CVHEASSY.DOC
Update: 7/17/96
WS-06/06/96

# CVHE Compressor Disassembly/Reassembly

**Unit Model Number:** _____
**Unit Serial Number:** _____
**Reason for Teardown:** _____

| | Disassembly = 1-36<br>Reassembly = (1)-(36) | Ref # | Clearances & Torques<br>Nominal | Disassembly | Reassembly |
|---|---|---|---|---|---|
| ☐ | 1. Remove tang operator, 1st stage vane assembly. | | | | |
| ☐ | (36). Install tang operator, 1st stage vane assembly | 1 | | | |
| ☐ | (36a). CAPSCREW TORQUE | | 14 Ft Lbs | | ____Ft Lbs |
| ☐ | 2. Remove 1st stage inlet vane assembly. | | | | |
| ☐ | (35). Install 1st stage inlet vane assembly. | 2 | | | |
| ☐ | 3. Measure 1st stage impeller nose seal clearance. (Radial) | | _____" | | |
| ☐ | (34). Measure/set 1st stage impeller nose seal. | A | | | |
| ☐ | (34a). NOSE SEAL BOLT TORQUE | | 24 Ft Lbs | | ____Ft Lbs |
| ☐ | 4. Remove 1st stage impeller nose seal. | | | | |
| ☐ | (33). Install 1st stage impeller nose seal. | 3 | | | |
| ☐ | 5. Remove 1st stage suction cover | | | | |
| ☐ | (32). Install 1st stage suction cover | 4 | | | |
| ☐ | (32a). SUCTION COVER BOLT TORQUE. | | 150 Ft Lbs | | ____Ft Lbs |
| ☐ | 6. Measure 1st stage impeller nose runout. | | | | |
| ☐ | (31). Measure 1st stage impeller nose runout. | A | < .003" | _____" TIR | _____" TIR |
| ☐ | 7. Measure detail "A" clearances for 1st stage impeller. | S<br>R | Flush/+.005"<br>.030" min radial centered | _____ | |

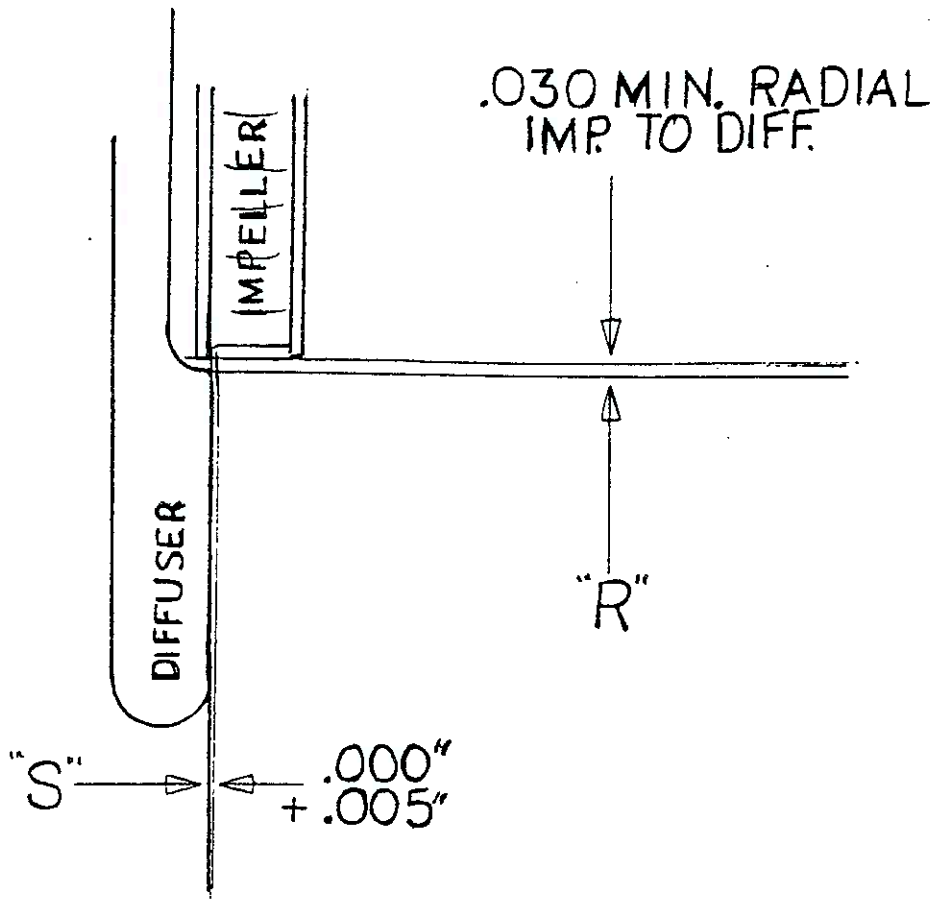
| Disassembly = 1-36<br>Reassembly = (1)-(36) | Ref # | Clearances & Torques | | |
|---|---|---|---|---|
| | | Nominal | Disassembly | Reassembly |
| ☐ 8. Remove impeller lock nut, lockwasher & spring washer.<br>☐ (30). Install impeller lock nut, lockwasher & spring washer.<br>☐ (30a). LOCKNUT TORQUE. | 5 | 115 Ft Lbs | | ____ Ft Lbs |
| ☐ 9. Remove 1st stage impeller<br>☐ (29). Install 1st stage impeller. | 6 | | | |
| ☐ 10. Measure shaft runout. | | < .0012" TIR | ____" TIR | |
| ☐ 11. Measure 1st stage shaft seal clearance.<br>☐ (28). Measure/set 1st stage shaft seal clearance.<br>☐ (28a). SHAFT SEAL BOLT TORQUE | B | .018/.024"<br>24 Ft Lbs | | ____ Ft Lbs |
| ☐ 12. Remove 1st stage shaft seal.<br>☐ (27). Install 1st stage shaft seal. | 7 | | | |
| ☐ (26). Measure/set detail "A" clearances for 1st stage impeller.<br>☐ (26a). DIFFUSER PLATE BOLT TORQUE. | S<br>R | Flush/+.005"<br>.030" min radial centered<br>24 Ft Lbs | | ____<br>____ Ft Lbs |
| ☐ 13. Remove 1st stage shaft impeller spacer<br>☐ (25). Install 1st stage shaft impeller spacer. | 8 | | | |
| ☐ 14. Remove 1st stage diffuser plate.<br>☐ (24). Install 1st stage diffuser plate. | 9 | | | |
| ☐ 15. Remove 2nd stage shroud assembly.<br>☐ (23). Install 2nd stage shroud assembly.<br>☐ (23a). 2ND STAGE SHROUD BOLT TORQUE. | 10 | 6 Ft Lbs | | ____ Ft Lbs |
| ☐ 16. Measure 2nd stage impeller nose seal clearance.<br>☐ (22). Measure/set 2nd stage impeller nose seal clearance.<br>☐ (22a). NOSE SEAL BOLT TORQUE | C | ____"<br>24 Ft Lbs | | ____ Ft Lbs |

| | Disassembly = 1-36<br>Reassembly = (1)-(36) | Ref # | Clearances & Torques | | |
|---|---|---|---|---|---|
| | | | Nominal | Disassembly | Reassembly |
| ☐ | 17. Remove 2nd stage impeller nose seal. | | | | |
| ☐ | (21). Install 2nd stage impeller nose seal. | 11 | | | |
| ☐ | 18. Remove 2nd stage suction cover. | | | | |
| ☐ | (20). Install 2nd stage suction cover. | 12 | | | |
| ☐ | (20a). SUCTION COVER BOLT TORQUE. | | 150 Ft Lbs | | _____ Ft Lbs |
| ☐ | 19. Measure 2nd stage impeller nose runout. | | < .003" TIR | _____" TIR | |
| ☐ | (19). Measure 2nd stage impeller nose runout. | | | | _____" TIR |
| ☐ | 20. Measure detail "A" clearances of 2nd stage impeller. | S<br>R | Flush/+.005"<br>.030" min radial centered | _____<br>I<br>_ _<br>I | |
| ☐ | 21. Remove 2nd stage impeller. | 13 | | | |
| ☐ | (18). Install 2nd stage impeller. | | | | |
| ☐ | 22. Measure 2nd stage shaft seal clearance. | | .018/.024" | I<br>_ _<br>I | |
| ☐ | (17). Measure/set 2nd stage shaft seal clearance. | D | | | I<br>_ _<br>I |
| ☐ | (17a). SHAFT SEAL BOLT TORQUE | | 24 Ft Lbs | | _____ Ft Lbs |
| ☐ | 23. Remove 2nd stage shaft seal. | 14 | | | |
| ☐ | (16). Install 2nd stage shaft seal. | | | | |
| ☐ | (15). Measure/set detail "A" clearances of 2nd stage impeller. | S<br>R | Flush/+.005"<br>.030" min radial centered | | _____<br>I<br>_ _<br>I |
| ☐ | (15a). 2ND STAGE DIFFUSER BOLT TORQUE. | | 24 Ft Lbs | | _____ Ft Lbs |
| ☐ | 24. Remove 2nd stage shaft impeller spacer. | 15 | | | |
| ☐ | (14). Install 2nd stage shaft impeller spacer. | | | | |

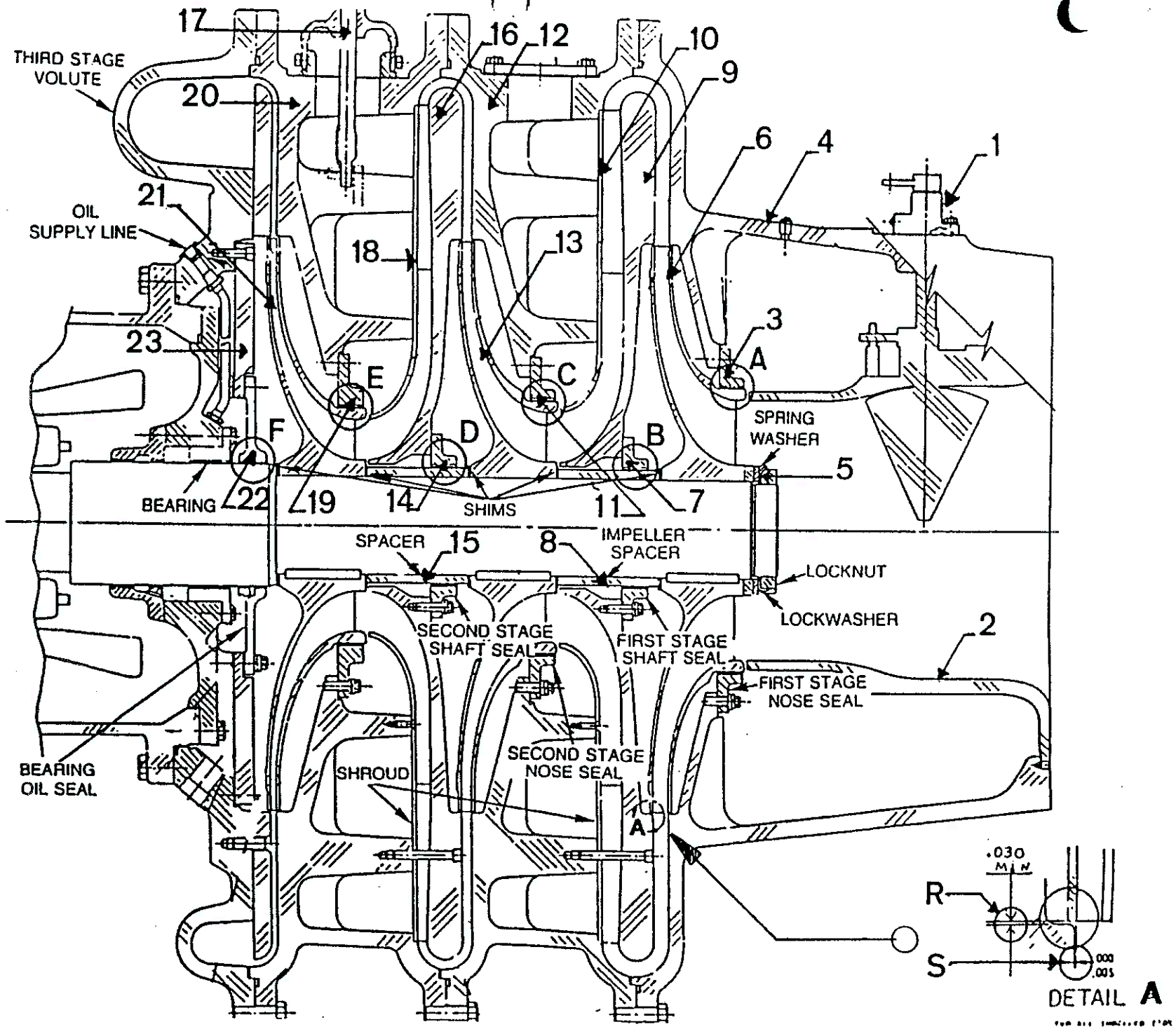
| Disassembly = 1-36<br>Reassembly = (1)-(36) | Ref # | Clearances & Torques | | |
|---|---|---|---|---|
| | | Nominal | Disassembly | Reassembly |
| ☐ 25. Remove 2nd stage diffuser plate.<br>☐ (13). Install 2nd stage diffuser plate. | 16 | | | |
| ☐ 26. Remove 3rd stage vane operator assembly.<br>☐ (12). Install 3rd stage vane operator assembly.<br>☐ (12a). VANE OPERATOR BOLT TORQUE | 17 | 60 Ft Lbs or gkt extrudes | | ____ Ft Lbs |
| ☐ 27. Remove 3rd stage shroud and vane assembly.<br>☐ (11). Install 3rd stage shroud and vane assembly.<br>☐ (11a). 3RD STAGE SHROUD BOLT TORQUE | 18 | 6 Ft Lbs | | ____ Ft Lbs |
| ☐ 28. Measure 3rd stage impeller nose seal clearance.<br>☐ (10). Measure/set 3rd stage impeller nose seal clearance.<br>☐ (10a). NOSE SEAL BOLT TORQUE | E | ____"<br>24 Ft Lbs | | ____ Ft Lbs |
| ☐ 29. Remove 3rd stage impeller nose seal.<br>☐ (9). Install 3rd stage impeller nose seal. | 19 | | | |
| ☐ 30. Remove 3rd stage suction cover casing.<br>☐ (8). Install 3rd stage suction cover casing.<br>☐ (8a). SUCTION COVER BOLT TORQUE | 20 | 150 Ft Lbs | | ____ Ft Lbs |
| ☐ 31. Measure 3rd stage impeller nose runout.<br>☐ (7). Measure 3rd stage impeller nose runout. | E | < .003" TIR | ____" TIR | ____" TIR |
| ☐ 32. Measure/set detail "A" clearances of 3rd stage impeller. | S<br>R | Flush/+.005"<br>.030" min radial centered | ____ | |
| ☐ (6). Measure/set detail "A" clearances of 3rd stage impeller.<br>☐ (6a). DIFFUSER PLATE BOLT TORQUE | S<br>R | Flush/+.005"<br>.030" min radial centered<br>24 Ft Lbs | | ____<br>____ Ft Lbs |

| Disassembly = 1-36<br>Reassembly = (1)-(36) | Ref # | Clearances & Torques | | |
|---|---|---|---|---|
| | | Nominal | Disassembly | Reassembly |
| ☐ 33. Remove 3rd stage impeller<br>☐ (5). Install 3rd stage impeller | 21 | | | |
| ☐ 34. Measure bearing oil seal clearance.<br>☐ (4). Measure/set bearing oil seal clearance.<br>☐ (4a). OIL SEAL BOLT TORQUE | F | .002/.004"<br><br>24 Ft Lbs | | _____Ft Lbs |
| ☐ 35. Remove bearing oil seal and gasket.<br>☐ (3). Install bearing oil seal and gasket | 22 | | | |
| ☐ 36. Remove bearing oil seal mounting plate and gasket.<br>☐ (2). Install bearing oil seal mounting plate and gasket.<br>☐ (2a). SEAL MOUNTING BOLT TORQUE | 23 | <br><br>24 Ft Lbs | | <br><br>_____Ft Lbs |
| ☐ (1). Measure motor shaft runout | | < .0012" TIR | | _____" TIR |

| CVHE Compressor Seal Clearances, "C" Design And Later | | | | | |
|---|---|---|---|---|---|
| 50 Hz | 60 Hz | 60 Hz | Impeller Nose Seal Ring Radial Clearance | | |
| Compressor Size | Compressor Size | Compressor Size | 1st Stage | 2nd Stage | 3rd Stage |
| | 130/140 | 013 Thru 014 | .0295/.0195" | .0240/.165" | .0240/.0165" |
| | 160/180/200 | 015 Thru 020 | .0295/.0195" | .0295/.0195" | .0240/.0165" |
| | | 022 | .0295/.0195" | .0295/.0195" | .0295/.0195" |
| | 230/250/280/320 | 023 Thru 032 | .0330/.0220" | .0295/.0195" | .0295/.0195" |
| | | 035 | .0330/.0220" | .0330/.0220" | .0295/.0195" |
| 300/330/370 | 360/400/450 | 036 Thru 045 | .0365/.0285" | .0330/.0220" | .0295/.0195" |
| 420 | 500 | 049 Thru 050 | .0365/.0285" | .0330/.0220" | .0330/.0220" |
| | | 055 | .0365/.0285" | .0365/.0245" | .0330/.0220" |
| 470/530/590 | 560/630/710 | 056 Thru 071 | .0430/.0285" | .0365/.0245" | .0330/.0220" |
| 660 | 800 | 079 Thru 080 | .0430/.0285" | .0365/.0245" | .0365/.0245" |
| 740/830/930 | 890/1100/1120 | 089 Thru 112 | .0460/.0310" | .0430/.0285" | .0365/.0245" |
| 1040 | 1250 | 125 | .0460/.0310" | .0430/.0285" | .0430/.0285" |
| **Shaft Seal Radial Clearances (All): 1st Stage-.018/.024" 2nd Stage-.018/.024" 3rd Stage-.002/.004"** | | | | | |




DETAIL "A"


17
THIRD STAGE VOLUTE
20
16
12
10
9
6
4
1
21
OIL SUPPLY LINE
18
13
3
23
A
E
C
F
D
B
SPRING WASHER
5
BEARING
22
19
14
SHIMS
11
7
SPACER
15
8
IMPELLER SPACER
LOCKNUT
LOCKWASHER
SECOND STAGE SHAFT SEAL
FIRST STAGE SHAFT SEAL
2
FIRST STAGE NOSE SEAL
BEARING OIL SEAL
SHROUD
SECOND STAGE NOSE SEAL
A
.030 MIN
R
S
.000 .005
DETAIL A