

**ATTENTION DO NOT** run the motor head dry as this will result in bearing failure.

#### Speed Regulator

Output of the CP range of motor heads is by 3 speed control. (Single speed versions are also available)

**⚠ Speed regulator adjustment should only be made with electrical supply switched off.**

1. It is always preferable to use the lowest motor performance where this gives circulation sufficient to heat all the heat emitters evenly (uneven distribution of heat may be due to the need to balance the flow of water in each heat emitter).
2. If the pump performance requirement is not known start with the lowest motor setting. If heat emitters remain cold, or if the boiler inlet and outlet temperature differential (specified by the manufacturers of the boiler) is not achieved increase the flow by adjusting the speed control as shown in fig.3.

**ATTENTION too high a speed setting may result in pumping over or drawing in air.**

**Important - DO NOT use pump isolating valves for performance control.**

### 6. Maintenance

No routine maintenance is necessary, however, during prolonged shutdown e.g. summer months, it is advisable to run the pump for a few minutes every few weeks.

#### Locked Pump

Should the pump fail to start, switch to maximum setting. If the motor still does not start, the manual restart knob can be used to free a locked motor (see manual restart procedure - section 5). Once the pump is running the regulator should be reset to its original position.

### 7. Trouble Shooting Guide

#### Faults and Remedies

##### Motor Fails to Start

- Check power supply fuses.
- Check voltage at motor terminals (see motor nameplate data).
- Check electrical connection wiring procedure (see section 4.3).
- Check rotor free to rotate (see section 6).

##### Motor Starts but Provides Incorrect Circulation

- Check motor valves open.
- Check motor head, pump case and system adequately vented (see section 5).
- Check correct electrical regulator setting (see section 5).

#### Noise

Check electrical regulator setting and readjust as required (see section 5). Noise due to cavitation can be subdued by increasing the system pressure within the permissible limits.

Pump may require 48 hours to attain normal quiet operation.

### 8. Relevant Documentation

#### Spare Parts

No non-approved replacement parts may be used.

### 9. Compact Motor Head - Limitation of Use (OEM Customers Only)

The motor head is supplied as a CE marked component to be added to the customer's pumpcase and tested as part of a pump in the customer's boiler. The CE marking is only applicable as long as the following conditions are met.

It is the customer's responsibility to ensure the final assembly complies with the requirements of EN60335-2-51 failure to do so may result in product failure or electrical/mechanical hazards.

The motor head supplied may be different to the standard Compact pump that is approved by BSI, VDE, IMQ, KEMA etc in that:-

- a) Product supplied without a fitted pump casing, 4 screws and O Ring  
See installation leaflet for fitting instructions section 4.1.
- b) Max. water temperature 95°C.
- c) Installation instructions may be supplied as an OEM manual.
- d) Supplied Type Z attachment (Non Replaceable Cable), Type X attachment (3 terminals) or an appliance inlet.

The motor head must be operated within the following limits:-

- a) Only to pump water in a closed circulation loop.
- b) Rated Voltage 230V
- c) Temperature Ambient - Min dew point - Max. 55°C.  
Water - 95°C Max.
- d) Maximum static pressure 10 bar (147p.s.i.) (102m water gauge)
- e) Min. Static Head Above Pump: 0.3m with water not exceeding 80°C.
- f) Minimum recommended pump flow rate 5 l/min.
- g) Operating conditions - When pumping water at 95°C the minimum dynamic head - 4 meters water gauge to avoid cavitation and ensure quiet running.
- h) Water quality - Deaerated mains supply water (typically that found in a running domestic heated system).

When installed in the application the motor head/pump combination must comply with the requirements of the following clauses of EN60335-2-51:-

Starting requirements of clause 9

Power input and current requirements of clause 10

Temperatures of motor windings and components requirements of the normal operation clause 11

Abnormal operation requirements of clause 19

Customer design of pumpcase connection to motor and electrical connection should ensure the following requirements are met in EN60 335-2-51 and EN60 335-1:-

Mechanical strength of clause 21

Construction of clause 22

Provision for earthing of clause 27

Screws and connections to clause 28



# CirculatingPumps



## CP

## REPLACEMENT MOTOR FOR DOMESTIC CIRCULATOR PUMP

Installation and Operating Instructions

# CE

CirculatingPumps

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In accordance with our policy of continual product improvement, we reserve the right to amend the specification of these products without prior notice.


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## 1. General Safety Rules

These instructions are of fundamental importance for the installation, use and maintenance of these products and must therefore be read before commencing work and then carried out accurately by the installer and end user. Installation and maintenance must be carried out by qualified personnel only. Failure to comply with these safety instructions will cause risk to people and equipment and may invalidate the guarantee.

Identified hazards are highlighted by the following symbols:-

Danger from general causes: 

Danger from electrical causes: 

Instructions, which if ignored could cause damage or impair the function of the motor are highlighted by the word: **ATTENTION**

### 1.1 Field of Application

The CP range is suitable for open vented or pressurised domestic central heating systems only.

### 1.2 Product Data

|                               |         |                                   |
|-------------------------------|---------|-----------------------------------|
| Weight CP21/23/41/43/51/53    | 1.8Kg   | (4.0lbs)                          |
| Weight CP61/63                | 1.9Kg   | (4.2lbs)                          |
| Maximum water temperature     | 95°C    | (203°F)                           |
| Maximum Ambient temperature   | 55°C    |                                   |
| Maximum static pressure       | 10 bar  | (147p.s.i.)<br>(102m water gauge) |
| Minimum recommended flow rate | 5 l/min |                                   |

**Operating conditions** - When pumping water at 95°C the minimum dynamic head should be 4 meters water gauge to avoid cavitation and ensure quiet running.

**Minimum static head - open vented systems** Motor heads may be fitted to systems with a minimum static head of 300mm provided the pump inlet is adjacent to the neutral point and the water temperature does not exceed 80°C.

| Model | Supply voltage 230V ~ 50Hz |           |             |      |
|-------|----------------------------|-----------|-------------|------|
|       | Speed Setting              | Speed RPM | Watts Input | Amps |
| CP21  |                            | 2600      | 60          | 0.28 |
| CP41  |                            | 1950      | 71          | 0.30 |
| CP51  |                            | 1850      | 104         | 0.45 |
| CP61  |                            | 1800      | 110         | 0.48 |
| CP23  | 3                          | 2600      | 60          | 0.28 |
|       | 2                          | 2450      | 45          | 0.20 |
|       | 1                          | 2100      | 35          | 0.16 |
| CP43  | 3                          | 1950      | 71          | 0.30 |
|       | 2                          | 1550      | 55          | 0.24 |
|       | 1                          | 1150      | 40          | 0.18 |
| CP53  | 3                          | 1850      | 104         | 0.45 |
|       | 2                          | 1400      | 78          | 0.35 |
|       | 1                          | 950       | 56          | 0.26 |
| CP63  | 3                          | 1800      | 110         | 0.48 |
|       | 2                          | 1400      | 83          | 0.37 |
|       | 1                          | 1050      | 60          | 0.27 |

## 2. Packaging & Handling

### 2.1 Transport and Storage ATTENTION

The motor head must be protected from moisture, and must not be subjected to temperatures outside -10°C and 50°C.

### 2.2 Handling ATTENTION

Care must be taken when handling and installing the motor head to avoid damaging components. If damage occurs the motor head must not be used. Abnormal handling may invalidate the warranty.

## 3. Description of Motor Head

### 3.1 General Description

The Motor is of a drum motor design using hard coated shaft and bearings supporting a moulded impeller and rotor. Motor cooling and bearing lubrication is carried out by the pumped water. Models offer a single or variable speed setting to allow system requirements to be accurately met.

### Design and Function/Safety Devices

The motor windings are impedance protected. A provision for earthing the outer casing is provided.

### Prohibited Use ATTENTION

The motor head must not be used on secondary hot water services or handling drinking water or handling food related liquids.

## 4. Installation

### 4.1 Motor Head to pump casing

The motor head is assembled to the customer's pumpcase using sealing pack A or B

#### Sealing Pack A

Circulating Pumps/Myson CP61/CP63

Circulating Pumps/Myson CP51/CP53

Circulating Pumps/Myson CP41/CP43

Circulating Pumps/Myson CP21/CP23

#### Sealing Pack B

Grundfos 15 - 60

Grundfos 15 - 50

1. Sealing Pack A locate motor head in pumpcasing taking care not to damage the rubber O ring. Sealing Pack B locate motor head in pumpcasing taking care not to damage the flat rubber gasket and spacer plate.
2. Tighten the four fixing screws included in the sealing pack in a diagonal pattern in stages to a final torque of 25kg cm (22lb in).
3. Check the motor is still moving freely by loosening the Manual Restart Knob (fig.3) and then withdrawing until it engages in the motor shaft.  
The motor should then be free to turn with the fingertips.

**N.B. After use the Manual Restart Knob should be screwed back finger tight into its original position.**

### 4.2 System ATTENTION

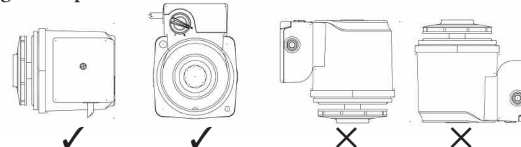
The motor head must not be installed against wood or any other material which may be effected by heat from the pump.

Before installing the motor head ensure all soldering/welding adjacent to it is complete, the system has been thoroughly flushed out to remove any foreign matter and that vent and feed pipes are positioned so that the pump will not draw in air or pump over.


The motor head should not be positioned in either a high point in the system where air could collect or a low point where sediment could build up.

The motor head must be installed with the rotating shaft horizontal (see fig.1)

Fig 1 Pump Installation Positions



Use approved makes of additives with corrosion inhibitors only. Do not leave the motor head wet without protection from corrosion inhibitor during testing or installation.

 Ensure no fluid drips onto the motor head or its electrical connections during installation, venting or operation as when the motor is energised this may create a risk of electric shock.

### 4.3 Electrical Connections ATTENTION

Electrical work to be carried out by qualified and licensed electricians in strict conformity to ruling national conditions and local regulations. All wiring and external switchgear to comply with the ruling local regulations in accordance with the latest edition of IEE wiring regulations.

Observe motor name plate data.

For motor fuse protection use a 3 Amp fuse.


A means of disconnection from the power supply having a contact separation of at least 3mm in all poles must be provided.

If the motor head already has a cable fitted to it, ensure the cable is isolated from the mains before removing the terminal cover.

### Wiring Procedure

If a cable or appliance inlet is not already fitted

1. Use heat resisting 3 x 0.75mm<sup>2</sup> core cable with rubber insulation rated at 110°C minimum.
2. Cut cable to required length.
3. Remove terminal cover.
4. Thread cable through grommet.
5. Depress levers to open cable clamps. Connect cable - Brown to L, Blue to N, Yellow/Green to  $\perp$  see Fig 2.
6. Adjust cable position and press outer sheath into clamp. See Fig 2.
7. Refit terminal cover, locating cover onto motor and tighten screws.

 The cable must not come in contact with the motor head, pump body or pipework.

### WARNING - 'THIS PUMP MUST BE EARTHED'

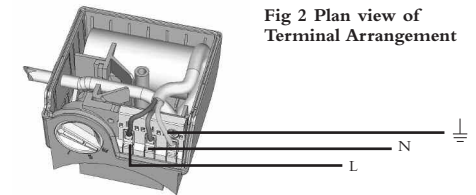



Fig 2 Plan view of Terminal Arrangement

## 5. Commissioning/Operation ATTENTION

Open both valves either side of the pump.

 In normal operation the motor head and pump surface can be hot (up to 125°C) creating a risk of being burnt.

### Manual Restart (First Commissioning)

**During this operation be aware of the risk of scalding from escaping hot water or steam.**


Before switching the motor head on the manual restart Fig 3 should be unscrewed and withdrawn to engage in the motor shaft. Check that the shaft rotates freely, and that the knob can be seen rotating on initial start up of the circulator. Screw manual restart back in.


Fig 3 Manual Restart Knob Location and Speed Control Knob Location (CP23/43/53/63 only)

### Venting

When the system is filled with water the pump will normally self vent air from motor head within a short while of switching on.

In cases where the motor head venting is slow (identified by noise) the motor bearings may be quickly vented by using the manual restart knob.

 **During this operation be aware of the risk of scalding from escaping hot water or steam.**

 **During this operation ensure the pump is switched off.**

Once the system has filled, switch off the pump, unscrew the manual restart applying sideways pressure to the screw until water emerges from it. Screw the manual restart knob back in. Switch pump back on.

Note, a system may take 24 hours to vent all the air in the system to atmosphere.

