

**DIRECTORATE GENERAL BORDER ROADS**

**GENERAL MAINTANENCE INSTRUCTION NO. 162**

**ON**

**STANDARDISATION OF LUBRICANTS IN RESPECT OF VEH / EQPT**

**ON THE PRODUCT OF INDIAN OIL CORPORATION**

**INTRUDUCTION**

1. BRO is holding large number of Veh/Eqpt of different makes ant type, both imported and indeginous.
2. There are large number of lubricants manufactures by various firms, which are correctly being used by the projects in the vehicle/ equipments. Holding of various type of lubricants manufactured by different firm, present difficulties of storage, preservation, identification and accounting by the project.
3. In order to overcome the above difficulties and to reduce the varieties of lubrication oil held, the lubricants required for vehicle/ equipment of this organisation have been standarised on the products manufactured by Indian Oil Corporation.
4. Lately many new oil have been introduced by various manufactures which are included in this GMI.
5. Conversion table from Fahrenheit to Centigrade by various manufacturer below for ready reference :-

(a) Fahrenheit to Centigrade = ( F-32 ) x  $\frac{5}{8}$

(b) Centigrade to Fahrenheit = ( C x  $\frac{8}{5}$  ) + 32

**ACTION**

6. The lubricants to be used in vehicles and equipment at various temperature ranges have been standarised and are attached to this instruction as follows :-
  - (a) Construction equipment - Appendix "A"
  - (b) "B" Vehicle - Appendix "B".
7. The various SAE Grades of lubricants to be used for various temperature ranges have also been indicated.
8. The project will demand the lubricants as recommended in this instruction, for use of veh / equipment held in the Organisation for their future requirements.
9. All previous instructions issued on the subject is hereby cancelled.

Appendix "A" Contd

S/ No	Assembly	(-) 10 deg F to 30 deg F (-) 25 deg C to 0 deg C	SAE Grade	30 deg F to 60 deg F 0 deg C to 17 deg C	SAE Grade	Above 60 deg F Above 17 deg C	SAE Grade
<b><u>Nb 2 : TIGER TRACTOR</u></b>							
a)	Engine & Air cleaner	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
b)	Hydarulic Tank	-	All	Temperature Servo	Ultra 10 SAE10W	-	-
c)	Convertor	-	All	Temperature Servo	Ultra 10 SAE10W	-	-
d)	Transmission	-	All	Temperature Servo	Gear HP90	-	-
e)	Gears	-	All	Temperature Servo	Gear HP90	-	-
<b><u>Nb 3 : D50 A15 Tractor</u></b>							
a)	Engine	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super-30	SAE 30
b)	Hydarulic system dozer group	-	All	Temperature Servo	Ultra 10	-	-
c)	Main clutch case, Transmission case steering clutch case & coil spring case	Servo Ultra 10	SAE 10W	Servo Super 20	SAE 20	Servo Ultra 10	SAE 10W
d)	Greasing Pint	-	All	Temperature Servo	Grease MP	-	-

Appendix "A" Contd

S/ No	Assembly	(-) 10 deg F to 30 deg F (-) 25 deg C to 0 deg C	SAE Grade	30 deg F to 60 deg F 0 deg C to 17 deg C	SAE Grade	Above 60 deg F Above 17 deg C	SAE Grade
<b>Nb 4 : D80 A8, D80 A-12, D-120 A-13</b>							
a)	Engine	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
b)	Hydraulic system Dozer group	-	All	Temperature Servo	Ultra 18	-	-
c)	Main clutch case, Transmission case steering clutch case , steering clutch case & coil spring case	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
d)	PCU Gear Case	(-) 4 deg F to 90 deg F above 90 deg F	-	Servo HP 90 Servo gear HP-140	-	-	-

## Appendix "A" Contd

S/ No	Assembly	Blow (-) deg C i.e 14 deg F	SAE Grade	From (-) 10 deg C to 30 deg C i.e. 14 deg F to 86 deg F	SAE Grade	Above 30 deg C i.e. 86 deg F	SAE Grade
<b><u>Nb 5: KOMATSU GD-37 MOTOR GRADER</u></b>							
a)	Engine	Servo Ultra 10	SAE 10W	Servo ultra 30	SAE30	Servo Ultra 40	SAE 40
b)	Gear Box	Servo HP80	SAE 80	Servo Gear HP90	SAE 90	Servo gear HP 140	SAE 140
c)	Hydraulic Oil	Servo Ultra 5	SAE 5W	Servo Ultra 10	SAE 10W	Servo Ultra 20	SAE 20
d)	Grease	-	All	Temperature servo grease MP	-	-	-

STONE CRUSHERS

S/ No	Assembly	0 deg F to 30 deg F (-) 18 deg C to 0 deg C	SAE Grade	30 deg F to 80 deg F 0 deg C to 30 deg C	SAE Grade	Above 80 deg F Above 30 deg C	SAE Grade
<u>Nb 6: STONE CRUSHER / GRANULATOR BAXTER MARSHAL</u>							
a)	Engine lubrication ( Perkins P-6)	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
<u>No. 7 PRABHAT STONE CRUSHER</u>							
b))	Engins Assy ( Perkins) lubrication	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
c)	Differential	-	All	Temperature servo gear 90	-	-	-
d)	Steering Gear Box	-	All	Temperature servo gear 90	-	-	-
<u>No. 8 : STONE CRUSHER AGARWALA</u>							
a)	Engine lubrication ( Perkins P-6)	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
<u>No.9: STONE CRUSHER SISCO</u>							
a)	Engine assy ( Lister) lubrication	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-

## Appendix "A" Contd

S/ No	Assembly	0 deg F to 30 deg F (-) 18 deg C to 0 deg C	SAE Grade	30 deg F to 80 deg F 0 deg C to 30 deg C	SAE Grade	Above 80 deg F Above 30 deg C	SAE Grade
<b><u>Nb 10: ATLAS COPCO 160 CFM AIR COMPRESSOR</u></b>							
a)	Engine crank case ( Perkins ) ( Lubrication )	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
b)	Air comp crank case lubrication	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
<b><u>No. 11: KIRLOSKAR BROOM MADE 120 CFM COMPRESSOR</u></b>							
a)	Engine crank case ( Perkins ) ( Lubrication )	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
b)	Valve & Bearings	-	-	Servo System 311	-	-	-
<b><u>No. 12 KIRLOSKAR BROOM MADE 210 CFM COMPRESSOR</u></b>							
a)	Engine crank case ( Lelynd UE 250 ) Lubrication	Servo Super 20	--	Servo super 30		Servo Super 40	
b)	Valve & Bearings	-	-	Servo System 311	-	-	-

Appendix "A" Contd

S/ No	Assembly	0 deg F to 30 deg F (-) 18 deg C to 0 deg C	SAE Grade	30 deg F to 80 deg F 0 deg C to 30 deg C	SAE Grade	Above 80 deg F Above 30 deg C	SAE Grade
<b><u>Nb 13: KIRLOSKAR BROOM MADE 270 CFM COMPRESSOR</u></b>							
a)	Engine crank case ( P-6 35A engine ) ( Lubrication )	Servo Super 10	SAE 10W	Servo Super 20	SAE 20	Servo Super 30	SAE 30
b)	Air cyl / Bearings	-	-	Servo system 317	-	-	-
<b><u>No. 14: AIR COMPRESSOR INGERSOL RAND 365 CFM</u></b>							
		<u>Over 30 deg F</u>		<u>0 deg F to 30 deg F</u>		<u>Blow 0 deg</u>	
a)	Engine crank case ( GM Series ) ( Lubrication )	Servo Super 30	-	Servo Super 20	-	Servo Super 10	-
b)	Valve & Bearings lubrication	-	-	Servo System 311	-	-	-
<b><u>No. 15 AIR COMPRESSOR INGERSOL RAND 600 CFM</u></b>							
a)	Engine crank case ( GM Series ) ( Lubrication )	Servo Super 30	--	Servo super 20		Servo Super 10	
B)	Air cylinder lubrication	-	-	Servo system 317	-	-	-
<b><u>No. 16 AIR COMPRESSOR INGERSOL RAND 250 CFM</u></b>							
a)	Engine crank case ( GM Series ) ( Lubrication )	Servo Super 30	--	Servo super 20		Servo Super 10	
B)	Air cylinder lubrication	-	-	Servo system 311	-	-	-

Appendix "A" Contd

S/ No	Assembly	Above 90 deg F Above 36 deg C	SAE Grade	30 deg F to 90 deg F 0 deg C to 36 deg C	SAE Grade	0 deg F to 30 deg F (-) 18 deg C to 0 deg C	SAE Grade
<u>Nb 17: GPT 365 CFM COMPRESSOR</u>							
a)	Engine (Lelynd UE 600 Engine)	Servo Super 40	-	Servo Super 30	-	Servo Super 20	-
b)	Compressor	-	-	Servo system 317	-	-	-
<u>No. 18: GPT 365 CFM RO 2 COMPRESSOR</u>							
a)	Engine ( Cummin NHC 4 B-1 Engine )	Servo Super 30	-	Servo Super 20	-	Servo Super 10	-
b)	Compressor	-	-	Servo system T-57	-	-	-
<u>No. 19 : KGK 250 CFM COMPRESSOR</u>							
		<u>0 deg F to 30 deg F</u>	--	<u>30 deg F to 80 deg F</u>		<u>Above 80 deg F</u>	
a)	Engine ( Perkins P-6 354 )	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
<u>No. 20 : KGK 365 CFM COMPRESSOR</u>							
		Above 90 deg F <u>Above 36 deg C</u>	-	60 deg F to 90 deg F <u>17 deg C to 36 deg C</u>		Below 60 deg F <u>Below 17 deg C</u>	
a)	Engine ( Torpedo )	Servo Super -40		Servo Super 30	-	Servo Super 20	-
<u>No. 21 : MAW INDIA 160 CFM COMPRESSOR</u>							
		Above 90 deg F <u>Above 36 deg C</u>	-	60 deg 90 deg F <u>17 deg C to 36 deg C</u>		Below 60 deg F <u>Below 17 deg C</u>	
a)	Engine ( Torpedo )	Servo Super -40		Servo Super 30	-	Servo Super 20	-



Appendix "A" Contd

S/ No	Assembly	0 deg F to 30 deg F (-) 18 deg C to 0 deg C	SAE Grade	30 deg F to 80 deg F 0 deg C to 30 deg C	SAE Grade	Above 80 deg F Above 30 deg C	SAE Grade
<u>Nb 22: ROAD ROOLER</u>							
a)	Engine ( Perkins ) P-4	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
<u>No. 14: AIR COMPRESSOR INGERSOL RAND 365 CFM</u>							
a)	Engine ( Perkins P-4) Air filter	Servo Super 10	-	Servo Super 20	-	Servo Super 30	-
b)	Gear Box	Above 90 deg F Above 36 deg C	-	Servo Gear HP 140			
		Below 90 deg F Below 36 deg C	-	Servo gear HP-90	-	-	-
<u>No. 24 ROAD ROLLER BM</u>		0 deg F to 20 deg F (-) 18 deg C to (-)25 deg C	-	20 deg F to 90 deg F (-) 25 deg C to 36 deg C	-	Above 90 deg F Above 36 deg C	
a)	Engine ( Fordson )	Servo Super 10	-	Servo Super 20	-	Servo Super 30	

LUBRICATION CHART FOR 'B' VEHICLES  
STANDARISED ON IOC PRODUCTS

No. 1 : TAT DIESEL VEHICLES ON 312, 1210D, LA 312, 1210S, 1210 SE MODELS

S/ No	Assembly	<u>IOC Lubrication Recommended</u>		Below 20 deg C ( 64 deg F )
		Above 20 deg C ( 64 deg F)		
a.	Engine	Servo Super 30		Servo super 20
b.	Air filter oil bath	----- Servo Super 30 All Temperature		-----
c.	FIP	----- Servo Super 30 All Temperature		-----
d.	Gear Box	----- Servo gear super 90 all temperature		-----
e.	Rear axle	----- Servo gear super 90 all temperature		-----
f.	Hydarulic Tipper	----- Servo system 311 all temperature		-----
<u>No.2 HIDUSTAN AMBASSADOR</u>		Above 0 deg C Above 32 deg F	0 deg C to (-) 12 deg C 32 deg F to 10 deg F	Below (-) 12 deg C 10.4 deg F
a.	Engine	Servo Super 30	Servo Super 20	Servo Super 10
b.	Gear Box	Servo Gear HP 90	Servo gear HP 90	Servo gear HP 80
c.	Brake system	----- Hydraulic Brake Brake fluid all temperature -----		
d.	Whhek hubs, fan bearings & chassis greasing nipples & springs	----- Servo grease MP all Temperature -----		

S/ No	Assembly	Above 32 deg C ( 83 deg F )	32 deg C to (-) 12 deg C ( 83 deg F to 13 deg F )	(-) 12 deg C to (-) 23 deg C ( 13 deg C to (-) 7 deg F
<u>No.3 HIDUSTAN TRUCK</u>				
a.	Engine	Servo Super 30	Servo Super 20	Servo Super 10
b.	Air Cleaner	- ----- Servo super 50 SAE 30 * all temperature -----		
c.	Gear Box 4 speed	Servo gear HP 90 Servo gear HP 80	Above 9 deg C Below 0 deg C	
d.	Gear Box 5 Speed	- ----- Servo gear HP 140 all temperature -----		
e.	<u>REAR AXLE</u>			
	i) First 16000 Kms	(a) Above 18 deg C – Servo gear HP - 90 (b) Below 18 deg C – Servo gear HP-80		
f.	Steering Gear Box	- ----- Servo gear HP 90 all temperature -----		
g.	Chassis grease points	- ----- Servo grade MP all temperature -----		

\* Service Bulletin HM Ltd No. 7 G.28 dated 31/12/80.

S/ No	Assembly	0 deg F to 30 deg F (- ) 18 deg C to 0 deg C	30 deg F to 80 deg F 0 deg C to 30 deg C	Above 80 deg F Above 30 deg C	
<u>No.4 DODGE / FARGO VEHICLES 109-P-6, 109 T P6, ( 354) VEHICLES</u>					
a.	Engine ( Perkins )	Servo Super 10	Servo Super 20	Servo Super 30	
b.	Gear Box	----- Servo gear HP 140 -----			
c.	Differential	----- Servo gear HP 140 -----			
d.	Steering Oil	----- Servo gear HP 140 -----			
		Above 90 deg F ( 36 deg C )	32 deg F to 90 deg F ( 0 deg C to 36 deg C )	10 deg F to 32 deg F (-) 12 deg C to 0 deg C	Below 10 deg F (-) 12 deg C
a.	Engine	Servo Super 30	Servo Super 20	Servo Super 20	Servo Super 10
b.	Gear box, Transmission & Transmission case	----- -----	Servo gear HP 90 summer Servo gear HP 80 winter	- -	-
c.	Front & rear Axle	-	Servo gear HP 90	-	
d.	Steering Gear	-	Servo gear HP 90	-	-
e.	Brake system	-	Hydarulic brake fluid	-	-

S/ No	Assembly	Above 90 deg F ( 36 deg C )	32 deg F to 90 deg F ( 0 deg C to 36 deg C )	10 deg F to 32 deg F (-) 12 deg C to 0 deg C	Below 10 deg F (-) 12 deg C
<u>No. 6 : NISSAN 1 TON</u>					
a.	Engine	Servo Engine 30	Servo Engine 20	Servo Engine 20	Servo Engine 10
b.	Transmission, Transmission case, Front & Rear Axle, Steering Gear	----- -----	Servo gear HP 90 ( Winter) Servo gear HP 140 ( Summer )	- -	-
<u>No.7: PREMIER 1 TON PETROL</u>		Above 0 deg C ( 32 deg F )	0 deg C to (-) 12 deg C ( 32 deg F to 10 deg F )	(-) 12 deg C to (-) 24 deg C ( 10 deg F to (-) 12 deg F )	Below (-) 24 deg 0 (-) 12 deg F )
a.	Engine	Servo Engine 30	Servo Engine 20	Servo Engine 10	Servo Engine 5
b.	Rear Axle	Servo Gear 140 Servo Gear 90	Above 32 deg C ( above 83 deg F) Below 32 deg C ( Below 83 deg F )	-	-
c.	Front Axle Steering gear	----- Servo gear 140 all temperature-----			
d.	Gear box	----- Servo gear 140 all temperature-----			
<u>No. 8 : ROYAL FIELD</u>					
a.	Engine	----- Servo engine 50 -----			
b.	Gear Box	----- Servo engine 50 -----			
c.	Greasing wheel bearing	----- Servo grease WB -----			

S/No.	Assembly	IOC Lubrication Recommended		
<u>No. 9 : MOGRUT MOBILE WORKSHOP LORRY</u>				
a.	Engine	Servo Super 30 ( Winter ) Servo Super 40 ( Summer )		
b.	Transmission Gear Box & Rear Axle	Servo gear HP 90 ( Winter ) Servo Gear HP 140 ( Summer )		
c.	Chassis	Servo Grease C.		
d.	Brake System	Hydraulic Brake Fluid		
e.	Wire ropes & open gears	Servo CDA 42-12		
		0 deg F to 30 deg F (- 18 deg C to 0 deg C	30 deg F to 80 deg F ( 0 deg C to 30 deg C )	Over 80 deg F ( 30 deg C )
<u>No. 10 ENGINE P3, P4, P6 / 354</u>				
a.	Engine	Servo super 10	Servo super 20	Servo super 30

----- END -----