

A SELECTION FROM THE VAST RANGE OF

Clarke[®]

QUALITY PRODUCTS

AIR COMPRESSORS

From DIY to industrial. Plus air tools, spray guns and accessories.

GENERATORS

Prime duty or emergency standby for business, home and leisure.

POWER WASHERS

Hot and cold, electric and engine driven - we have what you need.

WELDERS

Mig, Arc, Tig and Spot. From DIY to auto/industrial.

METALWORKING

Drills, grinders and saws for DIY and professional use.

WOODWORKING

Saws, sanders, lathes, mortisers and dust extraction.

HYDRAULICS

Cranes, body repair kits, transmission jacks for all types of workshop use.

WATER PUMPS

Submersible, electric and engine driven for DIY, agriculture and industry.

POWER TOOLS

Angle grinders, cordless drill sets, saws and sanders.

STARTER/CHARGERS

All sizes for car & commercial use.



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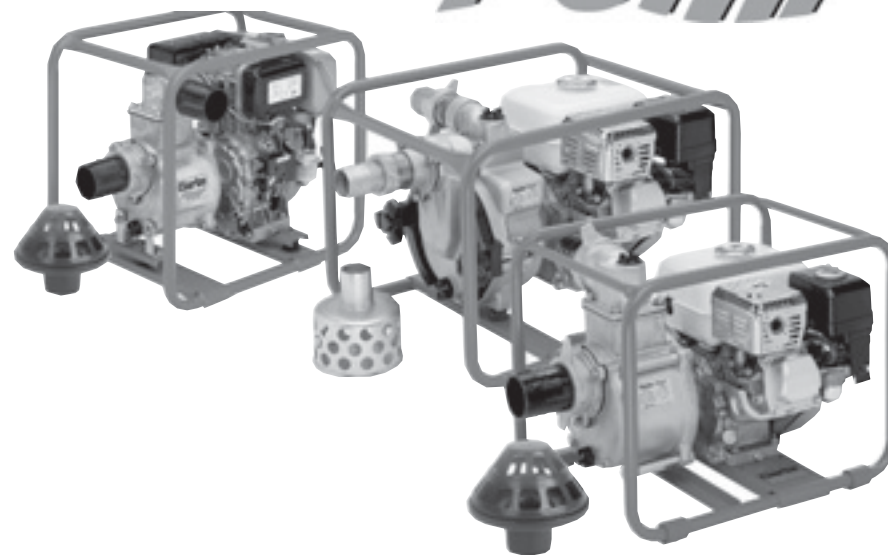
For spare parts and servicing, please contact your nearest dealer, or Clarke International on

020 - 8988 - 7400

e-mail: Parts@clarkeinternational.com e-mail: Service@clarkeinternational.com

Clarke[®]

PUMP



WATER PUMP

Model Nos.

CHF2 & CHF3 • CHS3 & CHS2E • CH3D • CH2D

OPERATING & MAINTENANCE INSTRUCTIONS

CE

0104

For Spare Parts and Service, please contact your nearest dealer,
or CLARKE International, on one of the following numbers.

PARTS & SERVICE TEL: 020 8988 7400

PARTS & SERVICE FAX: 020 8558 3622

or e-mail as follows:

PARTS: Parts@clarkeinternational.com

SERVICE: Service@clarkeinternational.com

This is an important document and should be retained

DECLARATION OF CONFORMITY



We declare that this product complies with the following standards/directives:

- 98/37/EEC
- 89/336/EEC
- EN 292-2
- EN 2000/14/EC (ANNEX V)

Description: **ENGINE DRIVEN WATER PUMP**

Model No:	Measured Sound Power Level	Guaranteed Sound Power Level
CH2E	102 dBL _{WA}	103 dBL _{WA}
CH3D	103 dBL _{WA}	106 dBL _{WA}
CHS2E	103 dBL _{WA}	103 dBL _{WA}
CHS3	103 dBL _{WA}	106 dBL _{WA}
CHF2	103 dBL _{WA}	106 dBL _{WA}
CHF3	108 dBL _{WA}	110 dBL _{WA}

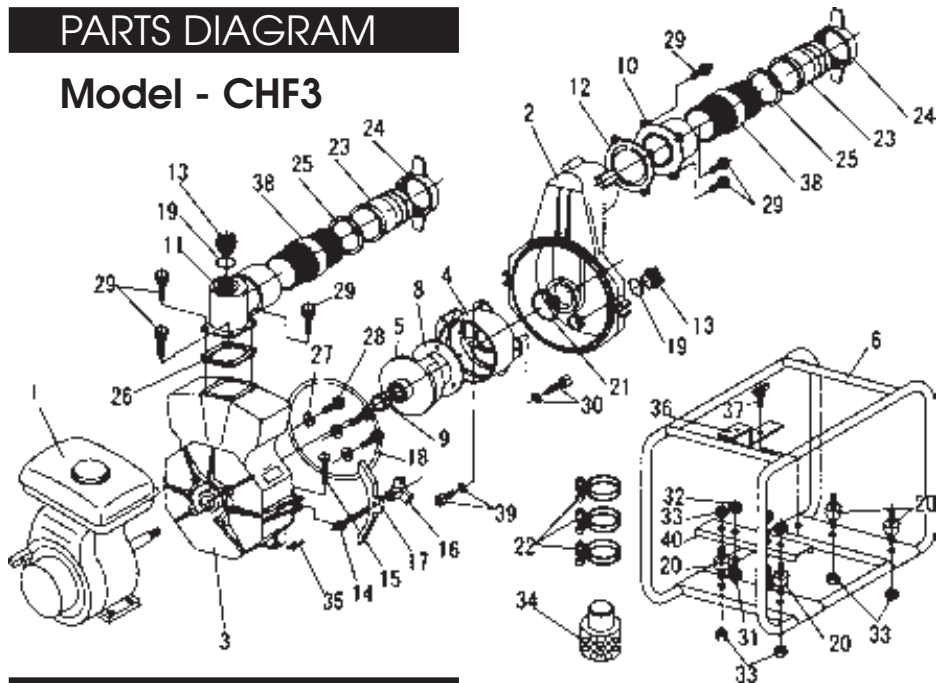
Serial (Batch) No: **See Product Date Plate**

Signed: 

Clarke[®] INTERNATIONAL
Hemnal Street, Epping, Essex CM11 4LG

PARTS DIAGRAM

Model - CHF3



PARTS LIST

For Engine part no. - Consult your CLARKE dealer

No.	Description	Part No.	No.	Description	Part No.
1	Engine	See yr Dealer	22	Hose Clip	DS801-028
2	Casing	DS821-001N	23	Hose Coupling	DS801-018
3	Casing Cover	DS821-002	24	Coupling	DS801-016
4	Inner Casing	DS821-003N	25	Coupling Packing	DS801-017
5	Impeller	DS821-004	26	Delivery Packng	DS801-020
6	Frame	DS821-005-	27	Seal Packing	DS501-006
8	Liner	DS821-007N	28	Bolt M8x48	N/A
9	Mechanical Seal	DS821-008	29	Bolt M10x30	N/A
10	Flange	DS821-009N	30	Blf Hex. Skt. M6x20	DS821-029
11	Outlet Adapter	DS821-010N	31	Bolt M10x45	N/A
12	Check Valve	DS821-011N	32	Flange Nut	DS1001-025
13	Filler Plug	DS801-012	33	Spring Nut	DS1001-024
14	Cover Bolt	DS821-013	34	Strainer	DS821-033
15	Rivet	DS821-014	35	Spring Pin	DS821-034
16	Knob	DS821-015	36	Bracket	DS521-035
17	Casing Cover Hldr	DS821-016	37	Wing Bolt	DS521-036
18	Casing Packing	DS821-017	38	Coupling	DS831-033
19	"O" Ring	DS801-018	39	Hex Skt Hd. Bolt	DS821-039
20	Anti-Vibration Rubber	DS821-019	40	Support Bracket	N/A
21	Inner Casing Bkt	DS821-020			

Thank you for purchasing this Clarke Water Pump, designed for pumping water, or water containing sand, or solids in suspension, depending upon the model (please see below).

Please read this leaflet thoroughly and follow the instructions carefully, in doing so you will ensure the safety of yourself and that of others around you, and with correct handling and servicing, you can look forward to the pump giving you long and satisfactory service.

GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt which will be required as proof of purchase. This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase. No product can be returned to us without prior permission. This guarantee does not effect your statutory rights.

SPECIFICATIONS

Model No.	CH2E	CH3D	CHS2E	CHS3	CHF2	CHF3
Hose Dia.	2"	3"	2"	3"	2"	3"
Motor HP	4.0	5.5	4.0	5.5	5.5	8.0
Max Flow	600 L/m	925 L/m	700 L/m	1000 L/m	750 L/m	1300 L/m
Max Head	26M	30M	23M	23M	27M	28M
Max Suction Height	7.5M	7.5M	7.5M	7.5M	7.5M	7.5M
Weight kg	21.5	27	21	26	33	57
Dimensions	470x355x350	456x370x370	429x368x344	500x400x396	510x440x397	660x484x572
Max Size of Solids in Suspension	-	-	20mm	20mm	31mm	31mm
Part No.	7140520	7140610	7230150	7230110	7230120	7230125

SAFETY PRECAUTIONS

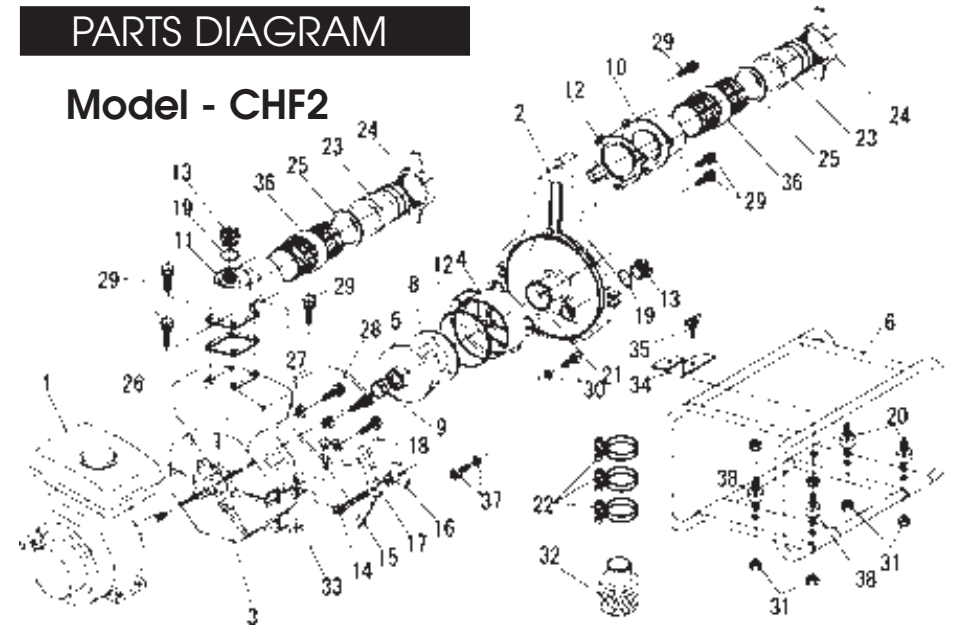
WARNING

As with all machinery, there are certain hazards involved with their operation and use. Exercising respect and caution will considerably lessen the risk of personal injury. However, if normal safety precautions are overlooked, or ignored, personal injury to the operator, or damage to property may result.

1. These pumps are designed to pump **WATER ONLY**. Never use for pumping petrol (or other flammable liquids), or chemicals.
2. Before operating this pump and its' power unit, you should thoroughly familiarise yourself with all aspects of its' operation, and follow all instructions in this manual and any other supplementary instructions supplied with the pump.
3. Never operate an engine driven unit in an explosive atmosphere, near combustible materials, or where there is insufficient ventilation.
4. Always ensure that the pump is properly secured and anchored where necessary to prevent it from moving during operation, and that the immediate area surrounding the pump is kept clear.
5. Do not over tighten drain or filler plugs. Excessive force may damage the threads or the pump body.
6. Observe all safety precautions for the handling of fuel. Never refuel the engine whilst it is running, and allow the engine to cool sufficiently before refuelling.
7. Whenever carrying out maintenance or making adjustments, ensure that the power unit cannot be started inadvertently.
8. Use at least 1ft (300mm) of flexible hose to make plumbing connections to the pump. Rigid piping may put stress on the pump, causing damage. If rigid piping must be used, it should be supported so as to eliminate stress on the pump.
9. Use only replacement parts supplied by the manufacturer. The use of non standard parts could be hazardous.
10. NEVER run the pump dry. Always fill the pump body with water before starting. When in regular use, it is not necessary to drain the pump body each time it is used, unless there is danger of freezing
11. ALWAYS use the strainer connected to the suction hose, to prevent stones and other solids from being drawn up, which could cause severe damage.

PARTS DIAGRAM

Model - CHF2



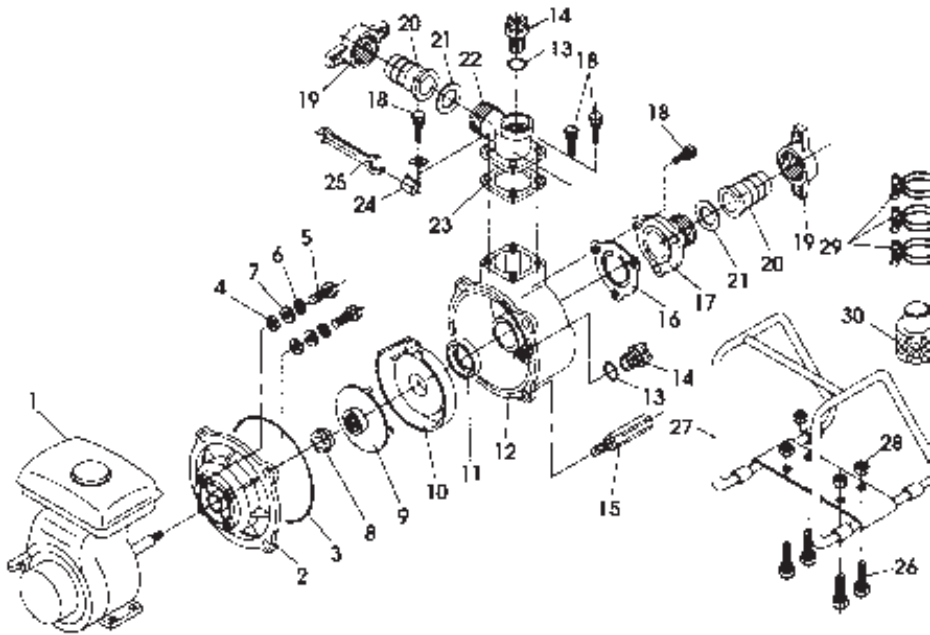
PARTS LIST

For Engine part no. - Consult your CLARKE dealer

No.	Description	Part No.	No.	Description	Part No.
1	Engine	See yr Dealer	22	Hose Clip	DS501-028
2	Casing A	DS521-002	21	Inner Casing Bkt	DS521-020
3	Casing B	DS	23	Hose Coupling	DS501-08P
4	Inner Casing	DS521-003N	24	Coupling Handle	DS501-016
5	Impeller	DS521-04	25	Coupling Packing	DS501-017
6	Frame	DS521-005-	26	Delivery Packing	DS501-020
8	Liner	DS521-007N	27	Seal Packing	DS501-006
9	Mechanical Seal	DS521-008	28	Bolt M8x48	N/A
10	Flange	DS521-009N	29	Bolt M8x25	N/A
11	Bend	DS521-010N	30	Bit Hex. Skt. M8	DS521-029
12	Check Valve	DS521-011N	33	Spring Nut	DS1001-024
13	Filler Plug	DS501-021	34	Strainer	DS521-033
14	Cover Bolt	DS521-013	35	Spring Pin	DS521-034
15	Rivet	DS521-014	36	Bracket	DS521-035
16	Knob	DS521-015	37	Wing Bolt	DS521-036
17	Casing Cover Hldr	DS521-016	38	Spacer	N/A
18	Casing Packing	DS521-017	39	Coupling	DS531-030
19	"O" Ring	DS501-022	40	Hex Skt Hd. Bolt	DS521-039
20	Anti-Vibration Rubber	DS521-019	41	Anti-Vibration Rubber	DS521-037

PARTS DIAGRAM

Models - CHS2 & CHS3



PARTS LIST

For Engine part no. - Consult your CLARKE dealer

No.	Description	Part No. CHS2	Part No. CHS3	No.	Description	Part No. CHS2	Part No. CHS3
1	Motor	Consult your dealer		16	Check Valve	DS501-015	DS801-015
2	End Cover	DS501-004	DS501-004	17	Valve Case	DS501-013	DS801-013
3	Packing Casing	DS501-002	DS501-002	18	Bolt M*x25	N/A	N/A
4	Seal Packing	DS501-006	DS501-006	19	Coupling	DS501-016P	DS801-016
5	Bolt M8x48	DS521-027	DS501-005	20	Hose Coupling	DS501-018P	DS801-018P
6	Spring Washer	N/A	N/A	21	Packing	DS501-017	DS801-017
7	Plain Washer	N/A	N/A	22	Outlet Conn.	DS501-019	DS801-019
8	Mech Seal	DS521008	DS521008	23	Gasket	DS501-020	DS801-020
9	Impeller	DS571-009	DS871-009	24	Bracket	DS571-021	DS571-021
10	Inner Casing	DS571-011	DS571-811	25	Spanner	DS571-022	DS571-022
11	Packing	DS501-012	DS801-012	26	Bolt M8x40	N/A	N/A
12	Casing	DS510-001	DS801-001	27	Frame	DS571-030	DS871-030
13	Sealing Ring	DS510-022	DS501-022	28	Nut	N/A	N/A
14	Plug	DS501-021	DS501-021	29	Hose Clip	DS501-028	DS801-028
15	Special Bolt	DS571-003	DS571-003	30	Strainer	DS571-029	DS871-029

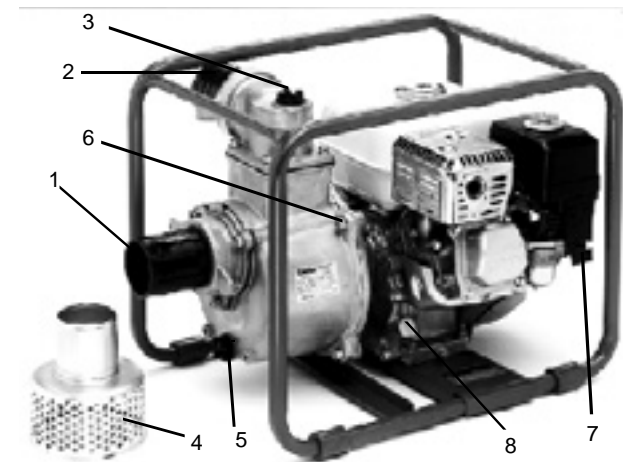
INTRODUCTION

These self-priming centrifugal pumps are designed for pumping water, or water containing small solids in suspension. The pumps are self-priming, and an open impeller with small solids handling capacity is fitted (see specifications). The suction strainer supplied, must always be used, to ensure that large stones or other objects cannot be drawn up, as this would cause severe damage to the pump.

Models CH2E and CH3D should be used for **water only**, Models CHS2E and CHS3 are **semi-trash** pumps, and may be used for contaminated water. Models CHF2 and CHF3, are **trash pumps**, for use with heavily contaminated water.

REMEMBER: Contaminated water is water containing small solids in suspension, NOT slurry, sludge, sand, or mud.

This illustration shows a CH3D pump, but all pumps are similar in construction.



1. Input to Suction Chamber
2. Output or Discharge pipe
3. Filler Plug
4. Strainer
5. Drain Plug
6. Suction Chamber Bolts
7. Starter Recoil Rope
8. Oil Filler and Dipstick

PREPARING THE PUMP FOR OPERATION

A. GENERAL.

Always prepare the site beforehand.

Ensure there is an adequate, firm foundation on which the pump may be located, and as near the water source as possible.

Ensure there is adequate drainage for the discharged water, and that there is no danger of damage to property as a result of the pumping operation.

B. THE ENGINE.

WARNING:

Never run the engine in an enclosed space
- ensure there is adequate ventilation.

This pump is not supplied with engine oil or fuel. Fill the engine crankcase with oil as specified in the engine manual.

Fill the fuel tank with petrol.

Consult the engine manual and carry out all checks, and prepare for use as specified.

C. THE PUMP

1. Place the pump on a firm, level foundation, putting it as near as possible to the water source, and ensure it is anchored where necessary, to prevent it from moving during operation.
2. Connect the suction hose to the pump housing, and ensure the complete hose is sound. There must be no damage of any kind. The connection at the pump body, and all other connections, (should there be any), **must be air tight.**

Hoses or pipes should be supported independently and not carried by the pump.

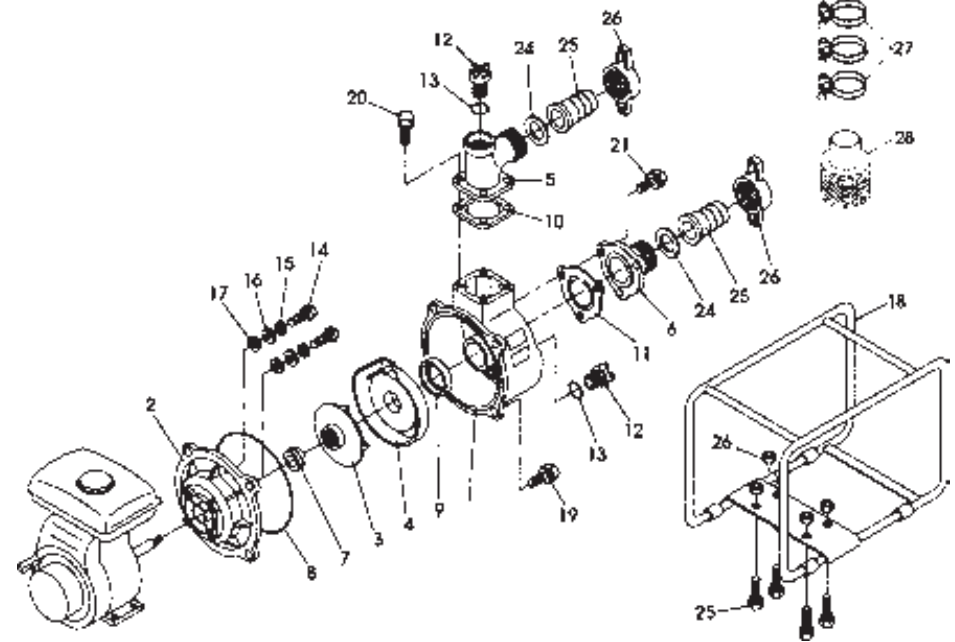
IMPORTANT : An air leak in the suction line will prevent priming, and reduce the capacity of the pump. The vast majority of problems which may occur, are as a result of air leaks in the suction line.

Pay particular attention to the following:

- a. Use sealant on all threaded connections.
- b. Always ensure the quick release gasket is in place, and correctly fitted.
- c. Always use a flexible hose at the pump body connection, of at least 1ft (300mm).
- d. Keep all pipes/hoses as short and straight as possible, and avoid sharp bends.
- e. If a flexible hose must be laid across a roadway, protect it with planking. (Instantaneous shut off pressure, applied when a vehicle runs across an unprotected hose, will cause "hydraulic shock", which can damage the pump and/or the hose).

PARTS DIAGRAM

Model - CH3D



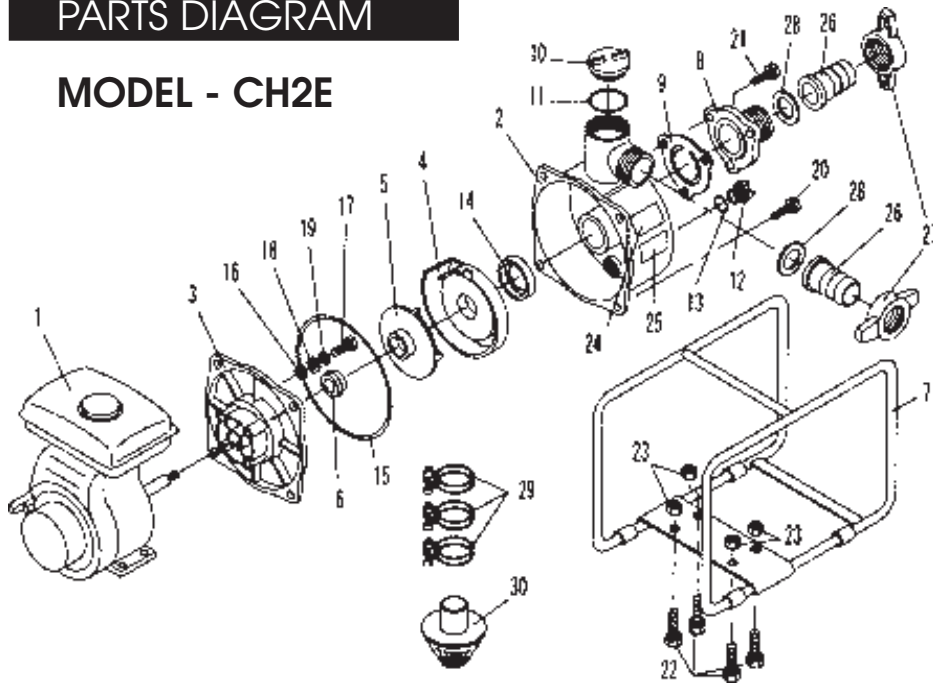
PARTS LIST

For Engine part no. - Consult your CLARKE dealer

No.	Description	Part No.	No.	Description	Part No.
-	Engine	See Dealer	15	Spring Washer	N/A
1	Casing	DS801001	16	Plain Washer	N/A
2	End Cover	DS501004	17	Seal Packing	DS501006
3	Impeller	DS801009	18	Frame	DS801030N
4	Inner Casing	DS801001	19	Bolt M10x30 SW	DS501003
5	Outlet Connector	DS801019	20	Bolt M8x25 SW	DS501014
6	Valve Casing	DS801013	21	Bolt M8x30 SW	DS801014
7	Mechanical Seal	DS501010	22	Bolt M8x40 SW	DS501023
8	Sealing Ring	DS501002	23	Flange Nut M6	N/A
9	Packing Inner Casing	DS801012	24	Packing Coupling	DS801017
10	Gasket Outlet Conn.	DS801020	25	Hose Connector	DS801018
11	Check Valve	DS801015	26	Hose Coupling	DS801016
12	Plug	DS501012	27	Hose Clip	DS801028
13	Packing Plug	DS501022	28	Strainer	DS801029
14	Bolt M8x48	N/A			

PARTS DIAGRAM

MODEL - CH2E



PARTS LIST

For Engine part no. - Consult your CLARKE dealer

No.	Description	Part No.	No.	Description	Part No.
1	Engine	-	16	Seal Packing	DS501-006
2	Casing	DS505-001	17	Bolt M8x48	N/A
3	End Cover	DS505-004	18	Plain Washer	N/A 4
4	Inner Casing	DS505-011	19	Spring Washer	N/A
5	Impeller	DS505-009	20	Tapping Bolt 30M	DS505-050
6	Mechanical Seal	DS505-010	21	Tapping Bolt 25M	DS523-051
7	Frame	DS505-030NH	22	Bolt M8x40	DS501-023
8	Valve Case	DS505-013	23	Nut M8	N/A
9	Check Valve	DS505-015	24	Data Plate	N/A
10	Filler Plug	DS505-021	25	Name Plate	N/A
11	Packing	DS505-022	26	Hose Connector	7950320
12	Drain Plug	DS501-021	27	Coupling	7950320
13	Packing	DS501-022	28	Coupling Packing	7950320
14	Packing	DS501-012	29	Hose Clip	DS501-028
15	Packing	DS505-002	30	Strainer	DS505-029

- The suction strainer **MUST** be attached to the end of suction hose, to prevent large stones etc., from being drawn up which could cause severe damage. Keep the strainer clean. If it is likely to clog with dirt or debris, proceed as follows:
 - Prepare a bed of stones on which to rest the strainer.
 - Tie the strainer so that it stays off the bottom of the pit, pond or excavation.
 - Tie the strainer inside a basket or bucket.
- Remove the Filler Plug on top of the pump case and fill the pump with water, leaving no air gap. Remember the pump is self-priming only when the pump is filled. It will prime and reprime itself without refilling. Refilling is necessary only if the pump has been drained or if the water has been lost. Never run the pump dry.
- Ensuring there is adequate drainage for the discharged water, attach the discharge hose if required, ensuring it is well protected and supported.

If the discharge line runs vertically more than 30ft., it is advisable to install a check valve in the discharge line near the pump to stop destructive liquid hammer when the pump is shut down. If a check valve is installed, it may also be necessary to vent the top of the pump so that air can be expelled during automatic repriming. This air bleed may be accomplished by providing a 1/4" line from the top of the pump back to the liquid source. We will not assume any responsibility for damage to the pump if no check valve is used in the discharge line.

Properly fuelled and lubricated, your pump will run without attention.

OPERATION (Refer to the illustration on page 3)

Ensure the site and pump is prepared as detailed on page 4, then proceed as follows:

1. STARTING.

Refer to the Engine Manual. Pay particular attention to "running in" the engine. Do not exceed the recommended engine speeds or running duration.

- With the fuel cock open, pull the starter recoil rope slowly two or three times, to allow fuel to reach the carburettor.
- Hold down the pump, and with the ignition switch ON, and choke and throttle, set according to the engine manual, pull the starter recoil rope firmly until the engine starts. Do not snatch at the starter rope, and allow it to retract slowly after each pull.
- Once the engine starts, set the choke according to the manual, and use the engine throttle to gradually increase engine speed.

2. PRIMING TIME.

With a suction lift from 5 to 10ft., the pump should discharge liquid in less than a minute. A suction lift of 25ft (at sea level) should require not more than 2 minutes for initial prime. To further reduce priming time the engine speed may be increased, after the engine is properly run in. If pumping does not start within this time, shut off engine and check carefully to find the problem, (See TROUBLESHOOTING GUIDE).

NOTE: Filling the suction pipe with water will speed up the priming process, and it is recommended that a foot valve (non-return valve) be fitted to the end of the suction pipe.

3. CONTROL.

On high suction lifts, a higher engine speed is necessary than on low lifts. On shallow lifts therefore, or when there is little water to pump, preserve fuel and engine wear, by reducing engine speed. (See engine manual).

4. STOPPING.

- 4.1 GRADUALLY reduce engine speed to minimum, and stop the engine by switching OFF the ignition switch.
- 4.2 Close the fuel cock.

5. BLOCKAGES

In the event of blockages, where debris has entered the suction chamber, the suction chamber bolts, (or quick release clamps on the larger pumps), allow the chamber to be opened and cleaned

MAINTENANCE

A. ENGINE

Ensure the engine is maintained in accordance with the instructions given in the engine manual, additionally, if the pump is not to be used for some time, it should be prepared as follows:

1. Drain the fuel tank and carburetor completely.
2. Remove the spark plug, and pour 2 - 3 teaspoons of light oil into the cylinder through the spark plug hole.
3. Pull the starter recoil rope slowly, 2 or 3 times so that the oil is deposited on the cylinder walls, and replace the spark plug.

B. PUMP

Always maintain the pump in a clean condition, checking regularly for loose bolts etc. Additionally, drain the pump body whenever there is danger of freezing, and if the pump has been used with contaminated or salty water, it should be thoroughly flushed with clean water immediately after use, both **inside and out**.

If the pump is not to be used for some time, it should be flushed thoroughly with clean water, and drained completely before storing in a clean dry environment

TROUBLESHOOTING

NOTE: For engine problems, consult the manual supplied.

FAULT	PROBLEM	REMEDY
A) Pump fails to prime	<ol style="list-style-type: none"> 1. Priming chamber not filled correctly. 2. Air leaks through the suction line joints (broken/damaged screws or rubber hoses, loose or broken hose clamps 3. Quick coupling gaskets broken or not correctly fitted. 4. Suction or delivery line obstructed 5. Pump speed too low. 6. Worn or broken impeller. 7. Air leaks through damaged mechanical seal. 8. Suction strainer clogged 	<ol style="list-style-type: none"> 1. Fill priming chamber leaving no air gap. 2. Carry out repairs as necessary 3. Check connections, and renew gaskets where necessary. 4. Remove obstruction and ensure there are no kinks in delivery line. 5. Increase engine speed. 6. Renew Impeller. 7. Renew Seal. 8. Clean strainer, and ensure it is not submerged in mud or sediment etc.
B) Low output	<ol style="list-style-type: none"> 1. Suction strainer clogged. 2. Suction or delivery line obstructed 3. High friction losses in the suction line. 4. Suction lift too high. 5. Pump speed too low. 6. Impeller clogged. 	<ol style="list-style-type: none"> 1. Clean strainer, and ensure it is not sub merged in mud or sediment etc. 2. Remove obstruction and ensure there are no kinks in delivery line. 3. Avoid unnecessary curves, restrictions or valves. 4. Set pump as near as possible to the level of the liquid to be pumped. 5. Increase engine speed. 6. Disassemble pump, and clean.