Viber® Flex Drive

Operating Instructions

FLEXIBLE DRIVES FOR VIBER®
INTERNAL CONCRETE VIBRATORS

MODELS: **VCR Cores**
VCS Casings
(7/8″ & 1-1/16″ diameter)
VDR
Flex Drive Assembly

Global® VIBRATORS

Viber® VIBRATORS

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I. INTRODUCTION

You have purchased a Viber® Vibrator Head and/or Flexible Drive to use with your Smart Parts™ Internal Concrete Vibrator system.

POWER UNIT+ FLEXIBLE DRIVE+ HEAD = Smart Parts™ SYSTEM

You build the right Smart Parts™ System for your application by choosing from the wide range of Viber® components including eleven different power options, fourteen different flexible drives, and fifteen different vibrator heads. These components all use identical fittings so that Viber® components are completely interchangeable. Any flexible drive can be used with any of the power units and any of the heads. See Section VIII for recommendations for selecting the best Viber® power unit, head and flex drive for your application.

When properly used, your Smart Parts™ system will effectively compact concrete to remove entrapped air, producing high quality concrete that is dense, strong, durable, and impermeable.

CAUTION! **CHECK YOUR EQUIPMENT**

1. Inspect the vibrator system for damage. Never use a damaged vibrator.
2. Have all components of the vibrator system received proper maintenance?

   VME Electric Motors: Monitor brushes & bearings. No lubrication required.
   Flexible Shafts: Re-grease core after every 50 hours of use or if core rattles excessively.
   Vibrator Head: Monitor bearings. Viber® heads are permanently lubricated at the factory. No further lubrication required.

3. Are all vibrator system connections tight? Apply Teflon® tape to the casing threads, before attaching the head, to give a watertight connection.

4. Do you have the proper power source?

   VME 1500, 1500L, 2500, 2500L / 115V models = 115 volt, 15 amp service
   VME 3000 / 115V model = 115 volt, 20-amp service
   VME 1500, 2500, 3000 / 230V = 230 volt, 15 amp service

   VMP 2000 = Filtered, lubricated air. 100 psi.
   VMG 2500 = Unleaded gasoline with a pump octane rating of 86 or higher.

   If using a portable generator, is it the proper size? If a portable generator is used, the total kilowatt requirement for the generator is determined by multiplying the voltage times the total current requirements for the system. VME power units have the following maximum current requirements:

   VME 1500, 1500L / 115V = 10 amps
   VME 2500, 2500L / 115V = 15 amps
   VME 3000 / 115V = 20 amps

   VME 1500 / 230V = 5 amps
   VME 2500 / 230V = 7.5 amps
   VME 3000 / 230V = 10 amps

   If a 115V VME 1500, VME 2500, and VME 3000 are run off the same generator, the requirements are: 115 (10 + 15 + 20) = 5,075 WATTS or 5.1 KW.

5. If using an electric motor, is it properly grounded?
6. If an extension cord is used, is it the proper size?

Motor Model	VME 1500	VME 2500	VME 3000	VME 1500	VME 2500	VME 3000
Voltage	115	115	115	230	230	230
Max Amps	10	15	20	5	7.5	10
Cord Length	Wire Size (Gauge)					
Up to 100'	#14	#12	#12	#14	#14	#14
100' - 150'	#12	#10	#10	#14	#14	#14
150' - 200'	#10	#10	#8	#14	#14	#14
200' - 250'	#10	#8	#6	#14	#14	#12
250' - 300'	#10	#8	#6	#14	#14	#12
300' - 400'	#8	#6	#4	#14	#12	#10
400' - 500'	#8	#6	#4	#12	#12	#10

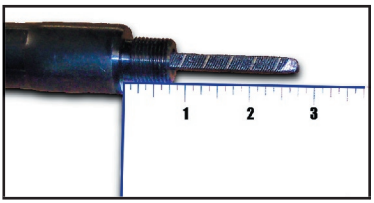
Check your forms: They need to be well made to withstand the strains of vibration.

1. Use screws instead of nails (nails will back out with vibration).
2. Forms need to be well braced to prevent bulging.
3. Joints need to be closely fit to prevent leaking.
4. Monitor forms during placement of concrete. Tighten as needed.

II. ASSEMBLING INTERNAL CONCRETE VIBRATOR

All Viber® system components are interchangeable. All flexible drives (cores and casings) can be used to attach any head to any power unit. For optimum performance and wear consult your Smart Parts™ SYSTEM GUIDE or the table in SECTION VIII for the best combination of components.

1. Always be sure the power unit is disconnected from the power source before assembling or disassembling your system.
2. Attach the flexible drive (casing with lubricated core installed) to the power unit. Be sure the core engages in the motor drive coupling. Turn the casing clockwise to tighten. Use a small pipe wrench or channel locks to be sure the connection is tight. (If you do not have an assembled flexible drive, the core must be lubricated before installing it in the casing. Run the core through a handful of Viber® Core Grease as it is inserted into the core. Attach the end of the casing, where the core was inserted, to the motor. As the system runs the grease will migrate from the motor end to the head end of the flexible drive.)
3. Before attaching the head, check the length of core extending from the head end of the flexible drive. If this length is greater than 2-3/4", twist the core while pushing it into the casing to make sure it is fully seated in the motor. If the exposed core is greater than 2-3/4" when it is fully seated in the motor it may bind and cause damage to the core, casing, or head. Do not use the system. Contact your dealer or Global Manufacturing at 1-800-551-3569.



4. Attach the head to the flexible drive. Be sure the core engages the drive coupling in the head. Apply two layers of Teflon® tape to the casing threads before screwing the head in a clockwise direction. Use a crescent wrench on the machined flats on the head and channel locks or a small pipe wrench on the casing fitting to make sure the connection is tight.

IMPORTANT **Do NOT leave out the Teflon® tape! It is required to provide a watertight seal between the head and casing. If Teflon® tape or a similar sealant is not used, the head can be damaged by water that penetrates this connection.**

5. Plug the power unit into the appropriate power source.

III. OPERATION

Follow the guidelines below when using your Viber® Internal Concrete Vibrator for consolidating concrete:

1. Do not leave the vibrator running in air. Totally submerse the vibrator head in the concrete. This cools the bearings. Running the vibrator in air without regularly submersing it in the concrete will overheat the bearings.
2. Avoid making sharp bends in the flexible shaft.
3. Make sure you can see the concrete surface. Use lighting if necessary.
4. Place the concrete in layers no deeper than the length of the vibrator head plus 4-6". Layers should not exceed 18-20", otherwise the weight of the concrete will prevent the entrapped air from escaping.
5. Keep the vibrator head at least 3-4" from the forms. It can damage them causing surface defects in the concrete.
6. Do not allow the vibrator head to touch reinforcements, such as rebar. Vibration can break the bond between the reinforcement and preceding layers of stiffened concrete.
7. Let the vibrator head penetrate to the bottom of the layer as quickly as possible under its own weight.
8. Keep the vibrator head vertical to minimize voids and enhance the release of entrapped air. For shallow flat slabs, lay the vibrator head horizontally and drag it through the concrete.
9. Withdraw the vibrator head slowly. Be sure concrete fills in behind leaving no hole. Do not attempt to "stir" the concrete.
10. Use repeated placements of the vibrator in a systematic pattern to be sure the entire surface has been vibrated. The area of action can be observed by noting how far from the vibrator head bubbles appear on the surface. Placements of the head should insure overlapping of the areas of action.
11. When compacting concrete placed on a previously compacted layer, push the vibrator 4-6" into the lower layer. Move the vibrator up & down for 5-15 seconds to "knit" the two layers together.
12. Avoid placing the concrete in "heaps". If it is necessary to flatten a heap, insert the vibrator head around the perimeter of the heap using as many placements as necessary.
13. Consolidation is complete when no new bubbles come to the top, a glistening layer of mortar covers the concrete surface, and the "whine" of the motor indicates that the vibrator speed has leveled off.
14. Clean all vibrator parts immediately following each use.

IV. MAINTENANCE

CAUTION! **Always disconnect the motor from the power source before starting any maintenance or repair.**

Vibrator Heads: Viber® heads have permanently lubricated bearings and require no routine maintenance. To replace the bearings, follow the instructions in Section V.

Flexible Drives: Re-grease the core using Viber® Core Grease after every 50 hours of use or if the core rattles excessively in the casing. To lubricate the core, detach the casing from the motor and pull it down to expose 18-24″ of core. Rub a handful of Viber® Core Grease over the exposed section of core. Reattach the casing to the motor. The fresh grease will travel the full length of the flexible drive as the vibrator is operated. DO NOT allow the core to be contaminated with dirt or other debris while re-greasing.

V. DISASSEMBLY AND ASSEMBLY

Required Tools:

1. Adjustable Crescent wrench.
2. Bench vise.
3. Channel lock pliers or small pipe wrench.
4. Propane torch.
5. Strap wrench – appropriate size to fit the diameter of the head.
6. ¼″ square driver.
7. Internal retaining ring pliers (for some models).
8. Arbor press.
6. Press bushings 0.005″ to 0.010″ smaller than the bearing and seal bore I.D.
7. Wire brush.
8. Loctite® 271 high strength thread adhesive.

CAUTION! **Always disconnect the motor from the power source before starting any maintenance or repair.**

Disassembly Procedures: Numbers in parenthesis refer to Part List and diagram.

1. Using a crescent wrench on the machined flats on the head and channel locks or a small pipe wrench on the casing fitting, disconnect the head from your vibrator system.
2. Determine which model head you have by measuring the outside diam-

eter of the vibrator head body. Heads having a diameter of 1-1/2″ or more, have an integral one-piece shaft, weight, and drive coupling. Heads smaller than 1-1/2″ have a separate drive coupling that screws into the one-piece shaft/weight.

3. Remove the Tip (1): Clamp the tip securely in a bench vise. Milled flats are provided for gripping the tip. Heat the tip and the adjacent portion of the housing to approximately 200°F with the propane torch to loosen the Locktite® used during assembly. **HEATING BEYOND 200°F WILL CRYSTALLIZE THE LOCTITE® AND MAKE IT IMPOSSIBLE TO REMOVE THE TIP.** Using an appropriate sized strap wrench or pipe wrench on the housing, unscrew the housing (8) from the tip (1). Threads are standard right-hand threads.
4. Remove the Top Cap (11): Clamp the top cap securely in a bench vise. DO NOT TIGHTEN THE VISE EXCESSIVELY OR THE DRIVE SHAFT PORT WILL BE DISTORTED. Milled flats are provided for gripping the top cap. Heat the top cap and the adjacent portion of the housing to approximately 200°F with the propane torch to loosen the Loctite® used during assembly. **HEATING BEYOND 200°F WILL CRYSTALLIZE THE LOCTITE® AND MAKE IT IMPOSSIBLE TO REMOVE THE TOP CAP.** Using an appropriate sized strap wrench or pipe wrench on the housing, unscrew the housing (8) from the top cap (11). Threads are standard right-hand threads. **FOR HEADS LESS THAN 1-1/2″ IN DIAMETER** – The top cap cannot be completely separated from the housing at this time because the drive coupling (12) will NOT fit through the seal (9) pressed in the bottom of the top cap. Pulling them apart will destroy the seal.
5. Remove the Seal (9): Pry the shaft seal out of the top cap being careful not to damage the top cap seal bore. The top cap can now be slid over the drive coupling on heads less than 1-1/2″ in diameter.
6. Remove the Bearings (3): **FOR HEADS LESS THAN 1-1/2″ IN DIAMETER** Use a press plate on the arbor press that has a gap. Place the housing on the press plate so the drive coupling extends down through the gap. The housing must sit solidly on the press plate. Using a 3″ length of copper or soft steel rod slightly smaller than the bearing inside diameter, press the shaft/weight-drive coupling assembly down through the housing until it drops free. Remove the coupling (12) from the shaft/weight (7) using the ¼″ square driver (standard right-hand threads). Slide the bearings (3), wavy washer (5), spacer washer (4), and seal (9) off of the shaft. Reverse the housing on the press plate. Slide the shaft/weight down (threaded end first) into the housing and through the remaining set of bearings. Using the shaft/weight, press those bearings out of the housing. Slide the bearings off the shaft.

   FOR HEADS 1-1/2″ IN DIAMETER AND LARGER - Use a press plate on the arbor press that has a gap. Place the housing on the press plate with the drive coupling up. Press carefully down on the square drive coupling part of the shaft/weight (7) until the lower bearings (3) are released from the housing. Remove the bearings and shaft/weight/coupling from the housing and slide the two bearings (3), the wavy washer (5), spacer washer (4), and the retaining ring (6) (not present on all models) from the

shaft. Reverse the housing on the press plate. Slide the shaft/weight/coupling down into the housing and through the remaining set of bearings. Press carefully down on the square drive coupling until the remaining bearings are released from the housing. Slide the bearings off the shaft.

7. Bearings (3) and shaft seal (9) should be replaced with new parts when reassembling the vibrator head. Use only special high-speed bearings from Viber®. These bearings are NOT standard "off the shelf" parts, but are specially adapted for high-speed vibrator use.

Reassembly Procedures: Numbers in parenthesis refer to Part List and diagram.

1. If unit had retaining rings (6) installed in the bearing bores, using the internal retaining ring pliers, install one now in the groove machined in the housing at the bottom of the bearing bore. The housing (8) is reversible, so it does not matter which end is done first. **NOTE:** The retaining rings (6) have a rounded edge and a sharp edge. Install the retaining ring with the ROUNDED edge facing DOWN in the bearing bore.
2. Using the arbor press and a press bushing that presses only on the outer ring of the bearing, press the first bearing (3) into the housing bearing bore until it seats **lightly** against the retaining ring (6) or the shoulder machined into the housing bore.
3. For all heads but the 7/8" Pencil Head and the 2-1/8" Shallow Pour Head place a wavy washer (5) and a spacer washer (4) in the housing bearing bore on top of the first bearing. Then press in the second bearing until it seats **lightly** against the first bearing (wavy washer (5) and spacer washer (4) are in between the two bearings).
4. For the 7/8" Pencil Head and the 2-1/8" Shallow Pour Head **ONLY**, reinstall the wavy washer (5) on the shaft end opposite the drive coupling. All other heads do not have this washer. Insert the shaft/weight (7) into the housing, from the end opposite the installed bearings, and through the bearings (For the 7/8" Pencil Head and the 2-1/8" Shallow Pour Head, the wavy washer will be on the shaft between the bearings and the weight).
5. If unit had retaining rings (6), using the internal retaining ring pliers, install the second retaining ring now in the other bearing bore. **NOTE:** The retaining rings have a rounded edge and a sharp edge. Install the retaining ring with the ROUNDED edge facing DOWN in the bearing bore.
6. Slide the third bearing (3) over the shaft and using the arbor press and a press bushing that presses only on the outer ring of the bearing, press the bearing into the housing bearing bore until it seats **lightly** against the retaining ring or the shoulder machined into the housing bore.
7. For all heads but the 7/8" Pencil Head and the 2-1/8" Shallow Pour Head, place a wavy washer (5) and a spacer washer (4) in the housing bearing bore on top of the third bearing. Then press in the fourth bearing until it seats **lightly** against the bearing installed in #6 (wavy washer (5) and spacer washer (4) are in between the two bearings). Check to be sure the shaft/weight (7) rotates freely within the bearings without detectable binding or roughness.

8. Using an appropriately sized press bushing, press a new shaft seal (9) into the top cap seal bore until it seats **lightly** in the bottom of the bore. The seal must face upward, away from the bearings when the top cap is installed. Install seal with care. Excessive pressing force can distort the seal and cause leaks.
9. Apply a small amount of grease to the seal lip and to the shaft where the seal will ride. Check the shaft and square coupler on the shaft/weight/coupling (1-1/2″ heads and larger) for burrs that could damage the seal as the top cap is installed. For heads smaller than 1-1/2″, the drive coupling must be removed from the shaft/weight before installing the top cap.
10. Place the top cap (11) on the main housing (8) and turn only two revolutions to engage the threads.
11. Apply a bead of Loctite® 271 all the way around the housing threads just below the top cap. This will seal the housing/top cap joint and prevent the top cap from coming loose during operation.
12. Continue to tighten the top cap until it seats completely against the housing.
13. Place the tip (1) on the other end of the housing (8) and turn about two revolutions to engage the threads.
14. Apply a bead of Loctite® 271 all the way around the housing threads just below the tip. This will seal the housing/tip joint and prevent the tip from coming loose during operation.
    When replacing Rubber Tips, use Permatex Ultra Blue BTV Silicone gasket maker instead of Loctite® 271.
15. Continue to tighten the tip (1) until it seats completely against the housing.
16. Clamp the flats found on the tip securely in a vise. Use a wrench on the top cap flats (11) to tighten both the tip and top cap securely.
17. On heads smaller than 1-1/2″ in diameter, screw the drive coupling (12) onto the threaded stud located in the top of the shaft. Tighten using a ¼″ drive. This connection will tighten further as the head is operated.

VI. PARTS LIST

SEE SECTION IX - page 10

VII. TROUBLESHOOTING

CALL FACTORY - 1-800-551-3569

VIII. Smart Parts™ SYSTEM RECOMMENDATIONS

VIBER® Smart Parts™ System Selection Guide

1		2	3		4	5								
Application	Slump	Space Limitations	Head Diameter	Radius of Action	Power Units	Flexible Drive Length (Feet)								
						1	3	5	7	10	14	21	28*	35*
Block Walls & Small Diameter Fills: Plastic and flowing concrete for very thin members & walls & confined places.	> 3"	2.5" x 2.5"	7/8" VH 14	5"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500*	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended		X	X	X	X	X	X	
Thinnest Prestressed Sections: Plastic and flowing concrete for very thin members & walls & confined places.	>3"	3" x 3"	1" VH 16	5"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500*	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended		X	X	X	X	X	X	
Thin Prestressed Sections: Plastic concrete in thin walls, columns, beams, pre-cast piles, thin slabs, and along construction joints.	3 - 5"	3.25" x 3.25"	1-1/4" VH 20	7"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended								
Thin Wall Sections & General Use: Plastic concrete in thin walls, columns, beams, precast piles, thin slabs, and along construction joints.	3 - 5"	3.5" x 3.5"	1-1/2" VH 24	13"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended		X	X	X	X	X	X	X
General Use: Plastic & stiff plastic concrete in general construc-tion such as walls, columns, beams, pre-stressed piles, and heavy slabs.	2 - 4"	3.75" x 3.75"	1-3/4" VH 28	17"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500	X	X	X	X	X	X	X	X	X
					VME 3000L	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended			X	X	X	X	X	X
Stiff Low-Slump Concrete: Stiff plastic concrete in general construction such as walls, columns, beams, pre-stressed piles, and heavy slabs.	1 - 3"	4" x 4"	2-1/8" VH 34	21"	VME 2500	X	X	X	X	X	X	X	Not Recommended	
					VME 3000L	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG 2500BP	7' or longer recommended			X	X	X	X	X	X
Stiffest Low-Slump Concrete: Mass and structural concrete deposited in relatively open forms.	< 2"	5" x 5"	2-1/2" VH 40	24"	VME 2500	X	X	X	X	X	X	X	Not Recommended	
					VME 3000L	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG 2500BP	7' or longer recommended			X	X	X	X	X	X
Shallow Pours: Plastic & stiff plastic concrete in slabs and other shallow pours less than 12" thick.	2-4"	4" x 4"	2-1/8"" VH 34-SP	13"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended			X	X	X	X	X	X
ICF Applications: Plastic and flowing concrete for very thin members & walls & confined places where insulated concrete forms are used.	> 4"	2.5" x 2.5"	7/8"" VH 14-LF	4"	VME 1500	X	X	X	X	X	X	X	Not Recommended	
					VME 2500	X	X	X	X	X	X	X	X	X
					VMP 2000	X	X	X	X	X	X	X	X	X
					VMG-1500HH	X	X	X	X	X	X	Not Recommended		
					VMG 2500BP	7' or longer recommended			X	X	X	X	X	X

1. Find description in column 1 that matches the desired application.
2. Use column 2 to adjust for any size restrictions due to reinforcements, such as rebar, or other limiting structures.
3. Column 3 gives the diameter of the vibrator head needed.
4. Select the power unit desired from column 4. VME units are universal electric motors available in 10 amps (1500), 15 amps (2500), or 20 amps (3000). The VME 3000 and the models ending with an "L" come with a twist lock plug. The motor with the higher amp rating will consolidate low slump concrete more efficiently. VMP 2000 is a 2hp pneumatic motor. VGM 1500HH is a 1.5hp hand held gasoline engine. VMG 2500BP is a 2.5hp backpack mounted gasoline engine.
5. Find the core and casing length desired in section 5. Smart Part Systems with a 7/8" head come with 7/8" diameter flexible drive. All other systems come with a 1-1/16" diameter flexible drive.

NOTE: 28' AND 35' FLEX DRIVES REQUIRE COUPLING TWO SHORTER DRIVES TOGETHER.

IX. TECHNICAL SPECIFICATIONS

Viber® REVERSIBLE FLEXIBLE SHAFTS										
	CORES		CASINGS				COMPLETE FLEX DRIVE ASSEMBLIES			
NOMINAL SHAFT LENGTH	CORES	CORE WEIGHT	STANDARD DIAMETER 1-1/16"	CASING WEIGHT	SMALL DIAMETER 7/8"	CASING WEIGHT	STANDARD DIAMETER 1-1/16"	FLEX DRIVE WEIGHT	SMALL DIAMETER 7/8"	FLEX DRIVE WEIGHT
FT	Model	pounds	Model	pounds	Model	pounds	Model	pounds	Model	pounds
	Part #	kg	Part #	kg	Part #	kg	Part #	kg	Part #	kg
1	VCR04-01	0.2	VCS17-01	0.8	VCS14-01	1.0	VDR17-01	1.0	VDR14-01	1.2
	935001	0.09	932001	0.36	932201	0.45	930001	0.45	930201	0.54
3	VCR04-03	0.6	VCS17-03	2.1	VCS14-03	2.0	VDR17-03	2.7	VDR14-03	2.6
	935003	0.27	932003	0.95	932203	0.91	930003	1.22	930203	1.18
5	VCR04-05	1.0	VCS17-05	4.2	VCS14-05	4.0	VDR17-05	5.2	VDR14-05	5.0
	935005	0.45	932005	1.91	932205	1.81	930005	2.36	930205	2.27
7	VCR04-07	1.4	VCS17-07	6.0	VCS14-07	5.5	VDR17-07	7.4	VDR14-07	6.9
	935007	0.64	932007	2.72	932207	2.49	930007	3.36	930207	3.13
10	VCR04-10	1.8	VCS17-10	8.0	VCS14-10	7.5	VDR17-10	9.8	VDR14-10	9.3
	935010	0.82	932010	3.63	932210	3.40	930010	4.45	930210	4.22
14	VCR04-14	2.8	VCS17-14	11.0	VCS14-14	10.0	VDR17-14	13.8	VDR14-14	12.8
	935014	1.27	932014	4.99	932214	4.54	930014	6.26	930214	5.81
21	VCR04-21	4.2	VCS17-21	16.0	VCS14-21	14.5	VDR17-21	20.2	VDR14-21	18.7
	935021	1.91	932021	7.26	932221	6.58	930021	9.16	930221	8.48

Viber® FLEXIBLE SHAFT ACCESSORIES AND LUBRICANTS		
DESCRIPTION	Model	pounds
	Part #	kg
STANDARD DRIVE COUPLING	VCP17	1.6
	939017	0.73
STANDARD DRIVE COUPLING	VCP14	0.8
	939014	0.36
QUICK DISCONNECT	VQD17	0.8
	939117	0.36
QUICK DISCONNECT NUT FITTING	VQDN	0.2
	414913	0.09
QUICK DISCONNECT MOTOR FITTING	VQDM	0.2
	414912	0.09
QUICK DISCONNECT DRIVE FITTING	VQDD	0.3
	414911	0.14
SHOULDER STRAP	VSTRP	1
	990001	0.45
Viber® CORE GREASE - 1LB	VCG1	1.2
	990051	0.54
Viber® CORE GREASE - 5LB	VCG5	0.8
	990055	0.36