

*If you are using a printed copy of this procedure, and not the on-screen version, then you **MUST** make sure the dates at the bottom of the printed copy and the on-screen version match. The on-screen version of the Collider-Accelerator Department Procedure is the Official Version. Hard copies of all signed, official, C-A Operating Procedures are available by contacting the ESSHQ Procedures Coordinator, Bldg. 911A*

C-A OPERATIONS PROCEDURES MANUAL

15.5.44 Turbopump Checkout

(Vacuum Group Procedure VA-008.18.1.44)

Note: This document was formerly a C-A Group Procedure. The content of the group procedure was reviewed by the Technical Supervisor. All approvals and/or issue dates of the original group procedure are maintained for present use.

Hand Processed Changes

<u>HPC No.</u>	<u>Date</u>	<u>Page Nos.</u>	<u>Initials</u>
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Approved: _____ Signature on File _____
Collider-Accelerator Department Chairman Date

S. Gill

Vacuum Group Procedure VA-008.18.1.44
Original Issue Date: 01/01/00
Revision 01

****IMPORTANT****

PRIOR TO THE PERFORMANCE OF ANY WORK WITHIN THE SCOPE OF THIS PROCEDURE, IT IS THE RESPONSIBILITY OF THE SUPERVISOR TO ENSURE THAT **WORK PLANNING** HAS BEEN REVIEWED FOR THE PROTECTION OF WORKERS, EQUIPMENT, AND THE ENVIRONMENT.

ROUTINE MAINTENANCE

First Regrease - pump previously without rubber plug 41-6436

Interval for 24 hour service

Maximum - Every 12 months (8,760 hours)

Minimum - Every 6 months (4,380 hours)

Materials:

- 2 41-6436 penetrable plugs
- 8 41-6331 grease filled syringes
- 1 Motor current meter fitted with starting shunt switch

Procedure:

1. Stop and vent.
2. On pump end plates, remove steel plugs located approximately 45° from end plate top. Replace with penetrable plug 41-6436.
3. Connect shunted meter in motor lead.
4. Evacuate and start turbo: when at full speed,
5. Open shunt: observe current.
6. Start grease injection on one end. Poke needle through middle of penetrable plug. Start grease injection to fill passages before grease gets to bearing. Three to four syringefulls will be required. When a syringe is emptied, withdraw syringe and connected needle. The rubber plug closes vacuum tight behind the needle. It is not necessary for successive needle penetrations to be through the same hole. At about 9 cc, grease will start to reach bearing and current will show a slight rise. Current will rise about 50% over normal but should drop back down halfway to normal after less than 5 minutes. After current is holding fairly steady, even though above normal, note the current and use it as a "norm" to inject grease in other end similar to the previous procedure.
7. Current should return to normal after about 18 hours.
8. Note: Do not unscrew the penetrable plug. At atmospheric pressure, a small volume may be trapped when it is screwed back which will expand at vacuum conditions and push uncontrolled amounts of grease through the bearings.

Subsequent Regrease

Interval for 24 hour service

Maximum - Every 12 months (8,760 hours)

Minimum - Every 6 months (4,380)

Materials:

- 1 41-6331 grease filled syringes
- 1 Motor current meter fitted with starting shunt switch

Procedure:

1. Connect meter in one motor lead. Evacuate turbo and get up to full speed. Open meter shunt. Observe current.
2. Start grease injection in one end. Poke needle through middle of penetrable plug. Inject until a slight rise is noticed. Current will rise to about 50% over normal, but should drop back down halfway to normal after less than 5 minutes. After current is holding fairly steady, even though above normal, note the current and use it as a "norm" to inject grease in the other end similar to the previous procedure.
3. Current should return to normal after about 18 hours.
4. Note: Do not unscrew the penetrable plug. At atmospheric pressure, a small volume may be trapped when it is screwed back which will expand at vacuum conditions and push uncontrolled amounts of grease through the bearings.

The rest of the maintenance is the same as with the 3106 turbo except for references to internal turbo oil supply, and refrigeration system maintenance. The small flask under the transmission must be emptied from time to time. The turbo must be let up to atmospheric pressure to do this. The flask collects the small seepage of seal oil which passes through the rubbing faces of the seal to the fore vacuum cavity.

Repairs

The decontamination flush procedure for the grease lubricated turbos is the same as the oil lubricated turbos. However, the drains on the lower side at the two ends of the turbo body proper, permanently connected in the case of the oil lubricated model are plugged in the 3120 and 3106 grease lubricated models. The plugs must be opened so that the flushing solvent can discharge after passing end wards through the turbo stages. In the model 3106, remove the two diamond shaped brass plugs at the ends of the turbo body for flushing. In the model 3120, the drain connects with the drilled foot crossbar. Remove one of the plugs in the foot crossbar at each end of the pump.

Shaft seal repairs are the same on oil lubricated and grease models.