

Industrial Maintenance

Laser Alignment

Courseware Sample

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By the staff of Festo Didactic

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



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








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Safety and Common Symbols

The following safety and common symbols may be used in this manual and on the equipment:

Symbol	Description
	DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
	WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
	CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
	CAUTION used without the <i>Caution, risk of danger</i> sign  , indicates a hazard with a potentially hazardous situation which, if not avoided, may result in property damage.
	Caution, risk of electric shock
	Caution, hot surface
	Caution, risk of danger
	Caution, lifting hazard
	Caution, hand entanglement hazard
	Notice, non-ionizing radiation
	Direct current
	Alternating current
	Both direct and alternating current
	Three-phase alternating current

Safety and Common Symbols

Symbol	Description
	Earth (ground) terminal
	Protective conductor terminal
	Frame or chassis terminal
	Equipotentiality
	On (supply)
	Off (supply)
	Equipment protected throughout by double insulation or reinforced insulation
	In position of a bi-stable push control
	Out position of a bi-stable push control

We invite readers of this manual to send us their tips, feedback, and suggestions for improving the book.

Please send these to did@de.festo.com.

The authors and Festo Didactic look forward to your comments.

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To the Instructor

- Before a student begins a work order, ensure that the equipment is in good condition and does not represent any risk when used.
- Your evaluation must relate to the quality of the accomplished work.
- Make sure that the students understand the objectives of the task they are to do. They should have read the Appendix D in this manual before starting with Work Order 1.
- Contact the National Center for Construction Education and Research (NCCER), at www.nccer.org, to obtain the requirements relative to the NCCER accreditation of this course.

Sample Work Order
Extracted from
Laser Alignment

Introduction to the Laser Alignment System

Task: To familiarize yourself with the Laser Alignment System, and learn how to set up the equipment.

PROCEDURE

CAUTION!



Before proceeding with this procedure, complete the safety checklist in Appendix B.

- 1. Attach the coupling and Motor to the Stuffing-Box Centrifugal Pump as described in the manual Stuffing-Box Centrifugal Pump, p/n 37904.

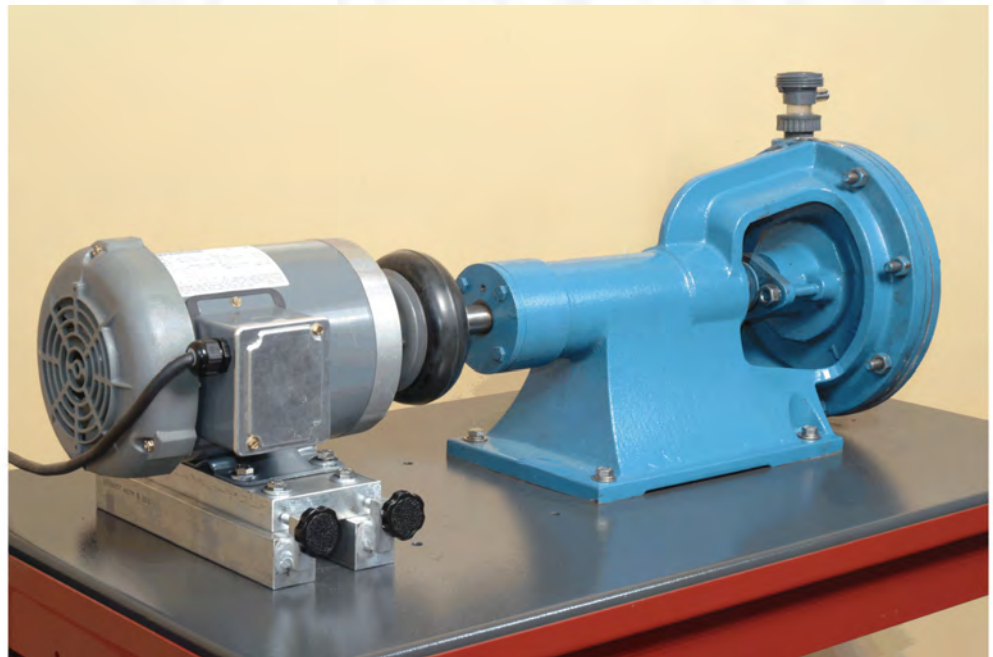


Figure 1-1. Attach the coupling and Motor to the Stuffing-Box Centrifugal Pump.

- 2. Remove the grease fitting at the shaft end of the pump.

- 3. Using the shaft adapters, install the measuring units as described in Appendix D and shown in Figures 1-2 and 1-3. Install the stationary measuring unit (S) on the pump shaft and the mobile measuring unit (M) on the Motor shaft.

Note: The magnetic fixtures with chain supplied with the Laser Alignment tool are designed for shafts having a diameter of at least 1.2 in. (30 mm). Since the diameter of the shafts of the Stuffing-Box Centrifugal Pump system is much smaller, a shaft adapter is required.

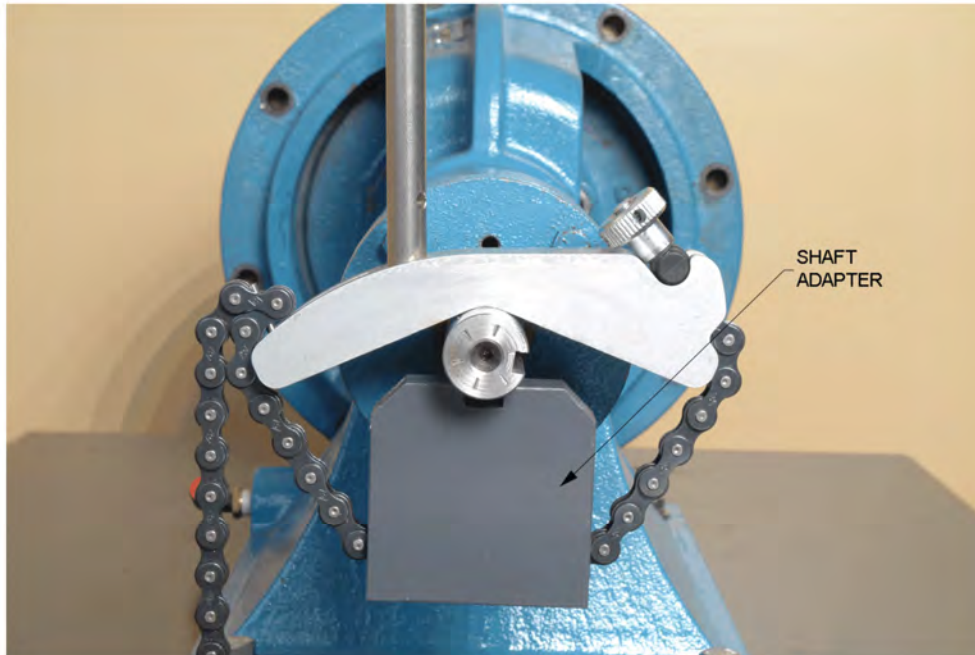


Figure 1-2. Use the shaft adapters to install the measuring units.

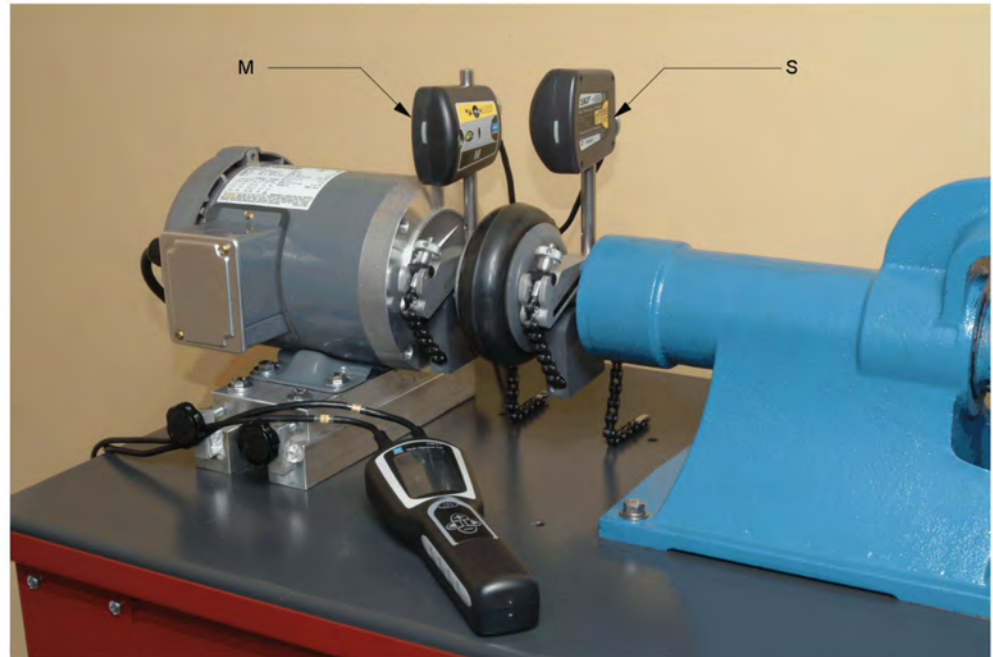


Figure 1-3. Installation of the measuring units.

- 4. Connect the measuring units to the display unit, and switch on the display unit.
- 5. Configure the display unit by entering the machine dimensions.
- 6. Aim the laser lines.

Note: *If the laser lines are outside the detector areas, perform a rough alignment.*

- 7. Ask the instructor to check your work.
- 8. Install the grease fitting at the shaft end of the pump.
- 9. Disassemble the setup and return the equipment to the storage location.

Name: _____ Date: _____

Instructor's approval: _____