

## COUPLING INSTALLATION / ALIGNMENT FOR BARE SHAFT PUMPS

**Issue:** How to properly install and align a coupling on bare shaft pumps used on Vmax oil-sealed liquid ring vacuum pump systems.

Each Vmax system is tested and checked at the factory prior to shipment to ensure trouble-free operation. In the unlikely event you encounter a problem, we recommend that you consult with your local distributor for parts/service. Remember, when calling for service, parts or system information, always have the pump or system model number and serial number ready.

[Click here to find your local authorized distributor.](#)

For units with elastomer-in-shear type couplings, it is important to inspect the couplings periodically for wear, alignment and general condition.

**WARNING!** Before attempting any repairs, disconnect all power from the system by switching off power at the main breaker or disconnect switch. Always use appropriate Lock Out - Tag Out procedures. Incorrectly installed couplings can be thrown from the coupling assembly with substantial force when subjected to severe shock loads or abuse causing property damage or bodily injury.

Inspect all coupling components and remove any protective coatings or lubricant from bores, mating surfaces, key ways and fasteners. Remove any existing burrs, etc., from the pump, motor shafts and keys. Use heavy duty steel wool or emery cloth only to remove burrs or protective coatings. Do not use abrasive tools which can remove large amounts of material at one time.

Slide one coupling flange onto each shaft, using keys where required. Keys must fit snugly. If coupling flange does not slide onto each shaft, remove the coupling flange and verify all protective coatings, etc. have been properly cleaned until the fit is proper. Note: Do not use a hammer to force fit the coupling onto the shaft.

Position the flanges on the shafts to approximately achieve the B dimension shown in Table 4A.1 (excerpted from Vmax Installation, Operation and Maintenance Manual (IOM)). It is usually best to have an equal length of shaft extending into each flange. Tighten the pump flange in its final position. If possible, slide the motor flange far enough back to install the sleeve. If the flange cannot be slid back, or if this is a "blind" assembly, tighten the second flange on the shaft and bring equipment together. Recheck the B dimension and readjust the motor flange position until the proper B dimension is achieved.

Tighten the set screws. Ensure that the set screws are coated with Loctite #242 or equivalent. With a two-piece sleeve, do not move the wire ring to its final position; allow it to hang loosely in the groove adjacent to the teeth until completing alignment. Pump systems containing the monoblock configuration will not require a coupling alignment.

Check parallel alignment by placing a straight edge across the two coupling flanges and measuring the offset at various points around the periphery of the coupling without rotating the coupling. If the maximum offset exceeds the figure shown under PARALLEL in Table 4A.1, realign the shafts. Alignment is not required for pumps with the monoblock configuration.



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Check angular alignment with a micrometer, vernier or caliper. Refer to B dimension in Table 4A.1. Measure at intervals around the periphery of the couplings; from the outside of the motor side coupling flange to the outside of the pump side coupling flange. Determine the maximum and minimum dimensions without rotating the coupling. These measurements must be within the range of B. If a correction is necessary, be sure to recheck the parallel alignment. Alignment is not required for pumps with the monoblock configuration.

If the coupling employs the two-piece sleeve with a wire ring, force the ring into its groove in the center of the sleeve. It may be necessary to pry the ring into position using a blunt screwdriver.

Install the coupling guard per OSHA or ASME B15.1 requirements.

Correctly installed and aligned couplings will increase the life of the coupling and its connecting equipment.

**TABLE 4A. 1 (excerpted from 2015 Vmax IOM):**

Pump Model	Sleeve Size	Maximum RPM	Parallel Misalignment	Angular Misalignment	“B”
--	3	9200	0.010	0.035	1.188
--	4	7600	0.010	0.043	1.500
DV0036	5	7600	0.015	0.056	1.938
DV0060-80	6	6000	0.015	0.070	2.375
DV0100-0150	7	5250	0.020	0.081	2.563
DV0200-0300	8	4500	0.020	0.094	2.938
DV0450	9	3750	0.025	0.109	3.500
DV0550	10	3600	0.025	0.128	4.063
--	11	3600	0.032	0.151	4.875
--	12	2800	0.032	0.175	5.688
--	13	2400	0.040	0.195	6.625
--	14	2200	0.045	0.242	7.750
--	16	1500	0.062	0.330	10.250

