligned with the motor keyway. Place the rear pump housing (Item 1) onto the motor adaptor (Item 10). Holding the rear housing tightly against the motor adaptor, slide the pump shaft in or out until a .187 inch gap exists between the back of the pump housing and the front of the shoulder on the pump shaft. (See Pump Assembly Drawing PLE-002). A piece of 3/16 inch keystone makes a handy spacer to set this gap. Tighten the pump shaft setscrews down into the bottom of the motor keyway.
3. With the rear housing installed on the motor adaptor, carefully slide the seal head (Item 5) onto the pump shaft with the carbon side towards the seal seat. The use of a "bullet" and lubricant will aid in installing the seal head over the flat at the end of the shaft. Type 9 seal heads require the use of two rotary seal pins (Item 9) installed through a hole provided in the shaft. These pins engage two recesses on the end of the seal head.
4. Slide the impeller (Item 3) onto the pump shaft. Holding the rear housing tight against the motor adaptor, space the impeller such that a .035 inch gap exists between the back of the impeller

and the inside of the pump housing. Tighten the impeller setscrew (Item 13) down onto the flat at the end of the shaft. A wire gauge commonly used to set spark plug gaps is useful in spacing the impeller. Spacing the impeller automatically provides the correct seal compression for the Type 21 seal.

5. Install front cover (Item 2). The use of a new gasket (Item 7) is recommended. Tighten cover bolts to 24 inch lbs.
6. Reinstall pump and reconnect wiring to motor. Check for proper rotation. Prime pump and start. Give pump time to purge all air then check performance. If problems are encountered see the Troubleshooting Section.

MODEL J SERIES

Reference Drawings: PLE-001
PLE-006
PLE-007

DISASSEMBLY

1. Close discharge and suction valves.
2. Disconnect power source to motor.
3. Flush and drain pump then remove pump from the piping.
4. Remove front cover bolts (Item 25), front cover (Item 1) and gasket (Item 14 or 15).
5. Loosen setscrews (Item 30) in impeller (Item 7) and slide the impeller off the pump shaft (Item 8). If the pump is multiple stage remove in order the following extra multi-stage parts until the seal cavity is reached. The parts are active housing (Item 2), gasket (Item 15), dead housing (Item 3), gasket (Item 14 or 15) and impeller. This removal sequence must be repeated again for a three stage pump. Housings for the multi-stage pumps are held in alignment by the use of various length alignment pins (Items 19, 20 and 21).
6. Remove seal head (Item 10). This is accomplished by pulling the rear pump housing (Item 4) from the motor adaptor (Item 22) which in turn will pull the seal head off the pump shaft. Type 9 seals require that two rotary seal pins (Item 17) be removed from the shaft before the seal head is pulled off. Usually compressing the Type 9 seal about 1/16 inch will cause the pins to fall free of the shaft. Type 21 double seals are more easily removed if the seal stop bolts (Item 28) in the back of the pump are removed. Then the pump housing (Item 5) can be easily pulled free. This leaves the double seal exposed for easy removal from the pump shaft. The double seal gland (Item 12) and seal stop (Item 6) can then also be removed.
7. Visually inspect seal seat or seats (Item 11). Remove only if replacing as this part may break during removal.
8. Inspect the pump shaft for damage or wear. Do not remove the shaft unless its condition requires replacement. This will aid in reassembly later. The pump shaft is removed by loosening the two pump shaft setscrews (Item 31).
9. If the pump is multiple stage inspect the bearing assembly (Item 9) for scoring, cracking or excessive wear. If any of these conditions exist the bearing assembly should be replaced. The maximum bearing inside diameter that should be used again is .381 inch. The bearing assembly is press fitted into the active housing, so it therefore must be pressed out for removal.
10. Thoroughly clean all parts before reassembly.

REASSEMBLY

1. Slide the pump shaft (Item 8) onto the motor shaft with the pump shaft

setscrews (Item 31) aligned with the motor keyway.

2. Install the seal seat (Item 11) in the seal stop (Item 6) if it was previously removed. Also install the seal seat in the optional double seal rear housing (Item 5), inner seal stop if it was previously removed. The use of a lubricant compatible with the fluid being pumped is recommended for seal seat and seal head installation to ease assembly. Install seal seat with the smooth, lapped side towards the seal head by gently pressing it into place. **Be careful not to scratch the lapped surface.** With Type 9 seal seats take care to line up the grooves on the back of the seal seat with the rotary seal pin (Item 18) protruding into the seal cavity.
3. **Single Seal.** Assemble the seal stop and seal stop gasket (Item 16) to the rear housing (Item 4). Place the rear pump housing onto the motor adaptor (Item 22). Holding the rear housing tightly against the motor adaptor, slide the pump shaft in or out until a 1.000 inch gap exists between the back of the seal stop and the front of the shoulder on the pump shaft. (See Pump Assembly Drawing PLE-001). Tighten the pump shaft setscrews down into the bottom of the motor keyway. Check shaft for runout. For best bearing and seal life, runout at any point should not exceed .002 inch. Straighten shaft as necessary.

Double Seal. Slide the seal stop, seal stop gasket, double seal gland (Item 12) and seal stop gasket onto the pump shaft. Install the double seal head (Item 10) onto the pump shaft. The use of a "bullet" and lubricant will aid in installing the seal head over the flats in the pump shaft. A double seal head is made from two single Type 21 seal heads. The extra spring and two spring guides are discarded. Place the rear housing (Item 5) onto the motor adapter (Item 22) and assemble the seal stop and

gland to the rear housing using the seal stop bolts (Item 28). Holding the rear housing tightly against the motor adaptor, slide the pump shaft in or out until a .187 inch gap exists between the back of the seal stop and the front of the shoulder on the pump shaft. (See Pump Assembly Drawing PLE-001). A piece of 3/16 inch keystock makes a handy spacer to set this gap. Tighten the pump shaft setscrews down into the bottom of the motor keyway. Check exposed shaft for runout. Runout at any point should not exceed .002 inch. Straighten shaft as necessary. Proceed to Step #5.

4. With the rear housing installed on the motor adaptor, carefully slide the seal head (Item 10) onto the pump shaft with the carbon side towards the seal seat. The use of a "bullet" and lubricant will aid in installing the seal head over the flats in the shaft. Type 9 seal gears require the use of two rotary seal pins (Item 17) installed through a hole provided in the shaft. These pins engage two recesses on the end of the seal head.
5. Slide the impeller (Item 7) onto the pump shaft. Holding the rear housing tight against the motor adaptor, space the impeller such that a .035 inch gap exists between the back of the impeller and the inside of the pump housing. Tighten the impeller setscrews (Item 30) down onto the shaft flats. A wire gauge commonly used to set spark plug gaps is useful in spacing the impeller. Spacing the impeller automatically provides the correct compression for the Type 21 seal head.
6. If the pump is multiple stage and the bearing assembly or assemblies (Item 9) were previously removed, reassemble by pressing the new bearing assembly into the active housing (Item 2) from the closed side. The press fit must be tight enough so that the bearing assembly cannot be rotated by hand. If it can the active housing must be replaced.

7. The following additional parts must be installed for multi-stage pumps. The use of new gaskets is highly recommended. Install rear housing gasket (Item 14), two size "A" alignment pins (Item 19) and a dead housing (Item 3). Then install a housing gasket (Item 15), two size "B" alignment pins (Item 20) and an active housing (Item 2). The active housing is the one with the bearing in it. Next install an impeller spaced at approximately .020 inch between the back of the impeller and the inside of the active housing. This is to account for gasket compression when all parts are bolted together. If the pump is a three stage proceed as follows. Install a housing gasket, two size "C" alignment pins (Item 21) and a dead housing. Then install a housing gasket, two size "C" alignment pins and an active housing. Next install an impeller spaced at approximately .010-.020 inch between the back of the impeller and the inside of the active housing.
8. If pump is a single stage pump install rear housing gasket (Item 14), front cover (Item 1) and cover bolts (Item 25). Tighten bolts to 6 ft lbs. If pump is multi-staged substitute a housing gasket for the rear housing gasket.
9. Check to see that pump turns freely. Reinstall pump and reconnect wiring to motor. Check for proper rotation, prime and start pump. Give the pump time to purge all air then check performance. if problems are encountered see the **Troubleshooting Section**.

MODEL C SERIES

Reference Drawings: PLE-004
PLE-008

DISASSEMBLY

1. Close discharge and suction valves.

2. Disconnect power source to motor.
3. Flush and drain pump then remove pump from the piping.
4. Remove front cover bolts (Item 16) and front cover (Item 1).
5. Remove impeller bolt and washer (Items 22, 23).
6. Unscrew and remove impeller (Item 4). Placing an Allen wrench through a slot in the motor adaptor (Item 13) and into one of the pump shaft setscrews (Item 24) will prevent the pump shaft (Item 5) from turning.
7. Remove seal head (Item 6).

Single seal. The easiest way to remove the seal head is by removing the rear housing bolts (Item 18) and pulling on the rear housing (Item 2) which in turn will pull the seal head off the shaft. With Type 9 seals you must first loosen the seal head setscrews before removing the seal head. If it is desired not to remove the rear housing, the seal head can be pryed off using two screwdrivers. But this usually ruins the seal head and may nick the shaft.

Double Seal. Remove the rear housing nuts (Item 21), then remove the rear housing assembly (Item 3). The seal head is now exposed. Loosen the seal head setscrews and slide the seal head off the shaft. Remove the seal gland (Item 8).

8. Visually inspect the seal seat (Item 7) or seats in the case of a double seal. Remove only if replacing as this part may break during removal.
9. Inspect the pump shaft for damage or wear. Do not remove pump shaft unless its condition requires replacement. This will aid in reassembly later. The pump shaft is removed by loosening the two pump shaft setscrews.

10. Clean all parts before reassembly.

REASSEMBLY

1. Slide the pump shaft (Item 5) onto the motor shaft with the pump shaft setscrews (Item 24) aligned with the motor keyway.
2. Install the seal seat (Item 7) in the rear housing (Item 2) if it was previously removed. If the pump is of double seal design install the seal seats into the seal gland (Item 8) and rear housing assembly (Item 3) if they were previously removed. The use of a lubricant compatible with the fluid being pumped is recommended for seal seat and seal head installation to ease assembly. Install seal seats with the smooth, lapped side towards the seal head by gently pressing into place. **Be careful not to scratch the lapped surface.** With Type 9 seal seats take care to line up the grooves on the back of the seal seat with the rotary seal pin (Item 12) protruding into the seal cavity.
3. **Single Seal.** Install the rear housing onto the motor adaptor (Item 13) using the rear housing bolts and lockwashers (Item 18,19). Install the seal head (Item 6) onto the pump shaft with the carbon side towards the seal seat. The use of a "bullet" and lubricant will aid in installing the seal over the shaft step. If a type 9 seal head is being used, the end of the seal head should be aligned flush with the step on the shaft then tighten the seal head setscrews.

Double Seal. Slide the seal gland plate over the pump shaft and pilot it into the motor adaptor (Item 13). Install the double seal head (Item 6) onto the shaft. Both ends are the same. The use of a "bullet" and lubricant will aid in installing the seal over the shaft step. Thread the rear housing studs (Item 20) into the rear housing assembly and lock nut them in place with the rear housing nuts and lockwashers (Items 19,21). Align one of the seal head setscrews with the

seal gland flushing connection farthest from the seal seat. Later in the reassembly it will be necessary to tighten the seal head setscrews through this connection hole. Install the rear housing assembly with O-ring (Item 11) onto the motor adaptor, sandwiching the seal gland in between the motor adaptor and rear housing. Thread the rear housing nuts and lockwashers onto the ends of the studs and tighten evenly.

4. Screw the impeller (Item 4) onto the pump shaft until it bottoms against the shaft shoulder. Install the impeller bolt and washer (Items 22,23) and tighten to 36 inch lbs.
5. Space the back surface of the impeller .125 inches from the inside machined surface of the rear housing. (See Pump Assembly Drawing PLE-004). Then tighten the pump shaft setscrews. The .125 inch Allen wrench used to tighten these setscrews can also be used as a spacing gauge. Spacing the impeller provides the correct compression for single seals. If an optional double seal is being used the seal head setscrews can now be tightened by reaching down through the appropriate flush connection hole with an Allen wrench. Remember to tighten both setscrews.
6. Install the cover O-ring (Item 10) and cover (Item 1) using the front cover bolts and lockwashers (Items 16,17). Tighten bolts to 6 ft lbs.
7. Check to see pump turns freely. Reinstall pump and reconnect wiring to motor. Check for proper rotation, prime and start pump. Given pump time to purge all air then check performance. If problems are encountered see the **Troubleshooting Section.**

MODEL H SERIES

Reference Drawings: PLE-003
PLE-009
PLE-010

DISASSEMBLY

1. Close discharge and suction valves.
2. Disconnect power source to motor.
3. Flush and drain pump then remove pump from the piping.
4. Remove front cover bolts (Item 18) and front cover (Item 1).
5. Bend the lock tab outward. Remove impeller bolt, lock tab and washer (Items 25,26A,26).
6. Remove impeller (Item 5) and impeller key (Item 24) from the pump shaft (Item 7). If the pump is multiple stage next remove the impeller spacer (Item 6), housing assembly (Item 2), impeller and impeller key. Repeat this process if there are more stages. Use care in removing the housing assembly from the impeller so as not to chip or damage the bearing.
7. Remove the seal head (Item 8).

Single Seal. The easiest way to remove the seal head is by removing the rear housing bolts (Item 20) and pulling on the rear housing (Item 3) which in turn will pull the seal head off the shaft. With Type 9 seals you must first loosen the seal head setscrews before removing the seal head. If it is desired not to remove the rear housing, the seal head can be pryed off using two screwdrivers. But this usually ruins the seal head and may nick the shaft.

Double Seal. Remove the rear housing nuts (Item 23), then remove the rear housing assembly (Item 3). The seal head is now exposed. Loosen the seal head setscrews and slide the seal head off the shaft. Remove the seal gland (Item 10).

8. Visually inspect the seal seat (Item 9) or seal seats in the case of a double seal. Remove only if replacing as this part may break during removal.
9. Inspect the pump shaft for damage or wear. The pump shaft is removed by loosening the pump shaft setscrews (Item 27).
10. If the pump is multiple stage inspect the bearings in the housing assembly for damage or wear and also inspect the mating wear area on the impeller. If scoring, cracking or excessive wear exist the parts should be replaced. The maximum diametral clearance (Bearing I.D. - Impeller O.D.) that is acceptable is .012 inches.
11. Thoroughly clean all parts before reassembly.

REASSEMBLY

1. Slide the pump shaft (Item 7) onto the motor or powerframe shaft until it bottoms out on the end of the shaft. Line up the pump shaft setscrews (Item 27) with the keyway and tighten. For maximum seal and bearing life, shaft run out should not exceed .002 inches. Straighten shaft as necessary.
2. Install the seal seat (Item 9) in the rear housing (Item 3) if it was previously removed. If the pump is of double seal design install the seal seats into the seal gland (Item 10) and rear housing assembly (Item 4) if they were previously removed. The use of a lubricant compatible with the fluid being pumped is recommended for seal seat and seal head installation to ease assembly. Install seal seats with the smooth, lapped side towards the seal head by gently pressing into place. **Be careful not to scratch the lapped surface.** With Type 9 seal seats take care to line up the grooves on the back of the seal seat with the rotary seal pin (Item 14) protruding into the seal cavity.
3. **Single Seal.** Install the rear housing onto the motor adaptor (Item 15) using the rear housing bolts and lockwashers (Items 20,21). Install the seal head (Item 8) onto

the pump shaft with the carbon side towards the seal seat. The use of a "bullet" and lubricant will aid in installing the seal over the shaft step. If a new Type 9 seal head is being used, it comes with pre-tensioning clips installed. All that is required is that the seal head be slipped onto the shaft until it contacts the seal seat. Then by reaching in through the flushing connection closest to the impeller, tighten the seal head setscrews. Then with a screwdriver pop off the clips and discard them. If the seal does not have clips, compress the seal head until the set screws are visually centered in the flush connection hole and tighten. The overall seal head length compressed should be .750 inches.

Double Seal. Slide the seal gland over the pump shaft and pilot it into the motor adaptor (Item 15). Install the double seal head (Item 8) onto the shaft. Both ends are the same. The use of a "bullet" and lubricant will aid in installing the seal over the shaft step. Thread the rear housing studs (Item 22) into the rear housing assembly and lock nut them in place with the rear housing nuts and lockwashers (Items 23,21). Align one of the seal head setscrews with the flushing connection hole in the rear housing assembly. Later in the reassembly it will be necessary to tighten the seal head setscrews through this connection hole. Install the rear housing assembly with O-ring (Item 13) onto the motor adaptor, sandwiching the seal gland in between the motor adaptor and rear housing. Thread the rear housing nuts and lockwashers onto the ends of the studs and tighten evenly. Using the appropriate Allen wrench reach down through the flush connection hole and tighten the seal head setscrew. Rotate the pump shaft until the second setscrew is visible and tighten it also.

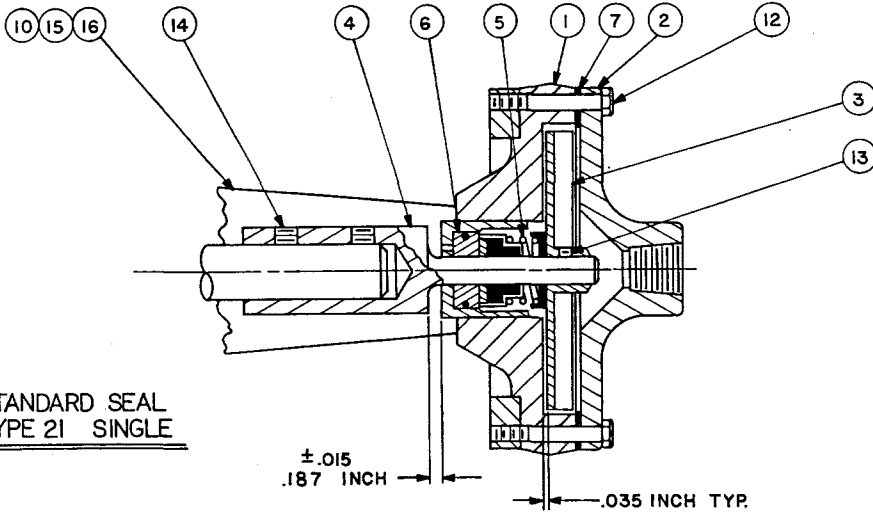
4. Place a key (Item 24) in the pump shaft keyway and slide the impeller (Item 5) onto the shaft. Double seal pumps use a special impeller with a shortened hub in this first position. If the pump is single stage proceed to Step 5. Next install a housing O-ring (Item 12), housing assembly (Item 2), impeller spacer (Item 6), key and impeller. Repeat this again if the pump has more stages. Be careful

when installing housing assemblies over the ends of impellers so as not to damage the bearing. Pumps of four or more stages assemble easier when assembled vertically.

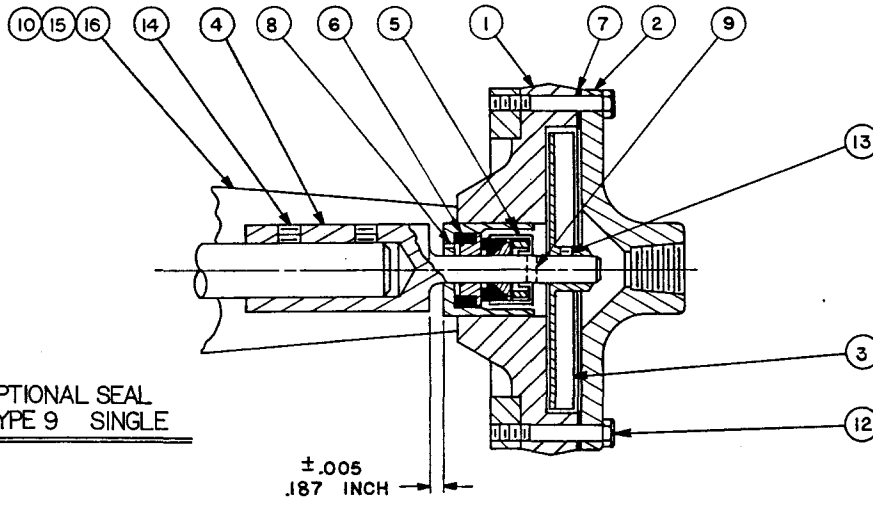
5. Install the impeller bolt, lock tab and washer (Item 25,26A,26) and tighten to 60 inch lbs. Placing an Allen wrench through a slot in the motor adaptor and into a pump shaft setscrew will prevent the shaft from turning. Pumps with four or more stages may require Step #6 be performed first. Bend the lock tab up against one of the flats on the impeller bolt.
6. Install a housing O-ring, the cover (Item 1) and the cover bolts and lockwashers (Items 18,19). Tighten cover bolts to 20 ft lbs.
7. Check to see pump turns freely. Reinstall pump and reconnect wiring to motor. Check for proper rotation, prime and start pump. Give pump time to purge all air then check performance. If problems are encountered see the **Troubleshooting Section.**

ASSEMBLY OF WET END TO DRIVE

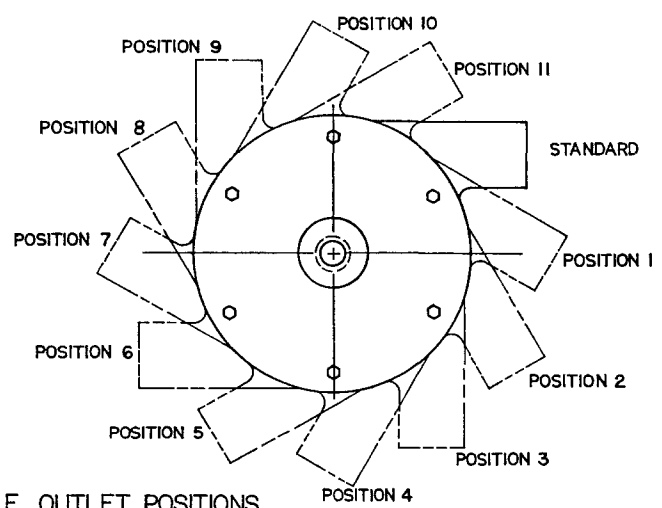
All pumps purchased wet end only include their respective motor adaptor allowing them to be close coupled with a standard NEMA electric motor or powerframe. By performing the following assembly procedures the pump wet end in all cases can be coupled to the motor without disassembly of the pump. In all cases remove the plastic shipping support before assembly.



STANDARD SEAL
TYPE 21 SINGLE



OPTIONAL SEAL
TYPE 9 SINGLE

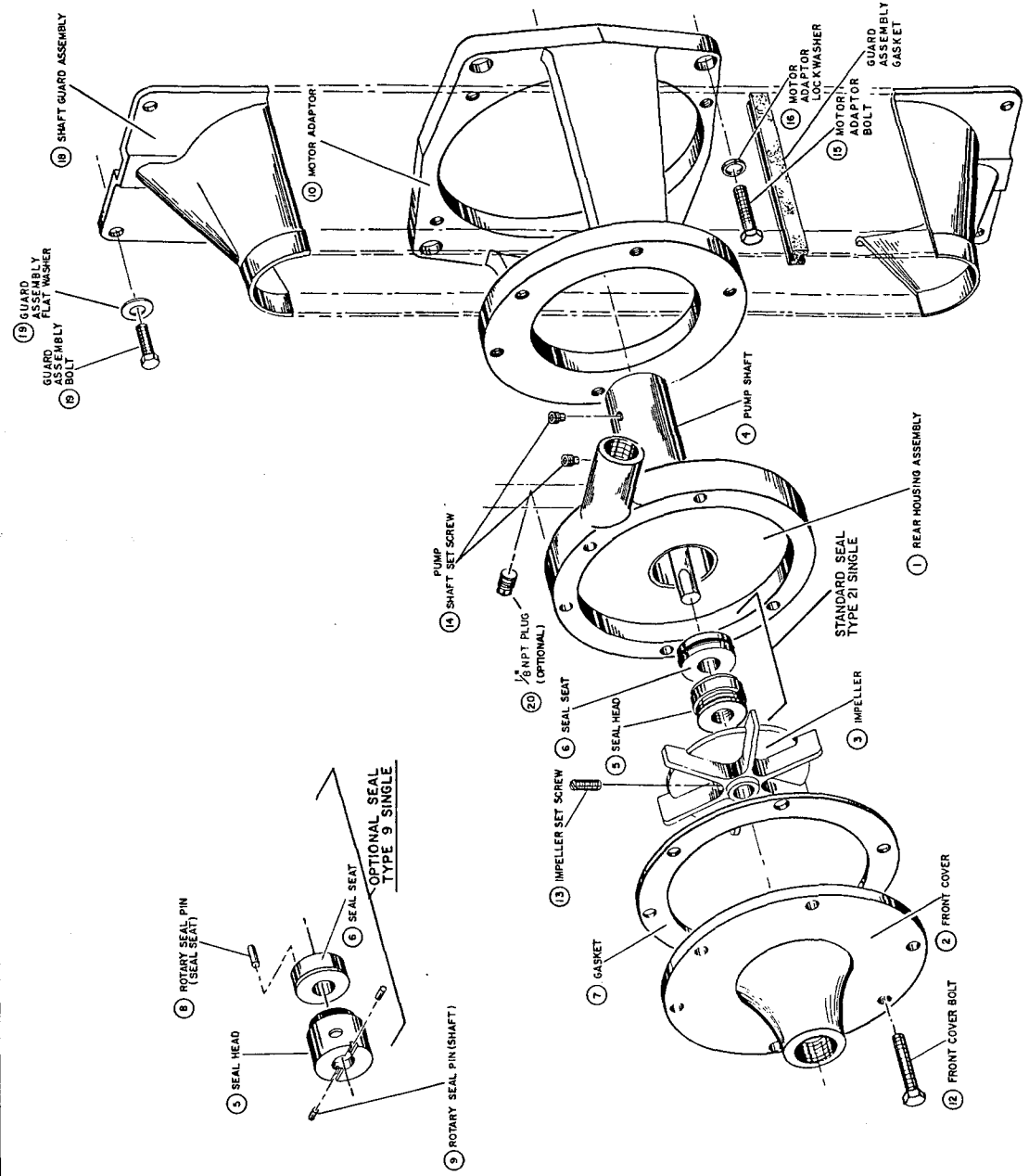


AVAILABLE OUTLET POSITIONS

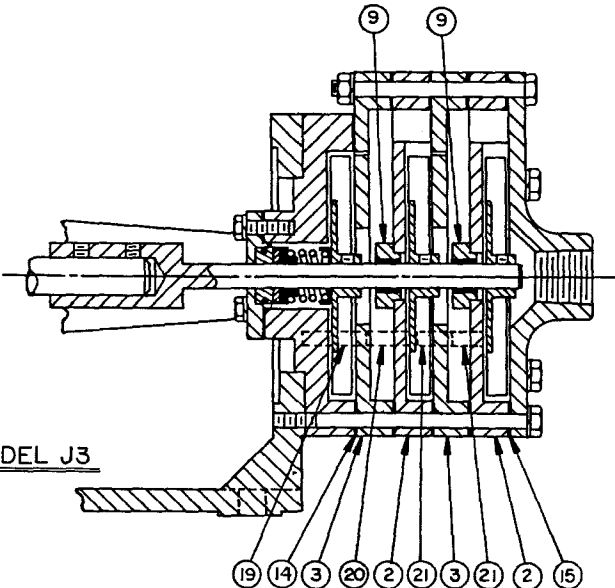
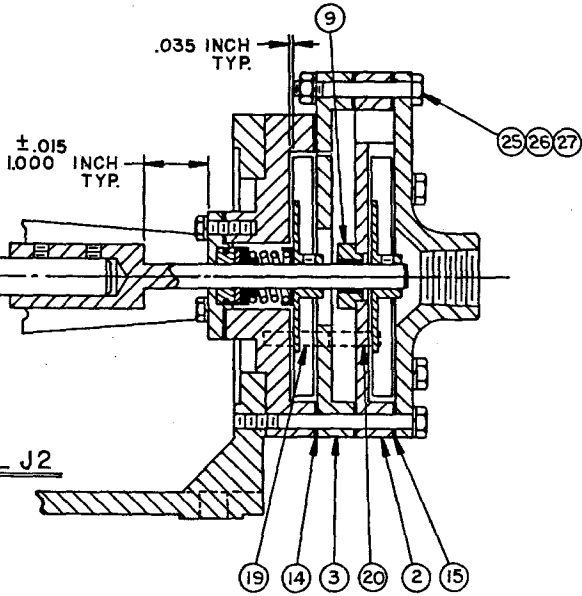
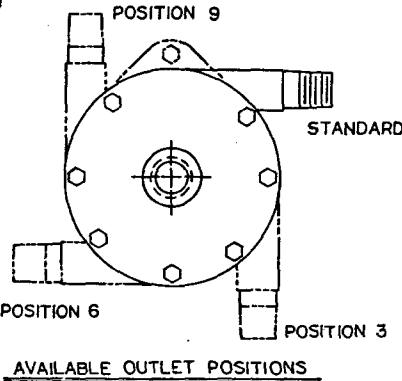
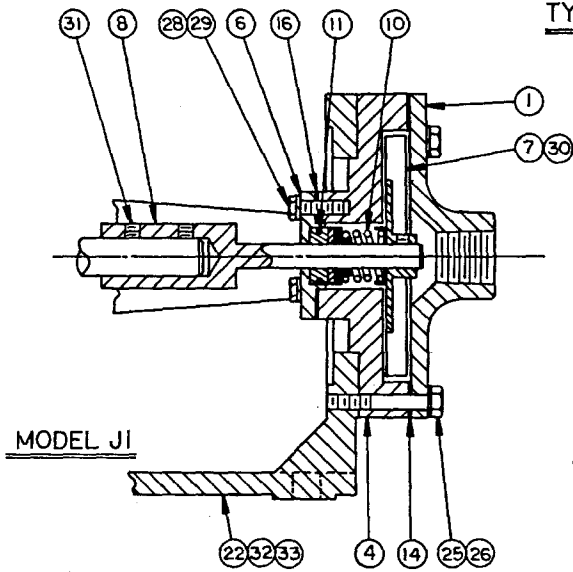
ITEM	PART NAME
1	REAR HOUSING ASSEMBLY
2	FRONT COVER
3	IMPELLER
4	PUMP SHAFT
5	SEAL HEAD
6	SEAL SEAT
7	GASKET
8	ROTARY SEAL PIN (SEAL SEAT)
9	ROTARY SEAL PIN (SHAFT)
10	MOTOR ADAPTOR
11	NAME TAG - NOT SHOWN
12	FRONT COVER BOLT
13	IMPELLER SET SCREW
14	PUMP SHAFT SET SCREW
15	MOTOR ADAPTOR LOCK
16	MOTOR ADAPTOR LOCK WASHER
17	NAME TAG DRIVE SCREWS - NOT SHOWN
18	GUARD, PUMP SHAFT - NOT SHOWN
19	GUARD HARDWARE - NOT SHOWN
20	1/8" NPT PLUG - NOT SHOWN

NOTE:
1. REFER TO COMPOSITE BILL OF MATERIALS FOR PART NUMBERS AND QUANTITIES.
2. TO OBTAIN OUTLET POSITIONS 1, 3, 5, 7, 9 AND 11; MOTOR ADAPTOR MUST ALSO BE ROTATED.

EASTERN	Pulsafeeder <small>ROCHESTER, NEW YORK 14621</small>
CENTRICHEM® - D SERIES TYPICAL PUMP ASSEMBLIES	
DWN BY: MEH	PLE 002
DATE: 1-3-86	
DATE REV: 10-15-86	

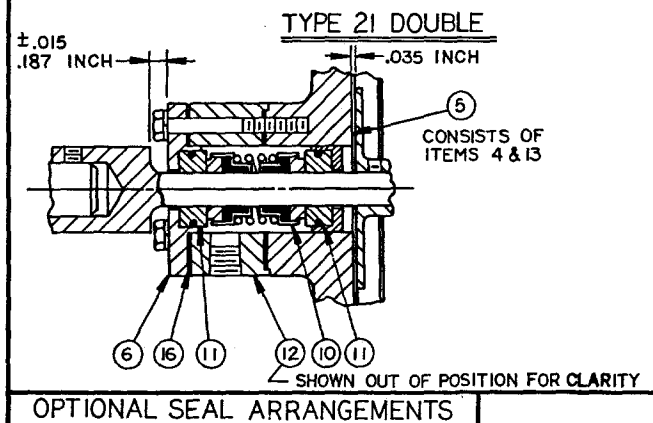
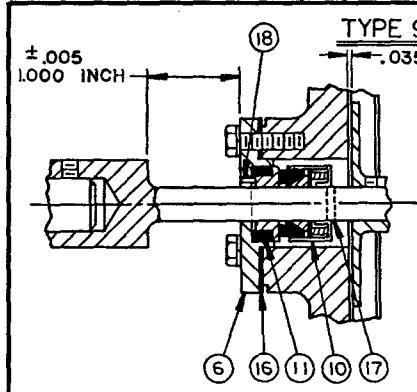


STANDARD SEAL
TYPE 21 SINGLE



NOTE:
1. REFER TO COMPOSITE BILL OF MATERIALS FOR PART NUMBERS AND QUANTITIES.

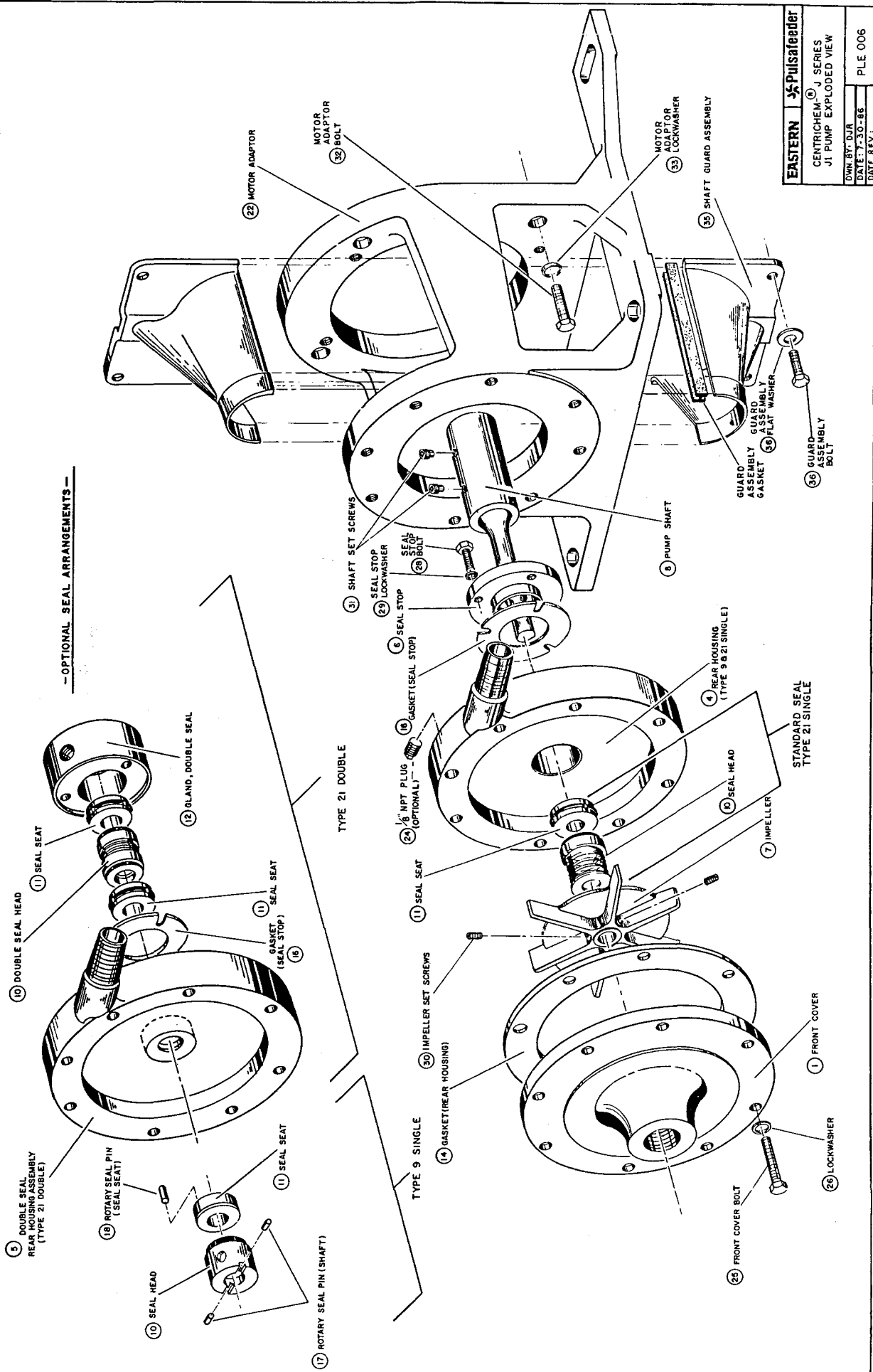
ITEM	PART NAME
1	FRONT COVER
2	ACTIVE HOUSING
3	DEAD HOUSING
4	REAR HOUSING
5	REAR HOUSING ASSEMBLY
6	SEAL STOP
7	IMPELLER
8	PUMP SHAFT
9	BEARING ASSEMBLY
10	SEAL HEAD
11	SEAL SEAT
12	GLAND (DOUBLE SEAL)
13	INNER SEAL STOP
14	GASKET (REAR HOUSING)
15	GASKET (HOUSING)
16	GASKET (SEAL STOP)
17	ROTARY SEAL PIN (SHAFT)
18	ROTARY SEAL PIN (SEAL SEAT)
19	ALIGNMENT PIN *A* 1.00 INCH
20	ALIGNMENT PIN *B* .75 INCH
21	ALIGNMENT PIN *C* .50 INCH
22	MOTOR ADAPTOR
23	NAME TAG -NOT SHOWN
24	1/8" NPT PLUG -NOT SHOWN
25	FRONT COVER BOLT
26	FRONT COVER LOCK WASHER
27	FRONT COVER NUT
28	SEAL STOP BOLT
29	SEAL STOP LOCK WASHER
30	IMPELLER SET SCREW
31	PUMP SHAFT SET SCREW
32	MOTOR ADAPTOR BOLT
33	MOTOR ADAPTOR LOCK WASHER
34	NAME TAG DRIVE SCREWS -NOT SHOWN
35	GUARD, PUMP SHAFT -NOT SHOWN
36	GUARD HARDWARE -NOT SHOWN



OPTIONAL SEAL ARRANGEMENTS

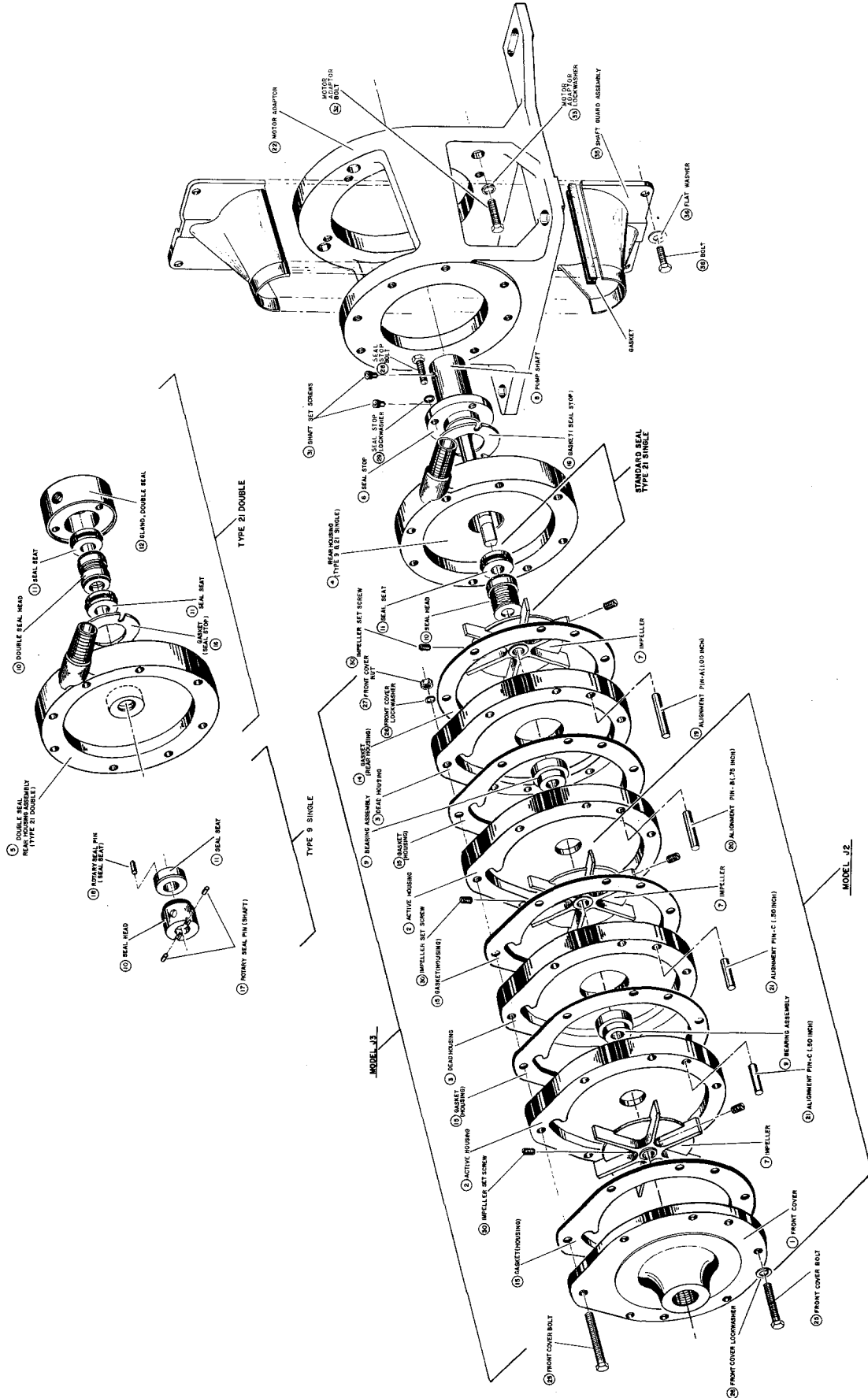
EASTERN **Pulsafeeder**
CENTRICHEM® - J SERIES
TYPICAL PUMP ASSEMBLIES
DWN.BY: TLM
DATE: 1-3-86
DATE REV.: 10-15-86
PLE 001

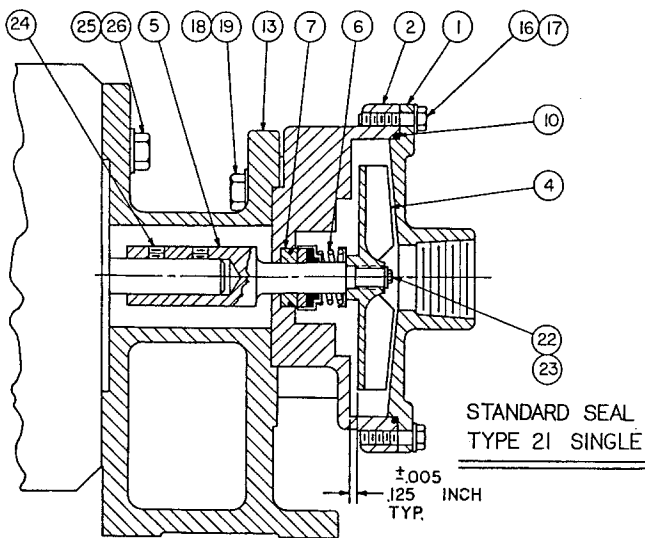
—OPTIONAL SEAL ARRANGEMENTS—



EASTERN	Pulsafeeder
CENTRICHEM® J SERIES JI PUMP EXPLODED VIEW	
OWN BY: DJR	DATE: 7-30-86
DATE REV:	PLE 006

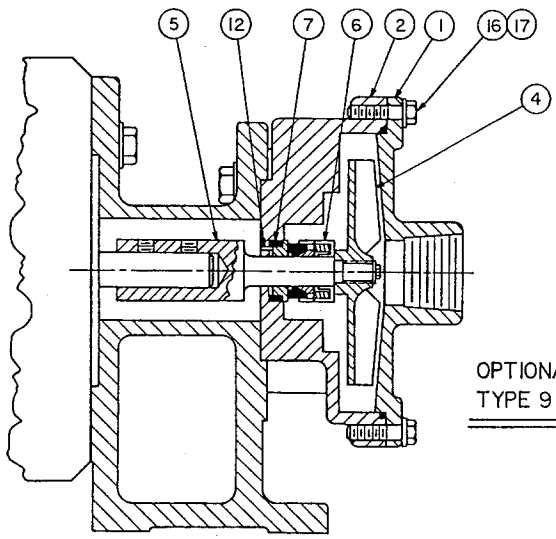
-OPTIONAL SEAL ARRANGEMENTS-





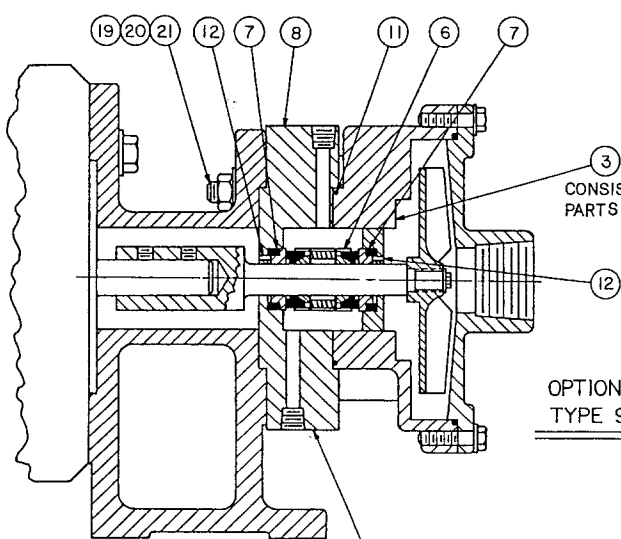
STANDARD SEAL
TYPE 21 SINGLE

ITEM	PART NAME
1	FRONT COVER
2	REAR HOUSING
3	REAR HOUSING ASSEMBLY
4	IMPELLER
5	PUMP SHAFT
6	SEAL HEAD
7	SEAL SEAT
8	GLAND (DOUBLE SEAL)
9	INNER SEAL STOP
10	O-RING (REAR HOUSING)
11	O-RING (GLAND)
12	ROTARY SEAL PIN (INNER AND OUTER)
13	MOTOR ADAPTOR
14	NAME TAG-NOT SHOWN
15	1/8" NPT PLUG-NOT SHOWN
16	FRONT COVER BOLT
17	FRONT COVER LOCK WASHER
18	REAR HOUSING BOLT
19	REAR HOUSING LOCK WASHER
20	REAR HOUSING STUD
21	REAR HOUSING NUT
22	IMPELLER BOLT
23	IMPELLER WASHER
24	PUMP SHAFT SET SCREW
25	MOTOR ADAPTOR BOLT
26	MOTOR ADAPTOR LOCK WASHER
27	NAME TAG DRIVE SCREW-NOT SHOWN

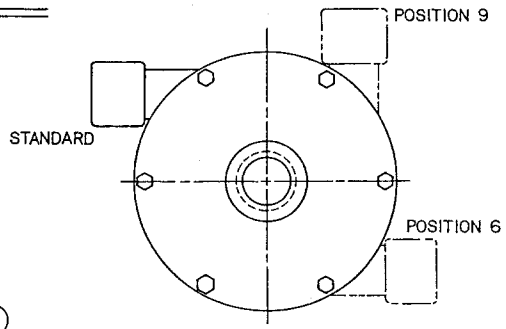


OPTIONAL SEAL
TYPE 9 SINGLE

NOTE:
1 REFER TO COMPOSITE BILL
OF MATERIALS FOR PART
NUMBERS AND QUANTITIES.



OPTIONAL SEAL
TYPE 9 DOUBLE



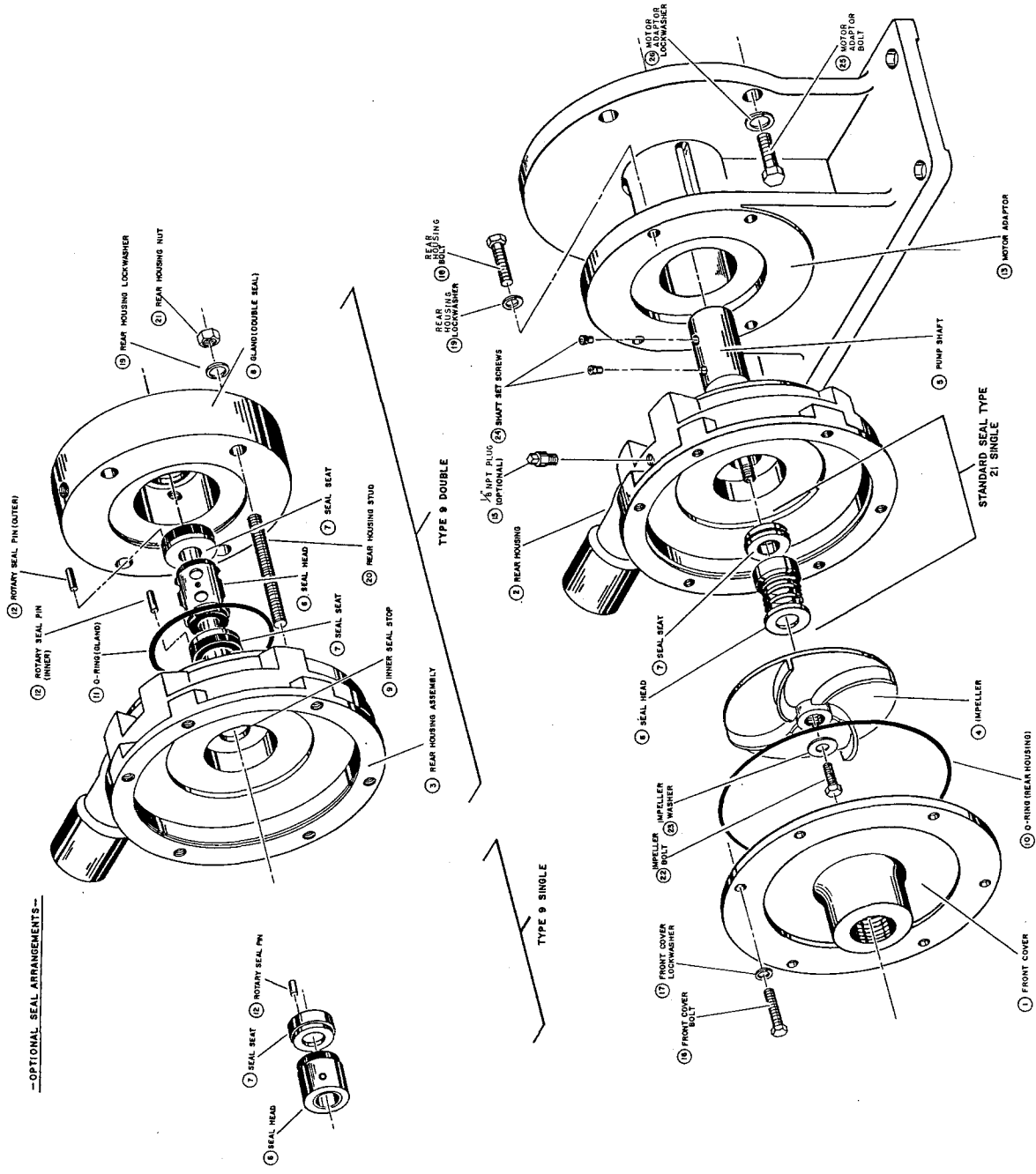
AVAILABLE OUTLET POSITIONS

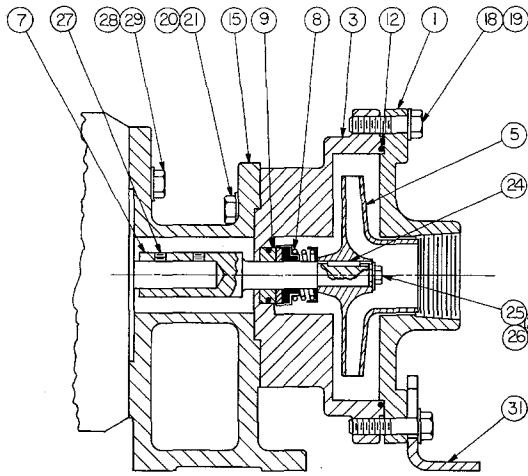
SHOWN OUT OF
POSITION FOR CLARITY

EASTERN	Pulsafeeder ROCHESTER, NEW YORK 14623
CENTRICHEM®-C SERIES TYPICAL PUMP ASSEMBLIES	
DWN BY: MEH	PLE 004
DATE: 4-1-86	
DATE REV:	

EASTERN	Pulsator
CENTRICHEM® - C. SERIES PUMP EXPLODED VIEW	
DWN BT. DUR	DATE 7-30-86
DATE REV.	PLE 008

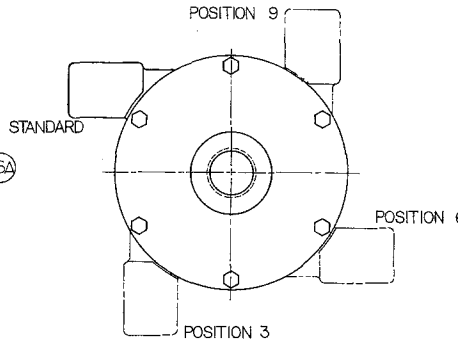
-OPTIONAL SEAL ARRANGEMENTS-



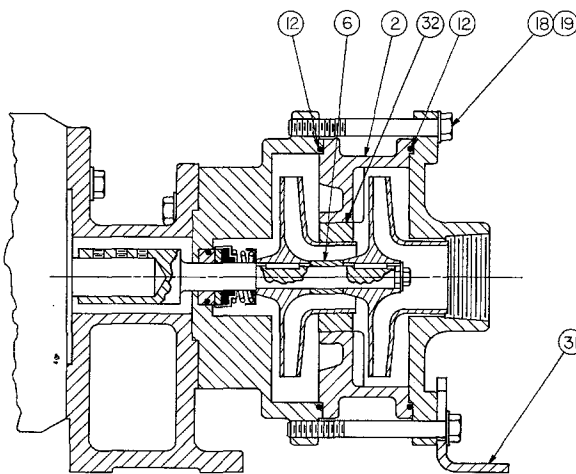


MODEL H1

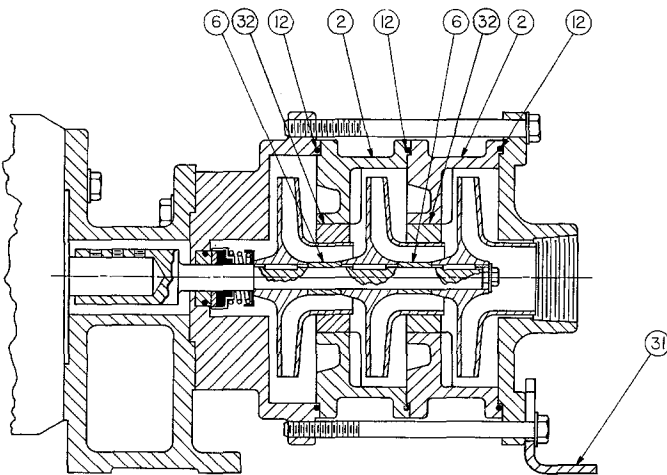
**STANDARD SEAL
TYPE 21 SINGLE**



**AVAILABLE OUTLET
POSITIONS**

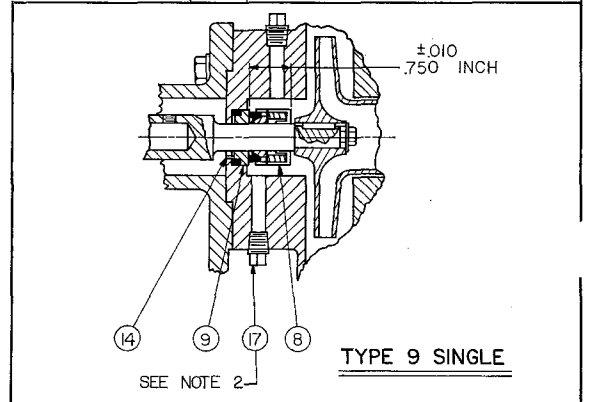


MODEL H2

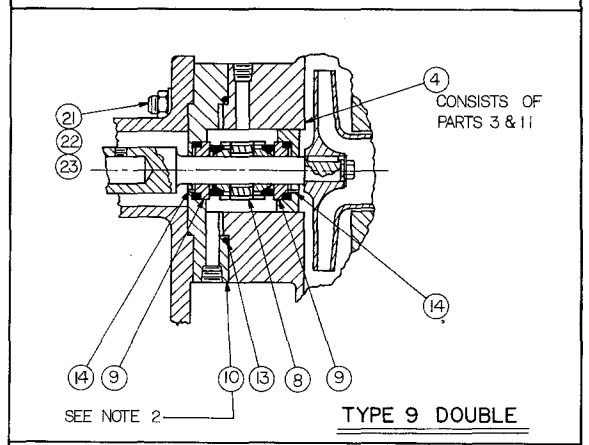


MODEL H3

ITEM	PART NUMBER
1	FRONT COVER
2	HOUSING ASSEMBLY
3	REAR HOUSING
4	REAR HOUSING ASSEMBLY
5	IMPELLER
6	IMPELLER SPACER
7	PUMP SHAFT
8	SEAL HEAD
9	SEAL SEAT
10	GLAND (DOUBLE SEAL)
11	INNER SEAL STOP
12	O-RING (HOUSING)
13	O-RING (GLAND)
14	ROTARY SEAL PIN (INNER AND OUTER)
15	MOTOR ADAPTOR
16	NAME TAG -NOT SHOWN
17	1/8" NPT PLUG
18	FRONT COVER BOLT
19	FRONT COVER LOCKWASHER
20	REAR HOUSING BOLT
21	REAR HOUSING LOCKWASHER
22	REAR HOUSING STUD
23	REAR HOUSING NUT
24	IMPELLER KEY
25	IMPELLER BOLT
26	IMPELLER WASHER
26A	IMPELLER LOCKWASHER
27	PUMP SHAFT SET SCREW
28	MOTOR ADAPTOR BOLT
29	MOTOR ADAPTOR LOCKWASHER
30	NAME TAG DRIVE SCREW -NOT SHOWN
31	PUMP SUPPORT BRACKET
32	HOUSING BEARING



TYPE 9 SINGLE

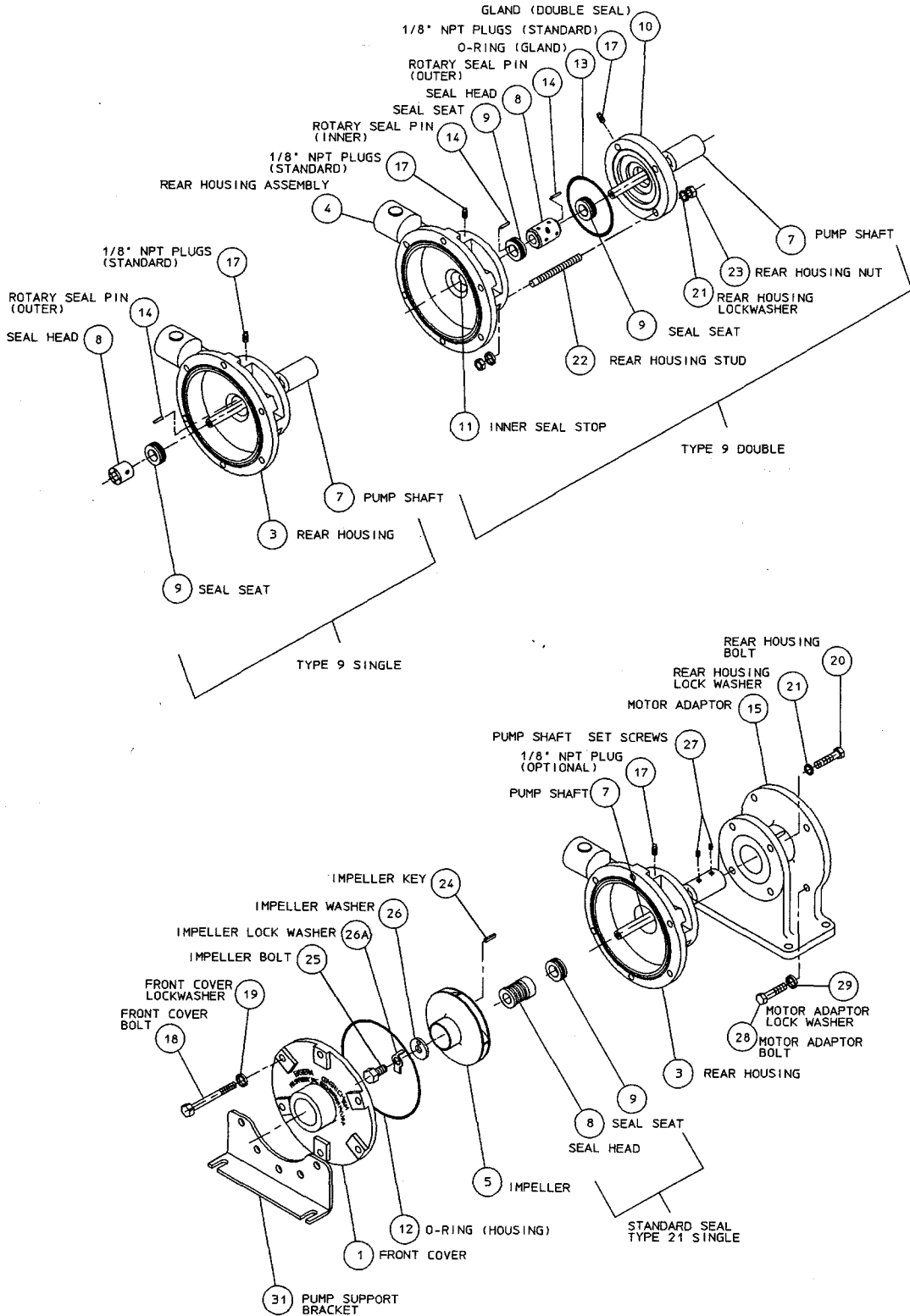


TYPE 9 DOUBLE

OPTIONAL SEAL ARRANGEMENTS

- NOTE:
1. REFER TO COMPOSITE BILL OF MATERIALS FOR PART NUMBERS AND QUANTITIES.
 2. SHOWN OUT OF POSITION FOR CLARITY.
 3. ADDITIONAL STAGES ARE ADDED IN THE SAME MANNER AS DEPICTED ABOVE.

EASTERN	Pulsafeeder ROCHESTER, NEW YORK 14623
CENTRICHEM®-H SERIES TYPICAL PUMP ASSEMBLIES	
DWN BY: MEH	
DATE: 2-27-86	
DATE REV: 10-06-92	
PLE 003	

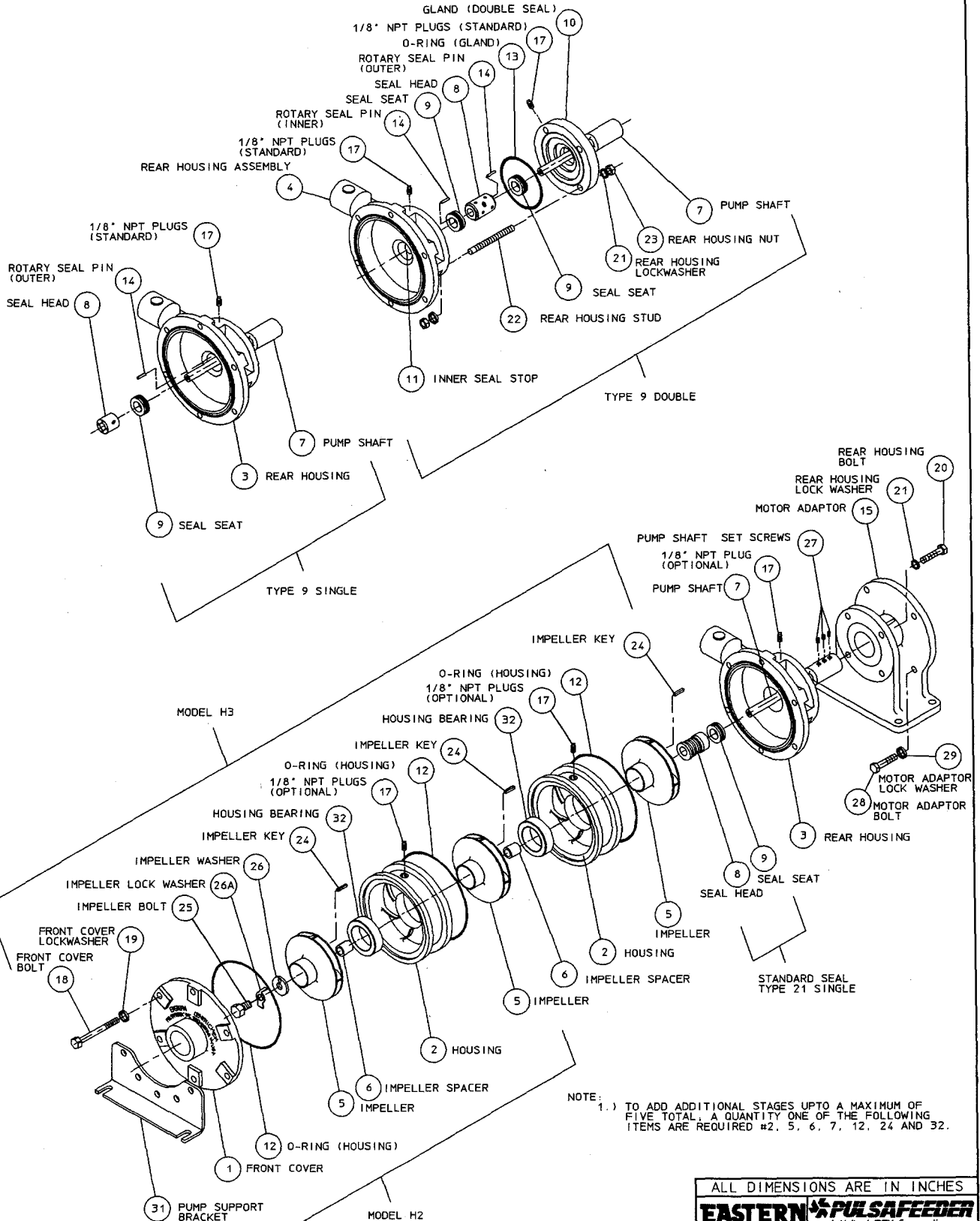


ALL DIMENSIONS ARE IN INCHES
EASTERN PULSAFEEDER
 A Unit of IDEX Corporation

CENTRICHEM -H SERIES
 H1 PUMP EXPLODED VIEW

▲	DRAWING UPDATE	06/01/95
REF	REVISION UPDATE	DATE

DWN BY: CLA	PLE 009
DATE: 06/01/95	



ALL DIMENSIONS ARE IN INCHES

EASTERN PULSAFEEDER
 A Unit of IDEX Corporation

CENTRICHEM -H SERIES
 H2 & H3 PUMP EXPLODED VIEW

DWN BY: PFM
 DATE: 09/05/90

PLE 010

△	DRAWING UPDATE	06/01/95
REF	REVISION UPDATE	DATE

Series D - Slide the pump shaft over the motor shaft. Bolt the motor adaptor to the motor with the bolts supplied. Adjust the pump shaft in or out until a .187 inch gap exists between the back of the pump and the shaft shoulder. Tighten the pump shaft setscrews.

Series J - Slide the pump shaft over the motor shaft. Bolt the motor adaptor to the motor with the bolts supplied. For single seal pumps adjust the pump shaft in or out until a 1.000 inch gap exists between the back of the pump seal stop and the shaft shoulder. Then tighten the pump shaft setscrews. For double seal pumps the procedure is the same but the gap is .187 inches.

Series C - Slide the pump shaft over the motor shaft. Bolt the motor adaptor to the motor with the bolts supplied. With the impeller up against the cover as a starting point, adjust the impeller back .025 inches and tighten the pump shaft setscrews.

Series H - Slide the pump shaft over the motor shaft. Bolt the motor adaptor to the motor with the bolts supplied. Push on the impeller until the pump shaft bottoms out on the end of the motor shaft. Tighten the pump shaft setscrews.

TROUBLE SHOOTING CHART

<u>Difficulty</u>	<u>Probable Cause</u>	<u>Remedy</u>
No Liquid Delivery	<ol style="list-style-type: none"> 1.Pump not primed 2.Motor incorrectly wired 3.Air leak in suction 4.Rotation direction incorrect 5.Suction and/or discharge discharge valves closed 6.Suction lift too high 	<p>Prime pump. Check wiring diagram. Locate and repair. Check rotation against arrow provided on front cover. Open valves.</p> <p>Do not exceed vapor pressure of liquid. Reduce discharge restrictions Ex: Open throttle valve. Seal leak. Check speed and wiring.</p>
Low Liquid Delivery	<ol style="list-style-type: none"> 1.Discharge head higher than calculated 2.Air leak in suction 3.Rotational speed not correct 4.Incorrect impeller adjustment 5.Rotation direction incorrect 6.Suction lift too high 7.Impeller worn 	<p>Adjust impeller position as per drawings provided (H pumps require no adjustment). Check rotation against arrow provided on front cover. Increase suction pressure. Replace impeller. Check speed. Repair leak. Eliminate air or gas.</p>
Low Discharge Pressure	<ol style="list-style-type: none"> 1.Rotational speed incorrect 2.Air leak in suction 3.Air or gas in liquid 4.Worn impeller 	<p>Replace impeller. Locate and repair. Eliminate pocket Keep suction inlet submerged at all times. Eliminate air or gas.</p>
Pump Gradually Loses Prime	<ol style="list-style-type: none"> 1.Air leak in suction 2.Air pocket in suction line 3.Air entering suction line 4.Air or gas in liquid 	<p>Check if seal is correctly installed. Replace worn parts. Replace worn parts. Change seal materials.</p>
Seal Leaks	<ol style="list-style-type: none"> 1.Incorrect assembly 2.Work or cracked seal faces 3.Seal was run dry 4.Seal materials are not compatible with liquid being pumped 5.Seal is plugged up with solid deposits, causing seal faces to separate 	<p>Clean or replace seal head.</p>
Motor Runs Hot Or Overloads	<ol style="list-style-type: none"> 1.It is normal for motors to feel hot even when not overloaded 2.Motor wired incorrectly 3.Voltage or frequency low 4.Motor not sized correctly for the flow 5.Heavy or viscous liquid being pumped 6.Seal or bearing binding 	<p>No action required.</p> <p>Check wiring diagram Correct condition. Higher flows may require more power than the motor is capable of. Flow can be reduced by using a throttle valve in discharge line. Pumping fluids heavier or more viscous than water requires a larger motor. Check shaft for straightness and seal for over compression.</p>

GENERAL MAINTENANCE:

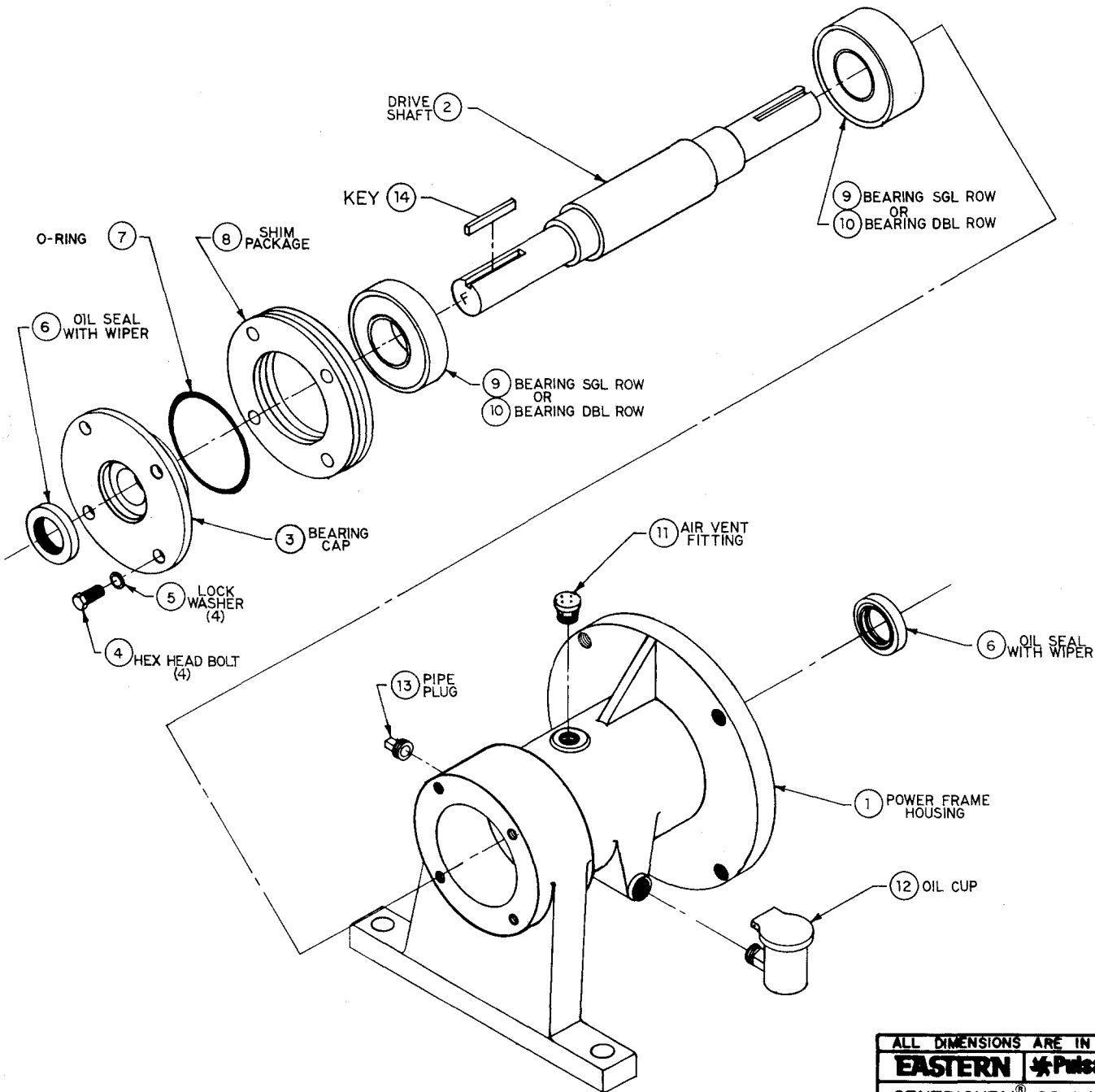
1. FILL POWER FRAME OIL CUP (ITEM # 12) TO THE "OIL LEVEL" LINE, ABOUT 1/2 INCH FROM THE TOP OF THE CUP. USE STANDARD MOTOR OIL SAE 10W-40, 10W-30 OR 5W-30.
2. DRAIN AND CHANGE OIL AFTER EVERY 1000 HRS. OF OPERATION. SOONER IF WATER OR OTHER CONTAMINATION OCCURS.

DISASSEMBLY:

1. REMOVE BEARING CAP BOLTS (ITEMS # 4 & 5)
2. SLIDE BEARING CAP (ITEM #3) OUT OF HOUSING (ITEM #1) AND OVER END OF SHAFT (ITEM # 2).
3. REMOVE SHAFT / BEARING ASSEMBLY BY SLIDING OUT OF HOUSING.

REASSEMBLY:

1. PRESS NEW BEARINGS (ITEMS #9 & 10) ONTO SHAFT (ITEM #2) IF REPLACEMENT IS REQUIRED.
2. PRESS NEW OIL SEALS (ITEM #6) INTO HOUSING (ITEM #1) AND BEARING CAP (ITEM #3). APPLY GREASE TO AREA BETWEEN THE SEAL AND WIPER LIPS.
3. INSTALL A NEW O-RING (ITEM #7) ONTO THE BEARING CAP.
4. SLIDE SHAFT / BEARING ASSEMBLY INTO POWERFRAME HOUSING. THE END STAMPED "F" MUST BE TOWARDS THE BEARING CAP.
5. DETERMINE THE CORRECT SHIM COMBINATION NECESSARY TO OBTAIN AN END PLAY OF .000 - .004 INCHES.
6. REPLACE BEARING CAP BOLTS (ITEMS # 4 & 5) AND TIGHTEN.



ALL DIMENSIONS ARE IN INCHES	
EASTERN	Pulsafeeder
CENTRICHEM® C&H SERIES POWER FRAME EXPLODED VIEW	
DWN BY: D HYMAN	Y1012
DATE: 12/06/86	

A	REVISION DESCRIPTION	DATE	APP
REF			

CENTRICHEM PUMP SPECIFICATIONS	PUMP MODEL					
	ECD (1/4 x 1/4)	ECD (1/2 x 1/4)	ECD (1/2 x 3/8)	ECJ	ECJ2	ECJ3
BEST EFFICIENCY POINT (BEP)	4 GPM @ 42 FT.	7 GPM @ 27 FT	12 GPM @ 25 FT	12 GPM @ 52 FT	10 GPM @ 79 FT	8 GPM @ 110 FT
MAXIMUM FLOW (GPM)	6.5	9	20	20	16	15
SHUT-OFF HEAD (FT)	46	50	50	75	130	175
BEST EFFICIENCY (%)	21	26	33	30	21	21
MAXIMUM POWER @ MIN DIFF (BHP)	.26	.30	.47	.72	1.22	1.75
MAXIMUM TEMPERATURE (F)	250	250	250	250	250	250
MAXIMUM VISCOSITY (CPS)	100	100	100	100	100	100
MAXIMUM SPECIFIC GRAVITY	1.5	1.5	1.5	1.5	1.5	1.5
MAXIMUM CASING PRESSURE (PSIG)	150	150	150	150	150	150
NPSHR @ BEP (FT)	3.2	18	9	11	14	13
IMPELLER DIAMETER (INCH)	3.25	3.25	3.25	3.75	3.75	3.75
INLET SIZE (NPT)	1/4 F	1/2 F	1/2 F	1/2 F	1/2 F	1/2 F
OUTLET SIZE (NPT)	1/4 F	1/4 F	3/8 M	1/2 M	1/2 M	1/2 M
FLUSHING PORT(S) SIZE (NPT)	1/8 F	1/8 F	1/8 F	1/8 F	1/8 F	1/8 F
ROTATIONAL SPEED (RPM)	3450	3450	3450	3450	3450	3450
ROTATION VIEWING PUMP SHAFT	CCW	CCW	CCW	CCW	CCW	CCW
MOTOR FRAME SIZE (NEMA)	56C	56C	56C	56C	56C	56C
STANDARD WET END CONSTRUCTION	316SS	316SS	316SS	316SS	316SS	316SS
OPTIONAL WET END CONSTRUCTION	316SS (P&P)	316SS (P&P)	316SS (P&P)	316SS (P&P)	316SS (P&P)	316SS (P&P)
STANDARD MECHANICAL SEAL	TYPE 21 SGL.	TYPE 21 SGL.	TYPE 21 SGL.	TYPE 21 SGL.	TYPE 21 SGL.	TYPE 21 SGL.
OPTIONAL MECHANICAL SEAL(S)	TYPE 9 SGL.	TYPE 9 SGL.	TYPE 9 SGL.	TYPE 9, DBL, 21	TYPE 9, DBL, 21	TYPE 9, DBL, 21
TYPE 21 SEAL MATERIALS		SEAL HEAD: 316SS,	CARBON, VITON	SEAL SEAT: CERAMIC, VITON	CERAMIC, VITON	CERAMIC, VITON
TYPE 9 SEAL MATERIALS		SEAL HEAD: 316SS,	CARBON, TEFLON	SEAL SEAT: SILICON CARBIDE, TEFLON	SILICON CARBIDE, TEFLON	SILICON CARBIDE, TEFLON
COVER BOLT TORQUE (INCH LBS)	24	24	24	72	72	72
PUMP & ADAPTOR HxWxL (INCH)	5.5x6x5.53	5.5x6x5.53	5.5x6x5.53	7.12x8x9	7.12x8x10.19	7.12x8x11.38
PUMP & ADAPTOR WEIGHT (LBS)	7	7	7	17	21	25

CENTRICHEM PUMP SPECIFICATIONS	PUMP MODEL					
	ECC	ECH	ECH2	ECH3	ECH4	ECH5
BEST EFFICIENCY POINT (BEP)	30 GPM @ 58 FT.	51 GPM @ 78 FT	51 GPM @ 132 FT	48 GPM @ 185 FT	51 GPM @ 225 FT	51 GPM @ 273 FT
MAXIMUM FLOW (GPM)	54	94	94	94	94	94
SHUT-OFF HEAD (FT)	72	93	165	235	297	365
BEST EFFICIENCY (%)	51	62	56	53	50	48
MAXIMUM POWER @ MIN DIFF (BHP)	1.35	2.31	4.43	6.33	8.50	10.0
MAXIMUM TEMPERATURE (F)	250	250	250	250	250	250
MAXIMUM VISCOSITY (CPS)	100	100	100	100	100	100
MAXIMUM SPECIFIC GRAVITY	1.5	1.5	1.5	1.5	1.5	1.5
MAXIMUM CASING PRESSURE (PSIG)	150	150	150	150	150	150
NPSHR @ BEP (FT)	8	10	10	10	10	10
IMPELLER DIAMETER (INCH)	3.88	4.56	4.56	4.56	4.56	4.56
INLET SIZE (NPT)	1 F	1 1/2 F	1 1/2 F	1 1/2 F	1 1/2 F	1 1/2 F
OUTLET SIZE (NPT)	3/4 F	1 F	1 F	1 F	1 F	1 F
FLUSHING PORT(S) SIZE (NPT)	1/8 F	1/8 F	1/8 F	1/8 F	1/8 F	1/8 F
ROTATIONAL SPEED (RPM)	3450	3450	3450	3450	3450	3450
ROTATION VIEWING PUMP SHAFT	CW	CW	CW	CW	CW	CW
MOTOR FRAME SIZE (NEMA)	56C	56C	140TC, 184C	140TC, 184C	140TC, 184C	140TC, 184C
STANDARD WET END CONSTRUCTION	316SS	316SS	316SS	316SS	316SS	316SS
OPTIONAL WET END CONSTRUCTION	316P&P, ALLOY C	316P&P, ALLOY C	316P&P, ALLOY C	316P&P, ALLOY C	316P&P, ALLOY C	316P&P, ALLOY C
STANDARD MECHANICAL SEAL	TYPE 21 SGL	TYPE 21 SGL	TYPE 21 SGL	TYPE 21 SGL	TYPE 21 SGL	TYPE 21 SGL
OPTIONAL MECHANICAL SEAL(S)	TYPE 9 SGL, DBL	TYPE 9 SGL, DBL	TYPE 9 SGL, DBL	TYPE 9 SGL, DBL	TYPE 9 SGL, DBL	TYPE 9 SGL, DBL
TYPE 21 SEAL MATERIALS		SEAL HEAD: 316SS,	CARBON, VITON	SEAL SEAT: CERAMIC, VITON	CERAMIC, VITON	CERAMIC, VITON
TYPE 9 SEAL MATERIALS		SEAL HEAD: 316SS,	CARBON, TEFLON	SEAL SEAT: SILICON CARBIDE, TEFLON	SILICON CARBIDE, TEFLON	SILICON CARBIDE, TEFLON
COVER BOLT TORQUE (INCH LBS)	36	60	60	60	60	60
PUMP & ADAPTOR HxWxL (INCH)	7.81x8x6.31	8.31x10x7.53	8.31x10x9.59	8.31x10x11.65	8.31x10x13.71	8.31x10x15.77
PUMP & ADAPTOR WEIGHT (LBS)	25	35	44	53	62	71

* ADD 1.31 INCHES TO LENGTH FOR DOUBLE SEAL C PUMPS.
ADD .72 INCHES TO LENGTH FOR DOUBLE SEAL H PUMPS.

REVISED 08/01/89

EASTERN CENTRICHEM PUMP SIGNIFICANT MODEL NUMBERING SYSTEM AND SELECTION TABLE

□ □ □ □ - □ □ □ □ □ □ □ □

POSITION NO. :

1 2 3 4 5 6 7 8 9 10 11 12

POSITION NO. 1 & 2	EC - EASTERN CENTRICHEM CENTRIFUGAL PUMP				
POSITION NO. 3	MODEL	STANDARD IMPELLER DIAMETER			
	C	3.88"			
	D	3.25"			
	H	4.56"			
	J	3.75"			
POSITION NO. 4	PUMP STAGE	MODEL			
		C	D	H	J
	1 - SINGLE STAGE	X	X	X	X
	2 - TWO STAGE			X	X
	3 - THREE STAGE			X	X
	4 - FOUR STAGE (SEE NOTE 3)			X	X
	5 - FIVE STAGE (SEE NOTE 3)			X	
POSITION NO. 5	AVAILABLE PUMP MATERIALS				
	A - 316SS	X	X	X	X
	B - 316SS (PICKLE & PASSIVATE)	X	X	X	X
	C - ALLOY C	X		X	
POSITION NO. 6	IMPELLER DIAMETER				
	S - STANDARD IMPELLER	X	X	X	X
	A - 3.44"	X			
	B - 3.06"	X			
	C - 4.15"			X	
	F - 3.12" (J2 & J3 ONLY)				X
POSITION NO. 7	SEAL ARRANGEMENTS (SEE NOTE 4)				
	A - 316SS SINGLE 21 SEAL CBN ROTARY, CERAMIC SEAT, VTN	X SEE NOTE 1	X	X SEE NOTE 1	X
	P - 316SS SINGLE 21 SEAL P90 ROTARY, SILICON CBD SEAT, EPR	X SEE NOTE 1	X	X SEE NOTE 1	X
	C - 316SS DOUBLE 21 SEAL (2 SINGLE 21 SEALS) CBN ROTARY, CERAMIC SEAT, VTN				X
	K - 316SS SINGLE 9 SEAL CBN ROTARY, SILICON CBD SEAT, TFE	X	X	X	X
	T - 316SS SINGLE 9 SEAL FTF ROTARY, SILICON CBD SEAT, TFE	X	X	X	X
	E - 316SS DOUBLE 9 SEAL CBN ROTARY, SILICON CBD SEAT, TFE	X		X	
	B - ALLOY C SINGLE 9 SEAL CBN ROTARY, SILICON CBD SEAT, TFE	X		X	
	R - ALLOY C SINGLE 9 SEAL FTF ROTARY, SILICON CBD SEAT, TFE	X		X	
	F - ALLOY C DOUBLE 9 SEAL CBN ROTARY, SILICON CBD SEAT, TFE	X		X	
POSITION NO. 8	INLET PORT				
	A - 1/4" FNPT		X		
	C - 1/2" FNPT		X		X
	E - 1" FNPT	X			
	F - 1 1/2" FNPT			X	
	H - 1 1/2" 150# FLANGE			X	
POSITION NO. 9	OUTLET PORT				
	A - 1/4" FNPT		X		
	C - 1/2" MNPT				X
	D - 3/4" FNPT	X			
	E - 1" FNPT			X	
	G - 3/8" MNPT		X	X	
	L - 1" 150# FLANGE			X	
POSITION NO. 10	MOTOR				
	Y - PUMP AND MOTOR	SEE NOTE 3		SEE NOTE 3	
	N - PUMP WET END ONLY	X	X	X	X
		X		X	X
POSITION NO. 11 & 12	OPTIONS				
	SS - NO OPTIONS	X	X	X	X
	AX - VENTS AND DRAINS	X		X	
	BX - SEAL FLUSHING PORT(S)	X	X	X	X
	CX - VENTS, DRAINS AND SEAL FLUSHING PORT(S)	X		X	

NOTE 1: 316SS SINGLE 21 SEAL IS NOT AVAILABLE FOR C & H SERIES PUMPS IN ALLOY C CONSTRUCTION (PUMP MATERIAL OPTION C).

NOTE 2: SEAL FLUSHING PORTS ARE STANDARD FOR ALL PUMPS WITH DOUBLE SEALS AND ALL H SERIES PUMPS WITH SINGLE 9 SEAL.

NOTE 3: POWER FRAME OR 5 HP MOTOR OPTION IS REQUIRED WHEN SELECTING H4 OR H5 MODELS.

NOTE 4: MAXIMUM DISCHARGE PRESSURE FOR TYPE 21 SEAL IS 200 PSIG.

**ECD CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

STANDARD PUMP MATERIALS						
316SS						
			316SS PICKLE & PASSIVATE (B)			
			(A)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM

POSITION NO. 3 STANDARD PUMP NON-VARIABLE COMPONENTS

PUMP SHAFT	1	Y0700900 - 316	316SS	Y0700900 - 316	316SS	4
MOTOR ADAPTOR	1	Y1100300 - IRN	IRN	Y1100300 - IRN	IRN	10
GASKET	* 1	Y1300300 - TFE	TFE	Y1300300 - TFE	TFE	7
GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600900 - 000	ABS/NPRN	Y1600900 - 000	ABS/NPR	18
NAME TAG	1	Y9900200 - 000	188SS	Y9900200 - 000	188SS	11
IMPELLER SET SCREW	1	W771004 - 117	316SS	W771004 - 117	316SS	13
PUMP SHAFT SET SCREW	2	W771004 - 116	17-4PH	W771004 - 116	17-4PH	14
FRONT COVER BOLT	6	W770491 - 188	188SS	W770491 - 188	188SS	12
GUARD ASSEMBLY BOLT	4	W770517 - STL	STL	W770517 - STL	STL	19
GUARD ASSEMBLY FLAT WASHER	4	W774044 - STL	STL	W774044 - STL	STL	19
MOTOR ADAPTOR BOLT	4	W770425 - STL	STL	W770425 - STL	STL	15
MOTOR ADAPTOR LOCK WASHER	4	W771108 - STL	STL	W771108 - STL	STL	16
NAME TAG DRIVE SCREW	2	W771000 - 188	188SS	W771000 - 188	188SS	17

POSITION NO. 4 PUMP STAGE NON-VARIABLE POSITION NO. 4 IS ALWAYS 1

POSITION NO. 5 AVAILABLE PUMP MATERIALS - AS SHOWN

POSITION NO. 6 IMPELLER DIAMETER

S	IMPELLER	1	Y0100300 - 316	316SS	Y0100300 - P16	316SS (P&P)	3
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POSITION NO. 7 SEAL ARRANGEMENTS

A	SEAL HEAD	* 1	Y0900721 - 316	316/CBN/VTN	Y0900721 - 316	316/CBN/VTN	5
	SEAL SEAT	* 1	Y1000521 - 000	CER/VTN	Y1000521 - 000	CER/VTN	6
P	SEAL HEAD	* 1	Y0901821 - 316	316/SIC/EPR	Y0901821 - 316	316/SIC/EPR	5
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	6
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	8
K	SEAL HEAD	* 1	Y0900809 - 316	316/CBN/TFE	Y0900809 - 316	316/CBN/TFE	5
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	6
	ROTARY SEAL PIN (SHAFT)	2	Y9900100 - 316	316SS	Y9900100 - 316	316SS	9
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	8
T	SEAL HEAD	* 1	Y0902209 - 316	316/FTF/TFE	Y0902209 - 316	316/FTF/TFE	5
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	6
	ROTARY SEAL PIN (SHAFT)	2	Y9900100 - 316	316SS	Y9900100 - 316	316SS	9
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	8

POSITION NO. 8 INLET PORT SIZE

A	FRONT COVER 1/4" FNPT	1	Y0200300 - 316	316SS	Y0200300 - P16	316SS (P&P)	2
C	FRONT COVER 1/2" FNPT	1	Y0200400 - 316	316SS	Y0200400 - P16	316SS (P&P)	2

POSITION NO. 9, 11 & 12 OUTLET PORT SIZE

A	SS	REAR HOUSING ASSY 1/4" FNPT	1	Y0501000 - 316	316SS	Y0501000 - P16	316SS (P&P)	1
	BX	REAR HOUSING ASSY 1/4" FNPT	1	Y0500604 - 316	316SS	Y0500604 - P16	316SS (P&P)	1
		PIPE PLUG 1/8" NPT	1	W772565 - 316	316SS	W772565 - 316	316SS	20
G	SS	REAR HOUSING ASSY 3/8" MNPT	1	Y0500700 - 316	316SS	Y0500700 - P16	316SS (P&P)	1
	BX	REAR HOUSING ASSY 3/8" MNPT	1	Y0500904 - 316	316SS	Y0500904 - P16	316SS (P&P)	1
		PIPE PLUG 1/8" NPT	1	W772565 - 316	316SS	W772565 - 316	316SS	20

POSITION NO. 10 MOTOR

Y	PUMP AND MOTOR						
N	PUMP END ONLY (SHIPPING SUPPORT)	1	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	--

POSITION NO. 11 & 12 OPTIONS

OPTIONS SHOWN IN CONJUNCTION WITH POSITION NO. 9							
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* DENOTES RECOMMENDED SPARE PARTS

**ECJ CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

STANDARD PUMP MATERIALS						
			316SS (A)	316SS PICKLE & PASSIVATE (B)		
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM

POSITION NO. 3 STANDARD PUMP NON-VARIABLE COMPONENTS

SEAL STOP	1	Y1500500 - 316	316SS	Y1500500 - 316	316SS	6
MOTOR ADAPTOR	1	Y1100200 - IRN	IRN	Y1100200 - IRN	IRN	22
GASKET (REAR HOUSING)	* 1	Y1300200 - TFE	TFE	Y1300200 - TFE	TFE	14
NAME TAG	1	Y9900200 - 000	188SS	Y9900200 - 000	188SS	23
PUMP SHAFT SET SCREW	2	W771004 - 116	17-4PH	W771004 - 116	17-4PH	31
MOTOR ADAPTOR BOLT	4	W770426 - STL	STL	W770426 - STL	STL	32
MOTOR ADAPTOR LOCK WASHER	4	W771108 - STL	STL	W771108 - STL	STL	33
GUARD ASSEMBLY BOLT	4	W770517 - STL	STL	W770517 - STL	STL	36
GUARD ASSEMBLY FLAT WASHER	4	W774044 - STL	STL	W774044 - STL	STL	36
SEAL STOP LOCK WASHER	3	W771106 - 188	188SS	W771106 - 188	188SS	29
NAME TAG DRIVE SCREW	2	W771000 - 188	188SS	W771000 - 188	188SS	34

POSITION NO. 4 PUMP STAGE

1	PUMP SHAFT	1	Y0700800 - 316	316SS	Y0700800 - 316	316SS	8
	IMPELLER SET SCREW	2	W771004-118	316SS	W771004-118	316SS	30
	FRONT COVER BOLT	7	W770405 - 188	188SS	W770405 - 188	188SS	25
	FRONT COVER LOCK WASHER	7	W771117 - 188	188SS	W771117 - 188	188SS	26
2	PUMP SHAFT	* 1	Y0700700 - 316	316SS	Y0700700 - 316	316SS	8
	BEARING ASSEMBLY	* 1	Y0800400 - 316	316/CBN	Y0800400 - 316	316/CBN	9
	ACTIVE HOUSING	1	Y0400200 - 316	316SS	Y0400200 - P16	316SS (P&P)	2
	DEAD HOUSING	1	Y0400300 - 316	316SS	Y0400300 - P16	316SS (P&P)	3
	GASKET (HOUSING)	* 2	Y1300100 - TFE	TFE	Y1300100 - TFE	TFE	15
	ALIGNMENT PIN 'A' 1.00 INCH	2	W771209 - 003	188SS	W771209 - 003	188SS	19
	ALIGNMENT PIN 'B' .75 INCH	2	W771209 - 004	188SS	W771209 - 004	188SS	20
	IMPELLER SET SCREW	4	W771004 - 118	316SS	W771004 - 118	316SS	30
	FRONT COVER BOLT	1	W770462 - 188	188SS	W770462 - 188	188SS	25
	FRONT COVER BOLT	7	W770472 - 188	188SS	W770472 - 188	188SS	25
	FRONT COVER LOCK WASHER	8	W771117 - 188	188SS	W771117 - 188	188SS	26
FRONT COVER NUT	1	W771213 - 188	188SS	W771213 - 188	188SS	27	
3	PUMP SHAFT	* 1	Y0700600 - 316	316SS	Y0700600 - 316	316SS	8
	BEARING ASSEMBLY	* 2	Y0800400 - 316	316/CBN	Y0800400 - 316	316/CBN	9
	ACTIVE HOUSING	2	Y0400200 - 316	316SS	Y0400200 - P16	316SS (P&P)	2
	DEAD HOUSING	2	Y0400300 - 316	316SS	Y0400300 - P16	316SS (P&P)	3
	GASKET (HOUSING)	* 4	Y1300100 - TFE	TFE	Y1300100 - TFE	TFE	15
	ALIGNMENT PIN 'A' 1.00 INCH	2	W771209 - 003	188SS	W771209 - 003	188SS	19
	ALIGNMENT PIN 'B' .75 INCH	2	W771209 - 004	188SS	W771209 - 004	188SS	20
	ALIGNMENT PIN 'C' .50 INCH	4	W771209 - 005	188SS	W771209 - 005	188SS	21
	IMPELLER SET SCREW	6	W771004 - 118	316SS	W771004 - 118	316SS	30
	FRONT COVER BOLT	1	W770495 - 188	188SS	W770495 - 188	188SS	25
	FRONT COVER BOLT	7	W770409 - 188	188SS	W770409 - 188	188SS	25
FRONT COVER LOCK WASHER	8	W771117 - 188	188SS	W771117 - 188	188SS	26	
FRONT COVER NUT	1	W771213 - 188	188SS	W771213 - 188	188SS	27	

* DENOTES RECOMMENDED SPARE PARTS

**ECJ CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS						
		316SS (A)			316SS PICKLE & PASSIVATE (B)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM		
POSITION NO. 5 AVAILABLE PUMP MATERIALS - AS SHOWN								
POSITION NO. 6 IMPELLER DIAMETER								
S	IMPELLER 3.75" DIA	1-3	Y0100400 - 316	316SS	Y0100400 - P16	316SS (P&P)	7	
F	IMPELLER 3.12" DIA	2-3	Y0100408 - 316	316SS	Y0100408 - P16	316SS (P&P)	7	
POSITION NO. 7 SEAL ARRANGEMENTS								
A	SEAL HEAD	* 1	Y0900921 - 316	316/CBN/VTN	Y0900921 - 316	316/CBN/VTN	10	
	SEAL SEAT	* 1	Y1000521 - 000	CER/VTN	Y1000521 - 000	CER/VTN	11	
	GASKET (SEAL STOP)	* 1	Y1300400 - TFE	TFE	Y1300400 - TFE	TFE	16	
	GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600300 - 000	ABS/NPRN	Y1600300 - 000	ABS/NPRN	35	
	PIPE PLUG 1/8" NPT	0-1	W772565 - 316	316SS	W772565 - 316	316SS	24	
	SEAL STOP BOLT	3	W770490 - 188	188SS	W770490 - 188	188SS	28	
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500400 - 316	316SS	Y0500400 - P16	316SS (P&P)	4	
	REAR HOUSING (1 PLUG) POSN NO. 11 & 12 - BX ONLY		Y0500404 - 316	316SS	Y0500404 - P16	316SS (P&P)	4	
P	SEAL HEAD	* 1	Y0901721 - 316	316/SIC/EPR	Y0901721 - 316	316/SIC/EPR	10	
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	11	
	GASKET (SEAL STOP)	* 1	Y1300400 - TFE	TFE	Y1300400 - TFE	TFE	16	
	GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600300 - 000	ABS/NPRN	Y1600300 - 000	ABS/NPRN	35	
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	18	
	PIPE PLUG 1/8" NPT	0-1	W772565 - 316	316SS	W772565 - 316	316SS	24	
	SEAL STOP BOLT	3	W770490 - 188	188SS	W770490 - 188	188SS	28	
	REAR HOUSING (0 PLUG) POSN NO. 11 & 12 - SS ONLY	1	Y0500400 - 316	316SS	Y0500400 - P16	316SS (P&P)	4	
REAR HOUSING (1 PLUG) POSN NO. 11 & 12 - BX ONLY	Y0500404 - 316		316SS	Y0500404 - P16	316SS (P&P)	4		
C	SEAL HEAD	* 2	Y0900921 - 316	316/CBN/VTN	Y0900921 - 316	316/CBN/VTN	10	
	SEAL SEAT	* 2	Y1000521 - 000	CER/VTN	Y1000521 - 000	CER/VTN	11	
	GLAND (DOUBLE SEAL)	1	Y1500400 - 316	316SS	Y1500400 - 316	316SS	12	
	GASKET (SEAL STOP)	* 2	Y1300400 - TFE	TFE	Y1300400 - TFE	TFE	16	
	GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600600 - 000	ABS/NPRN	Y1600600 - 000	ABS/NPRN	35	
	SEAL STOP BOLT	3	W770500 - 188	188SS	W770500 - 188	188SS	28	
	REAR HOUSING ASSEMBLY POSN NO. 11 & 12 - SS ONLY	1	Y0500800 - 316	316SS	Y0500800 - P16	316SS (P&P)	5	
K	SEAL HEAD	* 1	Y0901009 - 316	316/CBN/TFE	Y0901009 - 316	316/CBN/TFE	10	
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	11	
	GASKET (SEAL STOP)	* 1	Y1300400 - TFE	TFE	Y1300400 - TFE	TFE	16	
	GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600300 - 000	ABS/NPRN	Y1600300 - 000	ABS/NPRN	35	
	ROTARY SEAL PIN (SHAFT)	2	Y9900100 - 316	316SS	Y9900100 - 316	316SS	17	
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	18	
	PIPE PLUG 1/8" NPT	0-1	W772565 - 316	316SS	W772565 - 316	316SS	24	
	SEAL STOP BOLT	3	W770490 - 188	188SS	W770490 - 188	188SS	28	
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500400 - 316	316SS	Y0500400 - P16	316SS (P&P)	4	
REAR HOUSING (1 PLUG) POSN NO. 11 & 12 - BX ONLY	Y0500404 - 316		316SS	Y0500404 - P16	316SS (P&P)	4		
T	SEAL HEAD	* 1	Y0902109 - 316	316/FTF/TFE	Y0902109 - 316	316/FTF/TFE	10	
	SEAL SEAT	* 1	Y1000609 - 000	SICBD/TFE	Y1000609 - 000	SICBD/TFE	11	
	GASKET (SEAL STOP)	* 1	Y1300400 - TFE	TFE	Y1300400 - TFE	TFE	16	
	GUARD ASSEMBLY (PUMP SHAFT)	1	Y1600300 - 000	ABS/NPRN	Y1600300 - 000	ABS/NPRN	35	
	ROTARY SEAL PIN (SHAFT)	2	Y9900100 - 316	316SS	Y9900100 - 316	316SS	17	
	ROTARY SEAL PIN (SEAL SEAT)	1	W771206 - 052	188SS	W771206 - 052	188SS	18	
	PIPE PLUG 1/8" NPT	0-1	W772565 - 316	316SS	W772565 - 316	316SS	24	
	SEAL STOP BOLT	3	W770490 - 188	188SS	W770490 - 188	188SS	28	
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500400 - 316	316SS	Y0500400 - P16	316SS (P&P)	4	
REAR HOUSING (1 PLUG) POSN NO. 11 & 12 - BX ONLY	Y0500404 - 316		316SS	Y0500404 - P16	316SS (P&P)	4		

* DENOTES RECOMMENDED SPARE PARTS

**ECJ CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

STANDARD PUMP MATERIALS							
316SS (A)				316SS PICKLE & PASSIVATE (B)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM	
POSITION NO. 8 INLET PORT SIZE							
C	FRONT COVER J1 1/2' FNPT	1	Y0200600 - 316	316SS	Y0200600 - P16	316SS (P&P)	1
C	FRONT COVER J2 & J3 1/2' FNPT	1	Y0200500 - 316	316SS	Y0200500 - P16	316SS (P&P)	1
POSITION NO. 9 OUTLET PORT SIZE NON-VARIABLE POSITION NO. 9 IS ALWAYS C 1/2' MNPT							
POSITION NO. 10 MOTOR							
Y	PUMP AND MOTOR						
N	PUMP END ONLY (SHIPPING SUPPORT)	1	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	--
POSITION NO. 11 & 12 OPTIONS							
OPTIONS SHOWN IN CONJUNCTION WITH POSITION NO. 7							

* DENOTES RECOMMENDED SPARE PARTS

**ECC CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS						
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)		
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM

POSITION NO. 3 STANDARD PUMP NON-VARIABLE COMPONENTS

MOTOR ADAPTOR	1	Y1100100 - IRN	IRN	Y1100100 - IRN	IRN	Y1100100 - IRN	IRN	13
O-RING (REAR HOUSING)	* 1	W209729 - TFE	TFE	W209729 - TFE	TFE	W209729 - TFE	TFE	10
NAME TAG	1	Y9900200 - 000	188SS	Y9900200 - 000	188SS	Y9900200 - 000	188SS	14
PUMP SHAFT SET SCREW	2	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	24
MOTOR ADAPTOR BOLT	4	W770426 - STL	STL	W770426 - STL	STL	W770426 - STL	STL	25
MOTOR ADAPTOR LOCK WASHER	4	W771108 - STL	STL	W771108 - STL	STL	W771108 - STL	STL	26
FRONT COVER BOLT	6	W770403 - 188	188SS	W770403 - 188	188SS	W770403 - 188	188SS	16
FRONT COVER LOCK WASHER	6	W771117 - 188	188SS	W771117 - 188	188SS	W771117 - 188	188SS	17
IMPELLER BOLT	1	W770517 - 316	316SS	W770517 - 316	316SS	W770517 - HCO	ALLOY C	22
IMPELLER WASHER	1	W771006 - 316	316SS	W771006 - 316	316SS	W771006 - HCO	ALLOY C	23
REAR HOUSING LOCK WASHER	4	W771108 - 188	188SS	W771108 - 188	188SS	W771108 - 188	188SS	19
NAME TAG DRIVE SCREW	2	W771000 - 188	188SS	W771000 - 188	188SS	W771000 - 188	188SS	27

POSITION NO. 4 PUMP STAGE NON-VARIABLE POSITION NO. 4 IS ALWAYS 1

POSITION NO. 5 AVAILABLE PUMP MATERIALS - AS SHOWN

POSITION NO. 6 IMPELLER DIAMETER

S	IMPELLER 3.88 DIA	1	Y0100200 - 316	316SS	Y0100200 - P16	316SS (P&P)	Y0100200 - HCO	ALLOY C	4
A	IMPELLER 3.44 DIA	1	Y0100206 - 316	316SS	Y0100206 - P16	316SS (P&P)	Y0100206 - HCO	ALLOY C	4
B	IMPELLER 3.06 DIA	1	Y0100210 - 316	316SS	Y0100210 - P16	316SS (P&P)	Y0100210 - HCO	ALLOY C	4

POSITION NO. 7 SEAL ARRANGEMENTS

A	SEAL HEAD	* 1	Y0900121 - 316	316/CBN/VTN	Y0900121 - 316	316/CBN/VTN	NOT AVAILABLE	6
	SEAL SEAT	* 1	Y1000121 - 000	CER/VTN	Y1000121 - 000	CER/VTN		7
	PUMP SHAFT	1	Y0700500 - 316	316SS	Y0700500 - 316	316SS		5
	PIPE PLUG 1/8" NPT	0-4	W772565 - 316	316SS	W772565 - 316	316SS		15
	REAR HOUSING BOLT	4	W770425 - 188	188SS	W770425 - 188	188SS		18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500100 - 316	316SS	Y0500100 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500103 - 316	316SS	Y0500103 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY		Y0500104 - 316	316SS	Y0500104 - P16	316SS (P&P)		2
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - 316		316SS	Y0500105 - P16	316SS (P&P)	2		
P	SEAL HEAD	* 1	Y0901621 - 316	316/SIC/EPR	Y0901621 - 316	316/SIC/EPR	NOT AVAILABLE	6
	SEAL SEAT	* 1	Y1000209 - 000	SICBD/TFE	Y1000209 - 000	SICBD/TFE		7
	PUMP SHAFT	1	Y0700500 - 316	316SS	Y0700500 - 316	316SS		5
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS		12
	PIPE PLUG 1/8" NPT	0-4	W772565 - 316	316SS	W772565 - 316	316SS		15
	REAR HOUSING BOLT	4	W770425 - 188	188SS	W770425 - 188	188SS		18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500100 - 316	316SS	Y0500100 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500103 - 316	316SS	Y0500103 - P16	316SS (P&P)		2
REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY	Y0500104 - 316		316SS	Y0500104 - P16	316SS (P&P)	2		
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - 316		316SS	Y0500105 - P16	316SS (P&P)	2		

* DENOTES RECOMMENDED SPARE PARTS

**ECC CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

STANDARD PUMP MATERIALS								
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)		
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM
POSITION NO. 7 SEAL ARRANGEMENTS CONTINUED								
K	SEAL HEAD	* 1	Y0900209 - 316	316/CBN/TFE	Y0900209 - 316	316/CBN/TFE	NOT AVAILABLE	6
	SEAL SEAT	* 1	Y1000209 - 000	SICBD/TFE	Y1000209 - 000	SICBD/TFE		7
	PUMP SHAFT	1	Y0700500 - 316	316SS	Y0700500 - 316	316SS		5
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS		12
	PIPE PLUG 1/8" NPT	0-4	W772565 - 316	316SS	W772565 - 316	316SS		15
	REAR HOUSING BOLT	4	W770425 - 188	188SS	W770425 - 188	188SS		18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500100 - 316	316SS	Y0500100 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500103 - 316	316SS	Y0500103 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY		Y0500104 - 316	316SS	Y0500104 - P16	316SS (P&P)		2
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - 316		316SS	Y0500105 - P16	316SS (P&P)	2		
T	SEAL HEAD	* 1	Y0902009 - 316	316/FTF/TFE	Y0902009 - 316	316/FTF/TFE	NOT AVAILABLE	6
	SEAL SEAT	* 1	Y1000209 - 000	SICBD/TFE	Y1000209 - 000	SICBD/TFE		7
	PUMP SHAFT	1	Y0700500 - 316	316SS	Y0700500 - 316	316SS		5
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS		12
	PIPE PLUG 1/8" NPT	0-4	W772565 - 316	316SS	W772565 - 316	316SS		15
	REAR HOUSING BOLT	4	W770425 - 188	188SS	W770425 - 188	188SS		18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500100 - 316	316SS	Y0500100 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500103 - 316	316SS	Y0500103 - P16	316SS (P&P)		2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY		Y0500104 - 316	316SS	Y0500104 - P16	316SS (P&P)		2
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - 316		316SS	Y0500105 - P16	316SS (P&P)	2		
B	SEAL HEAD	* 1	NOT AVAILABLE		NOT AVAILABLE	Y0900209 - HCO	HCO/CBN/TFE	6
	SEAL SEAT	* 1				Y1000209 - 000	SICBD/TFE	7
	PUMP SHAFT	1				Y0700500 - HCO	ALLOY C	5
	ROTARY SEAL PIN (OUTER)	1				W771206 - 052	188SS	12
	PIPE PLUG 1/8" NPT	0-4				W772565 - HCO	ALLOY C	15
	REAR HOUSING BOLT	4				W770425 - 188	188SS	18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1				Y0500100 - HCO	ALLOY C	2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY					Y0500103 - HCO	ALLOY C	2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY					Y0500104 - HCO	ALLOY C	2
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - HCO		ALLOY C	2				
R	SEAL HEAD	* 1	NOT AVAILABLE		NOT AVAILABLE	Y0902009 - HCO	HCO/FTF/TFE	6
	SEAL SEAT	* 1				Y1000209 - 000	SICBD/TFE	7
	PUMP SHAFT	1				Y0700500 - HCO	ALLOY C	5
	ROTARY SEAL PIN (OUTER)	1				W771206 - 052	188SS	12
	PIPE PLUG 1/8" NPT	0-4				W772565 - HCO	ALLOY C	15
	REAR HOUSING BOLT	4				W770425 - 188	188SS	18
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1				Y0500100 - HCO	ALLOY C	2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY					Y0500103 - HCO	ALLOY C	2
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY					Y0500104 - HCO	ALLOY C	2
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500105 - HCO		ALLOY C	2				

* DENOTES RECOMMENDED SPARE PARTS

**ECC CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS						
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)		
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM

POSITION NO. 7 SEAL ARRANGEMENTS CONTINUED

E	SEAL HEAD	* 1	Y09003D9 - 316	316/CBN/TFE	Y09003D9 - 316	316/CBN/TFE	Y09003D9 - 316	316/CBN/TFE	6
	SEAL SEAT	* 2	Y1000209 - 000	SICBD/TFE	Y1000209 - 000	SICBD/TFE	Y1000209 - 000	SICBD/TFE	7
	PUMP SHAFT	1	Y0701400 - 316	316SS	Y0701400 - 316	316SS	Y0701400 - HCO	ALLOY C	5
	ROTARY SEAL PIN (INNER)	1	Y9900100 - 316	316SS	Y9900100 - 316	316SS	Y9900100 - HCO	ALLOY C	12
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS	W771206 - 052	188SS	12
	GLAND (DOUBLE SEAL)	1	Y1500900 - 316	316SS	Y1500900 - 316	316SS	Y1500900 - HCO	ALLOY C	8
	O-RING (GLAND)	* 1	W209788 - TFE	TFE	W209788 - TFE	TFE	W209788 - TFE	TFE	11
	PIPE PLUG 1/8" NPT	0-2	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	15
	REAR HOUSING STUD	4	W209237 - 188	188SS	W209237 - 188	188SS	W209237 - 188	188SS	20
	REAR HOUSING NUT	4	W771215 - 188	188SS	W771215 - 188	188SS	W771215 - 188	188SS	21
	REAR HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0501400 - 316	316SS	Y0501400 - P16	316SS (P&P)	Y0501400 - HCO	ALLOY C	3
	REAR HOUSING ASSY (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0501403 - 316	316SS	Y0501403 - P16	316SS (P&P)	Y0501403 - HCO	ALLOY C	3
	F	SEAL HEAD	* 1	NOT AVAILABLE		NOT AVAILABLE		Y09003D9 - HCO	HCO/CBN/TFE
SEAL SEAT		* 2	NOT AVAILABLE		NOT AVAILABLE		Y1000209 - 000	SICBD/TFE	7
PUMP SHAFT		1	NOT AVAILABLE		NOT AVAILABLE		Y0701400 - HCO	ALLOY C	5
ROTARY SEAL PIN (INNER)		1	NOT AVAILABLE		NOT AVAILABLE		Y9900100 - HCO	ALLOY C	12
ROTARY SEAL PIN (OUTER)		1	NOT AVAILABLE		NOT AVAILABLE		W771206 - 052	188SS	12
GLAND (DOUBLE SEAL)		1	NOT AVAILABLE		NOT AVAILABLE		Y1500900 - HCO	ALLOY C	8
O-RING (GLAND)		* 1	NOT AVAILABLE		NOT AVAILABLE		W209788 - TFE	TFE	11
PIPE PLUG 1/8" NPT		0-2	NOT AVAILABLE		NOT AVAILABLE		W772565 - HCO	ALLOY C	15
REAR HOUSING STUD		4	NOT AVAILABLE		NOT AVAILABLE		W209237 - 188	188SS	20
REAR HOUSING NUT		4	NOT AVAILABLE		NOT AVAILABLE		W771215 - 188	188SS	21
REAR HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS ONLY		1	NOT AVAILABLE		NOT AVAILABLE		Y0501400 - HCO	ALLOY C	3
REAR HOUSING ASSY (2 PLUGS) POSN NO. 11 & 12 - AX ONLY			NOT AVAILABLE		NOT AVAILABLE		Y0501403 - HCO	ALLOY C	3

POSITION NO. 8 INLET PORT SIZE

E	FRONT COVER 1" FNPT	1	Y0200100 - 316	316SS	Y0200100 - P16	316SS (P&P)	Y0200100 - HCO	ALLOY C	1
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POSITION NO. 9 OUTLET PORT SIZE NON-VARIABLE POSITION NO. 9 IS ALWAYS D 3/4" FNPT

POSITION NO. 10 MOTOR

Y	PUMP AND MOTOR								
N	PUMP WET END ONLY								
	SHIPPING SUPPORT	1	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	--

POSITION NO. 11 & 12 OPTIONS

OPTIONS SHOWN IN CONJUNCTION WITH POSITIONS NO. 7									
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* DENOTES RECOMMENDED SPARE PARTS

**ECH CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

DESCRIPTION	QTY	STANDARD PUMP MATERIALS						ITEM
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)		
		PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	
POSITION NO. 3 STANDARD PUMP NON-VARIABLE COMPONENTS								
MOTOR ADAPTOR	1	Y1100100 - IRN	IRN	Y1100100 - IRN	IRN	Y1100100 - IRN	IRN	15
PUMP SUPPORT BRACKET	1	Y1200200 - 000	STL	Y1200200 - 000	STL	Y1200200 - 000	STL	31
NAME TAG	1	Y9900200 - 000	188SS	Y9900200 - 000	188SS	Y9900200 - 000	188SS	16
MOTOR ADAPTOR BOLT	4	W770426 - STL	STL	W770426 - STL	STL	W770426 - STL	STL	28
MOTOR ADAPTOR LOCK WASHER	4	W771108 - STL	STL	W771108 - STL	STL	W771108 - STL	STL	29
FRONT COVER LOCK WASHER	6	W771108 - 188	188SS	W771108 - 188	188SS	W771108 - 188	188SS	19
IMPELLER BOLT	1	W770459 - 316	316SS	W770459 - 316	316SS	W770459 - HCO	ALLOY C	25
IMPELLER WASHER ASSY	1	Y9902200 - 316	316SS	Y9902200 - 316	316SS	Y9902200 - HCO	ALLOY C	
IMPELLER WASHER		Y9901500 - 316	316SS	Y9901500 - 316	316SS	Y9901500 - HCO	ALLOY C	26
IMPELLER LOCK WASHER	*	Y9902100 - 316	316SS	Y9902100 - 316	316SS	Y9902100 - HCO	ALLOY C	26A
NAME TAG DRIVE SCREW	2	W771000 - 188	188SS	W771000 - 188	188SS	W771000 - 188	188SS	30

POSITION NO. 4 PUMP STAGE									
1	O-RING (REAR HOUSING)	* 1	W209728 - TFE	TFE	W209728 - TFE	TFE	W209728 - TFE	TFE	12
	IMPELLER KEY	1	W773097 - 026	316SS	W773097 - 026	316SS	W773097 - 028	ALLOY C	24
	FRONT COVER BOLT	6	W770427 - 188	188SS	W770427 - 188	188SS	W770427 - 188	188SS	18
	PUMP SHAFT SET SCREW	2	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	27
2	O-RING (HOUSING ASSY)	* 2	W209728 - TFE	TFE	W209728 - TFE	TFE	W209728 - TFE	TFE	12
	IMPELLER SPACER	1	Y1400100 - 316	316SS	Y1400100 - 316	316SS	Y1400100 - HCO	ALLOY C	6
	PIPE PLUG 1/8" NPT	+ 0-2	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	17
	IMPELLER KEY	2	W773097 - 026	316SS	W773097 - 026	316SS	W773097 - 028	ALLOY C	24
	FRONT COVER BOLT	6	W770434 - 188	188SS	W770434 - 188	188SS	W770434 - 188	188SS	18
	PUMP SHAFT SET SCREW	3	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	27
++	HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS OR BX	1	Y0400400 - 316	316SS	Y0400400 - P16	316SS (P&P)	Y0400400 - HCO	ALLOY C	2
++	HOUSING ASSY (2 PLUGS) POSN NO. 11 & 12 - AX OR CX		Y0400403 - 316	316SS	Y0400403 - P16	316SS (P&P)	Y0400403 - HCO	ALLOY C	2
3	O-RING (HOUSING ASSY)	* 3	W209728 - TFE	TFE	W209728 - TFE	TFE	W209728 - TFE	TFE	12
	IMPELLER SPACER	2	Y1400100 - 316	316SS	Y1400100 - 316	316SS	Y1400100 - HCO	ALLOY C	6
	PIPE PLUG 1/8" NPT	+ 0-4	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	17
	IMPELLER KEY	3	W773097 - 026	316SS	W773097 - 026	316SS	W773097 - 028	ALLOY C	24
	FRONT COVER BOLT	6	W770436 - 188	188SS	W770436 - 188	188SS	W770436 - 188	188SS	18
	PUMP SHAFT SET SCREW	3	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	27
	++	HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS OR BX	2	Y0400400 - 316	316SS	Y0400400 - P16	316SS (P&P)	Y0400400 - HCO	ALLOY C
++	HOUSING ASSY (4 PLUGS) POSN NO. 11 & 12 - AX OR CX	Y0400403 - 316		316SS	Y0400403 - P16	316SS (P&P)	Y0400403 - HCO	ALLOY C	2
4	O-RING (HOUSING ASSY)	* 4	W209728 - TFE	TFE	W209728 - TFE	TFE	W209728 - TFE	TFE	12
	IMPELLER SPACER	3	Y1400100 - 316	316SS	Y1400100 - 316	316SS	Y1400100 - HCO	ALLOY C	6
	PIPE PLUG 1/8" NPT	+ 0-6	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	17
	IMPELLER KEY	4	W773097 - 026	316SS	W773097 - 026	316SS	W773097 - 028	ALLOY C	24
	FRONT COVER BOLT	6	W770502 - 188	188SS	W770502 - 188	188SS	W770502 - 188	188SS	18
	PUMP SHAFT SET SCREW	3	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	27
	++	HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS OR BX	3	Y0400400 - 316	316SS	Y0400400 - P16	316SS (P&P)	Y0400400 - HCO	ALLOY C
++	HOUSING ASSY (6 PLUGS) POSN NO. 11 & 12 - AX OR CX	Y0400403 - 316		316SS	Y0400403 - P16	316SS (P&P)	Y0400403 - HCO	ALLOY C	2
5	O-RING (HOUSING ASSY)	* 5	W209728 - TFE	TFE	W209728 - TFE	TFE	W209728 - TFE	TFE	12
	IMPELLER SPACER	4	Y1400100 - 316	316SS	Y1400100 - 316	316SS	Y1400100 - HCO	ALLOY C	6
	PIPE PLUG 1/8" NPT	+ 0-8	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	17
	IMPELLER KEY	5	W773097 - 026	316SS	W773097 - 026	316SS	W773097 - 028	ALLOY C	24
	FRONT COVER BOLT	6	W770503 - 188	188SS	W770503 - 188	188SS	W770503 - 188	188SS	18
	PUMP SHAFT SET SCREW	3	W771004 - 116	17-4PH	W771004 - 116	17-4PH	W771004 - 116	17-4PH	27
	++	HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS OR BX	4	Y0400400 - 316	316SS	Y0400400 - P16	316SS (P&P)	Y0400400 - HCO	ALLOY C
++	HOUSING ASSY (6 PLUGS) POSN NO. 11 & 12 - AX OR CX	Y0400403 - 316		316SS	Y0400403 - P16	316SS (P&P)	Y0400403 - HCO	ALLOY C	2

- * DENOTES RECOMMENDED SPARE PARTS
- + COMPONENT QUANTITY MAY BE CUMULATIVE OVER ENTIRE BILL OF MATERIAL
- ++ FIELD REPLACEABLE BEARING DESIGN FOR HOUSING ASSEMBLIES IS AVAILABLE, ORDER PART NUMBER Y0800900 - CGR

**ECH CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS							
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM	

POSITION NO. 5 AVAILABLE PUMP MATERIALS - AS SHOWN

POSITION NO. 6 IMPELLER DIAMETER

S	IMPELLER 4.56 DIA	0-5	Y0100100 - 316	316SS	Y0100100 - P16	316SS (P&P)	Y0100100 - HCO	ALLOY C	5	
	POSITION NO. 7 - E OR F ONLY									
	IMPELLER 4.56 DIA	1	Y0100500 - 316	316SS	Y0100500 - P16	316SS (P&P)	Y0100500 - HCO	ALLOY C	5	
C	IMPELLER 4.56 DIA	0-4	Y0100100 - 316	316SS	Y0100100 - P16	316SS (P&P)	Y0100100 - HCO	ALLOY C	5	
	POSITION NO. 7 - E OR F ONLY									
	IMPELLER 4.15 DIA	0-5	Y0100104 - 316	316SS	Y0100104 - P16	316SS (P&P)	Y0100104 - HCO	ALLOY C	5	
C	IMPELLER 4.15 DIA	1	Y0100504 - 316	316SS	Y0100504 - P16	316SS (P&P)	Y0100504 - HCO	ALLOY C	5	
	POSITION NO. 7 - E OR F ONLY									
	IMPELLER 4.15 DIA	0-4	Y0100104 - 316	316SS	Y0100104 - P16	316SS (P&P)	Y0100104 - HCO	ALLOY C	5	

POSITION NO. 7 SEAL ARRANGEMENTS

A	SEAL HEAD	* 1	Y0900421 - 316	316/CBN/VTN	Y0900421 - 316	316/CBN/VTN	NOT AVAILABLE	NOT AVAILABLE	8
	SEAL SEAT	* 1	Y1000321 - 000	CER/VTN	Y1000321 - 000	CER/VTN			9
	PIPE PLUG 1/8" NPT	+ 0-4	W772565 - 316	316SS	W772565 - 316	316SS			17
	REAR HOUSING BOLT	4	W770426 - 188	188SS	W770426 - 188	188SS			20
	REAR HOUSING LOCK WASHER	+ 4	W771108 - 188	188SS	W771108 - 188	188SS			21
	PUMP SHAFT H1 ONLY	1	Y0700100 - 316	316SS	Y0700100 - 316	316SS			7
	PUMP SHAFT H2 ONLY		Y0700200 - 316	316SS	Y0700200 - 316	316SS			7
	PUMP SHAFT H3 ONLY		Y0700300 - 316	316SS	Y0700300 - 316	316SS			7
	PUMP SHAFT H4 ONLY		Y0701900 - 316	316SS	Y0701900 - 316	316SS			7
	PUMP SHAFT H5 ONLY		Y0702000 - 316	316SS	Y0702000 - 316	316SS			7
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500200 - 316	316SS	Y0500200 - P16	316SS (P&P)			3
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500203 - 316	316SS	Y0500203 - P16	316SS (P&P)			3
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY		Y0500204 - 316	316SS	Y0500204 - P16	316SS (P&P)			3
	REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY		Y0500205 - 316	316SS	Y0500205 - P16	316SS (P&P)			3
P	SEAL HEAD	* 1	Y0901521 - 316	316/SIC/EPR	Y0901521 - 316	316/SIC/EPR	NOT AVAILABLE	NOT AVAILABLE	8
	SEAL SEAT	* 1	Y1000409 - 000	SICBD/TFE	Y1000409 - 000	SICBD/TFE			9
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS			14
	PIPE PLUG 1/8" NPT	+ 0-4	W772565 - 316	316SS	W772565 - 316	316SS			17
	REAR HOUSING BOLT	4	W770426 - 188	188SS	W770426 - 188	188SS			20
	REAR HOUSING LOCK WASHER	+ 4	W771108 - 188	188SS	W771108 - 188	188SS			21
	PUMP SHAFT H1 ONLY	1	Y0700100 - 316	316SS	Y0700100 - 316	316SS			7
	PUMP SHAFT H2 ONLY		Y0700200 - 316	316SS	Y0700200 - 316	316SS			7
	PUMP SHAFT H3 ONLY		Y0700300 - 316	316SS	Y0700300 - 316	316SS			7
	PUMP SHAFT H4 ONLY		Y0701900 - 316	316SS	Y0701900 - 316	316SS			7
	PUMP SHAFT H5 ONLY		Y0702000 - 316	316SS	Y0702000 - 316	316SS			7
	REAR HOUSING (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500200 - 316	316SS	Y0500200 - P16	316SS (P&P)			3
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0500203 - 316	316SS	Y0500203 - P16	316SS (P&P)			3
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - BX ONLY		Y0500204 - 316	316SS	Y0500204 - P16	316SS (P&P)			3
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - CX ONLY	Y0500205 - 316		316SS	Y0500205 - P16	316SS (P&P)	3			

* DENOTES RECOMMENDED SPARE PARTS

+ COMPONENT QUANTITY MAY BE CUMULATIVE OVER ENTIRE BILL OF MATERIAL

**ECH CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS							
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM	

POSITION NO. 7 SEAL ARRANGEMENTS CONTINUED

E	SEAL HEAD	* 1	Y09006D9 - 316	316/CBN/TFE	Y09006D9 - 316	316/CBN/TFE	Y09006D9 - 316	316/CBN/TFE	8
	SEAL SEAT	* 2	Y1000409 - 000	SICBD/TFE	Y1000409 - 000	SICBD/TFE	Y1000409 - 000	SICBD/TFE	9
	ROTARY SEAL PIN (INNER)	1	Y9900100 - 316	316SS	Y9900100 - 316	316SS	Y9900100 - HCO	ALLOY C	14
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS	W771206 - 052	188SS	14
	GLAND (DOUBLE SEAL)	1	Y1500700 - 316	316SS	Y1500700 - 316	316SS	Y1500700 - HCO	ALLOY C	10
	O-RING (GLAND)	* 1	W209787 - TFE	TFE	W209787 - TFE	TFE	W209787 - TFE	TFE	13
	PIPE PLUG 1/8" NPT	+ 0-2	W772565 - 316	316SS	W772565 - 316	316SS	W772565 - HCO	ALLOY C	17
	REAR HOUSING STUD	4	W209237 - 188	188SS	W209237 - 188	188SS	W209237 - 188	188SS	22
	REAR HOUSING NUT	8	W771215 - 188	188SS	W771215 - 188	188SS	W771215 - 188	188SS	23
	REAR HOUSING LOCK WASHER	+ 8	W771108 - 188	188SS	W771108 - 188	188SS	W771108 - 188	188SS	21
	PUMP SHAFT H1 ONLY	1	Y0701300 - 316	316SS	Y0701300 - 316	316SS	Y0701300 - HCO	ALLOY C	7
	PUMP SHAFT H2 ONLY		Y0701100 - 316	316SS	Y0701100 - 316	316SS	Y0701100 - HCO	ALLOY C	7
	PUMP SHAFT H3 ONLY		Y0701000 - 316	316SS	Y0701000 - 316	316SS	Y0701000 - HCO	ALLOY C	7
	PUMP SHAFT H4 ONLY		Y0702100 - 316	316SS	Y0702100 - 316	316SS	Y0702100 - HCO	ALLOY C	7
PUMP SHAFT H5 ONLY	Y0702200 - 316		316SS	Y0702200 - 316	316SS	Y0702200 - HCO	ALLOY C	7	
REAR HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0501200 - 316	316SS	Y0501200 - P16	316SS (P&P)	Y0501200 - HCO	ALLOY C	4	
REAR HOUSING ASSY (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0501203 - 316	316SS	Y0501203 - P16	316SS (P&P)	Y0501203 - HCO	ALLOY C	4	
F	SEAL HEAD	* 1	NOT AVAILABLE		NOT AVAILABLE		Y0900609 - HCO	HCO/CBN/TFE	8
	SEAL SEAT	* 2					Y1000409 - 000	SICBD/TFE	9
	ROTARY SEAL PIN (INNER)	1					Y9900100 - HCO	ALLOY C	14
	ROTARY SEAL PIN (OUTER)	1					W771206 - 052	188SS	14
	GLAND (DOUBLE SEAL)	1					Y1500700 - HCO	ALLOY C	10
	O-RING (GLAND)	* 1					W209787 - TFE	TFE	13
	PIPE PLUG 1/8" NPT	+ 0-2					W772565 - HCO	ALLOY C	17
	REAR HOUSING STUD	4					W209237 - 188	188SS	22
	REAR HOUSING NUT	8					W771215 - 188	188SS	23
	REAR HOUSING LOCK WASHER	+ 8					W771108 - 188	188SS	21
	PUMP SHAFT H1 ONLY	1					Y0701300 - HCO	ALLOY C	7
	PUMP SHAFT H2 ONLY						Y0701100 - HCO	ALLOY C	7
	PUMP SHAFT H3 ONLY						Y0701000 - HCO	ALLOY C	7
	PUMP SHAFT H4 ONLY		Y0702100 - HCO	ALLOY C	7				
PUMP SHAFT H5 ONLY	Y0702200 - HCO		ALLOY C	7					
REAR HOUSING ASSY (0 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0501200 - HCO	ALLOY C	4					
REAR HOUSING ASSY (2 PLUGS) POSN NO. 11 & 12 - AX ONLY		Y0501203 - HCO	ALLOY C	4					

POSITION NO. 8 INLET PORT SIZE

F	FRONT COVER 1 1/2" FNPT	1	Y0200200 - 316	316SS	Y0200200 - P16	316SS (P&P)	Y0200200 - HCO	ALLOY C	1
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POSITION NO. 9 OUTLET PORT SIZE NON-VARIABLE POSITION NO. 9 IS ALWAYS E 1" FNPT

POSITION NO. 10 MOTOR

Y	PUMP AND MOTOR								
N	PUMP WET END ONLY								
	SHIPPING SUPPORT H1	1	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	Y9900300 - 000	POLTHN	--
	SHIPPING SUPPORT H2 & H3		Y9900400 - 000	POLTHN	Y9900400 - 000	POLTHN	Y9900400 - 000	POLTHN	--

POSITION NO. 11 & 12 OPTIONS

OPTIONS SHOWN IN CONJUNCTION WITH POSITIONS NO. 4 & 7

- * DENOTES RECOMMENDED SPARE PARTS
- + COMPONENT QUANTITY MAY BE CUMULATIVE OVER ENTIRE BILL OF MATERIAL

**ECH CENTRICHEM PUMP
COMPOSITE BILL OF MATERIALS**

		STANDARD PUMP MATERIALS							
		316SS (A)		316SS PICKLE & PASSIVATE (B)		ALLOY C (C)			
DESCRIPTION	QTY	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER	MATERIAL	ITEM	
POSITION NO. 7 SEAL ARRANGEMENTS CONTINUED									
K	SEAL HEAD	* 1	Y0900509 - 316	316/CBN/TFE	Y0900509 - 316	316/CBN/TFE	NOT AVAILABLE	8	
	SEAL SEAT	* 1	Y1000409 - 000	SICBD/TFE	Y1000409 - 000	SICBD/TFE		9	
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS		14	
	PIPE PLUG 1/8" NPT	+ 2-4	W772565 - 316	316SS	W772565 - 316	316SS		17	
	REAR HOUSING BOLT	4	W770426 - 188	188SS	W770426 - 188	188SS		20	
	REAR HOUSING LOCK WASHER	+ 4	W771108 - 188	188SS	W771108 - 188	188SS		21	
	PUMP SHAFT H1 ONLY	1	Y0700100 - 316	316SS	Y0700100 - 316	316SS		7	
	PUMP SHAFT H2 ONLY		Y0700200 - 316	316SS	Y0700200 - 316	316SS		7	
	PUMP SHAFT H3 ONLY		Y0700300 - 316	316SS	Y0700300 - 316	316SS		7	
	PUMP SHAFT H4 ONLY		Y0701900 - 316	316SS	Y0701900 - 316	316SS		7	
	PUMP SHAFT H5 ONLY		Y0702000 - 316	316SS	Y0702000 - 316	316SS		7	
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500204 - 316	316SS	Y0500204 - P16	316SS (P&P)		3	
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - AX ONLY	Y0500205 - 316		316SS	Y0500205 - P16	316SS (P&P)	3			
T	SEAL HEAD	* 1	Y0901909 - 316	316/FTF/TFE	Y0901909 - 316	316/FTF/TFE	NOT AVAILABLE	8	
	SEAL SEAT	* 1	Y1000409 - 000	SICBD/TFE	Y1000409 - 000	SICBD/TFE		9	
	ROTARY SEAL PIN (OUTER)	1	W771206 - 052	188SS	W771206 - 052	188SS		14	
	PIPE PLUG 1/8" NPT	+ 2-4	W772565 - 316	316SS	W772565 - 316	316SS		17	
	REAR HOUSING BOLT	4	W770426 - 188	188SS	W770426 - 188	188SS		20	
	REAR HOUSING LOCK WASHER	+ 4	W771108 - 188	188SS	W771108 - 188	188SS		21	
	PUMP SHAFT H1 ONLY	1	Y0700100 - 316	316SS	Y0700100 - 316	316SS		7	
	PUMP SHAFT H2 ONLY		Y0700200 - 316	316SS	Y0700200 - 316	316SS		7	
	PUMP SHAFT H3 ONLY		Y0700300 - 316	316SS	Y0700300 - 316	316SS		7	
	PUMP SHAFT H4 ONLY		Y0701900 - 316	316SS	Y0701900 - 316	316SS		7	
	PUMP SHAFT H5 ONLY		Y0702000 - 316	316SS	Y0702000 - 316	316SS		7	
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - SS ONLY	1	Y0500204 - 316	316SS	Y0500204 - P16	316SS (P&P)		3	
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - AX ONLY	Y0500205 - 316		316SS	Y0500205 - P16	316SS (P&P)	3			
B	SEAL HEAD	* 1	NOT AVAILABLE	NOT AVAILABLE	Y0900509 - HCO	HCO/CBN/TFE	8		
	SEAL SEAT	* 1			Y1000409 - 000	SICBD/TFE	9		
	ROTARY SEAL PIN (OUTER)	1			W771206 - 052	188SS	14		
	PIPE PLUG 1/8" NPT	+ 2-4			W772565 - HCO	ALLOY C	17		
	REAR HOUSING BOLT	4			W770426 - 188	188SS	20		
	REAR HOUSING LOCK WASHER	+ 4			W771108 - 188	188SS	21		
	PUMP SHAFT H1 ONLY	1			Y0700100 - HCO	ALLOY C	7		
	PUMP SHAFT H2 ONLY				Y0700200 - HCO	ALLOY C	7		
	PUMP SHAFT H3 ONLY				Y0700300 - HCO	ALLOY C	7		
	PUMP SHAFT H4 ONLY				Y0701900 - HCO	ALLOY C	7		
	PUMP SHAFT H5 ONLY				Y0702000 - HCO	ALLOY C	7		
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - SS ONLY	1			Y0500204 - HCO	ALLOY C	3		
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - AX ONLY	Y0500205 - HCO		ALLOY C	3					
R	SEAL HEAD	* 1	NOT AVAILABLE	NOT AVAILABLE	Y0901909 - HCO	HCO/FTF/TFE	8		
	SEAL SEAT	* 1			Y1000409 - 000	SICBD/TFE	9		
	ROTARY SEAL PIN (OUTER)	1			W771206 - 052	188SS	14		
	PIPE PLUG 1/8" NPT	+ 2-4			W772565 - HCO	ALLOY C	17		
	REAR HOUSING BOLT	4			W770426 - 188	188SS	20		
	REAR HOUSING LOCK WASHER	+ 4			W771108 - 188	188SS	21		
	PUMP SHAFT H1 ONLY	1			Y0700100 - HCO	ALLOY C	7		
	PUMP SHAFT H2 ONLY				Y0700200 - HCO	ALLOY C	7		
	PUMP SHAFT H3 ONLY				Y0700300 - HCO	ALLOY C	7		
	PUMP SHAFT H4 ONLY				Y0701900 - HCO	ALLOY C	7		
	PUMP SHAFT H5 ONLY				Y0702000 - HCO	ALLOY C	7		
	REAR HOUSING (2 PLUGS) POSN NO. 11 & 12 - SS ONLY	1			Y0500204 - HCO	ALLOY C	3		
REAR HOUSING (4 PLUGS) POSN NO. 11 & 12 - AX ONLY	Y0500205 - HCO		ALLOY C	3					

* DENOTES RECOMMENDED SPARE PARTS

+ COMPONENT QUANTITY MAY BE CUMULATIVE OVER ENTIRE BILL OF MATERIAL

CENTRICHEM POWER FRAME ASSEMBLY
 COMPOSITE BILL OF MATERIALS
 FOR Y0400600-(SUFFIX FROM BELOW)

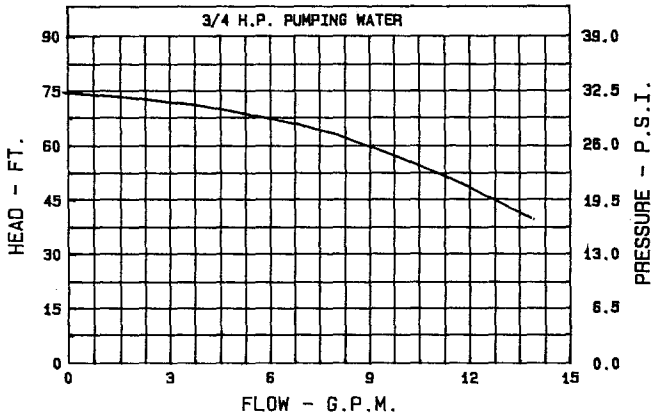
DESCRIPTION		QTY	PART NUMBER	MATERIAL	ITEM
COMMON PARTS	PIPE PLUG	1	W772565-STL	STEEL	13
	OIL CUP	1	A53801	STEEL	12
	AIR VENT	1	27219	STEEL	11
	SHIM PACKAGE	* 1	Y1300700-PAK	PLASTIC	8
	O-RING	* 1	W209789-NTR	NITRILE	7
	OIL SEAL	* 2	Y1501100-000	STL/NTR	6
	.25 LOCK WASHER	4	W771117-STL	STEEL	5
	.25-20 X .75 HEX HD BOLT	4	W770402-STL	STEEL	4
	.19 X 1.38 SQUARE KEY	1	W773098-010	STEEL	14
	BEARING CAP	1	Y1700200-000	STEEL	3
	POWER FRAME	1	Y0400500-IRN	CAST IRON	1
	.625 DIA. OUTPUT SHAFT FOR UP TO 3 H.P. INPUT				
SUFFIX	DRIVE SHAFT	1	Y0701600-000	STEEL	2
-000	BEARING, SINGLE ROW	* 2	Y0800800-000	STEEL	9
.875 DIA. OUTPUT SHAFT FOR UP TO 5 H.P. INPUT					
SUFFIX	DRIVE SHAFT	1	Y0701800-000	STEEL	2
-001	BEARING, SINGLE ROW	* 2	Y0800800-000	STEEL	9
.875 DIA. OUTPUT SHAFT FOR UP TO 10 H.P. INPUT					
SUFFIX	DRIVE SHAFT	1	Y0701500-000	STEEL	2
-002	BEARING, SINGLE ROW	* 1	Y0800800-000	STEEL	9
	BEARING, DOUBLE ROW	* 1	Y0800700-000	STEEL	10
.875 DIA. OUTPUT SHAFT FOR UP TO 20 H.P. INPUT					
SUFFIX	DRIVE SHAFT	1	Y0701700-000	STEEL	2
-003	BEARING, DOUBLE ROW	* 2	Y0800700-000	STEEL	10

* DENOTES RECOMMENDED SPARE PARTS

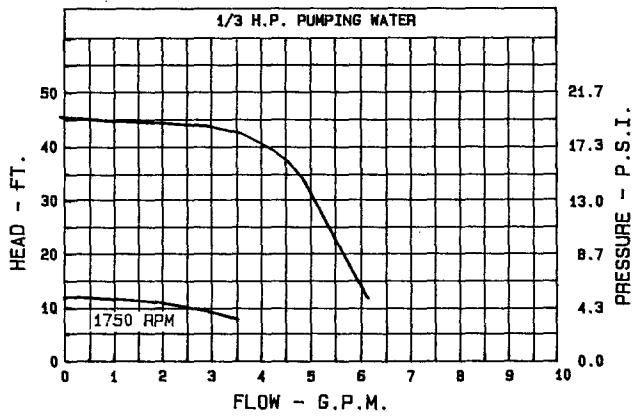
PUMP PERFORMANCE CURVES

3450 RPM

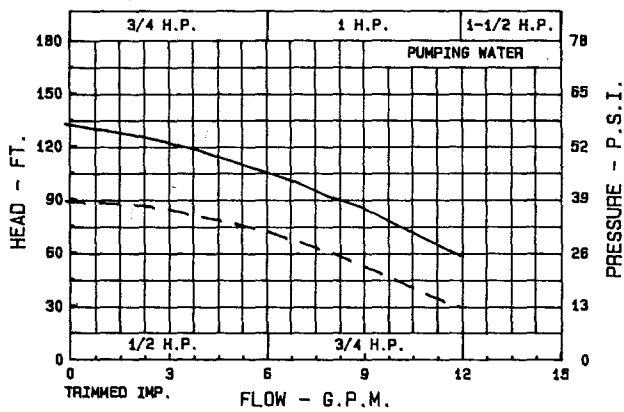
EASTERN CENTRICHEM ECJ1



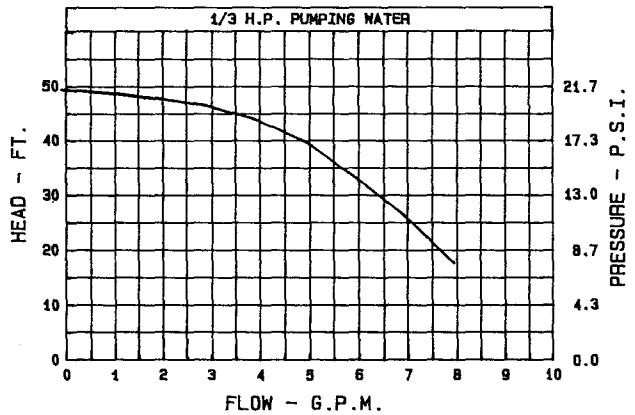
EASTERN CENTRICHEM ECD1
(1/4" INLET X 1/4" OUTLET)



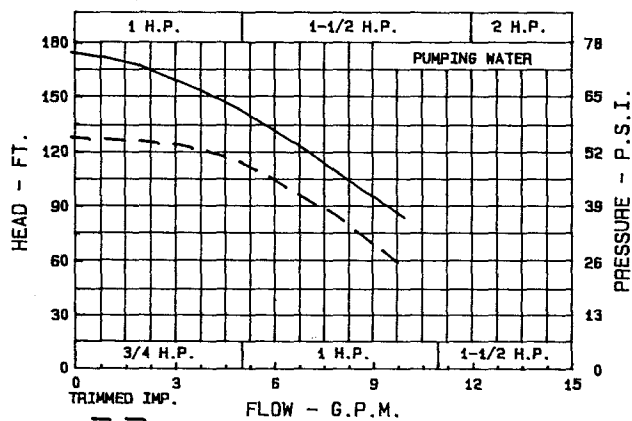
EASTERN CENTRICHEM ECJ2



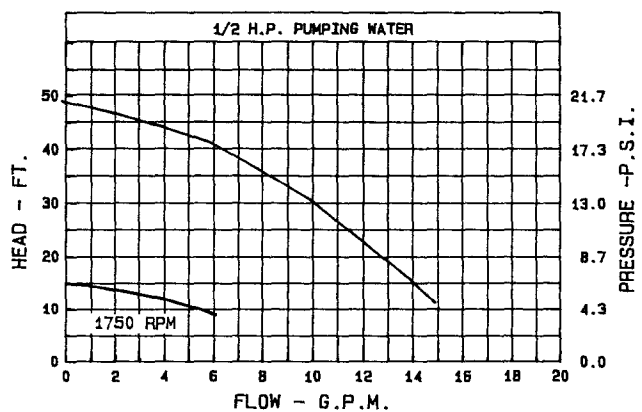
EASTERN CENTRICHEM ECD1
(1/2" INLET X 1/4" OUTLET)



EASTERN CENTRICHEM ECJ3

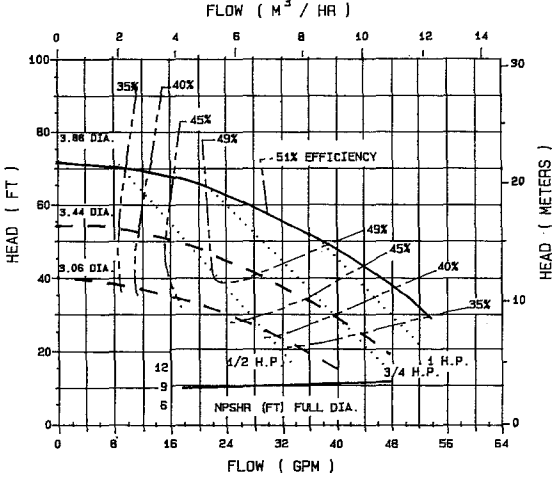


EASTERN CENTRICHEM ECD1
(1/2" INLET X 3/8" OUTLET)



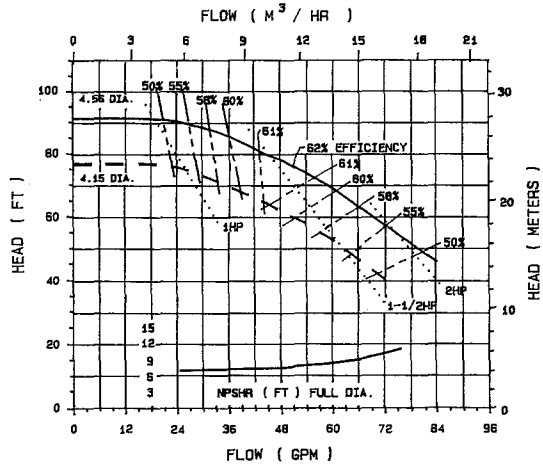
EASTERN CENTRICHEM ECC1

INLET : 1" OUTLET : 3/4"
TEST MEDIA : WATER RPM : 3450



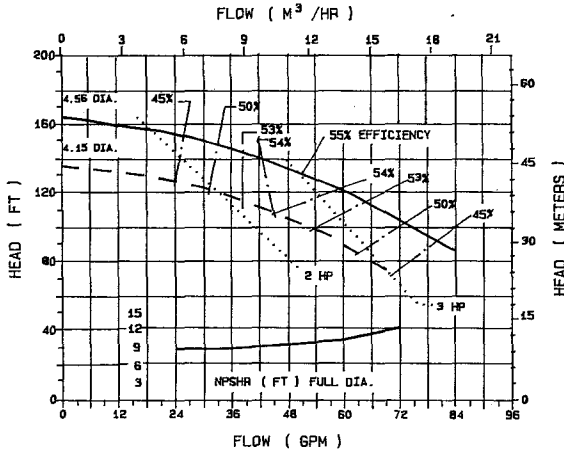
EASTERN CENTRICHEM ECH1

INLET : 1-1/2" OUTLET : 1"
TEST MEDIA : WATER RPM : 3450



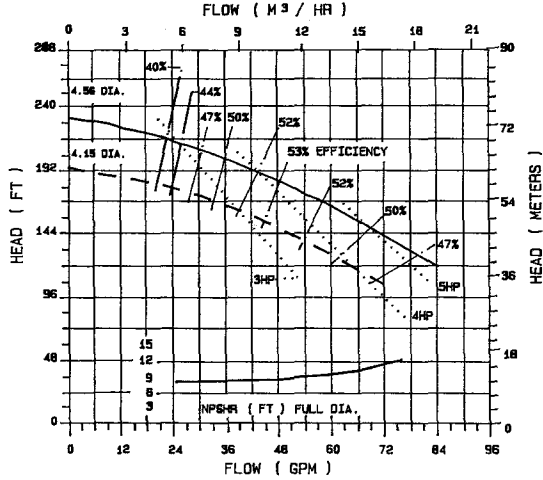
EASTERN CENTRICHEM ECH2

INLET : 1-1/2" OUTLET : 1"
TEST MEDIA : WATER RPM : 3450



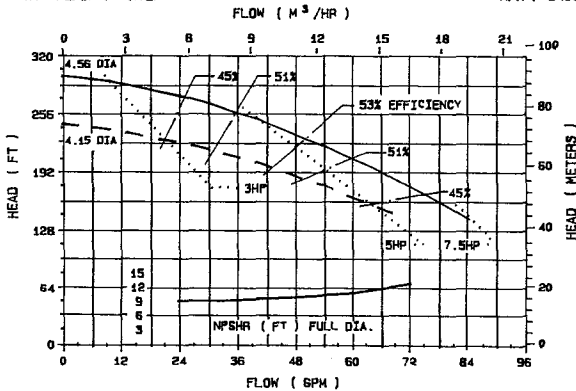
EASTERN CENTRICHEM ECH3

INLET : 1-1/2" OUTLET : 1"
TEST MEDIA : WATER RPM : 3450



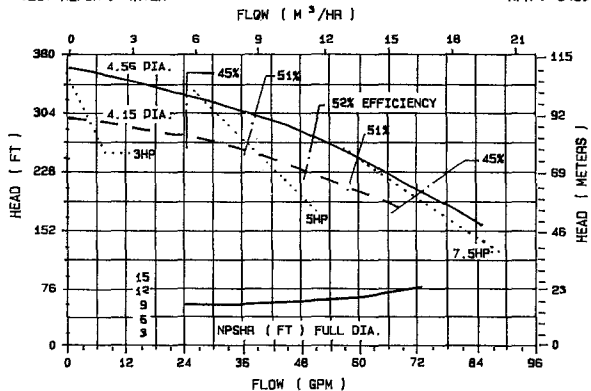
EASTERN CENTRICHEM ECH4

INLET : 1-1/2" OUTLET : 1"
TEST MEDIA : WATER RPM : 3450



EASTERN CENTRICHEM ECH5

INLET : 1-1/2" OUTLET : 1"
TEST MEDIA : WATER RPM : 3450





A Unit of IDEX Corporation

Manufacturers of Quality Pumps,
Controls and Systems.