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Approved:

(Plant Manager)

MC-1

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## LUBRICATION CONTROL

### 1.0 PURPOSE

- 1.1 The purpose of this procedure is to establish the requirements for storage, control, issue and usage of all lubrication (greases and oils) used at Shoreham Nuclear Power Station.
- 1.2 Quality shall be assured through the efforts and responsibilities of individuals and organizations and documented evidence as established within this procedure.

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## 2.0 RESPONSIBILITY

- 2.1 The Maintenance Engineer shall have the responsibility for ensuring proper implementation of this procedure.
- 2.2 Each Section Head shall be responsible for lubrication activities under their jurisdiction as described in this procedure.
- 2.3 All lubrication shall be controlled and issued through the Maintenance Department.

## 3.0 DISCUSSION

- 3.1 This procedure provides specific instructions to control the storage, issuance and use of all lubrication to assure the proper use of lubrication throughout the plant.
- 3.2 The following topics are covered in this procedure:
  - 3.2.1 Receipt & Storage of Greases & Oils
  - 3.2.2 Control of Greases
  - 3.2.3 Control of Oils
  - 3.2.4 Uses of Lubrication
  - 3.2.5 Lubrication Log
- 3.3 Most lubrication which have been incorporated in the SNPS PM SAWS Program are manufacturer recommended and/or Mobil lubrication specialist recommendation.

## 4.0 PRECAUTIONS

- 4.1 All lubrication should be stored in a closed suitable container to assure cleanliness and safety.
- 4.2 Lubrication stored in the oil room and grease rack should be properly labeled or suitable marked.
- 4.3 Lubrication type for all components is as per the PM "SAWS" program. Verification of the proper lubricant should be made by using the CRT or a hard copy of the PM SAWS.

## 5.0 PREREQUISITES

N/A

## 6.0 LIMITATION & ACTION

N/A

7.0 TEST EQUIPMENT

N/A

8.0 PROCEDURE

8.1 Receipt and Storage of Greases and Oils

8.1.1 Upon receipt of lubrication, it should be placed in a control area designated for lubrication by Maintenance Department.

8.1.2 All lubrication (Grease & Oil) should be identified by type of oil or grease. (i.e. Mobilux #2, DTE BB, etc.) using Appendix 12.1 for cross reference.

8.1.2.1 All drums, cans and guns should be labeled by grease/oil type.

8.1.3 Random sampling of the oil/grease may be made. Analysis may be made on new oil/grease for base line data.

8.2 Control of Greases

8.2.1 All greases should be issued from the oil room or be obtained from the grease rack.

8.2.1.1 The grease rack should only contain grease guns that are clearly label or identifiable as to what type of grease it contains.

8.2.2 Bulk grease should be signed out of the oil room on the lubrication log in accordance with 8.5 of this procedure.

8.2.3 Grease guns should be stored in the grease rack where individuals can obtain a grease gun. These grease guns will be filled by the Maintenance Dept. Upon completion of the job, grease guns should be placed in the designated area on the grease rack.

8.3 Control of Oils

8.3.1 All oils should be issued or obtained from the oil room or designated rack.

8.3.1.1 The oil should be obtained from clearly marked containers (i.e., 5 gal, 1 gal cans) that will be filled by the Maintenance Department. This function will be handled by the tool room man.

8.3.1.2 Bulk oil should be obtained through the tool room and signed out on the Lubrication Log in accordance with 8.5 of this procedure.

8.3.2 All oil cans should be returned to the oil room or designated area after completion of the job.

8.4 Use of Lubrication

8.4.1 Lubrication Type and Method of application.

8.4.1.1 SNPS PM SAW Program will list the proper lubrication and method of application (See Appendix 12.2).

8.4.1.2 When a MWR is generated, the type of lubrication will be listed when necessary. This will be obtained from the PM SAWS Program.

8.5 Lubrication Log

8.5.1 All Bulk Issuance of Lubricants should be recorded on the Lubrication Log (Appendix 12.3).

8.5.1.1 The Lubrication Log Sheet should be filled out by the Tool Room attendant and list the following:

- a) Person receiving the lubricant & Dept. & Date.
- b) SAWS or MWR #
- c) Type of Lubricant
- d) Quantity

9.0 ACCEPTANCE CRITERIA

N/A

10.0 FINAL CONDITION

N/A

11.0 REFERENCES

11.1 SP12.015.01 "Preventive Maintenance Program"

12.0 APPENDICES

12.1 Mobil # to type grease cross reference

12.2 SNPS Lube Code

12.3 Lubrication Log Sheet

PRODUCT CODE TO PRODUCT NAME

CROSS REFERENCE

PRODUCT CODE	PRODUCT NAME	PRODUCT CODE	PRODUCT NAME
40010	Mobil Oil Special	45021	Mobil Fleet 220 B
41010	Mobil Oil 10W	45022	Mobil Fleet 230 B
41011	Mobil Oil 20W-20	46010	Lubrite Mo SAE 10W
41012	Mobil Oil 30	46011	Lubrite Mo SAE 20W
41013	Mobil Oil 40	46012	Lubrite Mo SAE 30W
41014	Mobil Oil 50	46013	Lubrite Mo SAE 40W
41038	Mobil Oil Snowmobile	48015	Mobil Oil Sup 10W-40
41041	Mobil Oil MAR SAE 30	49011	Mobil AERO HFA
41241	Mobil Oil CD-20W-20	49491	AURE 903
44022	Mobil DELVAC Spl 10W-30	51011	Mobil Lube C90
44023	Mobil DELVAC Spl 20W-40	51012	Mobil Lube C 140
44050	Mobil DELVAC 1110	51014	Mobil Lube HD 90
44051	Mobil DELVAC 1120	51015	Mobil Lube HD 80-90
44052	Mobil DELVAC 1130	51016	Mobil Lube HD 140
44065	Mobil DELVAC 1210	51041	Mobil Lube 46 SAE 90
44066	Mobil DELVAC 1220	51042	Mobil Lube 46 SAE 140
44067	Mobil DELVAC 1230	52015	Mobil Fluid 99
44068	Mobil DELVAC 1240	52214	Mobil RTF 210
44070	Mobil DELVAC 1310	52215	Mobil RTF 220
44071	Mobil DELVAC 1320	52225	Mobil Fluid 300
44072	Mobil DELVAC 1330	52231	Mobil Fluid 423
44073	Mobil DELVAC 1340		

PRODUCT CODE	PRODUCT NAME	PRODUCT CODE	PRODUCT NAME
53011	Mobil Grease No. 2	60041	Mobil Vactra Oil Heavy
53020	Mobil Grease MD	60042	Mobil Vactra Oil Ex Heavy
53030	Mobil Grease Special	60043	Mobil Vactra Oil BB
53299	Mobil Grease 76	60044	Mobil Vactra Oil AA
53300	Mobil Grease 77	60048	Mobil Vactra Oil 1
53310	Mobil Grease 532	60049	Mobil Vactra Oil 2
58120	Mobil Hydraulic Light	60050	Mobil Vactra Oil 3
58121	Mobil Hydraulic Medium	60051	Mobil Vactra Oil 4
58122	Mobil Hydraulic Heavy Medium	60057	Mobil Velocite 8
58125	Mobil Hydraulic BB	60066	Mobil Velocite 6
58151	Mobil VACME Oil 3	60068	Mobil Velocite 10
58153	Mobil VACME Oil 4	60070	Mobil DTE Oil 3
58175	Mobil Viscolite SS	60073	Mobil DTE Oil 5
58187	RR Diesel Oil 440	60091	RARUS 57
60011	Mobil DTE 797	60121	Mobil 600W Super Cyl
60014	Mobil DTE Light	60123	Mobil Ex HEC
60015	Mobil DTE Medium	60124	Mobil Ex HEC Sup Min
60016	Mobil DTE Hvy Medium	60126	Mobil 600W Cyl Oil
60018	Mobil DTE Heavy	60131	Mobil Vacuoline 1405
60020	Mobil DTE Ex Heavy	60132	Mobil Vacuoline 1409
60022	Mobil DTE BB	60168	GG Artic Oil C
60025	Mobil DTE HH	60169	GG Artic Oil C Heavy
60027	Mobil Vactra Medium	60170	GG Artic Oil C Ex Heavy
60038	Mobil Vactra Hvy Med.	60172	GG Artic Oil 155

PRODUCT CODE	PRODUCT NAME	PRODUCT CODE	PRODUCT NAME
60039	Mobil Vactra Heavy	60173	CG Artic Oil 300
60040	Mobil Vactra Ex Heavy		
60176	Mobil ALMO No 1	60270	Mobil DTE 15
60177	Mobil ALMO No 3	60271	Mobil DTE 16
60178	Mobil ALMO No 5	60273	Mobil DTE 18
60179	Mobil ETNA No 2	60274	Mobil DTE 19
60181	Mobil ETNA No 4	60282	Mobil Gear 345
		60283	Mobil Gard 443
60183	Mobil ETNA NO 6	60285	Mobil Gard 445
60185	Soc Oven Conv Lubr	60290	Mobil SHC 639
60187	Mobil DTE 103	60291	Mobil SHC 634
60188	Mobil DTE 105	60313	RL 668 B
60190	Mobil VAC Pump Oil	60314	RL 668 C
60199	Mobil Sterntube Lubr	60315	RL 668 D
60201	Mobil PyroGard D	60575	Mobil Fluid 350
60222	Soc Dust Stop Lubr	60653	Mobil Geo 454
60243	Mobil Gard 393	60666	Mobil Gard 300
60244	Mobil Gard 493	60680	Mobil Gard 570
60245	Mobil Gard 593	60696	ETNA 24
60247	Mobil Gard 312	60698	ETNA 26
60248	Mobil Gard 412	60702	Mobil Mist Lube 27
60249	Mobil Gard 512	61013	Mobil Compound BB
60255	Mobil Gard 324	61015	Mobil Compound DD
60256	Mobil Gard 424	61017	Mobil Compound FF



PRODUCT CODE	PRODUCT NAME	PRODUCT CODE	PRODUCT NAME
60262	Mobil DTE 24	61085	Mobil Gear 626
60263	Mobil DTE 25	61086	Mobil Gear 629
60264	Mobil DTE 26	61087	Mobil Gear 630
60266	Mobil DTE 11	61088	Mobil Gear 632
60268	Mobil DTE 13	61089	Mobil Gear 633
61090	Mobil Gear 634	64083	Mobilplex 48
61091	Mobil Gear 636	64085	Mobilplex 46
61100	Mobil Tac A	64127	Mobilux EP 2
61104	Mobil Tac B	64128	Mobilux EP 1
61121	Mobil Tac MM	64129	Mobilux EP 0
62054	AM BREX 150	64220	Mobil Grease 67-1
62153	Flowrex 100	64303	Curve Grease 1105
62164	Flowrex 200	66021	MobilMet S 122
62179	Flowrex 500	66024	MobilMet S 125
62184	Rubrex 100	66100	MobilMet C 250
62188	Rubrex 200	66126	MobilMet 308
64010	Mobilux 1	66200	MobilMet 33
64011	Mobilux 2	66201	MobilMet 34
64017	MobilTemp 1	66202	MobilMet 35
64019	MobilTemp 78	66203	MobilMet 37
64022	SOVAREX Grease L0	66207	MobilMet 406
64023	SOVAREX Grease L1	66301	MobilMet 24
64041	GARGOYLE Grease B2	66303	MobilMet 26



PRODUCT CODE	PRODUCT NAME	PRODUCT CODE	PRODUCT NAME
64048	SOVAREX Grease 1 W	66304	MobilMet 27
64059	Mobil Grease Mc Heavy	66305	MobilMet 29
64063	Mobil Grease Grph 3	66307	MobilMet 45
64071	Mobil Block Grease Med	66310	MobilMet 715
64075	Mobilplex EP 0	66610	Mobil Prosol 44
64076	Mobilplex EP 1	66618	Mobil Prosol 172
64077	Mobilplex EP 2	66624	Mobil Prosol 174
64081	Mobilplex EP 47		
66701	Mobil ARMA 244		
66702	Mobil ARMA 245		
66705	Mobil ARMA 355		
66716	Mobil ARMA 777		
66721	Mobil ARMA 798		
66725	Mobil Tank Coating		
66802	Mobil Therm 2		
67122	VACMUL 03 D		
67135	VACMUL 3 D		
67175	VACMUL 2105		
67319	SULTRAN 176 M		
67600	SOLVAC R-35		
67601	SOLVAC R-35 G		
68030	Mobil Therm Light		
68035	Mobil Sol A		
6051	Mobil Therm 603		

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LUBRICATION INSTRUCTION

CODE 01

Check Hydraulic Reservoir

1. Determine if indicated reservoir is operating satisfactorily.
2. Clean fill cap and oil level gauge area.
3. Check lubricant level and add designated oil as required.
4. Check for leaks or anything unusual which may result in damage to the machine.
5. Replace oil fill cap securely.
6. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 02

Check Chain Reservoir

1. Inspect chain reservoir for leaks, broken seals, or general damage.
2. Clean, fill and level gauge area.
3. Check lubricant level and add designated oil as required.
4. Replace fill cap securely.
5. Check chain for possible loose or broken links.
6. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 03

Check Clutch Case

1. Determine if indicated case is operating satisfactorily.
2. Clean, fill and level gauge area.
3. Check lubricant level and add designated oil as required.
4. Replace fill cap securely.
5. Check for leaks or anything unusual which may result in damage to the unit.
6. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 04

Check Bearing Reservoir

1. Inspect bearing housing for leaks.
2. Check bearing temperature to insure bearing not running too hot.
3. Clean, fill and level gauge area.
4. Check lubricant level and add designated oil as required.
5. Replace fill cap securely.
6. Check for anything unusual which may result in damage to the unit.
7. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 05

Check Gear Case

1. Determine if indicated gear case is operating satisfactorily.
2. Clean, fill and level gauge area.
3. Check lubricant level and add designated oil as required.
4. Replace fill cap securely.
5. Check for leaks or anything unusual which may result in damage to the unit.
6. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 06

Drain, Clean and Refill Hydraulic Reservoir

1. Inspect Reservoir thoroughly for any leaks, broken seals, or general damage.
2. Make certain machine is not operating before attempt is made to drain reservoirs.
3. Clean outside of reservoir around the fill point before draining the oil.
4. Drain oil from reservoir. Inspect oil which is being drained for unusual color or unusual contamination. If oil contains a high percentage of metallic particles, it should be flushed.
5. In flushing the reservoir, use clean oil of the type and quantity used in normal operation. Start the machine so that flushing oil will dislodge contamination in the case. After a reasonable period of running, again drain the reservoir.
6. When the reservoir has been thoroughly drained and/or flushed and drained, replace drain plug, refill with recommended lubricant, and replace filler cap or plug.
7. Report any unusual situations which could lead to the malfunctioning of the unit or possible downtime to your supervisor.

LUBRICATION INSTRUCTIONS

CODE 07

Drain, Clean and Refill Chain Reservoir

1. Inspect chain case thoroughly for any leaks, broken seals, general damage.
2. Make certain chain case is not operative before attempt to drain it is made.
3. Clean outside of chain case around the drain and fill points before draining oil.
4. Drain oil from chain case. Inspect oil which is being drained for unusual color or unusual contamination. If case and oil contains an unusually high percentage of metallic particles, it should be flushed.
5. In flushing the case, use clean oil of the type normally used in its operation. Use the same quantity of oil normally used in its operation. Start the gear case so that the oil will dislodge contamination in the case. After a reasonable period of running, again drain the case.
6. When case has been thoroughly drained and/or flushed and drained, replace drain plug, refill with recommended lubricant, and replace filler cap or plug.
7. Report any unusual situations which could lead to the malfunctioning of the unit or possible downtime to your supervisor.

LUBRICATION INSTRUCTIONS

CODE 08

Drain, Clean and Refill Clutch Case

1. Make certain unit on which clutch is functioning is not in operation before an attempt is made to drain it.
2. Clean outside of clutch case around the drain and fill points before draining oil.
3. Drain oil from clutch reservoir.
4. If clutch is to be flushed, a solvent material such as kerosene is suggested. Case should be filled to normal oil level and clutch actuated several times to flush out accumulated deposits. Unit to which clutch is attached should be run unloaded a few minutes to make certain plates and/or facings are covered and flushed. Drain cleaning fluids from clutch compartment.
5. If case has no pockets to retain flushing solvent, fill to correct level with recommended lubricant.
6. If case does contain pockets which will retain some solvent which will materially reduce the viscosity of the refill lubricant, refill case to correct level, operate clutch for a few minutes, drain this change of oil and then refill with recommended oil for operation.
7. Report any unusual situations to your supervisor.

LUBRICATION INSTRUCTIONS

CODE 09

Drain, Clean and Refill Bearing Reservoir

1. Inspect bearing housing for leaks.
2. Make certain unit is stopped before working on it.
3. Clean outside of bearing housing around the drain and fill points before draining.
4. Drain oil reservoir. If oil is relatively clean and does not contain metallic particles or water, refill with the clean recommended oil to the desired level.
5. If oil is badly contaminated, call this to the attention of your supervisor.



LUBRICATION INSTRUCTIONS

CODE 10

Drain, Clean and Refill Gear Case

1. Inspect drive case thoroughly for any leaks, broken seals, or general seals, or general damage.
2. Make certain drive case is not operative before attempt is made to drain it.
3. Clean outside of drive case around the drain and fill points before draining oil.
4. Drain oil from drive case. Inspect oil which is being drained for unusual color or unusual contamination. If case and oil contains an unusually high percentage of metallic particles, or is extremely dirty, do Step 5; IF NOT ... Continue on with Step 6.
5. In flushing the case, use clean oil of the type normally used in its operation. Start the gear case so that the oil will dislodge contamination in the case. After a reasonable period of running, again drain the case.
6. When case has been thoroughly drained and/or flushed and drained, replace drain plug, refill with recommended lubricant and replace filler cap or plug.
7. Report any unusual situations which could lead to the malfunctioning of the unit or possible downtime to your supervisor.

LUBRICATION INSTRUCTIONS

CODE 11

Grease Anti-Friction Bearings

1. Wipe off grease fittings with a clean cloth.
2. Apply grease with gun. If bearing is not in an enclosed housing, apply sufficient grease to flush bearing. Wipe off excess grease with a clean cloth.
3. If bearing is in an enclosed housing which contains a grease fitting and a drain plug, remove the drain plug and purge the bearing until new grease comes out of the drain plug. With plug removed, run equipment for about 15 minutes or until grease stops coming out. Wipe off excess grease.
4. Replace the drain plug.

LUBRICATION INSTRUCTION

CODE 12

Grease Motor Bearing

1. Electric motors can be lubricated when operating or when shut down. If they are lubricated when operating, extreme care should be observed to make certain oilerman is not caught in any motor attachments.
2. Whether the electric motor is operating or shut down, it can be lubricated with a grease gun in the same manner.
3. Wipe dust from grease fittings with a clean rag.

MOTORS WITH MORE THAN ONE FITTING AND/OR PLUG

4. If bearing housing has a grease fitting and a pipe plug opening remove the pipe plug and apply grease through the fitting until new grease appears at the pipe plug opening.
5. Do the same with the bearing on the opposite side.
6. With pipe plugs removed, start motor, permitting it to run for about one-half hour so that bearing can relieve itself of any pressures brought about by the greasing.

MOTORS WITH ONE FITTING/PLUG

7. If housing does not have a pipe plug, after sufficient grease has been pumped into it through the grease fitting, remove the grease fitting, cover it with a rag, start the motor, and permit it to run one-half hour to relieve itself.
8. Replace grease fitting or pipe plug.

NOTE: If only plugs, are present, remove one and install a grease fitting in its place.

LUBRICATION INSTRUCTIONCODE 13Hand Pack Anti-Friction Bearing

1. Make certain unit of which bearing is a part is not operating.
2. Wipe dust from bearing housing.
3. Remove all or part of bearing housing to expose bearing
4. Remove old grease from housing. If there are areas where grease has hardened and is inaccessible, soften through the addition of a light viscosity oil (Mobil DTE Oil 24).
5. If bearing must be removed and cleaned, flush in cleaning solvent. Do not dry bearing with air hose. Coat bearing with a light oil such as a Mobil DTE Oil 24.
6. Replace bearing and pack housing from one-third to one-half full of grease.
7. Replace bearing housing.

LUBRICATION INSTRUCTIONCODE 14Fill and Turn Grease Cups

1. If grease cup is in an area where servicing it while equipment is running would be a hazard, take whatever precautions are necessary to insure safety.
2. Wipe dust from grease cup and area immediately surrounding it.
3. Remove cup, cover cup base with a clean rag, fill cup, remove rag and replace cup.
4. Turn cup to apply sufficient grease to meet the requirements of the unit being serviced.

LUBRICATION INSTRUCTION

CODE 15

Grease Fittings

1. Gun greasing can normally be done while unit is in operation. If unit is operating, extreme care should be observed so that oilerman is not caught in the mechanism.
2. Wipe grease fittings free of dust with a clean rag.
3. If the operation is particularly dusty, it is desirable if grease can be used as a flush, seal, and lubricant. In applying grease, use in this manner.
4. Wipe off excess grease from fitting and bearing area.
5. In the case where sealed housing bearings are greased, remove fitting or relief plug. Run unit about 15 minutes (to allow expansion of grease). Replace plug/fitting and wipe excess grease from area.

NOTE: Use Code 11 for greasing antifriction bearings.

LUBRICATION INSTRUCTION

CODE 16

Grease Coupling

All couplings in your plant are grease lubricated through a grease fitting. When called on to perform this function, observe these steps:

1. Wipe off the grease fitting to remove dirt before grease is applied to make certain dirt is not forced into the coupling with the grease.
2. Couplings are of all sizes. The amount of grease required varies from one size to another. Consult manufacturer's recommendations for amount of grease to be applied to each side.
3. Wipe off excessive grease.
4. Report to your supervisor on any part of this unit that is unsafe or requires repairs or parts replacement to prevent unscheduled failure or undue wear.

LUBRICATION INSTRUCTION

CODE 17

Fill Central Grease or Oil Lubricator

When called on to perform this function, the unit to be serviced should be:

1. Cleaned on the outside and particularly in the area of the grease fitting, grease cup, reservoir cover, etc., to make certain that contamination will not enter with the application th the lubricant.
2. Determine requirement of that section of the unit the code calls for and perform that function, making certain not to over-grease or over-fill reservoir or cavity involved.
3. Should oil be spilled or a glob of grease be permitted to hang on the fitting, be sure to wipe it before passing on to the next job.
4. Report to your supervisor on any part of this unit that is unsafe, requires repairs or parts replacements to prevent unscheduled failure or undue wear.

LUBRICATION INSTRUCTION

CODE 18

Fill Airline Oiler

1. Shut off air to the machine.
2. Drain water in water trap glass.
3. Clean and remove filler plug making sure dirt does not enter reservoir.
4. Fill bottle reservoir to prescribed level.
5. Replace oil plug and turn on air.
6. If unit does not require any oil, check to make sure airline oiler is operating properly. If it is not, report it to your supervisor.

LUBRICATION INSTRUCTION

CODE 19

Service Manzel Oil Lubricator

Manzel Mode 25 Lubricator. It is extremely important to keep this lubricator clean. To do this.

1. Remove each pump as follows:
  - a. Stop the lubricator.
  - b. Remove the discharge line connections and the pump mounting screws.
  - c. Loosen the adjacent pump mounting screws.
  - d. Lift out front end of pump (end with feed regulator screw) pulling it forward and upward at the same time. This will allow the yoke or crosshead to clear the eccentrics and the pump can be lifted out.
  - e. Before replacing each pump, position the yoke down as far as possible and then reverse the above procedure. Before replacing, follow the cleaning process set forth in the following:
2. Clean each pump unit and the reservoir by dipping and brushing in cleaning solvent.
3. Clean all lubrication tubing and check valves thoroughly at the same time.
4. Recharge lubricator and bleed lubrication lines at terminal check valve to assure full lubrication before putting equipment back into operation.
5. Replace pump in accordance with 1e, 1c, 1b and 1a, above. Fill reservoir with recommended lubricant.
6. When lubricator is started up, check feeds to make certain they are at satisfactory rates.



LUBRICATION INSTRUCTION

CODE 20

Service Lincoln Grease or Oil Lubricator

When required to check out the Lincoln Lubricator, proceed as follows:

1. Check the pump:
  - a. Disconnect the pump at the outlet and put a pressure gauge in the pump inlet.
  - b. Apply a known air pressure to the pump.
  - c. Pump should stall and pressure should build up equal to 50 times inlet air pressure.
  - d. If this occurs, pump is operating satisfactorily.
  - e. If pump does not reach stalling pressure but continues to cycle, check the foot valve and packings for air loss.
2. Check time clock.
  - a. Check time accuracy.
  - b. Check alarm clock, making certain it triggers alarm system.
3. Main Lubricating line.
  - a. Place gauge line.
  - b. Cycle System.
  - c. If pressure switch cuts out at 2,500 pounds, the system is operating satisfactorily.
4. Inspect all supply lines. If mashed or broken, repair or replace them.
5. Inspect the injectors for leakage at the packings. If leakage occurs, replace packings.
6. Inspect injectors for operation by checking the movement of the indicator stems.



LUBRICATION INSTRUCTION

CODE 21

Service Farval Grease Lubricator

When requested to check out Farval Lubricator, proceed as follows:

1. Check pressure gauge on lubrication reservoir. Be certain pressure reaches psi.
2. Check pump pressures on each lubrication line. Make certain pressures are maintained at psi during operation.
3. Check all measuring valves to make certain they are operating. If a positive check is required, uncouple inlet lines and test. If grease is reaching measuring valves, reconnect inlet lines and uncouple discharge lines. If grease passes through measuring valve in satisfactory amounts, reconnect and go on to next ones following above procedure. Before uncoupling lines, make certain all dust and dirt is removed.
4. When checking metering valves check all piping to be sure it is not crushed or broken. If piping connections are loose, tighten them. If piping connections are broken, replace them. Any crushed or broken parts should be replaced.
5. Remove the grease filler screen assembly and clean thoroughly. Make certain all dirt and dust has been removed from outside of unit before this is removed.
6. Check dial pins of timer and make sure they are tight. Also, tighten dial and thumb nut.

LUBRICATION INSTRUCTION

CODE 22

Drain, Clean and Refill Oil Type Air Filter

1. Be sure that unit on which filter is mounted is not operating.
2. Remove filter and disassemble.
3. Pour or drain oil from reservoir.
4. Clean reservoir as well as outside of filter with a cleaning solvent. Dry out with lint-free cloth preferably. Use air hose only as a last resort.
5. If filter contains a mesh screen as part of the filtering mechanism, rinse screen out in a solvent. Blow solvent out of screen in a well-ventilated area. If filter manufacturer recommends that the screen be impregnated with oil before it is reassembled, use same oil recommended for filter reservoir.
6. Refill filter reservoir with recommended oil, reassemble the filter unit, and relocate in original position.

LUBRICATION INSTRUCTION

CODE 23

Change Filter Element or Clean Permanent Type Oil Filter

1. If filter housing is the exposed type, inspect it for leaks, broken seals or general damage.
2. Make certain unit which is serviced by filter is inoperative before starting work.
3. Clean outside of filter housing so that dirt will not be drawn into circulation system when filter or housing is removed.
4. If filter is of replaceable cartridge type, remove old cartridge and replace with new, making certain all clips and/or gaskets are in place before housing is replaced.
5. If filter is of the metallic mesh type, wash in safety solvent. When thoroughly cleaned, wipe dry with lint-free cloth, or blow dry with air hose, make certain all clips and/or gaskets are in place before housing is replaced.
6. Replace housing and fasten securely in place.
7. Start up unit serviced by filter and observe it closely for leaks or improper reinstallation that would contribute to the malfunctioning of the machine.

LUBRICATION INSTRUCTION

CODE 24

Clean Air Filter - Dry Type

1. Wipe filter free of dust with a clean rag.
2. Remove filter, covering housing opening with a clean rag.
3. Blow dust from filter with an air hose.
4. If this does not clean sufficiently, flush filter in safety solvent. Blow safety solvent from filter in a well-ventilated area with an air hose.
5. Replace filter.

LUBRICATION INSTRUCTION

CODE 25

Keep Oil Cups Full

1. If the oil cup is in an area where servicing it while equipment is running would be a hazard, take whatever precautions are necessary to insure safety.
2. Wipe oil cup free of dust with a clean rag.
3. Fill oil cup with recommended lubricant.

LUBRICATION INSTRUCTIONS

CODE 26

Apply Hand Oil

1. Wipe dust from oil hole or oil cup.
2. Apply hand oil recommended.

LUBRICATION INSTRUCTIONS

CODE 27

Check Cooling System (Automotive)

1. Release pressure on radiator cap.
2. Check level of coolant.
3. Check for leaks with unit running and bubbles in radiator.
4. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTIONS

CODE 28

Change Cooling System (Automotive)

1. Release pressure on radiator cap.
2. Open drain valve and/or compressor block plug and drain out anti-freeze solution.
3. Flush, cooling with water. If this is not considered adequate, use a fluid like Mobil Radiator Flush to thoroughly clean it, following the instructions accompanying it.
4. Refill with a permanent anti-freeze solution, such as Mobil Permazone, to meet temperature requirements.

LUBRICATION INSTRUCTIONS

CODE 29

Clean and Brush Oil on Wire Rope

1. Wire rope involved is an elevator cable.
2. Remove dirt which has become impacted in strands of the cable with a wire brush. Run short lengths of cable over elevator top sheave while brushing.
3. Apply recommended lubricant to cable via a swab or bristle type brush.

LUBRICATION INSTRUCTION

CODE 30

Clean Magnetic Oil Trap

1. Shut down oil circulation system in which trap is located.
2. Remove trap magnet. Remove metallic particles from it. Wash it with safety solvent.
3. Flush magnet housing with lubricant used in circulation system.
4. Replace trap magnet.
5. Start circulation system and check it for leakage in magnetic trap area.

LUBRICATION INSTRUCTION

CODE 31

Check Crankcase

1. Make certain engine is not operating before starting check.
2. Check level in crankcase and add designated oil as required.
3. Check for leaks or anything unusual which may cause damage to engine.
4. Report unusual occurrences to your supervisor.

LUBRICATION INSTRUCTION

CODE 32

Change Crankcase

1. Make certain engine is not operating before you start to service it.
2. Remove drain plug from crankcase and drain out oil. Oil should be allowed to head up before draining.
3. Refill crankcase with recommended oil to proper level.

LUBRICATION INSTRUCTIONS

CODE 33

Lubricate Open Gears

1. If gear has a guard or shroud protector around it, remove enough of either of these so that you can get to gear in the area of mesh of the gear and pinion.
2. Using extreme caution, lubricate the gear while it is in operation just ahead of the mesh of the gear and pinion. By applying the lubricant here you will get the best distribution across the gear teeth with the least mess.
3. Observe base of gear teeth each time lubricant is applied. If lubricant is continuing to build up here, gear should be cleaned during a major shut-down. If gear is not cleaned, it will exert abnormal pressures on gear and pinion.
4. Replace guard or shroud protector.

LUBRICATION INSTRUCTION

CODE 34

Check Bijur System

1. Check oil level in reservoir and add oil as required.
2. Check for broken or pinched lines and for inoperative distribution blocks.
3. Check for leaks and anything unusual which may cause the machine to be damaged.
4. Report any unusual conditions to your supervisor.

LUBRICATION INSTRUCTION

CODE 35

Drain, Clean and Refill Bijur Systems

1. Disconnect pump by removing four cover screws.
2. Remove bottom of pump assembly - unscrew and remove old felt.
3. Install new felt.
4. Remove oil from pump reservoir.
5. Clean reservoir with Visi-Flusher and wipe dry with lint-free cloth.
6. Replace pump assembly and attach cover.
7. Refill with proper oil. Check machine card for oil to use.
8. Cycle pump, by hand or run machine to determine delivery to all points.
9. If certain points do not receive oil, remove lines and connections.
10. Blow out lines to clear or replace.
11. Replace felt filters in joints and reassemble.
12. Again determine if all points receive oil.
13. Be sure Bijur pump cam setting is as per instructions on card.



LUBRICATION INSTRUCTIONS

CODE 36

Drain, Clean and Refill Airline Oilers

1. Shut down machine and lock switch.
2. Close valve to air supply.
3. Open drain in water trap to bleed air out of system.
4. Remove oil reservoir, clean, replace and fill with proper lubricant.
5. Open air supply and check pressure. Make adjustment if necessary by turning handle on pressure regulator.
6. Check all points for proper delivery of lubricant.
7. Wipe off all excess oil.



LUBRICATION INSTRUCTION

CODE 37

SERVICE MOTOR OPERATED VALVES

Main Gear Case:

1. Clean off gear case housing, zerk fitting, and geared limit switch cover.
- 1A. When using a grease of a different soap base than that already in gear case, existing grease must be completely flushed out (follow Flush Procedure A, below). Then continue with Step #5.
2. Remove fill or drain plugs from main gear case to inspect grease, and check level.
3. Remove a small amount of grease (main gear case) and inspect for dirt, water, or other foreign material. If any is present, flush out gear case (follow Flush Procedure A, below), and repack with fresh grease.
4. Inspect the grease sample (main gear case) for consistency. It should be slightly fluid, and not stiffer than a standard NLGI-1 grade consistency. Otherwise, flushout (follow Flush Procedure A, below), and repack with fresh grease.
5. Fill or add grease to main gear case to replenish to proper level. Sufficient grease should be present to insure that "worm" is totally immersed.
6. Pump sufficient grese through zerk fitting to lubricate stem bearing.
7. Replace all fill and drain plugs.

Geared Limit Switch Box:

8. Remove plate from geared limit switch box, and inspect grease. If any water, dirt or other foreign material is present, flush out (follow Flush Procedure B, below) and repack with fresh grease.
9. Check the consistency of the in use (geared limit switch box) grease. It should feel soft to the touch, approximating a standard NLGI-2 consistency or less. If harder, flush out (follow Flush Procedure B, below) and repack with fresh grease.
10. When repacking or adding grease (geared limit switch box), use about a one-quarter pack (enough grease to cover gears and space behind them).

Flushing Procedures:

- A. Main Gear Case: Use a commercial degreaser/cleaner which is non-corrosive and does not affect seal material such as Buna-N or Viton (i.e., kerosene). Flush case several times, until all residue has been removed. Thoroughly drain case.
- B. Geared Limit Switch: Manually wipe out existing grease and residue. Kerosene may be used, applied by brush or swab, to aid removal. After, wipe all gears and surfaces dry.

