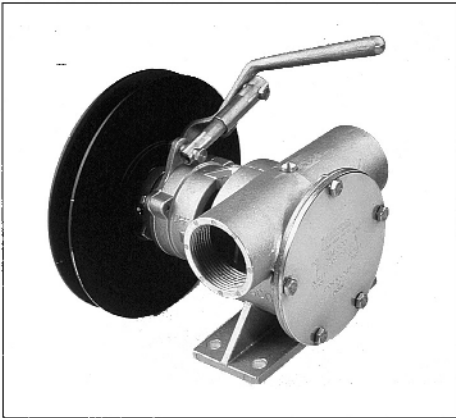




## MANUAL CLUTCH PUMPS - DESIGN FEATURES



### 51080 SERIES

|                   |                                    |
|-------------------|------------------------------------|
| <b>Body</b>       | Bronze                             |
| <b>Impeller</b>   | Jabco neoprene or nitrile compound |
| <b>Shaft Seal</b> | Lip type                           |
| <b>Bearing</b>    | Ball                               |
| <b>Shaft</b>      | Stainless steel 316 S31 to BS970   |
| <b>Wearplate</b>  | Replaceable                        |
| <b>Pulley</b>     | Anodised Aluminium                 |
| <b>Ports</b>      | 1" BSP to BS21 (DIN2999)           |
| <b>Weight</b>     | 5 kg                               |



### 51200 SERIES

|                   |                                    |
|-------------------|------------------------------------|
| <b>Body</b>       | Bronze                             |
| <b>Impeller</b>   | Jabco neoprene or nitrile compound |
| <b>Shaft Seal</b> | Mechanical carbon ceramic          |
| <b>Bearing</b>    | Ball                               |
| <b>Shaft</b>      | Stainless steel 316 S31 to BS970   |
| <b>Wearplate</b>  | Replaceable                        |
| <b>Pulley</b>     | Painted cast iron                  |
| <b>Ports</b>      | 1 1/2" BSP to BS21 (DIN2999)       |
| <b>Weight</b>     | 8 kg                               |



### 51220 SERIES

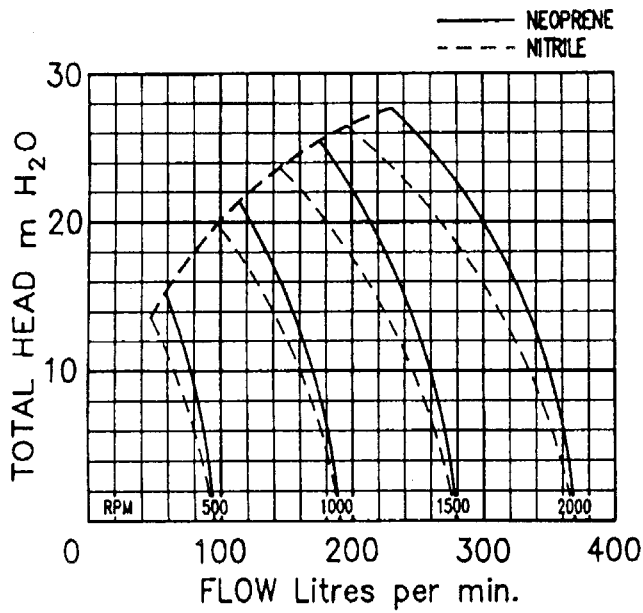
|                        |                                     |
|------------------------|-------------------------------------|
| <b>Body</b>            | Bronze                              |
| <b>Impeller</b>        | Jabco neoprene or nitrile compound  |
| <b>Shaft Seal</b>      | Mechanical carbon ceramic           |
| <b>Bearing</b>         | Ball                                |
| <b>Shaft</b>           | Stainless steel 316 to BS970        |
| <b>Wearplate</b>       | Replaceable                         |
| <b>Pulley</b>          | Painted cast iron                   |
| <b>Bearing Housing</b> | Cast iron painted protective primer |
| <b>Ports</b>           | 1 1/2" Flanged                      |
| <b>Weight</b>          | 10 kg                               |



### 51270 SERIES

|                        |   |
|------------------------|---|
| <b>Body</b>            | Bronze  |
| <b>Impeller</b>        | Jabco neoprene or nitrile compound                |
| <b>Shaft Seal</b>      | Mechanical carbon ceramic                         |
| <b>Bearing</b>         | Ball  |
| <b>Shaft</b>           | Stainless steel 316 to BS970                      |
| <b>Wearplate</b>       | Replaceable                                       |
| <b>Pulley</b>          | Painted cast iron                                 |
| <b>Bearing Housing</b> | Cast iron painted protective primer               |
| <b>Ports</b>           | 2" BSP to BS21 (DIN2999) Available with 2" Flange |
| <b>Weight</b>          | 11 kg   |

### SIZE 270

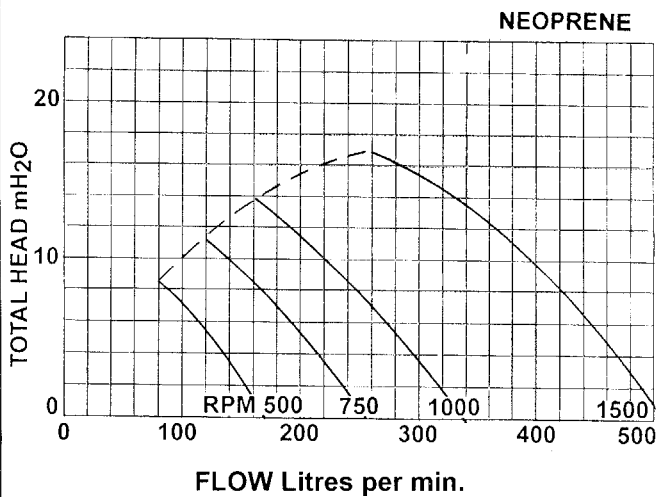


Performance Note Power (watt) figures shown are minimum recommended at pumpshaft.

| Total manometric head | 500 rpm  | 750 rpm  | 1000 rpm  | 1500 rpm  | 1750 rpm  | 2000 rpm  |
|-----------------------|----------|----------|-----------|-----------|-----------|-----------|
|                       | 550 watt | 750 watt | 1500 watt | 1800 watt | 2200 watt | 3000 watt |
| m/H2O                 | L/m      | L/m      | L/m       | L/m       | L/m       | L/m       |
| 3                     | 91       | 137      | 183       | 275       | 321       | 368       |
| 5                     | 87       | 133      | 179       | 271       | 317       | 363       |
| 9                     | 81       | 126      | 172       | 263       | 309       | 355       |
| 12                    | 72       | 117      | 162       | 253       | 298       | 343       |
| 15                    | 60       | 105      | 150       | 239       | 284       | 329       |
| 18                    |          | 90       | 134       | 223       | 267       | 311       |
| 21                    |          |          | 116       | 203       | 246       | 290       |
| 24                    |          |          |           | 180       | 223       | 265       |
| 27                    |          |          |           |           | 196       | 238       |
| Suction Bore          | 51mm     | 51mm     | 51mm      | 51mm      | 51mm      | 63.5mm    |
| Temp 0C               | Metres   | Metres   | Metres    | Metres    | Metres    | Metres    |
| 20                    | 7.4      | 7.4      | 6.9       | 4.8       | 1.9       | 2.3       |
| 30                    | 7.2      | 7.2      | 6.7       | 4.6       | 1.7       | 2.1       |
| 40                    | 6.8      | 6.8      | 6.3       | 4.2       | 1.3       | 1.7       |
| 50                    | 6.2      | 6.2      | 5.7       | 3.6       | 0.7       | 1.1       |

Maximum recommended suction head in mH<sub>2</sub>O at water temperature 20°C

### SIZE 500



Performance Note Power (watt) figures shown are minimum recommended at pumpshaft.

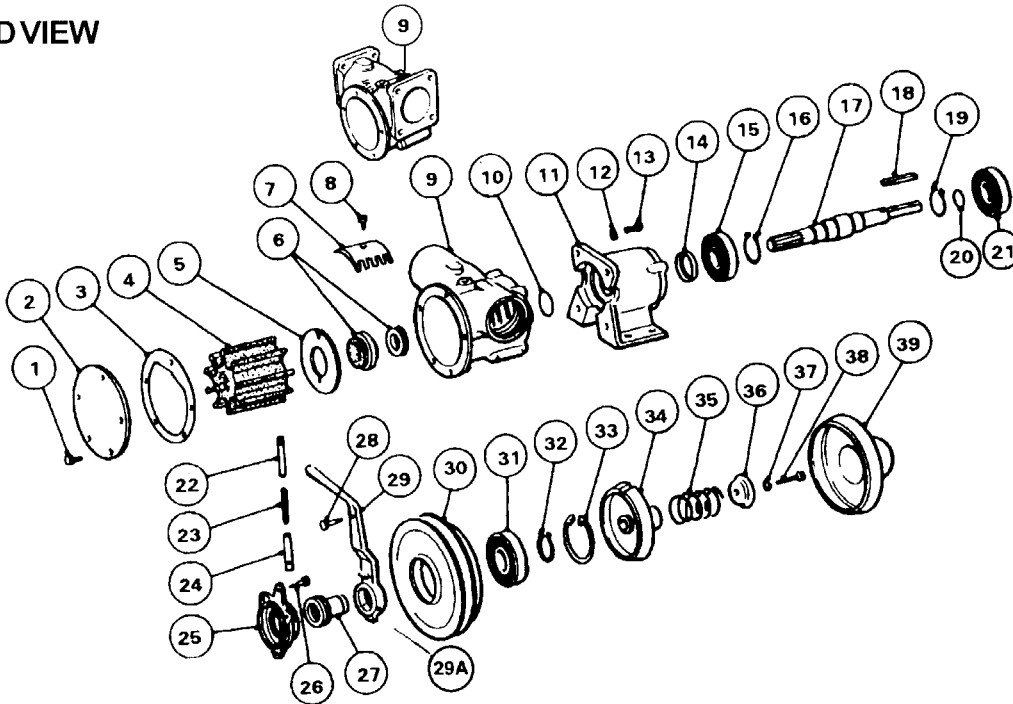
| Total manometric head | 500 rpm   | 750 rpm   | 1000 rpm  | 1500 rpm  |
|-----------------------|-----------|-----------|-----------|-----------|
|                       | 1500 watt | 2200 watt | 2200 watt | 4000 watt |
| 5                     | 132       | 220       | 303       | 463       |
| 9                     | 79        | 165       | 246       | 402       |
| 12                    | 40        | 127       | 210       | 361       |
| 15                    | -         | 60        | 145       | 308       |
| 18                    | -         | -         | -         | 250       |
| 20                    | -         | -         | -         | 194       |
| Suction Bore          | 63.5mm    | 63.5mm    | 63.5mm    | 63.5mm    |
| Temp                  | Metres    | Metres    | Metres    | Metres    |
| 20°C                  | 7.5       | 7.0       | 6.0       | 3.5       |
| 30°C                  | 7.3       | 6.8       | 5.8       | 3.3       |
| 40°C                  | 7.0       | 6.5       | 5.5       | 2.8       |
| 50°C                  | 6.5       | 6.0       | 5.0       | 2.3       |

Maximum recommended suction head in mH<sub>2</sub>O at water temperature 20°C

Pump Selection Tables and Graphs show approximate performance for new pumps with neoprene impeller pumping water (specific gravity 1.00) at 20°C, but note that performance can be affected if water temperature and suction head are higher than shown in above table. If in doubt consult your local Jabsco distributor or factory for application assistance.

\* Minimum nominal recommended bore. Note: Suction Head = Vertical Suction Height + Pipe Losses.

### EXPLODED VIEW



### PARTS LIST

| KEY | DESCRIPTION                | QTY | Model<br>51220-<br>Part No. | Model<br>51270-0<br>Part No. | Model<br>51270-2<br>Part No. |
|-----|----------------------------|-----|-----------------------------|------------------------------|------------------------------|
| 1   | Endcover Screws*           | 5   | SP1095-0640                 | SP1095-0640                  | X3001-176F                   |
| 2   | Endcover                   | 1   | 9336                        | 9336                         | 9336                         |
| 3   | Gasket *                   | 1   | 816                         | 816                          | 816                          |
| 4   | Neoprene Impeller *        | 1   | 17935-0001                  | 21676-0001 or<br>17936-0001  | 21676-0001 or<br>17936-0001  |
|     | Nitrile Impeller **        | 1   | 836-0003                    | 21676-0003 or<br>6760-0003   | 21676-0003 or<br>6760-0003   |
| 5   | Wearplate                  | 1   | 2574                        | 2574                         | 2574                         |
| 6   | Seal Assembly *            | 1   | 21849                       | 21849                        | 21849                        |
| 7   | Cam                        | 1   | 834                         | 6988                         | 6988                         |
| 8   | Cam Screw                  | 1   | SP1005-04                   | SP1005-04                    | SP1005-04                    |
| 9   | Body                       | 1   | 10634 (Flange)              | 10494 (Flange)               | 50274-0000 (BSP)             |
| 10  | Slinger                    | 1   | X4020-324A                  | X4020-324A                   | X4020-324A                   |
| 11  | Bearing Housing            | 1   | 50273-0000                  | 50273-0000                   | 50273-0000                   |
| 12  | Washer                     | 4   | SP1602-13                   | SP1602-13                    | X3081-101C                   |
| 13  | Bolt                       | 4   | SP1095-28                   | SP1095-28                    | X3001-209C                   |
| 14  | Inner Bearing Seal         | 1   | SP2701-54                   | SP2701-54                    | SP2701-54                    |
| 15  | Bearing                    | 1   | SP2601-0458                 | SP2601-0458                  | SP2601-0458                  |
| 16  | Retaining Ring             | 1   | Y5026-06                    | Y5026-06                     | Y5026-06                     |
| 17  | Shaft                      | 1   | 51227-0000                  | 51277-0000                   | 51277-0000                   |
| 18  | Key                        | 1   | X4000-270A                  | X4000-270A                   | X4000-270A                   |
| 19  | Retaining Ring             | 1   | Y5026-06                    | Y5026-06                     | Y5026-06                     |
| 20  | Shim                       | 1   | 51211-0000                  | 51211-0000                   | 51211-0000                   |
| 21  | Bearing                    | 1   | SP2601-0458                 | SP2601-0458                  | SP2601-0458                  |
| 22  | Guide Tube Outer           | 1   | 51089-0000                  | 51089-0000                   | 51089-0000                   |
| 23  | Spring                     | 1   | 51213-0000                  | 51213-0000                   | 51213-0000                   |
| 24  | Guide Tube Inner           | 1   | 51088-0000                  | 51088-0000                   | 51088-0000                   |
| 25  | Engaging<br>Mech / Housing | 1   | 51201-0000                  | 51201-0000                   | 51201-0000                   |
| 26  | Screw                      | 3   | X3001-180F                  | X3001-180F                   | X3001-180F                   |
| 27  | Engaging<br>Mech/Sleeve    | 1   | 51202-0000                  | 51202-0000                   | 51202-0000                   |
| 28  | Retaining Bolt             | 1   | 51094-0000                  | 51094-0000                   | 51094-0000                   |
| 29  | Handle                     | 1   | 51203-0000                  | 51203-0000                   | 51203-0000                   |
| 29A | Grub Screw (not shown)     | 2   | X3009-172F                  | X3009-172F                   | X3009-172F                   |
| 30  | Pulley                     | 1   | 51204-0000                  | 51204-0000                   | 51204-0000                   |
| 31  | Bearing                    | 1   | SP2600-09                   | SP2600-09                    | SP2600-09                    |
| 32  | Retaining Ring             | 1   | SP1700-137                  | SP1700-137                   | SP1700-137                   |
| 33  | Retaining Ring             | 1   | SP1700-283                  | SP1700-283                   | SP1700-283                   |
| 34  | Clutch Cone                | 1   | 51205-0000                  | 51205-0000                   | 51205-0000                   |
| 35  | Spring                     | 1   | X5250-002                   | X5250-002                    | X5250-002                    |
| 36  | Spring Retainer            | 1   | 51206-0000                  | 51206-0000                   | 51206-0000                   |
| 37  | Spring Washer              | 1   | X3081-101C                  | X3081-101C                   | X3081-101C                   |
| 38  | Screw                      | 1   | X3001-213F                  | X3001-213F                   | X3001-213F                   |
| 39  | Cover                      | 1   | 51212-0000                  | 51212-0000                   | 51212-0000                   |

#### 51220 - SERIES

Service Kit SK407-0011  
Service Kit SK407-0003

#### 51270 - SERIES

Service Kit SK408-0011  
Service Kit SK408-0013

All Service Kits contain  
parts marked\*, plus \*\*  
in place of Neoprene Impeller.

#### Port Adaptors (Optional Extra)

| Series | Kit No. | Description |
|--------|---------|-------------|
| 51220  | K1-01   | 2" I/D Hose |
|        | K1-200  | 1-1/2" BSP  |
|        | K1      | 1-1/2" NPT  |

#### Port Adaptors (Optional Extra)

| Series | Kit No. | Description     |
|--------|---------|-----------------|
| 51270  | K2-01   | 2-1/2" I/D Hose |
|        | K2-200  | 2" BSP          |
|        | K2      | 2" NPT          |

Refer to Operating Instructions on page 17.

**Inspect all parts for wear or damage and replace if necessary.**

#### **DIS-ASSEMBLY-CLUTCH**

1. Remove snap-on cover.
2. Unscrew spring retaining bolt at end of shaft. Remove retainer, spring and clutch cone.  
Note: Bolt is assembled with Loctite.
3. Remove one retaining bolt from guide tube assembly.
4. Unscrew bolts holding engaging mechanism housing to body. Remove complete clutch assembly handle, pulley and engaging mechanism from pump.
5. Remove key and shim from shaft.
6. To break down handle, pulley and engaging mechanism assembly remove small retaining ring at bearing, support pulley and press engaging sleeve through bearing. Loosen screws in handle and remove handle from engaging mechanism.
7. If pulley bearing requires renewing, remove retaining ring from pulley and push out bearing.

#### **DIS-ASSEMBLY - PUMP**

1. Remove end cover screw, end cover and gasket.
2. Remove impeller.
3. Loosen cam screw and remove cam.
4. Remove wearplate.
5. Remove bolts from bearing housing to body. Remove pump from bearing housing.
6. Remove seal assembly from body.
7. Press shaft on impeller drive end to remove shaft and bearing from pump.
8. Press shaft out of bearing supporting bearing inner race.
9. Remove inner bearing seal if it needs replacing.

#### **ASSEMBLY - PUMP**

1. Press new seal into bearing housing with lip facing away from bearing bore.
2. Fit retaining rings onto shaft and press on bearings.
3. Grease seal area of shaft, push bearings and shaft into bearing housing by pressing on outer race of bearing.
4. Place slinger on shaft.
5. Fit pump body to bearing housing securing with 4 bolts.
6. Take new seal (cup rubber and seal seat), lightly grease the outside edge of cup rubber and press into cavity in pump body with ceramic facing towards impeller bore. Slide mechanical seal sub assembly over shaft until it engages against ceramic face of stationary seal.
7. Fit wearplate.
8. Coat cam screw thread, top side and back of cam, with non setting jointing compound and fit into body, securing with the cam screw.
9. Lightly grease impeller bore and fit impeller.
10. Fit end cover and gasket and secure with screws.

#### **ASSEMBLY - CLUTCH**

1. Screw engaging mech/sleeve into housing approximately 1 turn. Fit handle over sleeve and set 0.5mm clearance between housing and handle, when in the dis-engaged position, by screwing sleeve in or out as required. Lock handle on sleeve with grub screws.  
Note: Lubricate threads with ANTI-SCUFFING PASTE.
2. Re-fit bearing and retaining ring into pulley. While supporting clutch mech/sleeve press pulley bearing assembly onto sleeve hard up against handle.
3. Fit pulley/handle/engaging mech assembly to pump with 3 bolts.
4. Fit guide tube mechanism to handle and to engaging mech housing.
5. Fit shim and key onto shaft.
6. Fit clutch cone, spring and spring retainer and secure with bolt. Tighten bolt until retainer is clamped against shaft. Notes: Lubricate between shaft and clutch cone with ANTI-SCUFFING PASTE. Assemble screw with Loctite (nut lock).
7. Re-fit snap on cover.

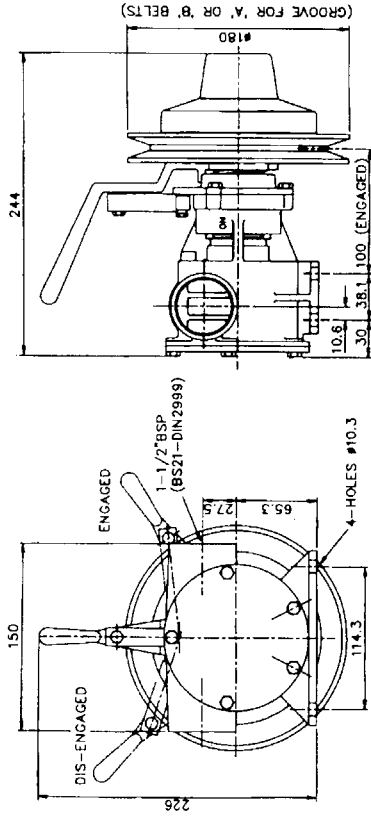
#### **ADJUSTMENT-CLUTCH**

When new, the clutch will begin to engage approx. half way between the 'OFF' and 'ON' position i.e. when handle is near to the vertical position. As wear takes place the engaging position will move towards the 'ON' position. When there is little movement left between the engaging point and the 'ON' stop, the clutch can be adjusted as follows:

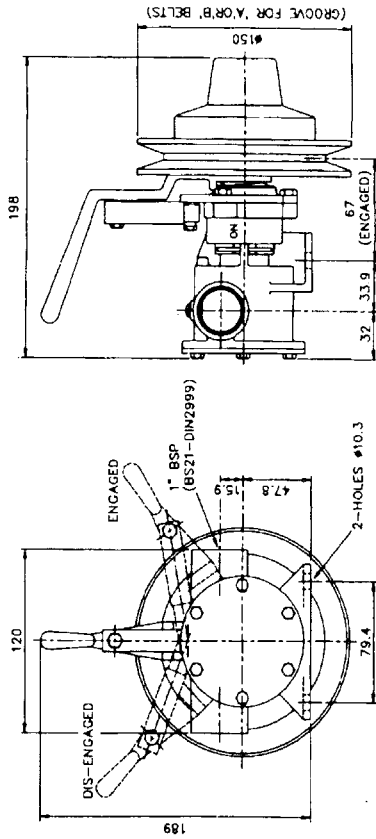
1. With handle in the 'OFF' position remove snap on cover.
2. Unscrew spring retaining bolt at end of shaft. Remove retainer, spring, clutch cone and key.  
Note: Bolt is assembled with Loctite (nut lock).
3. Remove shim and re-assemble key, clutch cone, spring, retainer, screw and cover.  
Note: Removal of shim will restore engaging point to its original position. Once shim has been removed no further adjustment is possible, and clutch cone, and possibly pulley will need to be replaced.

**Refer to Operating Instructions on page 17.**

### 51200 SERIES



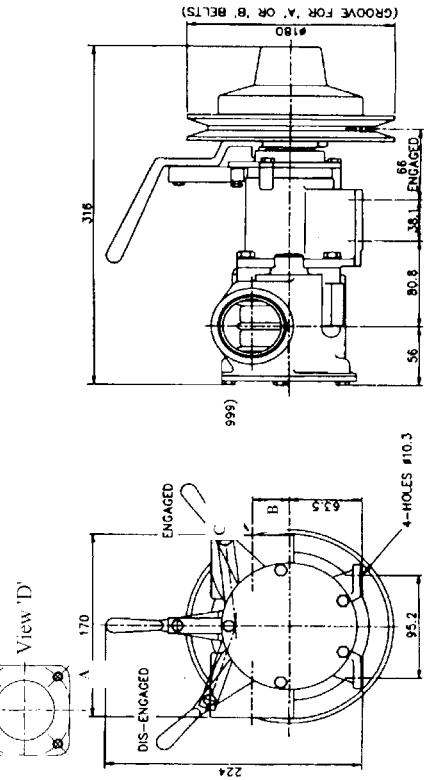
### 51080 SERIES



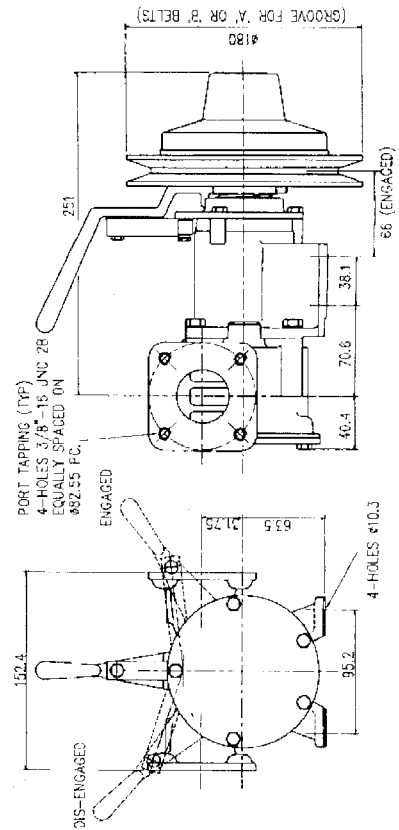
### 51270 SERIES

PORT TAPPING (TYP)  
4 HOLES 3/8" - 16 UNC 2B  
EQUALLY SPACED ON  
Ø90.47 ±0.2 PC.

|                    | A     | B    | C                       |
|--------------------|-------|------|-------------------------|
| 51270 - 'O' Series | 152.4 | 41.3 | See View 'D'            |
| 51270 - '2' Series | 170   | 32   | 2" BSP (BS21 - DIN2999) |



### 51220 SERIES (Flanged Ports)



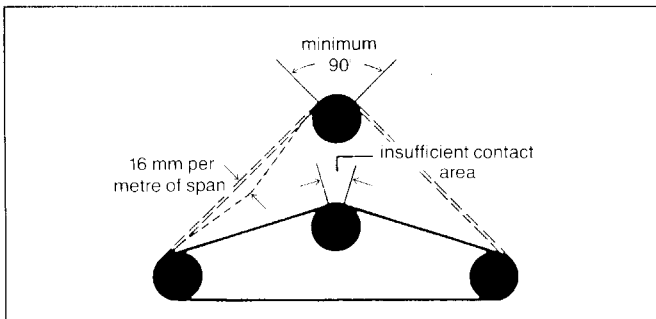
**PUMP MAY BE MOUNTED** in any position. When installed vertically motor must be above the pump.

**THE ROTATION OF THE PUMP SHAFT** determines the location of the pump inlet/outlet ports: refer to installation drawing.

**BEFORE INSTALLING** rotate pump shaft and impeller in the direction of the required operation.

**ALL PUMP PIPEWORK** must be adequately supported to avoid stress on pump and pump components and consequential leakage.

**BELT DRIVEN PUMPS** excessive drive belt tension will cause rapid belt wear and may result in premature bearing failure. It should be possible to deflect a correctly tensioned belt between pulleys about 16mm per metre of span by applying finger pressure. Ideally, the contact area should be about 120° but not less than 90°.



## OPERATION

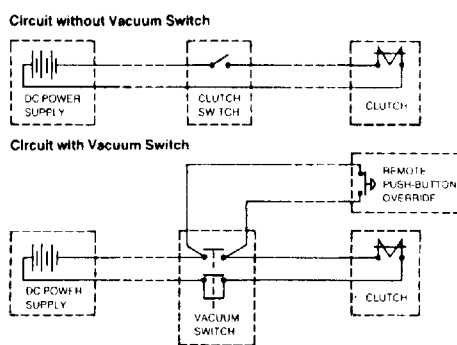
Pump should not be operated above its published performance without referring to distributor.

## D.C. CLUTCHES

Inadequate supply voltage at DC terminals (not less than 20% below rated voltage at full load) due to partly discharged battery or voltage loss through long or small size electric wire may cause fuses to blow or pump starting problems. If fuse fails repeatedly, identify and solve the fault. (DO NOT under any circumstances fit a heavier fuse or bridge fuse terminals). Connect black wire or negative (-) battery terminal.

Red wire should run via a suitably rated switch and fuse to a positive (+) battery terminal. The pump should be installed where it will always remain dry. Ensure battery capacity is adequate for ALL electrical equipment (pumps, radio, TV, refrigerator, navigational instruments). Observe installation instructions of instruments likely to be affected by close proximity of a magnetic field such as navigational instruments.

## WIRING DIAGRAM



Electrical installation must take into account the minimum wire size recommended.

12v Clutches need 5 amp fuse with 1.5mm<sup>2</sup> wiring.  
24v Clutches need 2.5 amp fuse with 1.0mm<sup>2</sup> wiring.

**TEMPERATURE:** Operating range

|                         |         |
|-------------------------|---------|
| Neoprene Impellers      | 4-80°C  |
| Oil Resistant Impellers | 10-90°C |

**PUMPS:** are dry self-priming i.e. do not require to be filled with liquid start up.

**RUNNING DRY:** Unit depends on liquid pumped for lubrication. A dry running period of up to 30 seconds is generally a safe length of time. If pump has not been primed after 30 seconds, stop and check for air leaks in pipework, and impeller, seal or gasket damage.

## SAFETY ADVICE

Ensure that all moving parts are adequately guarded to prevent accidental contact. Leakage from mechanical seal or gland could cause hazard. If liquids being pumped are toxic or corrosive, use of a drip tray is recommended.

DO NOT USE for Petrol, Toluene, Benzene or light fraction petroleum products such as solvent, thinners or other liquids with flashpoint below 37°C.

FREEZING Temperatures - do not permit liquid to freeze in pump body. Drain pump by loosening end cover.

**IT IS A REQUIREMENT OF COSHH(1988) REGULATIONS THAT THE MANUFACTURER'S INSTRUCTIONS IN THE HANDLING OF HAZARDOUS SUBSTANCES MUST BE OBSERVED AT ALL TIMES.**

To conform with the Health and Safety and COSHH Regulations, ITT Jabsco will require that any pump or part of a pump that is returned to this company for repair or examination, or for any reason whatsoever, will be accompanied by a letter stating what the pump/part has been pumping.

If the liquid or product is hazardous or in any way dangerous, this must be stated and the chemical make-up of it must be stated in detail.

Unless this procedure is observed then the unit will not be accepted on our company premises. The only exception to this rule is if the pump returned is new and unused.