

OPERATION AND PARTS MANUAL



MODEL 314V, 382V AND FS FLEXSHAFTS MODEL 900HD~2600HD VIBRATOR HEADS

Revision #0 (07/16/10)


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THIS MANUAL MUST ACCOMPANY THE EQUIPMENT AT ALL TIMES.

SILICOSIS/RESPIRATORY WARNINGS

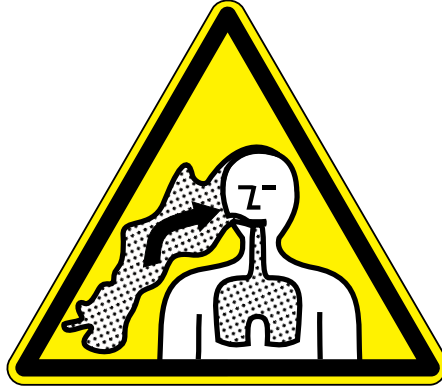
⚠ WARNING



SILICOSIS WARNING

Grinding/cutting/drilling of masonry, concrete, metal and other materials with silica in their composition may give off dust or mists containing crystalline silica. Silica is a basic component of sand, quartz, brick clay, granite and numerous other minerals and rocks. Repeated and/or substantial inhalation of airborne crystalline silica can cause serious or fatal respiratory diseases, including silicosis. In addition, California and some other authorities have listed respirable crystalline silica as a substance known to cause cancer. When cutting such materials, always follow the respiratory precautions mentioned above.

⚠ WARNING



RESPIRATORY HAZARDS

Grinding/cutting/drilling of masonry, concrete, metal and other materials can generate dust, mists and fumes containing chemicals known to cause serious or fatal injury or illness, such as respiratory disease, cancer, birth defects or other reproductive harm. If you are unfamiliar with the risks associated with the particular process and/or material being cut or the composition of the tool being used, review the material safety data sheet and/or consult your employer, the material manufacturer/supplier, governmental agencies such as OSHA and NIOSH and other sources on hazardous materials. California and some other authorities, for instance, have published lists of substances known to cause cancer, reproductive toxicity, or other harmful effects.

Control dust, mist and fumes at the source where possible. In this regard use good work practices and follow the recommendations of the manufacturers or suppliers, OSHA/NIOSH, and occupational and trade associations. Water should be used for dust suppression when wet cutting is feasible. When the hazards from inhalation of dust, mists and fumes cannot be eliminated, the operator and any bystanders should always wear a respirator approved by NIOSH/MSHA for the materials being used.

TABLE OF CONTENTS

Flexshaft/Vibrator Heads

Proposition 65 Warning	2
Silicosis/Respiratory Warnings	3
Table Of Contents	4
Parts Ordering Procedures.....	5
Safety Information	6-9
Specifications	9-10
General Information.....	11-12
Setup	13-14
Operation.....	15
Maintenance	16-17
Troubleshooting	18
Explanation Of Code In Remarks Column	19

Component Drawings

314V Series Flexible Shafts Assy.	20-21
382V Series Flexible Shafts Assy.	22-23
FS Series Flexible Shafts Assy.	24-25
HD Series Vibrator Steel Heads Assy.....	26-29
Vibrator Rubber/Steel Heads Assy.....	30-31
Terms And Conditions Of Sale — Parts	32

NOTICE

Specifications and part numbers are subject to change without notice.

PARTS ORDERING PROCEDURES

Ordering parts has never been easier! Choose from three easy options:

Effective:
January 1st, 2006

www.multiquip.com



Order via Internet (Dealers Only):

Order parts on-line using Multiquip's SmartEquip website!

- View Parts Diagrams
- Order Parts
- Print Specification Information



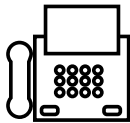
If you have an MQ Account, to obtain a Username and Password, E-mail us at: parts@multiquip.com.

To obtain an MQ Account, contact your District Sales Manager for more information.

Goto www.multiquip.com and click on **Order Parts** to log in and save!

Use the **internet** and qualify for a **5% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Fax (Dealers Only):

All customers are welcome to order parts via Fax.

Domestic (US) Customers dial:
1-800-6-PARTS-7 (800-672-7877)

Fax your order in and qualify for a **2% Discount** on *Standard orders* for all orders which include complete part numbers.*

Note: Discounts Are Subject To Change



Order via Phone: Domestic (US) Dealers Call:
1-800-427-1244

Non-Dealer Customers:

Contact your local Multiquip Dealer for parts or call 800-427-1244 for help in locating a dealer near you.



International Customers should contact their local Multiquip Representatives for Parts Ordering information.

When ordering parts, please supply:

- | | |
|---|--|
| <input type="checkbox"/> Dealer Account Number | <input type="checkbox"/> Specify Preferred Method of Shipment: |
| <input type="checkbox"/> Dealer Name and Address | <input checked="" type="checkbox"/> UPS/Fed Ex <input checked="" type="checkbox"/> DHL |
| <input type="checkbox"/> Shipping Address (if different than billing address) | <input type="checkbox"/> Priority One <input checked="" type="checkbox"/> Truck |
| <input type="checkbox"/> Return Fax Number | <input type="checkbox"/> Ground |
| <input type="checkbox"/> Applicable Model Number | <input type="checkbox"/> Next Day |
| <input type="checkbox"/> Quantity, Part Number and Description of Each Part | <input type="checkbox"/> Second/Third Day |

NOTICE

All orders are treated as *Standard Orders* and will ship the same day if received prior to 3PM PST.

WE ACCEPT ALL MAJOR CREDIT CARDS!



SAFETY INFORMATION


Do not operate or service the equipment before reading the entire manual. Safety precautions should be followed at all times when operating this equipment. Failure to read and understand the safety messages and operating instructions could result in injury to yourself and others.




SAFETY MESSAGES

The four safety messages shown below will inform you about potential hazards that could injure you or others. The safety messages specifically address the level of exposure to the operator and are preceded by one of four words: **DANGER**, **WARNING**, **CAUTION** or **NOTICE**.


SAFETY SYMBOLS

 **DANGER**

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

 **WARNING**

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.



 **CAUTION**

Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury.

Potential hazards associated with the operation of this equipment will be referenced with hazard symbols which may appear throughout this manual in conjunction with safety messages.

Symbol	Safety Hazard
	Burn hazards
	Electric shock hazards

SAFETY INFORMATION

GENERAL SAFETY

CAUTION

- **NEVER** operate this equipment without proper protective clothing, shatterproof glasses, respiratory protection, hearing protection, steel-toed boots and other protective devices required by the job or city and state regulations.



- Avoid wearing jewelry or loose fitting clothes that may snag on the controls or moving parts as this can cause serious injury.
- **NEVER** operate this equipment when not feeling well due to fatigue, illness or when under medication.
- **NEVER** operate this equipment under the influence of drugs or alcohol.



- **ALWAYS** clear the work area of any debris, tools, etc. that would constitute a hazard while the equipment is in operation.
- No one other than the operator is to be in the working area when the equipment is in operation.
- **DO NOT** use the equipment for any purpose other than its intended purposes or applications.

NOTICE

- This equipment should only be operated by trained and qualified personnel 18 years of age and older.
- Whenever necessary, replace nameplate, operation and safety decals when they become difficult read.
- Manufacturer does not assume responsibility for any accident due to equipment modifications. Unauthorized equipment modification will void all warranties.
- **NEVER** use accessories or attachments that are not recommended by Multiquip for this equipment. Damage to the equipment and/or injury to user may result.
- **ALWAYS** know the location of the nearest fire extinguisher.
- **ALWAYS** know the location of the nearest first aid kit.
- **ALWAYS** know the location of the nearest phone or **keep a phone on the job site**. Also, know the phone numbers of the nearest **ambulance, doctor and fire department**. This information will be invaluable in the case of an emergency.



SAFETY INFORMATION

FLEXSHAFT SAFETY

DANGER

- **ALWAYS** wear rubber insulated gloves and boots when holding the flexshaft during operation. The possibility of electrocution exists causing equipment damage and severe bodily harm even death!

DANGER

- If applicable, periodically check insulation resistance as referenced in maintenance section. The possibility of electrocution exists causing equipment damage and severe bodily harm even death!

WARNING

- **NEVER** attempt to run the core outside the casing assembly for any reason.

NOTICE

- **DO NOT** allow flexshaft to kink.
- Check flexshaft for cuts, cracks or abrasions. Replace flex-shaft immediately if defective.
- Make sure the correct shaft is in use for the job. Selecting too large a head/shaft combination will overload the power unit.
- When transporting flexshaft on jobsite **NEVER** drag flex-shaft on ground.
- **ALWAYS** make certain vibrator power unit is **OFF** before connecting flexshaft.
- Apply anaerobic sealant to shaft threads when required.
- Only use flexshaft to power vibrator heads.
- Grease flexshaft as recommended in maintenance section. **DO NOT** over-pack with grease. A tightly packed casing will put a heavy load on power unit, which could cause the power unit to over heat.
- After each use, remove any concrete, debris or foreign matter that may have accumulated on the flex-shaft. Rinse flexshaft using a garden hose.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

VIBRATOR HEAD SAFETY

CAUTION

- **NEVER** touch the head casing when it is **hot!** The possibility exists of severe burns which could cause bodily harm.



NOTICE

- **NEVER** lift the vibrator head out of the mix (head is vibrating) for an extended period of time. This condition can cause the bearings inside the vibrator head to overheat.
- **NEVER** use a worn or deformed vibrator head. Replace any defective vibrator head immediately.
- Lubricate vibrator head as recommended in maintenance section. **DO NOT** overfill. Too much oil in the head will overload the motor.
- Periodically check the outside diameter of the vibrator head casing for signs of wear. Replace head if measured diameter is less than minimum wear diameter referenced in maintenance section.
- After each use, remove any concrete, debris or foreign matter that may have accumulated on the head. Wipe clean with a soft cloth.
- **ALWAYS** store equipment properly when it is not being used. Equipment should be stored in a clean, dry location out of the reach of children and unauthorized personnel.

NOTICE

ENVIRONMENTAL SAFETY/DECOMMISSIONING

- **DO NOT** pour waste or oil directly onto the ground, down a drain or into any water source.
- Contact your country's Department of Public Works or recycling agency in your area and arrange for proper disposal of any electrical components, waste or oil associated with this equipment.
- When the life-cycle of this equipment is over it is recommended that the head casing and all other metal parts be sent to a recycling center.



SPECIFICATIONS

314 SERIES FLEXIBLE SHAFTS

Reference Table 1 when determining drive motor, vibrator head and flexshaft combinations. Choosing the wrong vibrator head combination will overload the motor and cause excessive wear.

Table 1. Maximum Shaft Length Selection Chart (314V)			
Model#	Recommended Head Size	Max Shaft Length ft. (m)	Recommended Drive Motor
314V	900~1300HD	21 (6.4)	CV1/BP25H

382V SERIES FLEXIBLE SHAFTS

Reference Table 2 when determining drive motor, vibrator head and flexshaft combinations.

Table 2. Maximum Shaft Length Selection Chart (382V)				
Model#	Recommended Head Size	Max Shaft Length ft. (m)	Recommended Drive Motor	Remarks
382V	1400~1700HD	28 (8.5)	CV2/CV2E/BP25H	Adapter Required P/N FSC
382V	2100HD	21 (6.4)	CV2/CV2E/BP25H	
382V	1400 ~ 2600HD	35 (10.6)	CV3/CV3E/BP25H/ G55H	Adapter Required P/N FSC
382V	RHV188, RHV250 RHV275, RHV275S	21 (6.4)	CV3/CV3E/BP25H/ G55H	

FS SERIES FLEXIBLE SHAFTS

Reference Table 3 when determining drive motor, vibrator head and flexshaft combinations

Table 3. Maximum Shaft Length Selection Chart (FS)				
Model#	Recommended Head Size	Max Shaft Length ft. (m)	Recommended Drive Motor	Remarks
FS	1400~1700HD	28 (8.5)	CV2/CV2E/BP25H	Adapter Required P/N FSC
FS	2100HD	21 (6.4)	CV2/CV2E/BP25H	
FS	1400 ~ 2600HD	35 (10.6)	CV3/CV3E/BP25H/ G55H	Adapter Required P/N FSC
FS	RHV188, RHV250 RHV275, RHV275S	21 (6.4)	CV3/CV3E/BP25H/ G55H	

Table 4. Drive Motors (Electric/Gasoline)

Model#	Amps	Voltage/Frequency	HP (kW)	RPM	Required Shaft	Type
CV1	10	120 VAC 50/60 Hz	1 (1.2)	16,000	314V	Electric
CV2	15	120 VAC 50/60 Hz	2 (1.8)	18,000	382V/FS	Electric
CV2E	7.5	240 VAC 50/60 Hz	2 (1.8)	18,000	382V/FS	Electric
CV3	20	120 VAC 50/60 Hz	3 (2.4)	19,250	382V/FS	Electric
CV3E	10	240 VAC 50/60 Hz	3 (2.4)	19,250	382V/FS	Electric
G55H	N/A	N/A	4.8 (3.6)	3,600	382V/FS	Gasoline
BP25H	N/A	N/A	2.1 (1.6)	7,000	382V/FS	Gasoline

NOTICE

Vibration techniques, vibrator head placement and spacing as referenced in the "General Information" and "Operation" sections of this manual is only to be **used as a guideline**. Multiquip assumes no responsibility for vibrator operating techniques referenced in this manual.

The consolidation of concrete has many mitigating factors that must be considered such as slump, mix, depth of vibrator, vibrator spacing, vibration time, vibration frequency, temperature. All of these factors must be considered when the consolidation (vibration) of concrete is required.

GENERAL INFORMATION

Multiquip's flex-shafts vibrator heads are designed to work in medium to high slump concrete. Typical applications include small pours, slabs driveways, stem walls and footings.

Typical shaft lengths range from 2 to 21 feet (0.6 to 6.4 meters). See Tables 1, 2 and 3 for the various recommended shaft lengths.

Vibrating steel heads are attached to one end of the flex-shaft. These heads generate a vibration via an eccentric rotor that consolidates the concrete by removing air pockets. The round head design allows for the transmission of vibration in all directions.

There are 7 different steel head sizes that range from $\frac{7}{8}$ to $2\frac{5}{8}$ inches in diameter. Typical vibration frequency for these vibrating heads range from 9,200 to 12,150 VPM with 1-inch slump when using electric motors.

When working with epoxy coated rebar, 4 different types of rubber heads are available to prevent chipping of the rebar coating. These rubber heads range in diameter from $1\frac{7}{8}$ to $2\frac{3}{4}$ inches (48~69 mm).

WHY VIBRATE CONCRETE

To ensure optimum strength and durability, vibration of fresh concrete is an important requirement. Vibration or compaction is the principal method for consolidation of concrete.

CONSOLIDATION

Consolidation eliminates pockets of aggregate and air bubbles maximizing strength, eliminating surface voids. Vibrators consolidate concrete by transmitting shock waves which allow the aggregate to float freely while pushing lighter trapped air up and out of the concrete mix.

A properly consolidated concrete pour will display a thin line of mortar appearing along the form near the vibrator and the coarse aggregate has been dispersed evenly throughout the pour and is not visible.

VIBRATION TIME

Vibration time depends on frequency. The higher the frequency, the less vibration time is required for the job.

VIBRATION RANGE

Vibration range (Figure 1) can be defined as "Area of Influence". This area of influence (vibrating radius) is the distance from the center of the vibrator to the outer most edge.

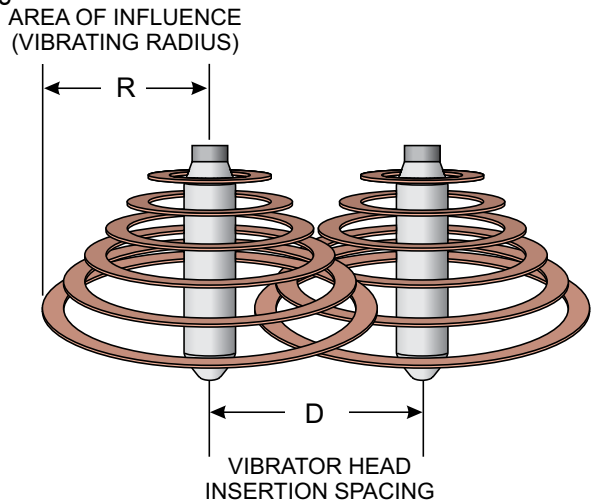


Figure 1. Vibrator Radius/Spacing

Table 5 shows the vibration radius and spacing for a given vibrator head diameter.

Table 5. Vibrating Radius/Insertion Spacing			
Vibrating HD. Model	Vibrator HD. Dia. in. (mm)#	Vibration Radius (R)	Vibrator Spacing (D)
900HD	$\frac{7}{8}$ (22)	4 (102)	6 (152)
1000HD	$1\frac{1}{16}$ (27)	5.5 (140)	8.25 (210)
1300HD	$1\frac{3}{8}$ (35)	8 (203)	12 (305)
1400HD	$1\frac{3}{8}$ (35)	8 (203)	12 (305)
1700HD	$1\frac{11}{16}$ (43)	12 (305)	18 (457)
2100HD	$2\frac{1}{8}$ (54)	14 (356)	21 (533)
2600HD	$2\frac{5}{8}$ (67)	18 (457)	27 (686)
RVH188	$1\frac{7}{8}$ (48)	11 (279)	16.5 (419)
RVH250	$2\frac{1}{2}$ (63)	14 (356)	21 (533)
RVH275S	$2\frac{3}{4}$ (69)	18 (457)	27 (686)
RVH275	$2\frac{3}{4}$ (69)	15 (381)	22.5 (572)

NOTICE

Radius (area of influence **R**) and vibrator head spacing (**D**) are expressed in inches/millimeters. Radius and distance values expressed in Table 5 are only to be used as a general guide. Values are subject to change.

NOTICE

Vibrator head spacing distance (**D**) is calculated by multiplying the vibrating head radius (area of influence) by 1.5.

When determining which head to choose it is important to access the application. Mainly what are the dimensions of the application. Select the vibrator head based on its radiating radius characteristics. Reference Table 5.

Select the vibrating head that covers the largest possible area without excessive overkill. This will allow for more efficient productivity. General rule of thumb is **DO NOT** select a vibrator head which has a vibration radius of more than twice the width of the form.

Example:

If the form width is 9 inches (229 mm) the selected vibrator head radius should not exceed an 18 inch (457 mm) radius.

In this example the 2600HD vibrator head would be the recommended choice. Reference Table 5 and Figure 2.

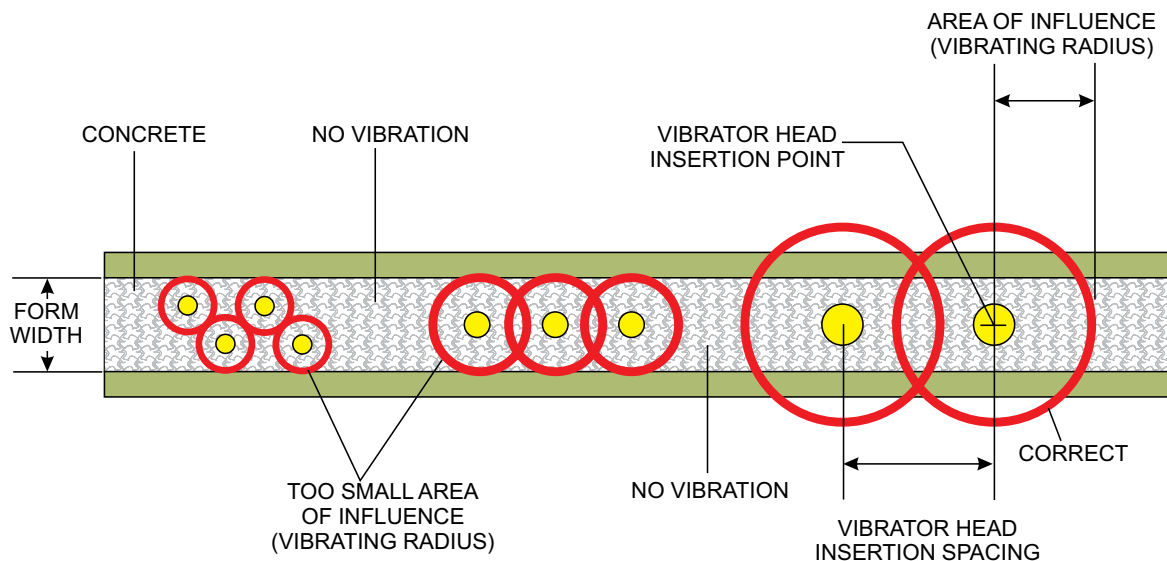


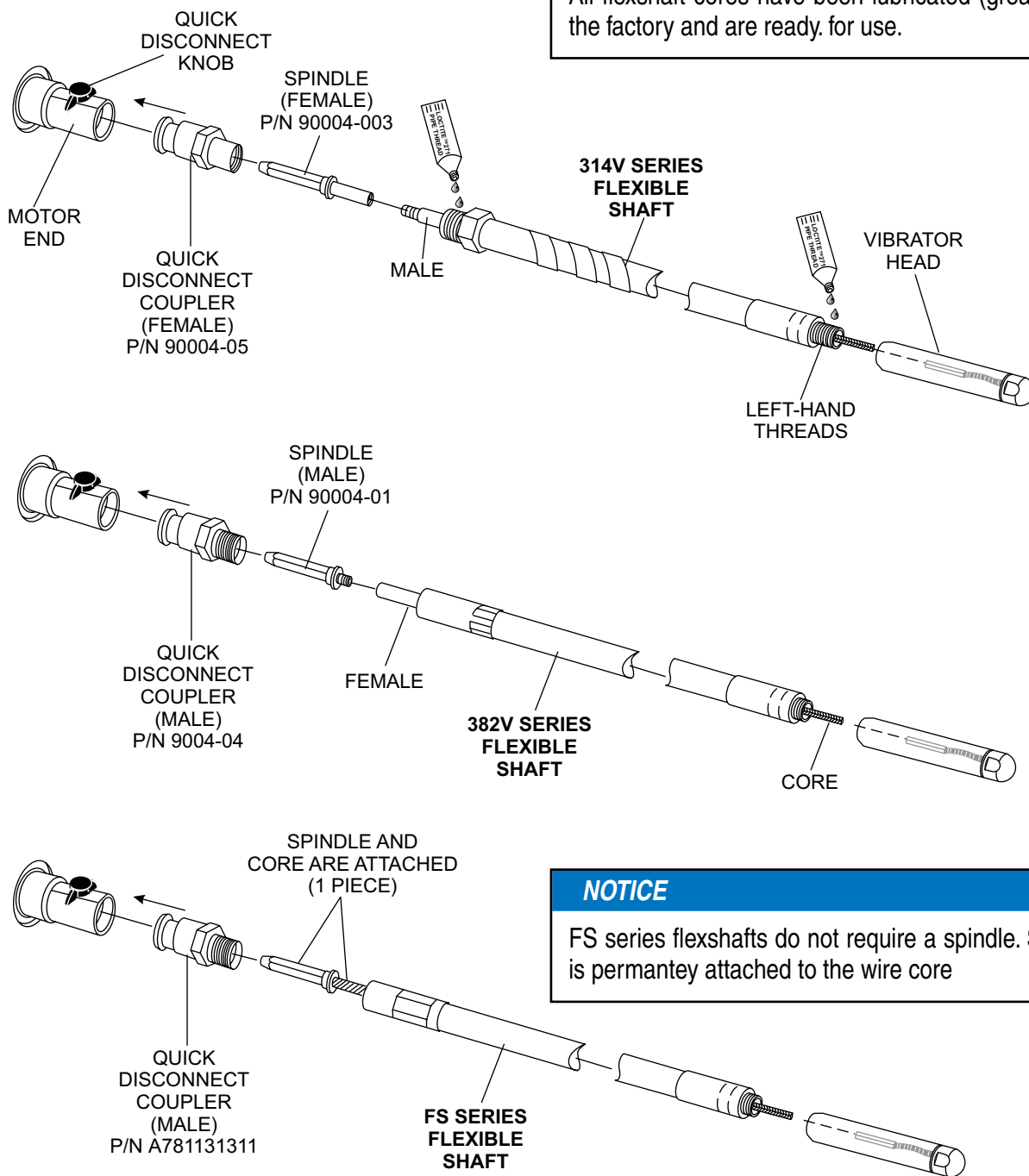
Figure 2. Head Selection

ATTACHING VIBRATING HEAD TO FLEX-SHAFT

1. Locate appropriate coupler and spindle for desired flex-shaft. Reference Figure 3.
2. Apply a ring of anaerobic sealant (Loctite™ No. 271) to flexshaft threads as shown in Figure 3.
3. Insert coupler and spindle into flexshaft as shown in Figure 3.
4. Attach vibrator head onto flexshaft as shown in Figure 3.
5. Use a wrench and tighten vibrator head securely to flexshaft/ Threads are left-handed..

NOTICE

All flexshaft cores have been lubricated (greased) at the factory and are ready for use.



NOTICE

FS series flexshafts do not require a spindle. Spindle is permantey attached to the wire core

Figure 3. Attaching Vibrating Head to Flexshaft

ATTACHING FLEXSHAFT TO DRIVE MOTOR

1. Pull upward on drive motor quick disconnect knob. Insert coupler-end of flext-shaft into drive motor housing. Reference Figure 4.
2. Make sure flexshaft has been seated securely. Release drive motor quick disconnect knob.

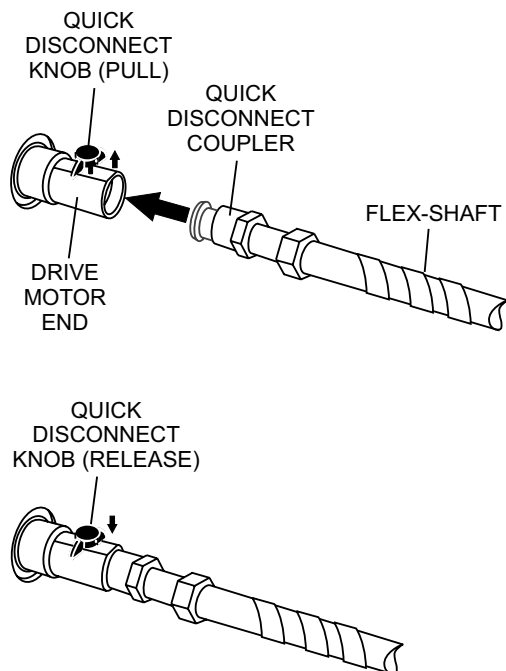


Figure 4. QD Coupler Connection

INSTALLING FSC SHAFT COUPLER

The FSC shaft coupler allows for the extension of the FS-Series flex-shafts. Maximum extension length shall not exceed 35 ft (10.6 meters).

This shaft extension coupler is only to be used on FS series shafts. **DO NOT** use the FSC shaft coupler on the 314V or 382V flex-shafts.

1. Install FSC shaft coupler as shown in Figure 5.

NOTICE

All FS-Series flexible shafts are supplied with a quick disconnect (QD) coupler. This coupler is not required for flex shaft extension.

2. Apply anaerobic sealant as required. Tighten FSC coupler securely.

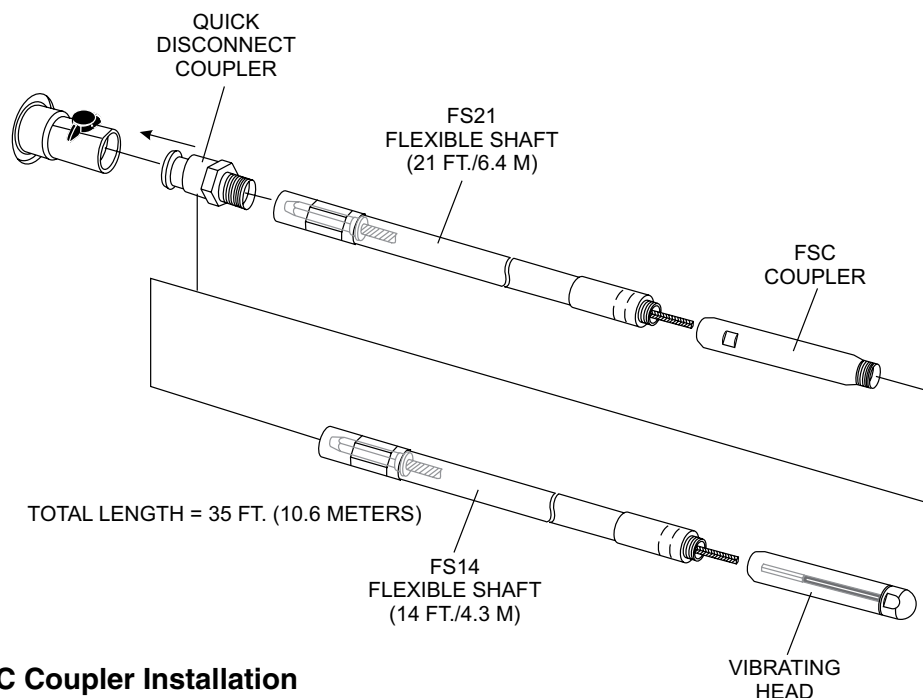


Figure 5. FSC Coupler Installation

OPERATION

Before connecting any of the flexible-shafts referenced in this manual, please read any and all operating instructions relating to the drive motor associated with the flex-shaft.

Using the wrong drive motor can adversely affect the performance of the flexshaft/vibrating head. Selecting too large a flexshaft/vibrating head combination will overload the motor and cause excessive wear.

1. Hold vibrator head above concrete pour when starting drive motor. This will prevent the vibrator head from bouncing on hard surfaces which could damage the bearings.
2. Keep flexshaft (Figure 6) straight as possible when operating. Sharp bends increase the load on the core and drive motor, which will result in early core failure and possible damage to the drive motor.

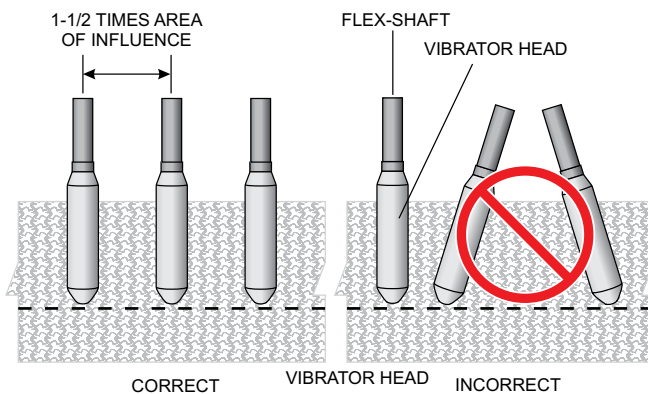


Figure 6. Vibrator Head Insertion

3. Completely immerse the vibrator head quickly into the concrete mix at a vertical rate of about one foot per second (0.3 meters/second). Vibrate concrete for about 5 to 15 seconds for wet mixes. For stiff mixes vibrate 2-3 minutes.
4. Stop vibration of concrete mix when concrete has a level, glossy surface and there are no breaking air bubbles.
5. Slowly lift the head out of the mix using an up and down movement. This slight up and down movement will close the hole formed by the vibrator.

6. When lifting the head out of the concrete, withdraw slowly at a rate of about 3 sec./ft. Using this technique will avoid the re-trapping of air.
7. When near the top of the mix, withdraw the vibrator quickly.
8. Re-insert vibrator into mix according to the "area of influence" See Figure 6. Establish a symmetrical overlapping pattern for inserting and removing the vibrator head.
9. If concrete is poured in layers, allow vibrator to pass within 3 to 6 inches (76 to 152 mm.) into next layer to ensure the knitting of the two layers. The complete bonding of layers will prevent "lift lines" when forms are removed.

NOTICE

DO NOT use vibrator to move concrete laterally. This will cause segregation of the concrete. Use a shovel or similar device to spread the concrete.

FLEXSHAFT LUBRICATION (100 HOURS)

1. Using a bench vice and wrench, remove coupler from flexshaft as shown in Figure 7. Please note threads are **right-handed** on this side of the flexshaft (drive motor end).
2. Heat should be applied to the threads to break down the anaerobic sealant. Applying heat will help prevent possible damage to threads.
3. Next, using a wrench and bench vise if necessary, remove flexible shaft from vibrator head as shown in Please note threads are **left-handed** on this side of the flexshaft (vibrator end).
4. Pull the wire core out from casing. Using a clean soft cloth wipe the grease off as it is pulled from the casing. Wipe clean.

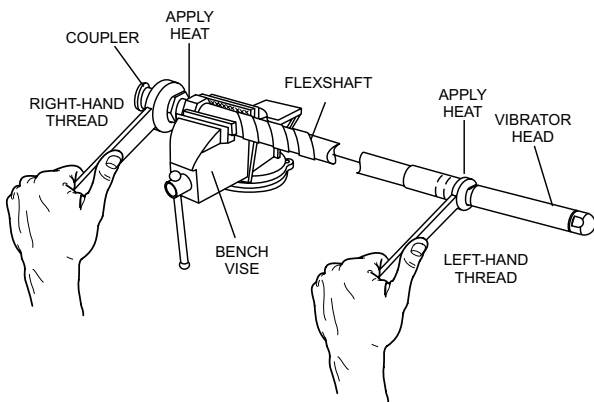


Figure 7. Removing Wire Core

5. Inspect the core for broken wires, permanent set or other damage such as an area that indicates high wear or having overheated. If any of these conditions exist replace wire core.
6. Use the core to push a cleaning patch through the casing to remove any old grease or foreign matter that may have accumulated inside the casing.

NOTICE

DO NOT use solvents to clean casing. Applying solvents to the core or casing may cause grease (lubricant) to breakdown, resulting in damage to the flexshaft.

7. Thoroughly clean wire core (Figure 8) if it is being reused. A wire brush may be required to remove hardened residue.

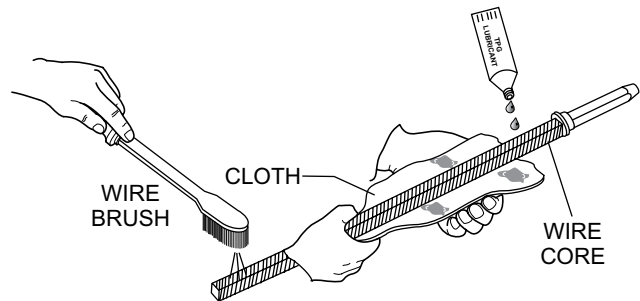


Figure 8. Cleaning Wire Core

8. Apply a light amount of DuBois "TPG" lubricant (Figure 8) or a good grade bearing grease to the entire length of the wire core.

NOTICE

DO NOT force casing full of grease. A tightly packed casing will load the drive motor which could lead to overheating.

9. Reinstall wire core back into casing. When re-attaching coupler and vibrator head to flexshaft, clean mating threads with an anaerobic sealant primer. Allow primer to dry for several minutes.
10. Also apply a ring of anaerobic sealant (Loctite™ No. 271) to the middle of the casing ferrule threads.
11. Screw the vibrator head back onto flexshaft casing. Wait one hour before using.
12. Apply anaerobic sealant to coupler threads. Insert coupler back into flexshaft. Tighten securely. Wait one hour before using.

VIBRATOR HEAD LUBRICATION (300 HOURS)

- Using a wrench, remove vibrator tip (Figure 9) from vibrator head body. Have a cloth handy to catch any spilled oil.

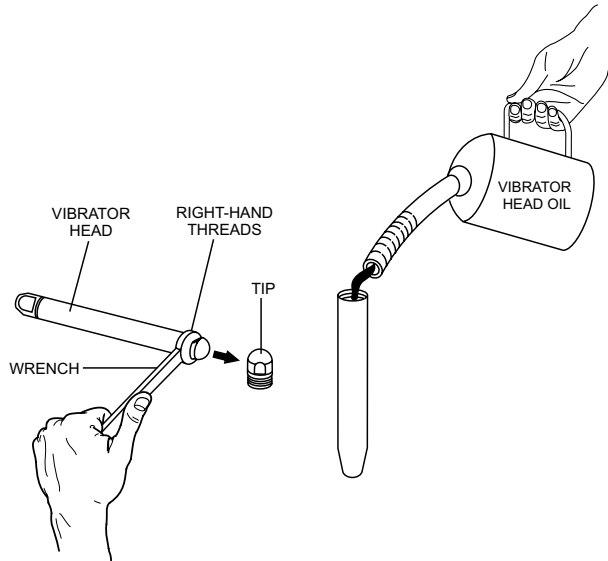


Figure 9. Adding Oil (Vibrator Head)

- Drain old oil from vibrator head body (casing). Place oil in a suitable container. **DO NOT** pour oil on the ground.

NOTICE

Dispose used vibrator head oil in accordance with city, local and state environmental guidelines.

- Fill vibrator head body with SAE 15 or AW MV ISO 46 type oil or equivalent.
- DO NOT** fill head body beyond capacity. Reference Table 6.

NOTICE

DO NOT overfill. Too much oil in the vibrator head will overload the drive motor.

Table 6. Vibrator Head Oil Capacity

Vibrating HD. Model	Oil Capacity. oz. (ml)#	Vibrating HD. Model	Oil Capacity. oz. (ml)#
900HD	0.5 (15)	2600HD	1.5 (44)
1000HD	0.5 (15)	RVH188	N/A
1300HD	0.5 (15)	RVH250	N/A
1400HD	0.5 (15)	RVH275S	N/A
1700HD	0.75 (22)	RVH275	N/A
2100HD	1 (30)		

VIBRATOR HEAD WEAR (300 HOURS)

- Periodically measure the outside diameter (Figure 10) of the vibrator head casing.

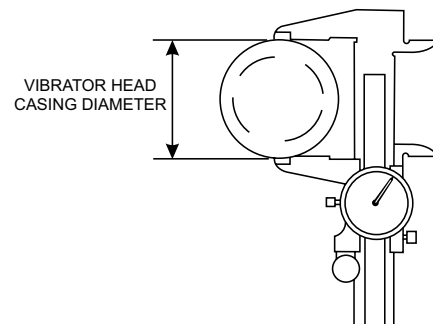


Figure 10. Vibrator Head Diameter

- Replace vibrator head if it is not within minimum wear tolerances as specified in Table 7.

Table 7. Vibrator Head Wear Diameter

Vibrating HD. Model	Vibrator HD. New Dia. in. (mm)#	Vibrator HD. Min Wear Dia. in. (mm)
900HD	$\frac{7}{8}$ (22.22)	$\frac{13}{16}$ (20.62)
1000HD	$1\frac{1}{16}$ (26.98)	1 (25.4)
1300HD	$1\frac{3}{8}$ (34.92)	$1\frac{1}{4}$ (31.75)
1400HD	$1\frac{3}{8}$ (34.92)	$1\frac{1}{4}$ (31.75)
1700HD	$1\frac{11}{16}$ (42.86)	$1\frac{9}{16}$ (39.67)
2100HD	$2\frac{1}{8}$ (53.97)	$1\frac{7}{8}$ (47.62)
2600HD	$2\frac{5}{8}$ (66.67)	$2\frac{1}{4}$ (57.15)
RVH188	N/A	N/A
RVH250	N/A	N/A
RVH275S	N/A	N/A
RVH275	N/A	N/A

TROUBLESHOOTING

Table 8. Generator Troubleshooting

Symptom	Possible Problem	Solution
Flexshaft Binding	Flexshaft kinked?	Straighten out flexshaft.
	Defective flexshaft?	Replace flexshaft.
	Too much grease in flexshaft casing?	Relube flexshaft.
Leaking Vibrator Head	Too much oil in head casing?	Fill head casing to recommended level.
	Head bearings/seals defective?	Replace vibrator head.

EXPLANATION OF CODE IN REMARKS COLUMN

The following section explains the different symbols and remarks used in the Parts section of this manual. Use the help numbers found on the back page of the manual if there are any questions.

NOTICE

The contents and part numbers listed in the parts section are subject to change **without notice**. Multiquip does not guarantee the availability of the parts listed.

SAMPLE PARTS LIST

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	12345	BOLT.....	1	INCLUDES ITEMS W/%
2%		WASHER, 1/4 IN.....		NOT SOLD SEPARATELY
2%	12347	WASHER, 3/8 IN....	1	MQ-45T ONLY
3	12348	HOSE		A/R ...MAKE LOCALLY
4	12349	BEARING	1	S/N 2345B AND ABOVE

NO. Column

Unique Symbols — All items with same unique symbol

(@, #, +, %, or >) in the number column belong to the same assembly or kit, which is indicated by a note in the “Remarks” column.

Duplicate Item Numbers — Duplicate numbers indicate multiple part numbers, which are in effect for the same general item, such as different size saw blade guards in use or a part that has been updated on newer versions of the same machine.

NOTICE

When ordering a part that has more than one item number listed, check the remarks column for help in determining the proper part to order.

PART NO. Column

Numbers Used — Part numbers can be indicated by a number, a blank entry, or TBD.

TBD (To Be Determined) is generally used to show a part that has not been assigned a formal part number at the time of publication.

A blank entry generally indicates that the item is not sold separately or is not sold by Multiquip. Other entries will be clarified in the “Remarks” Column.

QTY. Column

Numbers Used — Item quantity can be indicated by a number, a blank entry, or A/R.

A/R (As Required) is generally used for hoses or other parts that are sold in bulk and cut to length.

A blank entry generally indicates that the item is not sold separately. Other entries will be clarified in the “Remarks” Column.

REMARKS Column

Some of the most common notes found in the “Remarks” Column are listed below. Other additional notes needed to describe the item can also be shown.

Assembly/Kit — All items on the parts list with the same unique symbol will be included when this item is purchased.

Indicated by:

“INCLUDES ITEMS W/(unique symbol)”

Serial Number Break — Used to list an effective serial number range where a particular part is used.

Indicated by:

“S/N XXXXX AND BELOW”

“S/N XXXX AND ABOVE”

“S/N XXXX TO S/N XXX”

Specific Model Number Use — Indicates that the part is used only with the specific model number or model number variant listed. It can also be used to show a part is NOT used on a specific model or model number variant.

Indicated by:

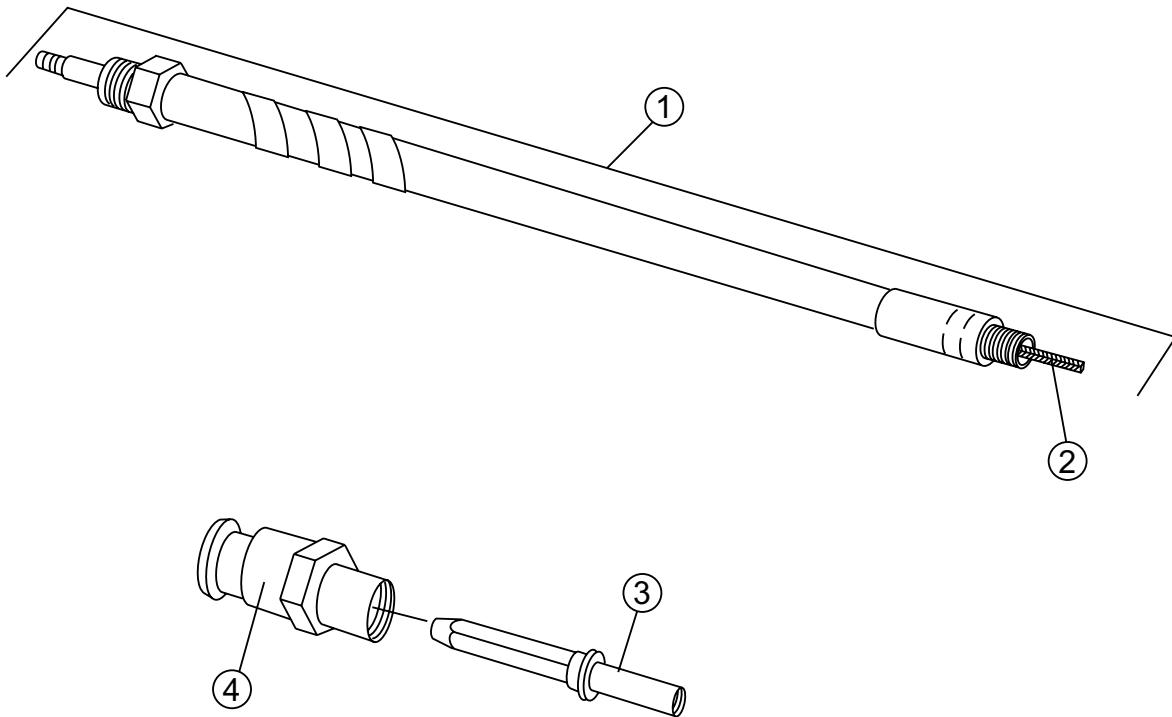
“XXXXX ONLY”

“NOT USED ON XXXX”

“Make/Obtain Locally” — Indicates that the part can be purchased at any hardware shop or made out of available items. Examples include battery cables, shims, and certain washers and nuts.

“Not Sold Separately” — Indicates that an item cannot be purchased as a separate item and is either part of an assembly/kit that can be purchased, or is not available for sale through Multiquip.

314V SERIES FLEXIBLE SHAFTS ASSY.



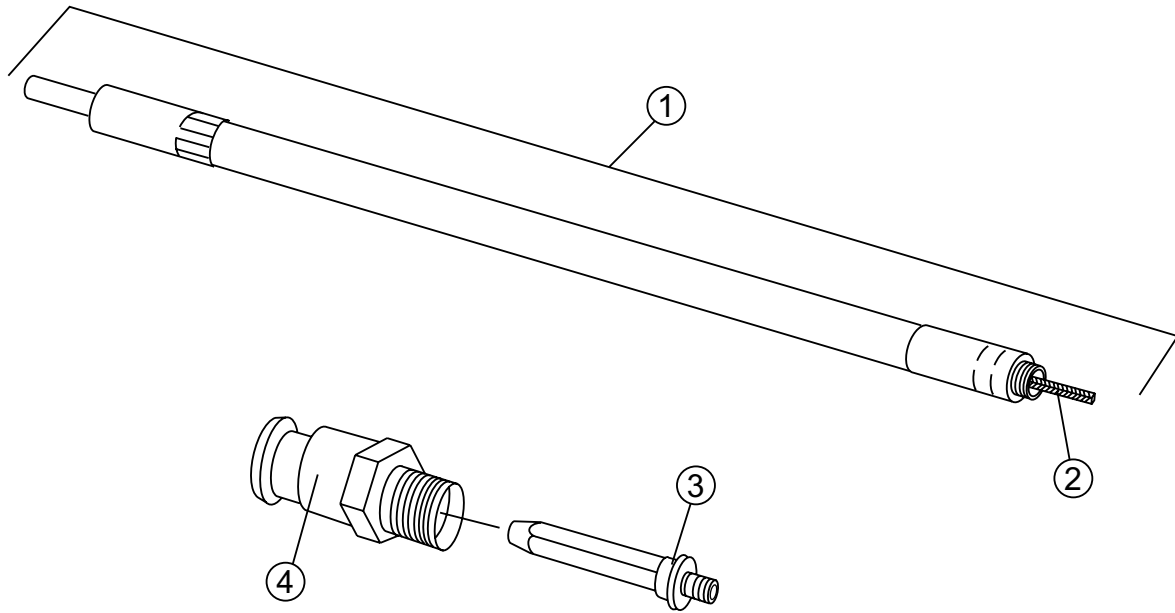
314V SERIES FLEXIBLE SHAFTS ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	314V2	FLEXSHAFT 24" (0.6 M)	1.....	INCLUDES ITEM W/#
1	314V5	FLEXSHAFT 60" (1.5 M)	1.....	INCLUDES ITEM W/\$
1	314V7	FLEXSHAFT 84" (2.1 M)	1.....	INCLUDES ITEM W/◇
1	314V10	FLEXSHAFT 120" (3 M)	1.....	INCLUDES ITEM W/%
1	314V12	FLEXSHAFT 144" (3.7 M)	1.....	INCLUDES ITEM W/@
1	314V14	FLEXSHAFT 168" (4.3 M)	1.....	INCLUDES ITEM W/◆
1	314V18	FLEXSHAFT 216" (5.5 M)	1.....	INCLUDES ITEM W/♥
1	314V21	FLEXSHAFT 252" (6.4 M)	1.....	INCLUDES ITEM W/♣
2#	13609-502	CORE, 27-1/16" (.685 M)	1	
2\$	13609-505	CORE, 63-1/16" (1.6 M)	1	
2◇	13609-507	CORE, 87-1/16" (2.2 M)	1	
2%	13609-510	CORE, 123-1/16" (3.12 M)	1	
2@	13609-512	CORE, 147-1/16" (3.73 M)	1	
2◆	13609-514	CORE, 171-1/16" (4.34 M)	1	
2♥	13609-518	CORE, 219-1/16" (5.56 M)	1	
2♣	13609-521	CORE, 255-1/16" (6.47 M)	1	
3	90004-03	SPINDLE, FEMALE	1.....	OPTION
4	90004-05	COUPLER, FEMALE	1.....	OPTION

NOTICE

Item 1 to be used only with a CV-1, 50/60 Hz, 115 VAC
1 HP, 10 amp electric motor only or a BP25H, 2.1 HP
gasoline engine. Reference Table 1

382V SERIES FLEXIBLE SHAFTS ASSY.



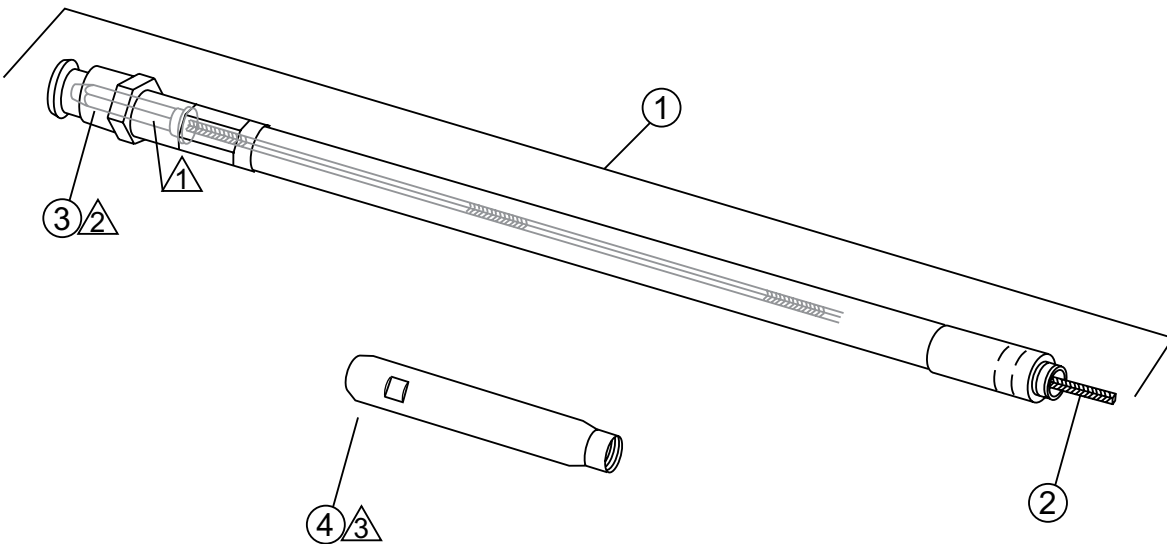
382V SERIES FLEXIBLE SHAFTS ASSY.

NO.	PART NO.	PART NAME	QTY.	REMARKS
1	382V2	FLEXSHAFT 24" (0.6 M)	1.....	INCLUDES ITEM W/#
1	382V5	FLEXSHAFT 60" (1.5 M)	1.....	INCLUDES ITEM W/\$
1	382V7	FLEXSHAFT 84" (2.1 M)	1.....	INCLUDES ITEM W/◇
1	382V10	FLEXSHAFT 120" (3 M)	1.....	INCLUDES ITEM W/%
1	382V12	FLEXSHAFT 144" (3.7 M)	1.....	INCLUDES ITEM W/@
1	382V14	FLEXSHAFT 168" (4.3 M)	1.....	INCLUDES ITEM W/◆
1	382V18	FLEXSHAFT 216" (5.5 M)	1.....	INCLUDES ITEM W/♥
1	382V21	FLEXSHAFT 252" (6.4 M)	1.....	INCLUDES ITEM W/♣
2#	13827-502	CORE, 24" (0.6 M)	1	
2\$	13827-505	CORE, 60" (1.5 M)	1	
2◇	13827-507	CORE, 84" (2.1 M)	1	
2%	13827-510	CORE, 120" (3 M)	1	
2@	13827-512	CORE, 144" (3.7 M)	1	
2◆	13827-514	CORE, 168" (4.3 M)	1	
2♥	13827-518	CORE, 216" (5.5 M)	1	
2♣	13827-521	CORE, 252" (6.4 M)	1	
3	90004-01	SPINDLE, MALE.....	1.....	OPTION
4	90004-04	COUPLER, MALE.....	1.....	OPTION

NOTICE

Item 1 to be used with drive motors as listed in Table 2

FS SERIES FLEXIBLE SHAFTS ASSY.



NOTE:

- △ 1 SPINDLE IS PART OF CORE.
- △ 2 QUICK-DISCONNECT (QD) COUPLER IS INCLUDED WITH ITEM 1.
- SHAFT LENGTHS EXCEEDING 21 FT. (6.4 M) REQUIRE A SHAFT
- △ 3 EXTENSION COUPLER P/N FSC. MAXIMUM SHAFT EXTENSION SHALL NOT EXCEED 35 FT. (10.6 M).

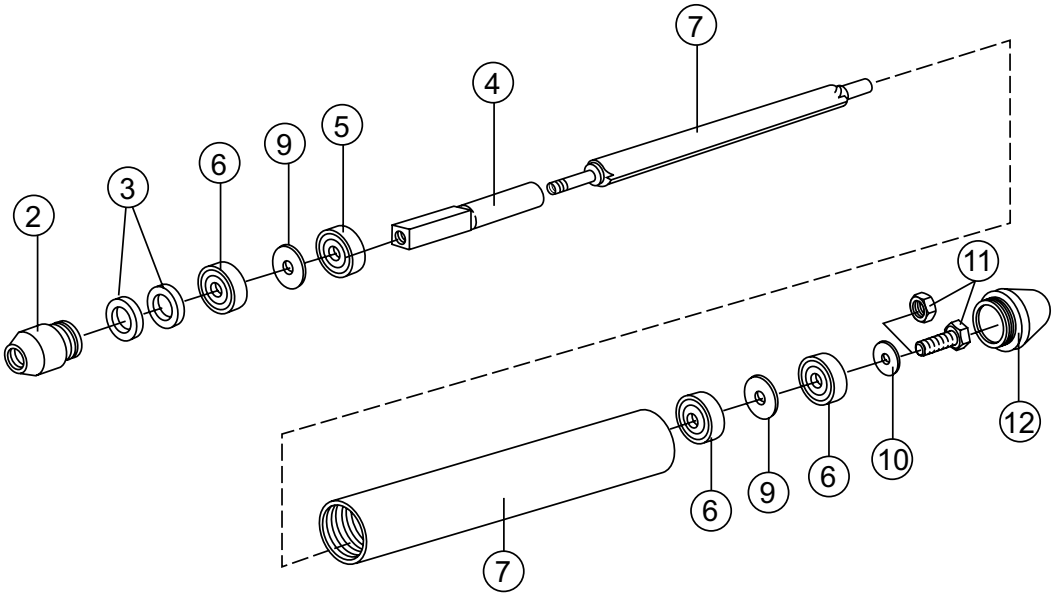
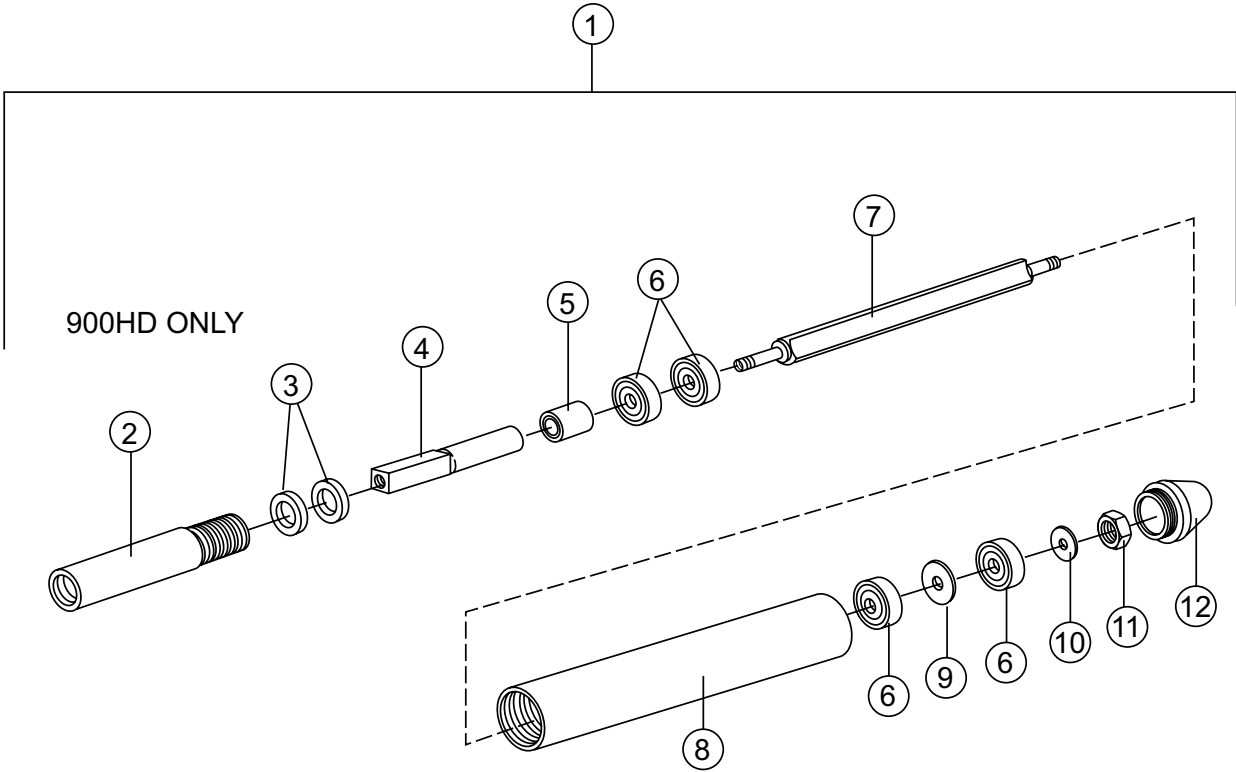
FS SERIES FLEXIBLE SHAFTS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1◇	FS1	FLEXSHAFT 18" (0.45 M)	1.....	INCLUDES ITEM W/#
1◇	FS2	FLEXSHAFT 24" (0.6 M)	1.....	INCLUDES ITEM W/\$
1◇	FS3	FLEXSHAFT 36" (.914 M)	1.....	INCLUDES ITEM W/◇
1◇	FS5	FLEXSHAFT 60" (1.5 M)	1.....	INCLUDES ITEM W/%
1◇	FS7	FLEXSHAFT 84" (2.1 M)	1.....	INCLUDES ITEM W/@
1◇	FS10	FLEXSHAFT 120" (3.0 M)	1.....	INCLUDES ITEM W/◆
1◇	FS12	FLEXSHAFT 144" (3.6 M)	1.....	INCLUDES ITEM W/♥
1◇	FS14	FLEXSHAFT 168" (4.2 M)	1.....	INCLUDES ITEM W/♣
1◇	FS18	FLEXSHAFT 216" (5.5 M)	1.....	INCLUDES ITEM W/♠
1◇	FS21	FLEXSHAFT 252" (6.4 M)	1.....	INCLUDES ITEM W/♣
2#	13132201	CORE, 17.25" (.43 M)	1	
2\$	13132202	CORE, 23.25" (.59 M)	1	
2◇	13132203	CORE, 35.25" (.89 M)	1	
2%	13132205	CORE, 59.25" (1.5 M)	1	
2@	13132207	CORE, 83.25" (2.1 M)	1	
2◆	13132210	CORE, 119.25" (3.0 M)	1	
2♥	13132212	CORE, 143.25" (3.6 M)	1	
2♣	13132214	CORE, 167.25" (4.2 M)	1	
2♠	13132218	CORE, 215.25" (5.4 M)	1	
2♣	13132221	CORE, 251.25" (6.3 M)	1	
3	A781131311	COUPLER, MALE.....	1.....	INCLUDES ITEM W/◇
4	FSC	COUPLER, SHAFT EXTENSION	1	

NOTICE

Item 1 to be used with drive motors as listed in Table 3

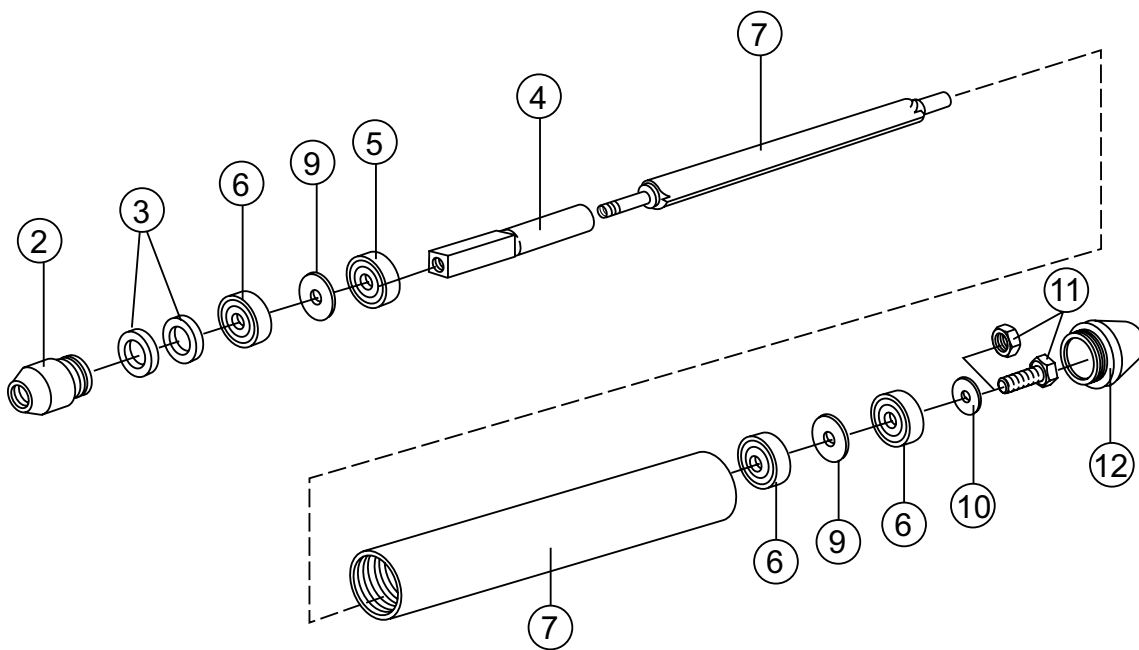
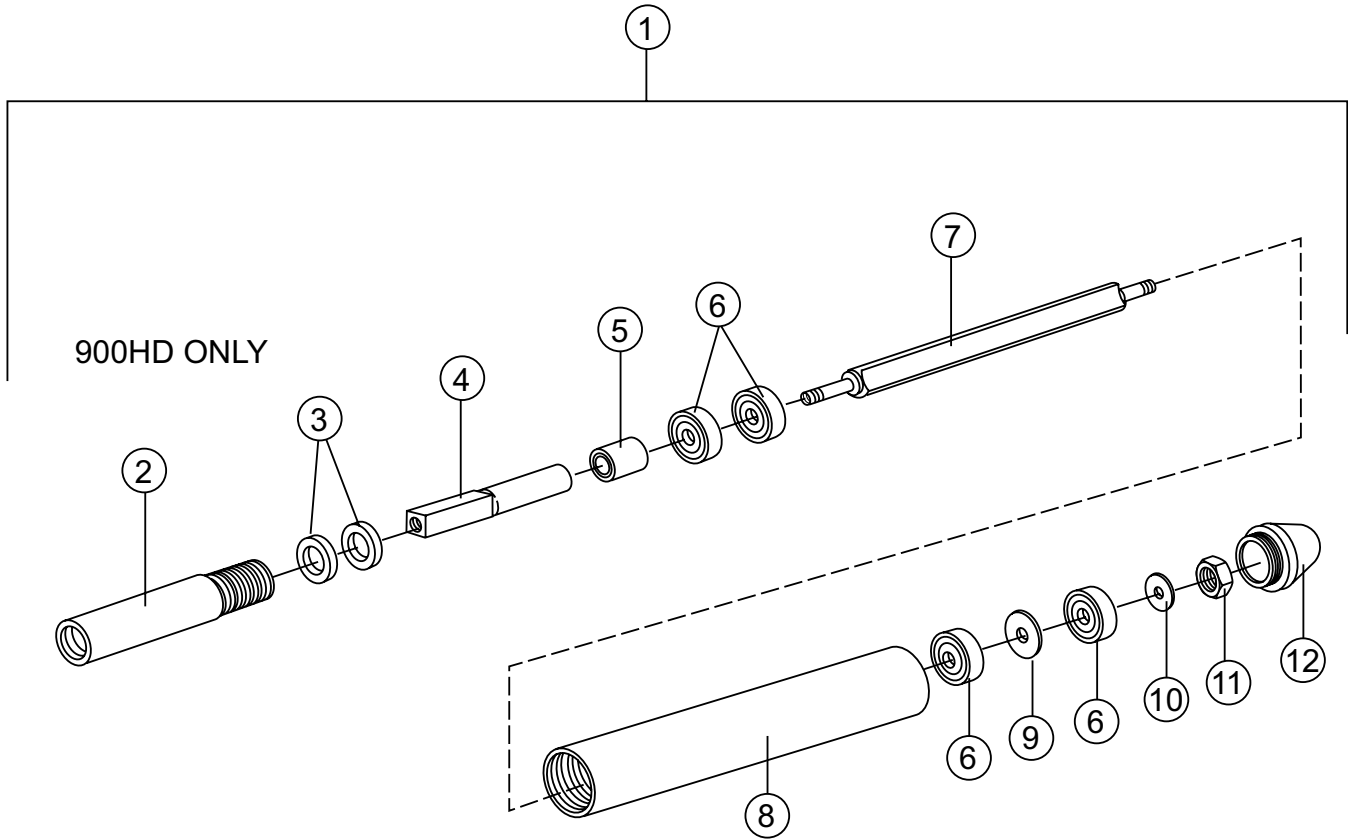
HD SERIES VIBRATOR HEADS ASSY.



HD SERIES VIBRATOR HEADS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	17302-505	VIBRATOR HEAD, STEEL 900HD	1.....	INCLUDES ITEMS W/#
1	16369-501	VIBRATOR HEAD, STEEL 1000HD	1.....	INCLUDES ITEMS W/\$
1	16317-501	VIBRATOR HEAD, STEEL 1300HD	1.....	INCLUDES ITEMS W/◇
1	16316-501	VIBRATOR HEAD, STEEL 1400HD	1.....	INCLUDES ITEMS W/%
1	15699-505	VIBRATOR HEAD, STEEL 1700HD	1.....	INCLUDES ITEMS W/@
1	16301-501	VIBRATOR HEAD, STEEL 2100HD	1.....	INCLUDES ITEMS W/♣
1	16274-501	VIBRATOR HEAD, STEEL 2600HD	1.....	INCLUDES ITEMS W/♠
2#	26049-001	CASING ADAPTER	1	
2\$	16374-002	CASING ADAPTER	1	
2◇	16325-001	CASING ADAPTER	1	
2%	16326-001	CASING ADAPTER	1	
2@	16704-004	CASING ADAPTER	1	
2♣	16303-001	CASING ADAPTER	1	
2♠	16278-001	CASING ADAPTER	1	
3#	07001-056	SEAL	2	
3\$	07001-021	SEAL	2	
3◇%	07001-029	SEAL	2	
3@	07001-046	SEAL	2	
3♣	07001-057	SEAL	2	
3♠	07001-019	SEAL	2	
4#	26050-001	FITTING ADAPTER	1	
4\$	16375-001	FITTING ADAPTER	1	
4◇	16328-001	FITTING ADAPTER	1	
4%	16327-001	FITTING ADAPTER	1	
5#	26055-001	SPACER	1	
6#	09189-002	BEARING	4	
6\$	10093-401	BEARING	4	
6◇%	19393-004	BEARING	4	
6@	19393-003	BEARING	4	
6♣	19393-001	BEARING	4	
6♠	19393-001	BEARING	4	
7#	11199-002	SPINDLE	1	
7\$	19484-001	SPINDLE	1	
7◇%	18871-001	SPINDLE	1	
7@	26900-001	SPINDLE	1	
7♣	18785-001	SPINDLE	1	
7♠	18809-001	SPINDLE	1	

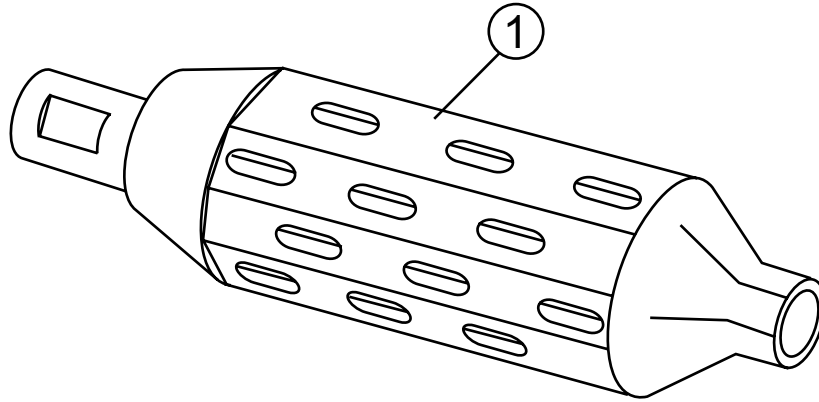
HD SERIES VIBRATOR STEEL HEADS ASSY.



HD SERIES VIBRATOR STEEL HEADS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
8#	17303-002	HOUSING	1	
8\$	16371-001	HOUSING	1	
8◇%	16320-001	HOUSING	1	
8@	15700-001	HOUSING	1	
8♣	16305-001	HOUSING	1	
8♠	16279-001	HOUSING	1	
9#\$	11906-026	SHIM	2	
9◇%	11906-012	SHIM	2	
9@♣	11906-015	SHIM	2	
9♠	11906-020	SHIM	2	
10@♣	07030-006	WASHER, FLAT 3/8"	1	
10♠	07030-008	WASHER, FLAT 1/2"	1	
11#	08233-004	NUT, LOCK 1/4-20"	1	
11\$	08233-005	NUT, LOCK 5/16-18"	1	
11◇%	08297-006	NUT, LOCK 3/8-24"	1	
11@♣	06511-005	HHCS 3/8-24X5/8"	1	
11♠	06513-006	HHCS 1/2-20X3/4"	1	
12#	11204-001	TIP	1	
12\$	16368-001	TIP	1	
12◇%	16318-001	TIP	1	
12@	15705-001	TIP	1	
12♣	16302-001	TIP	1	
12♠	16277-001	TIP	1	

HD SERIES VIBRATOR RUBBER HEADS ASSY.



HD SERIES VIBRATOR RUBBER HEADS ASSY.

<u>NO.</u>	<u>PART NO.</u>	<u>PART NAME</u>	<u>QTY.</u>	<u>REMARKS</u>
1	RHV188	VIBRATOR HEAD, STEEL/RUBBER	1	
1	RHV250	VIBRATOR HEAD, STEEL/RUBBER	1	
1	RHV275S	VIBRATOR HEAD, STEEL/RUBBER	1	
1	RHV275	VIBRATOR HEAD, STEEL/RUBBER	1	

TERMS AND CONDITIONS OF SALE — PARTS

PAYMENT TERMS

Terms of payment for parts are net 30 days.

FREIGHT POLICY

All parts orders will be shipped collect or prepaid with the charges added to the invoice. All shipments are F.O.B. point of origin. Multiquip's responsibility ceases when a signed manifest has been obtained from the carrier, and any claim for shortage or damage must be settled between the consignee and the carrier.

MINIMUM ORDER

The minimum charge for orders from Multiquip is \$15.00 net. Customers will be asked for instructions regarding handling of orders not meeting this requirement.

RETURNED GOODS POLICY

Return shipments will be accepted and credit will be allowed, subject to the following provisions:

1. A Returned Material Authorization must be approved by Multiquip prior to shipment.
2. To obtain a Return Material Authorization, a list must be provided to Multiquip Parts Sales that defines item numbers, quantities, and descriptions of the items to be returned.
 - a. The parts numbers and descriptions must match the current parts price list.
 - b. The list must be typed or computer generated.
 - c. The list must state the reason(s) for the return.
 - d. The list must reference the sales order(s) or invoice(s) under which the items were originally purchased.
 - e. The list must include the name and phone number of the person requesting the RMA.
3. A copy of the Return Material Authorization must accompany the return shipment.
4. Freight is at the sender's expense. All parts must be returned freight prepaid to Multiquip's designated receiving point.

5. Parts must be in new and resalable condition, in the original Multiquip package (if any), and with Multiquip part numbers clearly marked.
6. The following items are not returnable:
 - a. Obsolete parts. (If an item is in the price book and shows as being replaced by another item, it is obsolete.)
 - b. Any parts with a limited shelf life (such as gaskets, seals, "O" rings, and other rubber parts) that were purchased more than six months prior to the return date.
 - c. Any line item with an extended dealer net price of less than \$5.00.
 - d. Special order items.
 - e. Electrical components.
 - f. Paint, chemicals, and lubricants.
 - g. Decals and paper products.
 - h. Items purchased in kits.
7. The sender will be notified of any material received that is not acceptable.
8. Such material will be held for five working days from notification, pending instructions. If a reply is not received within five days, the material will be returned to the sender at his expense.
9. Credit on returned parts will be issued at dealer net price at time of the original purchase, less a 15% restocking charge.
10. In cases where an item is accepted, for which the original purchase document can not be determined, the price will be based on the list price that was effective twelve months prior to the RMA date.
11. Credit issued will be applied to future purchases only.

PRICING AND REBATES

Prices are subject to change without prior notice. Price changes are effective on a specific date and all orders received on or after that date will be billed at the revised price. Rebates for price declines and added charges for price increases will not be made for stock on hand at the time of any price change.

Multiquip reserves the right to quote and sell direct to Government agencies, and to Original Equipment Manufacturer accounts who use our products as integral parts of their own products.

SPECIAL EXPEDITING SERVICE

A \$35.00 surcharge will be added to the invoice for special handling including bus shipments, insured parcel post or in cases where Multiquip must personally deliver the parts to the carrier.

LIMITATIONS OF SELLER'S LIABILITY

Multiquip shall not be liable hereunder for damages in excess of the purchase price of the item with respect to which damages are claimed, and in no event shall Multiquip be liable for loss of profit or good will or for any other special, consequential or incidental damages.

LIMITATION OF WARRANTIES

No warranties, express or implied, are made in connection with the sale of parts or trade accessories nor as to any engine not manufactured by Multiquip. Such warranties made in connection with the sale of new, complete units are made exclusively by a statement of warranty packaged with such units, and Multiquip neither assumes nor authorizes any person to assume for it any other obligation or liability whatever in connection with the sale of its products. Apart from such written statement of warranty, there are no warranties, express, implied or statutory, which extend beyond the description of the products on the face hereof.

Effective: February 22, 2006

OPERATION AND PARTS MANUAL

HERE'S HOW TO GET HELP

PLEASE HAVE THE MODEL AND SERIAL
NUMBER ON-HAND WHEN CALLING

UNITED STATES

Multiquip Corporate Office

18910 Wilmington Ave.
Carson, CA 90746
Contact: mq@multiquip.com

Tel. (800) 421-1244
Fax (800) 537-3927

Mayco Parts

800-306-2926
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Service Department

800-421-1244
310-537-3700

Fax: 310-537-4259

MQ Parts Department

800-427-1244
310-537-3700

Fax: 800-672-7877
Fax: 310-637-3284

Warranty Department

800-421-1244, Ext. 279
310-537-3700, Ext. 279

Fax: 310-537-1173

Technical Assistance

800-478-1244

Fax: 310-631-5032

MEXICO

MQ Cipsa

Carr. Fed. Mexico-Puebla KM 126.5
Momoxpan, Cholula, Puebla 72760 Mexico
Contact: pmastretta@cipsa.com.mx

Tel: (52) 222-225-9900
Fax: (52) 222-285-0420

UNITED KINGDOM

Multiquip (UK) Limited Head Office

Unit 2, Northpoint Industrial Estate,
Global Lane,
Dukinfield, Cheshire SK16 4UJ
Contact: sales@multiquip.co.uk

Tel: 0161 339 2223
Fax: 0161 339 3226

CANADA

Multiquip

4110 Industriel Boul.
Laval, Quebec, Canada H7L 6V3
Contact: jmartin@multiquip.com

Tel: (450) 625-2244
Tel: (877) 963-4411
Fax: (450) 625-8664

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