OPERATOR'S
SPARE PARTS &
SERVICE MANUAL

Type ‘M’ Vibrating Pokers and Drive Units

FAIRPORT
CONSTRUCTION EQUIPMENT LTD

Blagden Street
Sheffield
S2 5QS
ENGLAND
Tel: +44 (0) 114 276 7921
Fax: +44 (0) 114 272 0965
Email: sales@fairport.uk.com
Website: www.fairport.uk.com

'M' RANGE POKER MANUAL

CONTENTS

1. INTRODUCTION

The ‘M’ range of internal concrete vibrators (pokers) is petrol engine or electric motor powered and drive is transmitted to the vibrating head using a flexible shaft. The ‘M’ range system has four main components:

a) A vibrating poker head
b) A flexible drive shaft
c) A quick action coupling
d) A drive unit.

The quick action coupling is disconnected from the drive unit by hand. Spanners are required to remove the coupling from the flexible shaft and this may be carried out on site. Further dismantling should be carried out in a workshop.

Four models of poker are available, M281, M385, M501 and M651. The first two numbers of the model designation indicates the poker diameter in millimetres.

The flexible drive shafts are produced in standard lengths of 3 metres, 5 metres and 6 metres. The flexible shaft for the 281 poker is 28mm diameter, and 32mm diameter for the larger pokers. The versatility of the ‘M’ range system allows 32mm diameter flexible shafts to be connected together to increase overall lengths and also allows 32 mm diameter flexible shafts to be connected to a 28mm shaft. Special lengths can be made up to suit individual requirements.

Couplings are available that will screw on to the flexible drive and plug in to alternative makes of drive unit. The alternatives that are available are shown on the parts list in this manual.

This manual is concerned with the safe use and routine maintenance of this equipment. It is recommended that poker heads that require repair be returned to one of the Fairport depots at either Sheffield or Edenbridge.

A service manual and special service tools are available from Fairport for customers wishing to carry out their own repairs. Instruction courses are available to customers’ personnel at Sheffield – please contact the head office at Sheffield for further details.

2. TECHNICAL DATA

Drive Units, Petrol/Diesel

Engine Make/Type	Length (mm)	Width (mm)	Height (mm)	Weight (mm)	Net BHP (at 2800 rpm)	LwA dB (A)
Honda GX160						
w/o clutch	455	460	470	25	4.0	98
with clutch	465	460	470	27	4.0	98
Yanmar L40						
w/o clutch	460	460	470	41	3.4	96
with clutch	509	460	470	43	3.4	96
Hatz 1B30						
w/o clutch	460	460	470	tba	6.3	tba
Petter AC1, rope start						
w/o clutch	635	416	530	70	5.2	102
with clutch	635	416	530	72	5.2	102

LwA levels based on engine manufacturers' data.

Poker Sound Levels dB (A)

Poker	281	385	501	651
In Concrete:				
Operator Position LpA	78.8	78.2	84.6	81.0
Power Level LwA	88.0	92.2	100.4	91.4
In Air:				
Operator Position LpA	86.3	86.6	91.4	88.5
Power Level LwA	96.4	99.0	105.6	102.1

Sound levels tested according to ISO 5349

Hand/Arm Vibration Levels (m/s²) Maximum Axis

In concrete	2.0	5.0	3.2	3.5
In Air	2.0	5.0	4.0	3.5

Vibration levels tested to ISO 3746

3. SAFETY

Never run petrol or diesel engines in trenches or confined spaces.

Never attempt to carry out maintenance with engine running.

Never top up fuel tank whilst engine is running; don't smoke; wipe up spilt fuel.

Dispose of fuel contaminated wipes safely.

Always turn off fuel after use.

Always wear suitable protective clothing, i.e. safety helmet, footwear, ear defenders and gloves.

Ensure guards are always fixed in position when engines/motors are running.

Always comply with site safety regulations.

3.1 FLEXIBLE CASING USED ON POKER VIBRATORS - COSHH REGULATIONS

This data sheet provides the information required on Section 6 of the Health and Safety at Works Act 1974 as amended by Schedule 3 of the consumer Protection Act 1987.

3.1.1 Data Sheet On Flexible Casing

The Polymeric compounds used on hose may contain materials that can migrate to the surface from whence they could be transferred to the skin during handling. This may cause skin irritation to persons who frequently handle hose. Persons who have to handle the hose frequently are advised to follow good hygienic practices e.g. wear gloves whenever practicable. Use barriers cream and wash hands after work before eating, drinking or smoking.

3.1.2 Fire

With a few exceptions the polymeric materials used by Dunlop Hose Limited are not easy to ignite in bulk. However when exposed to flame or to serious overheating they will decompose liberating noxious or toxic smoke or fumes. Fire precautions should recognise the hazards that may arise from indirect involvement in a fire as well as the inherent fire risk of the individual products.
Specialised advice on fire precautions is available from local Fire Authorities and from Health & Safety Executive.

3.1.3 Storage

Hose may deteriorate in appearance and physical properties during storage

particularly if adverse storage conditions apply. BS3574 details the most suitable conditions for storage. In summary, hose should be stored in an unstressed darkened condition below 25° C and protected from moisture and air circulation. Expose to atmosphere containing high concentration of ozone (eg. near discharge from electric motors) is to be particularly avoided. Hose should be stored away from direct heat and contact with strong oxidising agents should be avoided.

3.1.4 Waste Disposal

Hose should be disposed of by normal waste disposal procedures. Where incineration is used the incinerator must be specifically designed to give complete combustion of the gases and fumes produced.

3.2 SAFETY PICTOGRAMS USED ON THIS EQUIPMENT

Wear Gloves

Wear ear protectors

Read the manual before using this equipment

4. COMMISSIONING AND OPERATING INSTRUCTIONS

The machine as delivered will generally be in two main assemblies:

a) The drive unit

b) The poker head complete with flexible shaft drive and coupling.

To assemble the flexible poker drive to the power unit, raise the latch knob on the coupling housing on the engine and insert the coupling attached to the end of the flexible drive. On releasing the knob the plunger should locate itself in the groove in the plug-in connector. When connecting to a petrol or diesel engine it may be necessary to rotate the engine crankshaft by means of the rope or handle starter at the same time applying pressure to the coupling in order to obtain engagement. Check the engagement by pulling on the coupling after releasing the latch knob. The coupling must never be inserted into or removed from the housing with the engine running.

If the coupling is disconnected from the flexible shaft at any time, be sure to protect all exposed ends from possible damage or entry of foreign matter.

When transporting flexible poker shaft assemblies, it is essential that they are never coiled too tightly, likewise acute bends should be avoided when operating on site. The recommended method of storing these flexible shafts is on timber racks so that the shaft is kept straight and supported throughout its full length.

4.1 POKER DRIVE UNIT - PETROL OR DIESEL

Carefully read the engine manufacturer's instruction book before starting.

Check oil level.

Turn fuel tap on.

Put speed control lever to tick-over.

If engine is cold, close the choke (petrol engines only).

Turn engine switch to ON (1) position.

Pull the starter rope toggle lightly until resistance is felt, then pull briskly using quick short pull. Do not pull rope to its full extent or allow toggle to snap back against engine. Return it gently to avoid damage.

When engine is warm open choke.

Position engine speed control lever to give required engine speed (usually full speed, but see note below).

To stop engine, position the engine speed control to slow and turn the engine switch to off (0).

Turn the fuel valve to off.

NOTE: The governors of petrol and diesel engine drive units have been set at 2,750/2,850 rpm maximum. It is essential that the engine speed is not increased over 3,000 rpm as this will induce stress which may result in the failure of the poker head or flexible shaft and therefore invalidate any warranty. CHECK ENGINE SPEED.

4.2 STARTING THE VIBRATING POKER

With the coupling correctly inserted into the housing start the engine or switch on the electric motor. During cold weather it is advisable to run petrol or diesel engines for a few minutes before connecting the flexible drive.

If the poker head does not start vibrating when the drive unit is at full speed tap the nose cap on a hard surface. Avoid tapping the body of the poker head, as this has not been hardened.

4.3 USER HINTS AND INSTRUCTIONS

Use the largest poker that the job and reinforcement will allow.

Move the poker frequently. A little and often over an area is better than holding it in one place for a long time.

Make sure the whole area is covered.

Withdraw the poker slowly to ensure the hole is closed with adequately vibrated concrete.

When using a poker with timber formwork make sure the poker does not damage the formwork. Consider using a poker with a polyurethane nose cap – contact Fairport or your dealer.

When vibrating a layer of concrete, which has been poured onto a previously vibrated layer, ensure the poker penetrates the previous layer by about 100mm.

Do not try to vibrate concrete in layers greater than 300mm to 400mm.

Try to immerse the whole of the poker head in the concrete to provide some cooling.

Do not leave the poker running when it is not in concrete. This will prevent overheating of the bearings.

Avoid tight bends in the flexible drive shaft. Tight bends cause rapid wear of the flexible core.

Check on a regular basis (weekly) that all joints on the flexible drive are tight.

Do not allow the coupling end of the flexible drive to lie in wet conditions on the ground, as the entry of water to the bearings will cause rusting.

Do not stop the vibration whilst the poker is still in the concrete. It may prove difficult to remove and it will leave a void.

5. ROUTINE ATTENTION

5.1 CLEANING THE POKER VIBRATOR UNIT

Time on regular maintenance is well spent, as it prolongs the life of the machine between regular overhauls. Therefore, a few minutes each day removing excessive cement deposits from the poker head, flexible drive and power unit will ensure satisfactory operation.

5.2 POKER DRIVE UNIT

When using a petrol or diesel engine as the prime mover, it is essential that the oil level in the crankcase is checked daily and replenished if necessary with the correct grade.

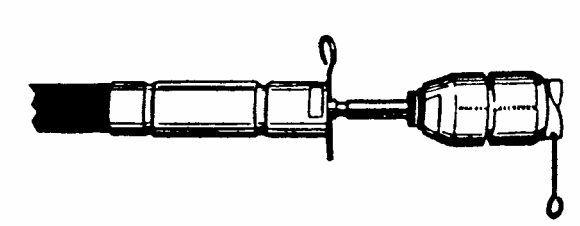
Cleanliness of both the lubricating oil and fuel cannot be over stressed. Therefore, use clean measures and containers and always observe recommended safety procedure.

5.3 FLEXIBLE POKER SHAFT

In order to minimise damage to the flexible shaft drive, avoid acute bends, especially where the flexible drive passes over the edge of trenches, shuttering etc.

5.4 REMOVING A PLUG-IN COUPLING

Fit a spanner to the flats on the end of the flexible drive and a spanner to the flats on the coupling body and unscrew the coupling from the flexible drive (left hand thread). Suitable spanners, part no. W81692, are available from Fairport Construction Equipment Ltd.

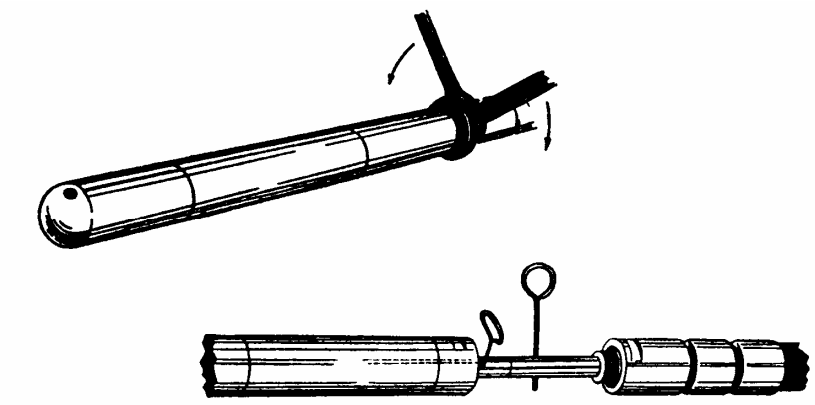


Pull the coupling away from the end of the flexible drive exposing the tommy bar hole in the connector on the end of the inner core. Place a tommy bar through this hole and also insert a tommy bar into the hole on the side of the drive claw of the coupling and unscrew (right hand thread) the coupling from the core. If the coupling is being replaced leave the tommy bar in the hole in the core connector. Replacement of the coupling is the reverse of this procedure. Suitable tommy bars, part no. W81691, are available from Fairport Construction Equipment Ltd.

Replacement is the reverse of the above procedure, but it is worth renewing the 'O' ring

5.5 REMOVING A POKER HEAD

Fit a spanner to the flats on the end of the flexible drive and a spanner to the flats on the poker head and unscrew the poker head from the flexible drive (left hand thread). Suitable spanners, part no. W81692, are available from Fairport Construction Equipment Ltd.



Pull the poker head away from the end of the flexible drive exposing the tommy bar hole in the connector on the end of the inner core. Place a tommy bar through this hole and also insert a tommy bar into the hole on the poker head drive connector. Unscrew the poker head connector from the core connector (right hand thread). If the poker head is being replaced leave the tommy bar in the hole in the core connector. Replacement of the poker head is the reverse of this procedure. Suitable tommy bars, part no. W81691, are available from Fairport Construction Equipment Ltd.

Replacement is the reverse of the above procedure, but it is worth renewing the ‘O’ ring

5.6 REMOVING AND RE-GREASING A FLEXIBLE SHAFT

The flexible drive shaft should be dismantled and re-charged with grease every 500 working hours. As it is extremely difficult to keep accurate records, it is suggested that the flexible shaft be overhauled at six monthly intervals. This will ensure trouble free operation.

Do not attempt to carry out the lubrication of the flexible shaft drive under site conditions; this should always be carried out in a maintenance workshop.

Remove the coupling and poker head as described above.

Remove and c0lean the flexible steel inner core and core connectors thoroughly with grease solvent.

Clean ends of outer casing with a cloth.

After thoroughly cleaning the complete flexible drive shaft, inspect the inner core for any excessive wear due to rubbing action between the core and outer casing spiral reinforcement; also for damaged and broken outer layer wires. If there is a permanent bend in the outer casing we advise fitting a replacement, as this is liable to cause damage to the inner core.

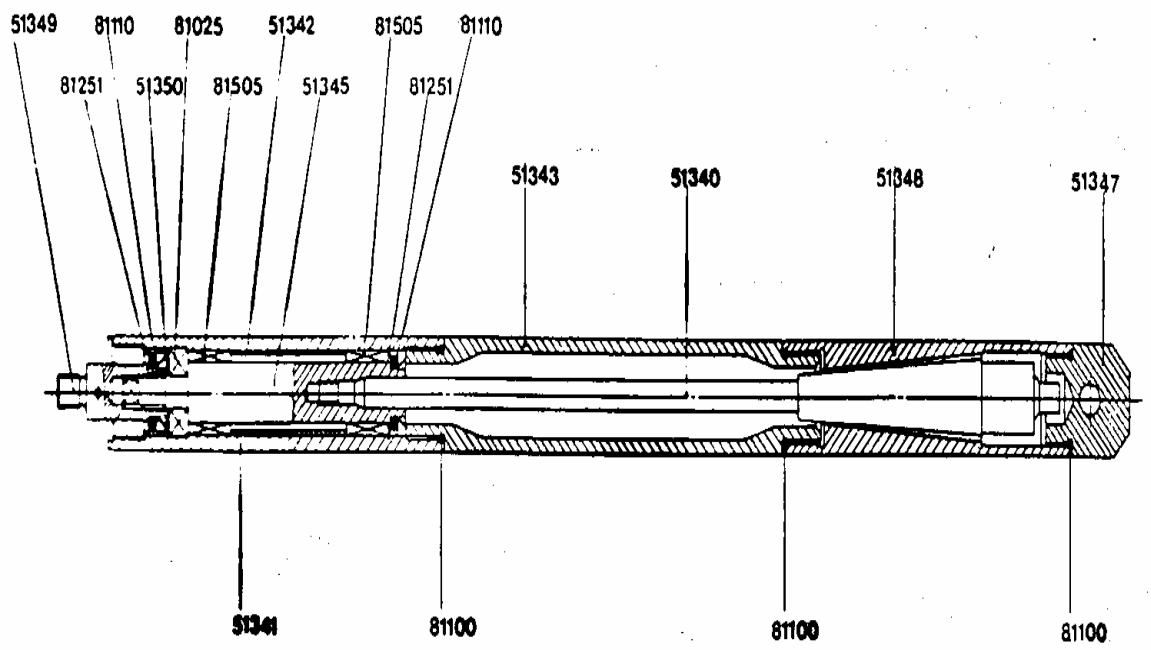
Re-grease the first 12" - 18" (30 - 40cm) of the inner core with Castrol BM2 grease or equivalent moly-graphite grease. Insert the greased inner core into the casing ensuring it is the correct way round. Continue greasing the inner core and at the same time insert it into the casing. Continue until the whole length of inner core has been greased. Also grease thoroughly the sliding connector.

As the inner core is pushed through the outer casing, some of the grease will naturally adhere to the inner walls of the casing. To ensure adequate lubrication, it is advisable to draw out the core for approximately 6ft (2 metres) from the other end, re-grease as the core is inserted back into the casing.

It is essential during the re-greasing operation to keep dirt and grit away from the component parts.

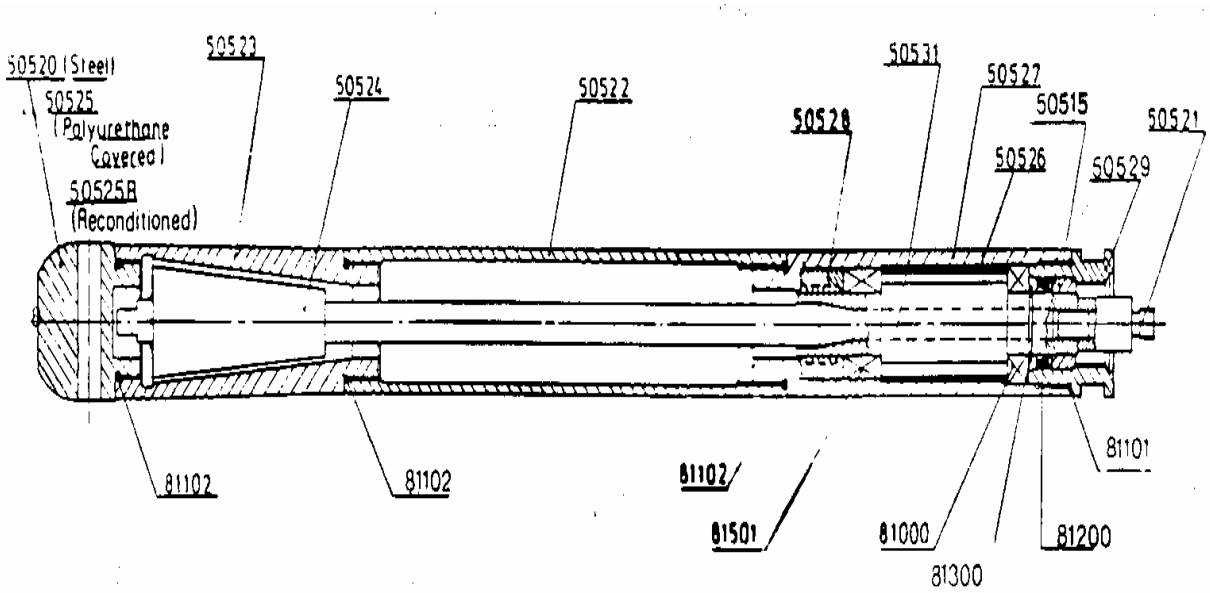
When reassembling shaft, head and coupling always renew the ‘O’ rings.7.

6. PARTS LIST – 281 ‘M’ Range Poker Head

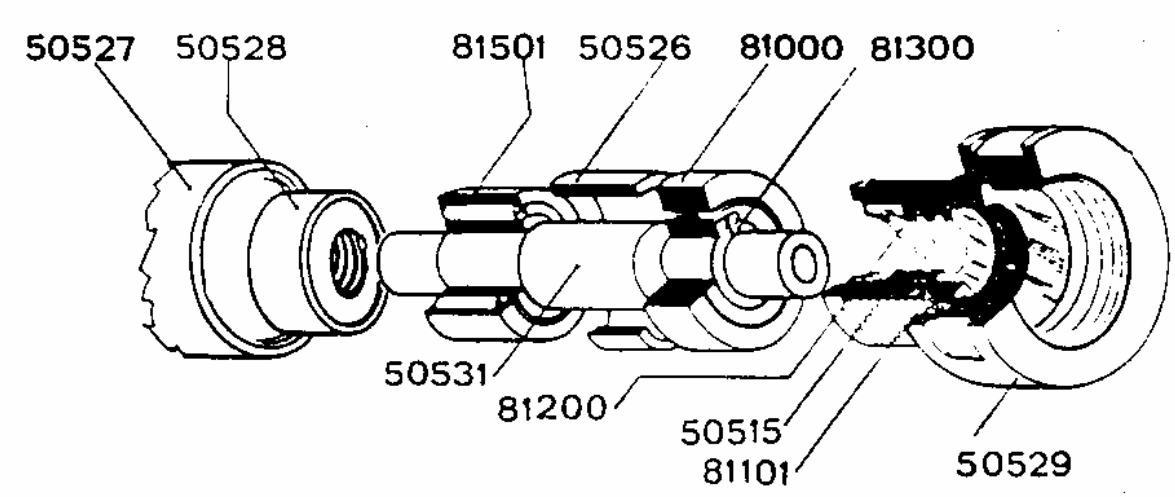


Part No.	Description	Qty Required
W51347	End Cap (Steel)	1
W51343	Vibrator Tube Only	1
W51348	Collet without ‘O’ Ring	1
W51340	Impeller Weight Assembly	1
W81100	‘O’ Ring	3
W92108	Bearing Case Complete	1
W92106	Vibrator Complete without Drive	1
W51342	Distance Piece	1
W51341	Bearing Case Only	1
W51350	‘V’ Ring Housing	1
W81110	‘V’ Ring	2
W51345	Bearing Spindle	1
W51349	Shaft Connector	1
W81025	Ball Bearing	1
W81505	Needle Bearing	2
W81251	Circlip	2

PARTS LIST – 385 ‘M’ Range Poker Head

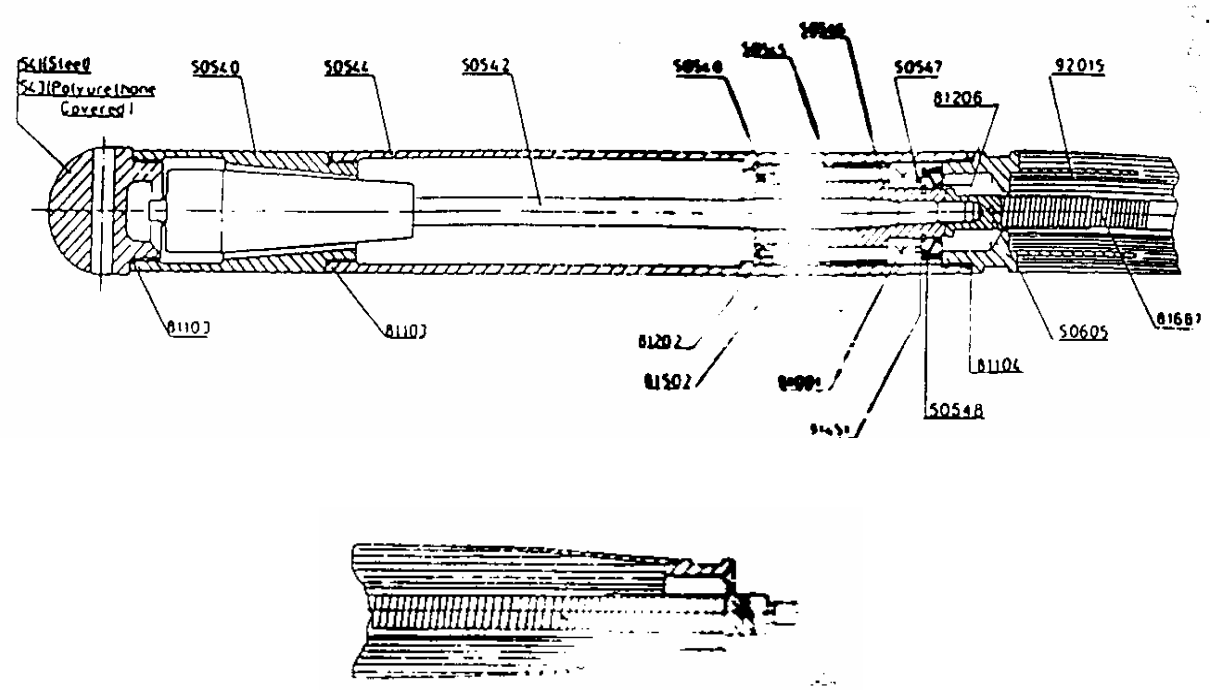


Part No.	Description	Qty Required
W50520	End Cap (Steel)	1
W50521	Shaft Connector	1
W50522	Vibrator Tube only	1
W50523	Collet without ‘O’ Ring	1
W50524	Impeller	1
W81101	Rubber ‘O’ Ring, 29.2 x 3	1
W81102	Rubber ‘O’ Ring, 26.2 x 3	3
W92010	**Vibrator Tube Complete, comprising W50522, W81102, W50523**	**1**
W92011	**Bearing Case Connector Assy comprising W50529, W81101, W50515, W81200**	
W92012	**Bearing Case complete with W92011 and ‘O’ Ring**	**1**
W92013	**Vibrator Complete**	**1**



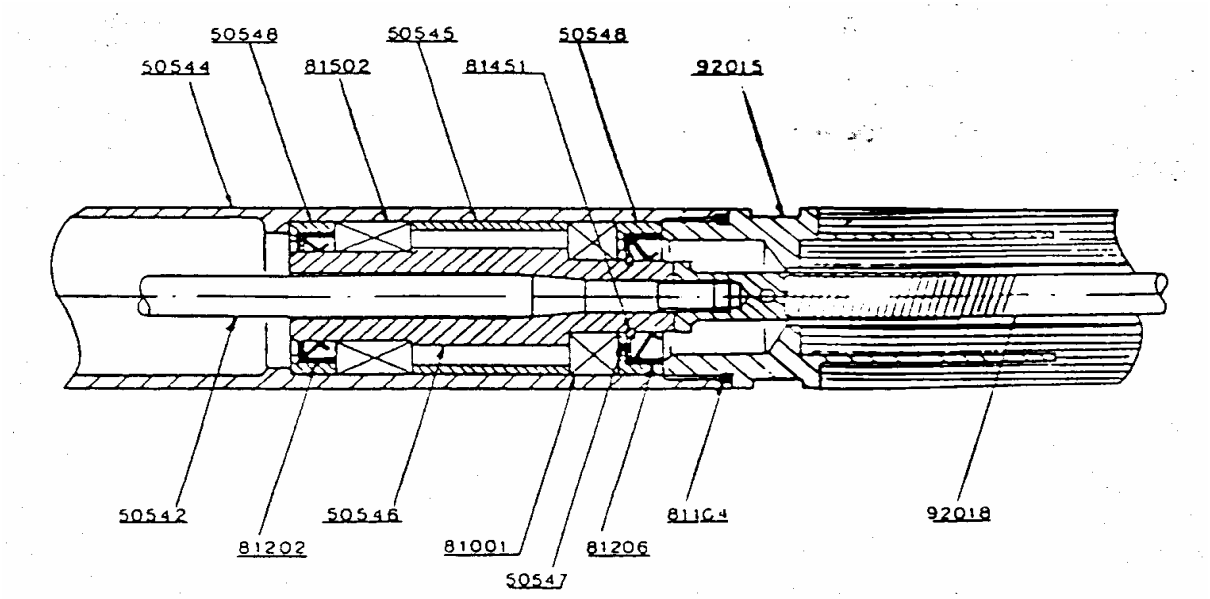
Bearing Case Spares		
Part No.	**Description**	**Qty Required**
W50526	Distance Sleeve	1
W50527	Bearing Case Shell only	1
W50528	Lower Grease Seal	1
W50529	Bearing Case Connector only	1
W50515	Spacer	1
W50531	Bearing Spindle	1
W81000	Ball Bearing	1
W81101	Rubber ‘O’ Ring	1
W81200	Spring Loaded Oil Seal	1
W81300	Circlip (Ball Bearing)	1
W81501	Needle Bearing	1
W92012	**Bearing Case Complete (comprising of above items)**	

PARTS LIST – 501 ‘M’ Range Poker Head



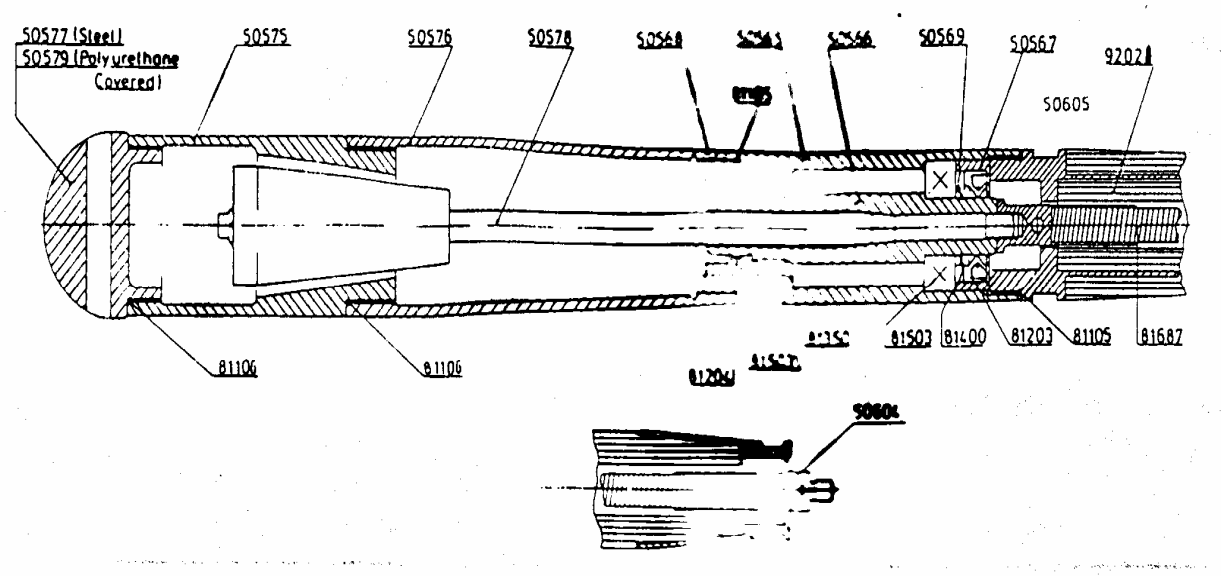
Part No.	Description	Qty Required
W50540	Collet only (without ‘O’ Ring)	1
W50541	End Cap (steel)	1
W50542	Impeller	1
W50604	Upper Core Connector	1
W50605	Lower Core Connector	1
W81103	Rubber ‘O’ Ring, 36.2 x 3	2
W81104	Rubber ‘O’ Ring, 39.2 x 3	1
W81687	Inner Flex only	1
W92015	Outer Rubber Sleeve	1
W92016	**Vibrator Tube and Bearing Case complete with Seals. Bearings, etc**	**1**
W92017 *	**Rubber Sleeve complete with Inner Flex complete**	**1**
W92018 *	**Inner Flex complete with Connectors**	**1**
W92019	**Vibrator complete with Sleeve**	**1**

*Note: In place of Sleeve and Inner Flex, Adaptor W50625 and Connector W50624 may be fitted.



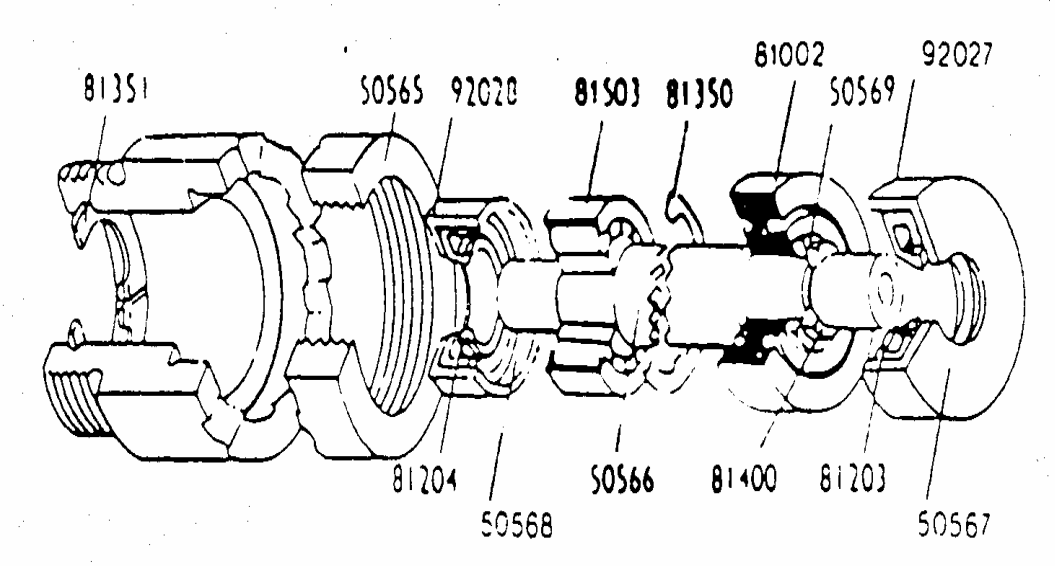
Bearing Case Spares		
Part No.	**Description**	**Qty Required**
W50544	Vibrator Tube and Bearing Case Combined	1
W50545	Distance Sleeve	1
W50546	Bearing Spindle	1
W50547	Packing Washer	1
W50548	Oil Seal Housing Upper and Lower	2
W81001	Ball Bearing	1
W81206	Upper Spring Loaded Oil Seal	1
W81202	Lower Spring Loaded Oil Seal	1
W81451	Circlip (Ball Bearing)	1
W81502	Needle Bearing	1

PARTS LIST – 651 ‘M’ Range Poker Head



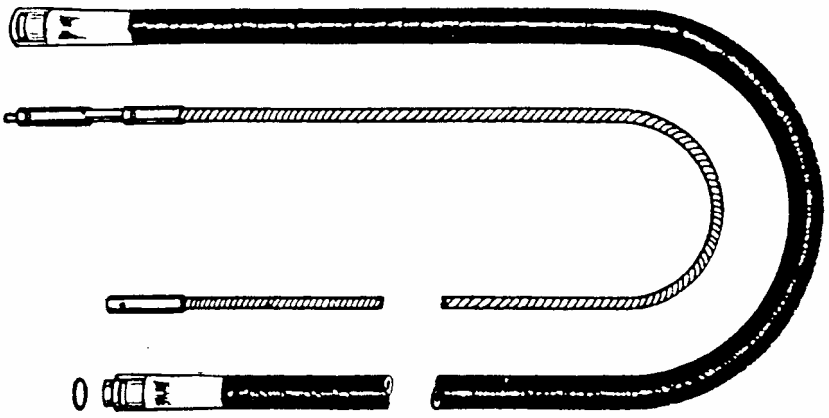
Part No.	Description	Qty Required
W50575	Collet only (without ‘O’ Ring)	1
W50576	Vibrator Tube without Collet	1
W50577	End Cap (Steel)	1
W50578	Impeller	1
W50604	Upper Core Connector	1
W50605	Lower Core Connector	1
W81105	Rubber ‘O’ Ring, 42.5 x 3	2
W81106	Rubber ‘O’ Ring, 49.5 x 3	2
W81687	Inner Flex (without Connectors)	1
W92021 *	Outer Rubber Sleeve	1
W92018 *	Inner Flex complete with Connectors	1
W92024	**Rubber Sleeve complete with Inner Flex complete**	**1**
W92025	**Bearing Case complete with Seals and ‘O’ Ring**	**1**
W92030	**Vibrator Tube complete**	**1**
W92031	**Vibrator complete with Sleeve**	**1**

*Note: In place of Sleeve and Inner Flex, Adaptor W50626 and Connector W50624 may be used

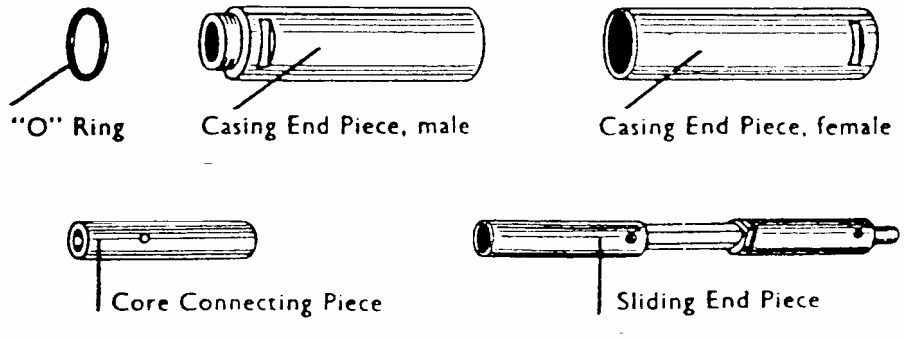


Bearing Case Spares		
Part No.	**Description**	**Qty Required**
W50565	Bearing Case Shell Only	1
W50566	Bearing Spindle	1
W50567	Upper Oil Seal Housing	1
W50568	Lower Oil Seal Housing	1
W50569	Packing Washer	1
W81002	Ball Bearing	1
W81003	Upper Spring Loaded Oil Seal	1
W81004	Lower Spring Loaded Oil Seal	1
W81350	Circlip (Internal)	1
W81351	Circlip (Internal)	1
W81400	Circlip (Ball Bearing)	1
W81503	Needle Race	1
W92027	Upper Oil Seal Assy	1
W92028	Lower Oil Seal Assy	1

PARTS LIST – Flexible Drive

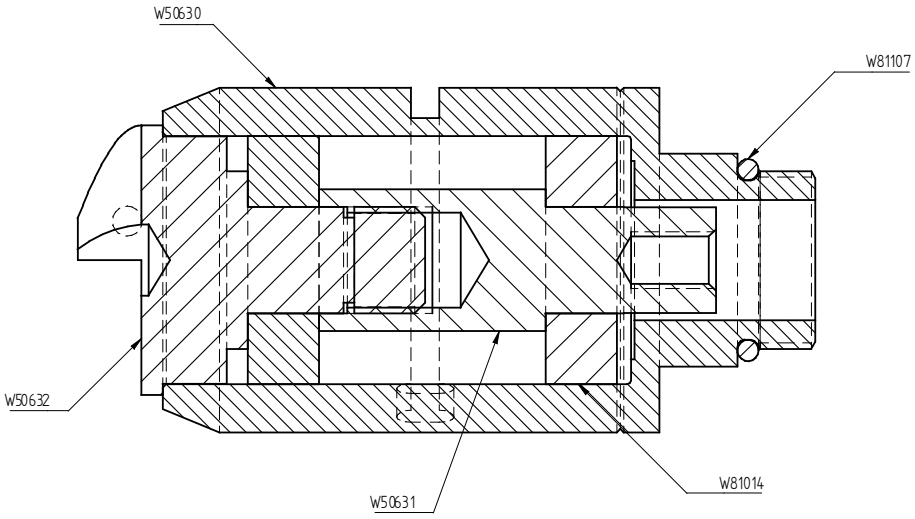


Part Numbers			
3 Metre	**5 Metre**	**6 Metre**	**Description**
92040	92067	92215	Flexible Drive complete (Inner and Outer)
92041	92068	92216	Outer Casing complete
81682	92075	81718	Outer Casing without Casing End Pieces
82203	82203	82203	Steel Spiral
92042	92069	92217	Inner Core complete
81683	81694	81719	Inner Core without Connecting Pieces



Part No.	Description
92046	Drive Reinforcement complete (Inner and Outer)
92047	Outer Casing complete with Casing End Pieces
92048	Inner Flex complete with Connectors
81684	Outer Casing only
81685	Inner Flex only
50596	Male Casing End Pieces
50597	Female Casing End Pieces
50592	Lower Core Connector
50604	Upper Core Connector

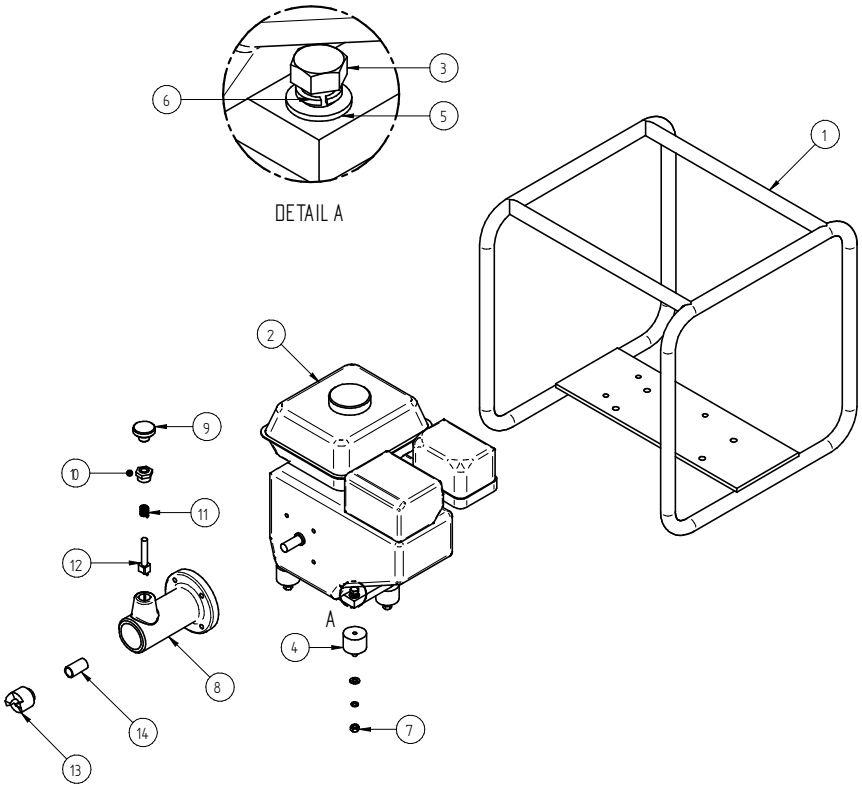
PARTS LIST – Plug In Connectors



Part No.	Description	Qty Required
W50630	Coupling Body	1
W50632	Coupling Claw	1
W50631	Coupling Spindle	1
W81014	Bearing	2
W81107	‘O’ Ring 22.5 x 3	1

PARTS LIST – Power Unit

Parts List	Part Code	Description	Qty Required
1	W50697	Frame	1
2	W81732	Honda GX160	1
3	W437/8/30	M8 x 30 Set Screw	4
4	W88913	AV Mount	4
5	W418/8	M8 Washer	8
6	W432/8	M8 Spring Lock Washer	8
7	W440/8	M8 Nut	4
-	W51784	Throttle Stop	1
-	W80505	Throttle Lever Cap	1
-	93080	Housing Assy (consisting of item no's 8, 9, 10, 11, 12, 13, 14)	1
8	W51271	Housing	1
9	W51288	Knob	1
10	W51273	Latch Guide	1
11	W89001	Spring	1
12	W51272	Latch	1
13	W50637	Claw	1
14	W51234	Spacer	1



7. WARRANTY CONDITIONS AND CLAIMS PROCEDURE

All products supplied by Fairport Construction Equipment Ltd (hereafter referred to as FCE) are warranted to be free of defects due to faulty materials or workmanship for a period of 12 months from the date of original despatch from FCE or as specified below:

Hydraulic hoses and hydraulic couplings – 3 months.
Hydraulic accumulators – 6 months.
Flexible drives – 6 months.
All spare parts used in repairs carried out by FCE or an authorised dealer or repairer – 3 months.

If the goods have been purchased through a stockist the above warranty periods also apply from receipt of the goods by the user of the equipment up to a total of a further 6 months from date of despatch from FCE whichever is earlier.

Filter elements, gauges and oils are specifically excluded from this warranty.

FCE shall at their option repair or replace during normal working hours goods accepted as faulty free of charge to the user.

For proprietary items such as engines, the original manufacturer's warranty and conditions shall apply.

CONDITIONS

The goods shall be returned at the purchaser's expense to FCE or to a destination FCE may reasonably direct. Carriage costs will be refunded if warranty is accepted.

Warranty claims will not be considered where there is evidence that failure has been caused by carelessness, improper use, negligence, inadequate servicing, incorrect engine speeds, fair wear and tear or non-compliance with instructions issued by the manufacturer.

To the extent permitted by law, the liability of FCE under this section is confined only to providing a remedy for defective goods and does not extend to any consequential loss, loss of profit, injury or damage suffered.

Warranty will not be accepted on dismantled goods unless dismantling was carried out with the written permission of FCE.

No claim shall be considered if other than genuine parts supplied by FCE have been used.

Products are only covered by this warranty in the country to where they were supplied by FCE.

Warranty on products applies only to the original user of the equipment.

This warranty shall not apply if the serial number or other identifying numbers or marks applied by FCE have been removed, defaced or are otherwise illegible.

CLAIMS PROCEDURE

Check that the goods are still under warranty before returning them to FCE (see above for warranty periods).

Return the goods to FCE with an order number for the work to proceed. If warranty is accepted no charge will be made. If warranty is not accepted a quotation will be given for the repair and the conditions under the section headed REPAIRS AND ESTIMATES will apply.

In the customer's interest, goods must be accompanied by documentation detailing the nature of the fault or its symptoms. Phrases such as 'Faulty' are unacceptable and will result in delays and possible charges to defray costs incurred in identifying the fault.

In the case of hydraulic breakers and power packs, both the breaker and the pack should be returned

8. REPAIRS AND ESTIMATES

When returning a machine, or an assembly for repair, always include an Advice Note quoting model and serial number of the machine.

An official order must also be forwarded to FCE giving detailed instructions. No repair work can be carried out unless covered by an official order.

An estimate will be submitted before proceeding with any repair. To partly cover the cost in dismantling, cleaning and inspection, a small charge will be made, this however will be waived upon receipt of your official instructions to proceed with the repair.

In the event of the estimate not being accepted, a further charge will be made to defray the rebuilding of the machine.

Estimates must be treated as approximate only as it may be found necessary to use additional parts on further examination.

EC Declaration of Conformity

We Fairport Construction Equipment Limited

Blagden Street
Sheffield
S2 5QS

Declare that the product

"W" Type Poker & Drive Units
Manufactured from 1 Sept 2004

conforms to the following Directives:

89/336/EEC, 89/392/EEC, 91/368/EEC, 2000/14/EC

uses the following standards:

BS EN 292-1, BS EN 292-2, BS EN 294

conforms to the following Statutory Instruments

The Supply of Machinery (Safety) Regulations 1992 & amendments

Complies with the relevant essential health and safety requirements of the Machinery Directive

Technical Construction File no **P.D.U.**

Technical Manager

Signature	Position
R.J.Castle I.Eng M.I.Mech.E.	12/12/2005
Signed by	Date Technical