

NAVSEA  
STANDARD ITEM

FY-20

ITEM NO: 009-58  
DATE: 01 OCT 2018  
CATEGORY: II

1. SCOPE:

1.1 Title: Pump and Driver Shaft Alignment; accomplish

2. REFERENCES:

2.1 S6226-JX-MMA-010, Instruction Manual for the Indicator Reverse Method of Pump Shaft Alignment

2.2 803-6397419, Standard Machinery Shim Kits

3. REQUIREMENTS:

3.1 Measure pump and driver shaft alignment using the indicator reverse method and the mathematical equations or graphs or alignment computer or laser based measuring instruments in accordance with 2.1.

3.1.1 Determine soft foot and correct in accordance with Section 2-2, 2-6.5.13 or 2-6.6.18 of 2.1. Shims **must** be in accordance with 2.2.

(V) "INSPECT PIPING ALIGNMENT PRIOR TO REMOVAL"

3.2 Inspect piping alignment in accordance with Section 2-3 of 2.1 prior to removal.

(V) (G) "INSPECT PIPING ALIGNMENT AT INSTALLATION"

3.3 Inspect piping alignment in accordance with Section 2-3 of 2.1 at installation.

3.4 Measure indicator sag in accordance with Section 2-4 of 2.1.

(V) (G) "COLD ALIGNMENT" (See 4.4)

3.5 Align each shaft to the offset and angular alignments in accordance with the cold alignment settings invoked in the Work Item (see 4.1). Cold alignments for horizontally mounted machinery **must** be accomplished in accordance with Chapter 2, Sections 2-1 through 2-7 of 2.1, and vertically mounted machinery **must** be in accordance with Chapter 5, Sections 5-1 through 5-3 of 2.1. Pumps/motors with magnetic couplings **must** be aligned in

accordance with 2.1. The results of this section **must** be used to complete the alignment data collection form (Page 7.2 of 2.1) (See 4.5).

3.5.1 If hot alignment is not required, complete cold final alignment verification. Accomplish a final alignment check of pump with dowels installed.

3.5.1.1 Fit and install new chocks and shims conforming to ASTM A 240 to accomplish alignment. Shims **must** be in accordance with 2.2.

3.5.1.2 Drill and ream foundations. Fit and install new SAE-AMS-QQ-S-763, Grade 304, dowels in each unit to retain final satisfactory unit alignment in accordance with Section 2-8 of 2.1.

3.5.2 Submit one legible copy, in hard copy or approved transferrable media, of a completed alignment data collection form (Page 7-2 of 2.1) (see 4.5) for the results of the requirements of 3.5 to the SUPERVISOR.

3.6 Align shafts so that offset and angular alignments are acceptable when the unit is hot. Acceptable alignment tolerances **must** be based on the rated speed of the pump and the alignment tolerance listed in Table 1-1 of 2.1 (see 4.2). Hot alignments for horizontally mounted turbine-driven machinery **must** be accomplished in accordance with Chapter 2, Section 2-1 through 2-8 of 2.1. Hot alignment is not required for vertically mounted machinery unless specified in the unit's technical manual. Hot alignment is not required for horizontally mounted, motor-driven machinery. Accomplish hot alignment check only on units when the cold alignment has been compensated for thermal growth. (Hot alignment readings must be taken within 30 minutes of shutting down unit).

3.6.1 Fit and install new chocks and shims conforming to ASTM A 240 to accomplish alignment. Shims **must** be in accordance with 2.2.

3.6.2 Drill and ream foundations. Fit and install new SAE-AMS-QQ-S-763, Grade 304, dowels in each unit to retain final satisfactory unit alignment in accordance with Section 2-8 of 2.1.

(V) (G) "FINAL HOT ALIGNMENT"

3.7 Accomplish a final hot alignment check of pump in accordance with 2.1 with dowels installed.

3.7.1 Submit one legible copy, in hard copy or approved transferrable media, of a report listing results of the requirements of 3.7 to the SUPERVISOR. The report **must** include the completed alignment data collection form (page 7-2 of 2.1) (see Note 4.5) for final hot alignment condition.

4. NOTES:

4.1 Reference that contains the cold setting alignment will be identified in the invoking Work Item.

4.2 Hot alignment criteria if different from zero will be identified in the invoking Work Item.

4.3 Turbine driven unit must be run a minimum of 2 hours to achieve operating temperature.

4.4 (V) (G) of **3.5** is invoked only when hot alignment is not required.

4.5 If utilizing laser based measuring instruments, a completed results printout may be utilized in lieu of Page 7-2 of 2.1.