

INDUSTRIAL LUBRICANTS



FOREWORD



IndianOil's **SERVO** enjoys the Superbrand status and is India's No. 1 Lubricant brand powered by highest technology, quality standards and a wider range. This has been made possible by continued technical support of our R&D Centre at Faridabad, which is one of its kind in this part of the world. The continued technological upgrade of existing formulations developed by our R&D have moved from mere indigenization in the early 1970s to global standards now. IndianOil has also been innovating in terms of improvements in energy, economy, environment and emission control through lubricant formulations and has set a high standard for itself.

IndianOil's endeavor has always been to provide the best possible technical solution and guidance on lubrication to our esteemed customers. Towards this end, an updated version of the Product Line booklet is presented here, which provides information on various Industrial Lubricants marketed by IndianOil and approved by Indian and Foreign OEMs.

We are happy to present this Product Line Booklet on Industrial Lubricants to our esteemed customers, which would serve as reference material. For more details, proper recommendation and application of these products, our customers are requested to avail the services of our experienced Technical Services Engineers who are posted in State Offices across the country and Head Office, Mumbai.

30th November, 2018.
Mumbai

A handwritten signature in black ink, appearing to read 'Gurmeet Singh'.

(GURMEET SINGH)
DIRECTOR (MARKETING)

INTRODUCTION



Customer Service leading to customer delight is the key to success in any business. This approach has earned us great confidence of our valued customers with IndianOil emerging as the India's largest commercial organization and building **SERVO**® as largest selling lubricant brand in the country.

The Industrial lubricants arena has undergone significant changes since the last edition of this booklet was published in 2014. The Industrial lubricants segment has seen rapid developments in recent years due to design modifications in the industrial machinery towards improvement in efficiency, reliability, productivity and safety. This has resulted in an ever-expanding matrix of applications, performance standards and formulations.

This Product Line booklet provides a comprehensive yet concise compilation of IndianOil's **SERVO**® industrial lubricants range as it exists today. The booklet also provides a brief outline on the specifications and applications of various industrial lubricating oils and greases marketed by IndianOil and approved by Indian and global OEMs operating in India. The booklet also provides information leading to the principles of correct lubrication to the users of **SERVO**® lubricants to achieve knowledge-based resource optimisation.

We take immense pleasure in presenting this Product Line booklet on Industrial Lubricants to our esteemed customers and hope that it would serve as a valuable & reference ready-reckoner.

30th November, 2018.
Mumbai

A handwritten signature in black ink that reads "Sanat Misra".

(Sanat Misra)

Chief General Manager I/C (Lubes)

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M.7434010606 | 9904166652 | 9099942070

website: www.servodealer.com | Email: uma@iocssi.com

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Turbine Oils				
Servoprime 15	13 – 16	100	160	Servoprime oils are premium turbine oils formulated with superior quality hydro-treated base stocks and possess exceptional thermal and oxidation stability, excellent demulsibility, air release property and resistance to foaming. These oils meet IS:1012-2002, BS 489, L-TSA & L-TGA specifications of ISO 8068:2006(E), General Electric GEK27070, Siemens TLV 9013 04 (SPrime 32 & 46), TPS 9013 04 (KWU), GEK 28143A, GEK 32568C, GEK 101941A (for Servoprime 32) & GEK 32568A for Gas Turbine (for Servoprime 32) and BHEL turbine oil requirements. Servoprime oils provide long service life and are recommended for lubrication of steam, gas and hydraulic turbines and can be used in hydraulic systems requiring long life lubricant of outstanding properties.
Servoprime 32	29 – 35	100	200	
Servoprime 46	42 - 50	98	200	
Servoprime 57	54 – 60	95	210	
Servoprime 68	62 – 74	95	210	
Servoprime 76	74 – 80	95	220	
Servoprime 100	94 – 106	95	220	
Servoprime 32 T	29 – 35	100	200	Servoprime T oils are similar to Servoprime oils but in addition contain anti-wear additives. These oils have higher FZG ratings and meet the requirements of geared turbines. Servoprime T oils meet specifications of ALSTOM HTGD 90117, GEK 28143 and Siemens-TLV 901304 (KWU).
Servoprime 46 T	42 – 50	98	200	
Servoprime 57 T	52 - 60	95	210	
Servoprime 68 T	62 – 74	95	210	
Servoprime 76 T	75 - 80	95	220	
Servoprime 32 LP	29 – 35	100	200	Servoprime LP oils are low pour-point turbine oils formulated with superior quality hydro-treated base oils and have excellent oxidation stability and anti-rust and anti-foam characteristics. Recommended for low temperature applications like Rotoflow expanders and Turbo-compressors used in refrigeration applications.
Servoprime 46 LP	42 – 50	98	200	
Servoprime 68 LP	62 – 74	95	210	

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servoprime 32 LL Servoprime 46 LL Servoprime 68 LL	29 – 35 42 – 50 62 – 74	100 98 95	215 215 215	Servoprime LL oils are long life turbine oils with superior oxidation stability and improved anti-wear performance. These oils have potential for providing problem- free long life in turbines of modern power plants working under most severe operating conditions. Exceed the requirements of all National and International specifications and carries the approval of major OEMs like BHEL, Siemens etc.
Servoprime 32A	29 – 35	100	200	Servoprime 32A is specially designed turbine oil, with high anti-wear properties, formulated with superior quality hydro-treated base stocks. Recommended by GEC-Alstom for use in gas turbines against GEK 28143A specification.
Servoprime 32 GR	29 – 35	100	215	Servoprime GR oils are formulated with superior quality hydro-treated base oils, specially designed to satisfy the demanding requirements of modern high output gas turbines including geared units. Exceed the specification requirement of GEK 32568f of GE Turbines.
Servoprime 32 G Servoprime 46 G	29 – 35 42 – 50	100 100	210 210	Servoprime G oils are high anti-wear type turbine oil, formulated with superior quality hydro-treated base oils, specially designed to satisfy the demanding requirements of modern high output gas turbines including geared units. Exceed the specification requirement of Alstom HTGD 90117, GEK 107395, GEK 32568F, BHEL GT10198, Siemens TLV 9013-04 ,9013-05 and L-TSA, L-TGA, L-TSE, L-TGE, L-TGB, L-TGSB, L-TGF & L-TGSE specifications of ISO 8068:2006(E). The product has got approvals from BHEL, Siemens and Alstom.

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servoprime 32 XL Servoprime 46 XL	29 – 33 42 - 50	100 98	210 210	Servoprime XL oils are specially designed turbine oils meeting Mitsubishi Heavy Industries (MHI) specification MS04-MA-CL002 (Rev. 2) & MS 04-MA-CL005 (Rev 2) for application in heavy duty single to multi-shaft steam and gas turbines with bearing ambient temperature of above 250 deg C. The oil has excellent thermal/oxidation properties with minimal sludge generation tendency.
Servoprime 76RR	75 - 80	95	220	Servoprime oils are premium turbine oils formulated with superior quality hydro-treated base stocks and possess exceptional thermal and oxidation stability, excellent demulsibility, air release property and resistance to foaming. These oils meet IS:1012-2002, BS 489. Servoprime oils provide long service life and are recommended for lubrication of steam, gas and hydraulic turbines and can be used in hydraulic systems requiring long life lubricant of outstanding properties. Product is approved by Railways.
Servoprime EP 32 Servoprime EP 46 Servoprime EP 68	29 – 35 42 – 50 62 – 74	100 98 95	200 200 215	Servoprime EP series are "EP Type " turbine oils meeting high FZG load capacity (12 stage paass) . These products possess superior thermal/ oxidation stability, superior rust & corrosion protection, rapid water separation, good air release value as well as superior antiwear characteristics. These oils are recommended for modern turbine systems coupled with gears.
Synthetic Turbine Oils Servoprime SHC 32 Servoprime SHC 46	28 – 36 40 - 52	137 145	235 235	Servoprime SHC Oils are PAO based Turbine oils specifically designed to meet severe industrial gas turbine applications. It has TOST life of more than 10,000 hrs. and meets ISO 8068:2006 (E), L-TGCH for synthetic turbine oils. It provides outstanding low temperature fluidity, excellent anti-wear performance and exceptional resistance to degradation at higher temperature.

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Control Valve Hydraulic Fluid Servoconval 46	42 – 50	98	215	Servoconval 46 is a premium quality hydraulic fluid recommended for use in the HP/ LP bypass system of steam turbines. Formulated with superior quality hydro-treated base stocks, it provides reliable service of control valves and is particularly helpful when fine sintered bronze filters are present in the circuit. Approved by M/s. BHEL.
Servoact AF 100	90– 110	95	220	Servoact AF 100 is high performance actuator oil specially developed for electrohydraulic SPL actuators (Compact drives and electrohydraulic drives) in turbine governor systems. Meets BHEL TC 58063 specifications.
Fire Resistant Electric Hydraulic Control Fluid Servosynturbo GF 46	41.4 - 50.6	-	235	Servosynturbo GF 46 is phosphate ester based, fire resistant, turbine governor fluid designed for use in electrohydraulic governor control systems of steam turbines operating at higher steam temperature and pressure, including systems using fine tolerance Servo Valves. It is approved by BHEL against its ST 22007 standards. Servosynturbo has approval of Siemens under TLV 9012 02 specs. Servosynturbo GF 46 is also approved by GE Power under DIN EN 14832 standard.
Servosynturbo GF ECO 46	41.4 - 50.6	-	230	Servosynturbo GF ECO 46 is synthetic biodegradable, non toxic fire resistant turbine governor fluid. Product is recommended turbine governor fluid for power plants.

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Circulating and Hydraulic Oils (R&O Type)				
Servocirol 32	29 – 35	95	196	Servocirol oils are premium quality R&O type hydraulic oils formulated with superior quality hydro treated base stocks Servocirol meet IS:3098-1983 (Reaffirmed 2004), DIN-51524 H and HL (except for very low pour point) and US Steel 135 requirements. Servocirol 32, 46, 68 and 150 also meet Cincinnati Machines, U.S.A. specification P-38, P-55, P-54 and P-57 respectively. Servocirol oils are recommended for hydraulic system, circulation system of industrial gearboxes, air compressors requiring turbine quality oil and for plain and anti-friction bearings of turbo feed pumps, turbo blowers, etc. These Oils can be used for lubrication of intermittently operating turbo generator sets where oil is changed after short duration.
Servocirol 46	42 – 50	95	200	
Servocirol 68	62 – 74	95	210	
Servocirol 100	90 – 110	90	210	
Servocirol 150	135 - 165	90	230	
Circulating and Hydraulic Oils (Anti-wear Type)				
Servosystem 22	20 – 24	95	160	Servo system oils are premium quality anti - wear type lubricants formulated with superior quality of hydro treated base stock. They provide long service life and are recommended for hydraulic and circulation systems of wide variety of equipments. These oils are also used for compressor crankcase lubrication, but are not recommended for lubrication of turbines and equipments having silver-coated components. These oils pass Vickers V-1O4C vane pump test and meet IS:10522-1983 (Reaffirmed 2004) and IPSS 1-09-002 specifications.
Servosystem 32	29 – 35	95	190	
Servosystem 46	42 – 50	95	200	
Servosystem 57	54 – 60	95	210	
Servosystem 68	62 – 74	95	210	
Servosystem 81	76 - 86	90	210	
Servosystem 100	90 – 110	90	210	
Servosystem BD 46	42 – 50	125	204	Servo system BD 46 offers excellent biodegradability in addition to excellent load bearing capacity, anti-rust and anti-oxidant properties. It meets CETOP HETG (European Oil Hydraulic and Pneumatic Committee) specification and exceeds the minimum requirement of 70% biodegradability.

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servohydraulic Oil 32	29 – 35	95	190	Servohydraulic oils are high quality anti-wear type lubricants recommended for hydraulic systems and a wide variety of circulation systems of industrial equipments. These oils are also used for compressor crankcase lubrication, but are not recommended for lubrication of turbines and equipments having silver-coated components. These oils pass Vickers V-104C vane pump test and meet IS:10522-1983 (Reaffirmed 2004).
Servohydraulic Oil 46	42 – 50	95	200	
Servohydraulic Oil 57	54 - 60	95	210	
Servohydraulic Oil 68	62 – 74	95	210	
Servohydraulic Oil 81	76 - 86	90	210	
Servohydraulic Oil 100	90 – 110	90	210	
Circulating Oils (Anti-wear Type)				These oils are high quality circulating oils designed for continuous use in circulation lubrication systems for gears and bearings. They provide outstanding performance at the elevated temperature generally found in paper mills, plastic film calendars, coal pulverisers etc., These grades are also recommended for use in compressors, machine tools, hydraulic and circulation systems and enclosed gearboxes, which do not require EP type lubricants.
Servosystem 121	118 – 124	90	220	
Servosystem 150	135 -165	90	230	
Servosystem 176	170 – 182	90	230	
Servosystem 220	198 – 242	90	230	
Servosystem 320	288 – 352	90	230	
Servosystem 460	414 – 506	90	260	

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servohydraulic Oil 121	118 – 124	90	220	These oils are recommended for circulation systems requiring oils with good load bearing capacity in applications such as paper mills, plastic film calendars, coal pulverisers etc. These grades are also recommended for use in compressors, machine tools, hydraulic and circulation systems and enclosed gearboxes, which do not require EP type lubricants.
Servohydraulic Oil 150	135 – 165	90	230	
Servohydraulic Oil 220	198 – 242	90	230	
Servohydraulic Oil 320	288 – 352	90	230	
Servohydraulic Oil 460	414 – 506	90	260	
Special Purpose Hydraulic Oils (Anti-wear type)				Servosystem HLP oils are premium hydraulic oils having high FZG rating. These oils meet DIN 51524 Part 2 Denison HF-O US Steel 127, Cincinnati Machines P-69 and P-70 and also IS:10522-1983 (Reaffirmed 2004) and IS:11656-1986 specifications. Servosystem HLP oils are recommended for high performance electro-hydraulic or numerically controlled systems. These oils are extensively used as screw compressor oils also.
Servosystem HLP 10	9-11	100	125	
Servosystem HLP 22	20 – 24	100	165	
Servosystem HLP 32	29 – 35	100	200	
Servosystem HLP 46	42 – 50	98	204	
Servosystem HLP 68	62 – 74	95	210	
Servosystem HLP 100	90 – 110	95	210	
Servosystem HLP 150	135 - 165	90	230	

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosystem HLP XL 22	20 – 24	100	165	Servosystem HLP XL Oils are ashless type high anti-wear hydraulic oils meeting performance requirements of DIN 51524 Part 2, Cincinnati Machines P-68, 69 & 70 and IS:10522 and IS 11656 specifications. They possess superior demulsibility, thermal and oxidation stability ,excellent filterability and tribological properties, essentially required for the equipments working in humid environment. Product is recommended for paper industries.
Servosystem HLP XL 32	29 – 35	100	200	
Servosystem HLP XL 46	42 – 50	98	204	
Servosystem HLP XL 68	62 – 74	95	210	
Servosystem HLP XL 100	90 – 110	95	210	
Servosystem HLP XL 150	135 - 165	90	230	
Servosystem HLP 22N	20 – 24	95	165	Servosystem HLP N oils meet the requirements of DIN 51524 HLP (Part 2) and Cincinnati Machines and Vickers Vane pump test requirements. These oils provide good film strength, anti-wear properties to minimise wear in pumps, rings, valves,pistons. These oils have high viscosity index to restrict any viscosity change under continuous operating conditions and resistance to foaming to ensure efficient functioning. Servosystem HLP N oils are recommended for use in hydraulic systems, compressors, pumps, circulation oiling systems, enclosed gearboxes etc.
Servosystem HLP 32N	29 – 35	95	200	
Servosystem HLP 46N	42 – 50	95	204	
Servosystem HLP 68N	62 – 74	95	210	
Servosystem HLP 100N	90 – 110	90	210	
Servosystem HLP 150N	135 - 165	90	230	
Servosystem HLP-D 32	29 – 35	100	200	Servosystem HLP-D Oils are ashless, antiwear hydraulic oils with emulsifying properties meeting DIN 51524 Part 2 HLP-D specifications. They possess superior emulsifying properties, excellent filtration abilities and superior thermal oxidation stability. They are suitable for high pressure industrial hydraulic oil systems where there are severe chances of water ingress. Product is recommended for equipment operating in humid environment or high chances of water ingress in system including mobile hydraulic systems.
Servosystem HLP-D 46	42 – 50	98	204	
Servosystem HLP-D 68	62 - 74	95	210	

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosystem XLP 15	14 - 16.5	100	170	Servo system XLP oils are long life, premium antiwear hydraulic oil (HLP type) exceeding DIN 51524 Part 2 & meeting Denison HF-O requirements. It also passes Vickers Vane & Eaton pump test. The oils have excellent oxidation stability with D943 life of more than 4000 hours. these oils provide superior wear protection and deposit control for severe service applications where deposit control in the hydraulic circuit of the electro-pneumatic servo valves is essential for trouble free operation. Servosystem XLP oils are recommended and are in use in all type of high pressure & high speed hydraulic pumps in heavy industries e.g. Steel plants. Products have also approval of international OEM like KHD Humbolt, Germany. Products also meet Danieli technical standards.
Servosystem XLP 22	20 – 24	100	180	
Servosystem XLP 32	29 – 35	100	200	
Servosystem XLP 46	42 - 50	100	210	
Servosystem XLP 68	62 - 74	100	210	
Servosystem XLP GOLD 32	29 – 35	100	200	Servosystem XLP Gold Oils are Top tier premium antiwear hydraulic oils possess superior thermal, oxidation stability and tribological properties and also meets stringent Bosch Rexroth requirements. Products are recommended for new generation hydraulic system.
Servosystem XLP GOLD 46	42 - 50	98	204	
Servosystem XLP GOLD 68	62 - 74	95	210	
Special Purpose High VI Hydraulic Oils (Anti-wear Type)				Servosystem HVLP Oils are all-weather high anti-wear hydraulic oils formulated with superior quality hydro treated base stocks. They have very high viscosity index, very low pour point and excellent low temperature fluidity for use in equipments working at high altitudes and under wide ambient temperature variation. They meet DIN 51524 Part 3 specifications.
Servosystem HVLP 15	14 - 16	140	125	
Servosystem HVLP 22	20 - 24	140	165	
Servosystem HVLP 46	42 – 50	165	204	
Servosystem HVLP 68	62 - 74	150	200	
Servosystem PGF 15	12.6 – 15.5	398 (t)	90	Servosystem PGF 15 is recommended for use in high pressure gauge instruments connected with hydraulic tong cylinders, mud pumps etc. at Oil exploration assets. It possesses superior thermal/oxidation stability, good low temperature rheological property and adequate anti-wear characteristics. The fluid inside the gauge provides for longer movement life and damping out most rig vibrations.

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servohydrex 32	29 – 35	160	140	Servohydrex oils are ash less type antiwear type hydraulic oils which possess high viscosity index,excellent lubrication characteristics. These oils are recommended for very low operating temperature conditions. Servohydrex TH 46 is recommended for Tata Hitachi excavators and Servohydrex 100 is approved by L&T for use in Poclain excavators. Servoexcavator TH 46 is approved by Hitachi.
Servohydrex TH 46	43 – 50	135	200	
Servohydrex 68	64 - 74	145	200	
Servohydrex 100	100 – 110	130	220	
Servoexcavator TH 46	43 – 50	135	200	
Servohydrex TH 46 Plus	43-48	160	200	Servohydrex TH Plus is ashless type anti-wear type hydraulic oil recommended as fluid media in all hydraulic systems where very low operating temperatures are encountered and the application demands use of a very high shear stable viscosity index oils. This grade is recommended as hydraulic fluid for HEMMs including Hitachi Excavators working in Mining area. Tata Steel has approved the use of this oil since it has been able to double its oil drain interval from 2000 hrs to 4000 hrs. This has also approval of EATON under 03-4-1-2010 Rev.-01. Product has given fuel efficiency & productivity benefits .
Servohyvis EE 46	43-50	180	200	Servohyvis EE oils are Zinc base antiwear type hydraulic oils recommended as fluid media in all hydraulic systems where very low operating temperatures are encountered and the application demands use of a very high shear stable viscosity index oils. This grade is recommended as hydraulic fluid for HEMMs including Hitachi Excavators working in Mining area. Tata Steel has approved the use of this oil since it has been able to double its oil drain interval from 2000 hrs to 4000 hrs.
Servohyvis EE 68	64 - 74	180	200	
Servohyvis EE 100	100 - 110	180	220	

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Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Synthetic Hydraulic Oils				
Servosystem SHC 32	29 – 35	136 (T)	230	Servosystem SHC Oils are formulated from synthetic hydrocarbon base fluids and selected additive system. They can be effectively used in severe duty operations under high loads and extreme temperature conditions such as cold start up or very high operating temperatures. They are recommended for high and low pressure gear, vane and piston stationary and mobile hydraulic systems.
Servosystem SHC 46	42 – 50	135 (T)	230	
Servosystem SHC 68	62 – 74	136 (T)	230	
Servosystem SHC 100	90 - 110	140 (T)	230	
Foodgrade Hydraulic Oils				
Servosystem BD S 32	28.8 – 35.2	130	250	Servosystem BD S Oils are anti wear type, synthetic bio-degradable hydraulic oils for applications where contamination due to leakage or blown hydraulic lines present an environmental hazard. They fall under CETOP HEES hydraulic fluid and typically provide a bio-degradability value of more than 80% as per CEC L 33 A 94 test.
Servosystem BD S 46	41.4 – 50.6	130	250	
Servosystem BD S 68	61.2 - 74.8	130	250	
Foodgrade Hydraulic Oils				
Servosystem FG 15	13.5 – 16.5	124 (T)	180	Servosystem FG Oils are specially designed synthetic hydraulic fluids for Food Processing Industry. They are formulated with selected synthetic hydrocarbon base oil and additives and are listed by National Sanitary Foundation (NSF), USA as H1 category food grade lubricants. These grades are recommended hydraulic fluids for food processing industries.
Servosystem FG 32	28 – 36	134 (T)	220	
Servosystem FG 46	41 – 52	135 (T)	230	
Servosystem FG 68	61 - 75	135 (T)	240	
Servohylube FG 32	29 – 35	100	185	Servohylube FG Oils are mineral oil based food grade , anti-wear type hydraulic oils formulated with selected base oils and additive systems. It meets DIN 51524 Part II specification requirements and is enlisted with NSF, USA as H1 category food grade lubricants.
Servohylube FG 46	42 - 50	98	185	

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Product	Kin. Viscosity cSt at 40 °C	Auto Ignition Temperature °C	Description / Application
Fire Resistant Hydraulic Fluids (Dilute Emulsion Type) Servoaquol 250 Servoaquol 750	55 – 75 115 – 135	- -	Servoaquol oils are oil-in-water type fire resistant hydraulic fluids specifically developed for hydraulically operated mining pit-props. They form stable emulsion with water and give long satisfactory service life in hydraulic systems. Servoaquol 250 and Servoaquol 750 have been developed to meet former National Coal Board, UK specification NCB 463-1981 for grade 18 and grade 19 respectively and also IS:10532 (Part I)- 1983 (Reaffirmed 2004), HF-A Grade 1 and HF-A Grade 2 respectively. Servoaquol 250 and Servoaquol 750 meet the requirements of Director General of Mines Safety, Dhanbad.
Servosystem HFB 68	62 - 74	-	Servosystem HFB 68 is invert emulsion (water-in-oil) type fire resistant hydraulic fluid specially developed for use in hydraulic systems in mining equipments working under severe operating conditions. It imparts fire resistance as well as proper lubrication to hydraulic equipments. It meets IS:10532 (part 2) – 1983 (Reaffirmed 2004), former National Coal Board, UK Specification No.570/1970. It is approved by Director General of Mines Safety, Dhanbad.
Fire Resistant Hydraulic Fluids (Water Glycol Type) Servofyress WG 22 Servofyress WG 46 Servofyress WG 68	19 – 25 41 – 50 61 - 74	468 545 545	Servofyress WG are water glycol based HFC type fire resistant hydraulic fluids. Servofyress WG are highly fire resistant and contain anti-wear additives and a combination of powerful anti-corrosion additives and oxidation inhibitors. These fluids are suitable for use in coal mines where fire resistance is mandatory and are also recommended for forming equipments such as, continuous casting machinery etc.

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Product	Kin. Viscosity cSt at 40 °C	Auto Ignition Temperature °C	Description / Application
Fire Resistant Hydraulic Fluids (Water free) Servofyress HFDU 46 Servofyress HFDU 68	41.4 – 50.6 61.2 - 74.8	400 400	Servofyress HFDU oils are new generation, HFDU type water free fire resistant hydraulic fluids formulated with synthetic base stocks (Polyether Polyol) and certified additive package meeting the requirements of Factory Mutual Global Certification. These oils possess outstanding anti-wear properties and have inherently good lubricity, high oxidation stability and excellent detergency which contributes to system cleanliness. These oils meet the Spray ignition characteristics and Flame propagation properties as per IS: 7895-1975 (Reaffirmed 2007) .
Servofyress HFDU 46 ES Servofyress HFDU 68 ES	41 – 52 61 - 74	400 400	Servofyress HFDU ES oils are non-aqueous fully synthetic ester type fire-resistant hydraulic fluids designed for use in high pressure hydraulic equipments operating in possible fire risk areas in manufacturing and mining industry (Servofyress HFDU 68 ES). They have very good anti-wear and anti-corrosion properties, good filterability and air-release value. They are HFDU type fluids as defined by ISO 6743/4 and ISO 12922. These grades have EATON approval under Rev-03-401-2010 Rev-01 . These oils also meet IS 7895: 1975 (RA 2007) Tests for fire resistant characteristics of hydraulic fluids used in mining machinery.
Servofyress HFDR 22 Servofyress HFDR 32 Servofyress HFDR 46 Servofyress HFDR 68 Servofyress HFDR 100	20 - 24 29 – 35 41 – 52 62 – 75 90 - 110	600 568 585 585 585	Servofyress HFDR Oils are triaryl phosphate based fire resistant hydraulic fluids for general industrial applications. These are HFDR type fluids as per ISO 6743/4. They have excellent thermal and oxidation stability for high temperature applications and provide corrosion protection for both ferrous and non ferrous metals. They can be used as hydraulic fluids and high pressure reciprocating air compressor lubricant for high temperature applications. These products are not designed for use in EHC systems of power plants.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Spindle Oils				
Servospin 2	2.0 – 2.5	-	70	Servospin oils are recommended for bearing lubrication of high speed textile spindles and machine tool spindles. Other applications include timing gears, positive displacement blowers and tracer mechanism and hydraulic systems of precision machine tools. Servospin 10 meets IS:493 Part 2 (Reaffirmed 2004).
Servospin 5	4.5 – 5	-	70	
Servospin 12	11 – 14	90	144	
Servospin 22	20 – 24	90	160	
Servospin EE 10	9 – 11	90	144	Servospin EE oils are premium textile machinery oils developed specifically as energy efficient spindle lubricant for the ring frames. Formulated with superior quality hydro treated base stocks these oils offer improved service life and possess superior oxidation/thermal stability. These oils have potential of about 5% power saving. Approved by M/s. Kunal Engineering, LMW etc.
Servospin EE 22	20 – 24	90	160	
Machinery Oils				
Servoline 32	29 – 35	-	152	Servoline oils provide good oiliness for general lubrication of machinery even under boundary lubrication conditions. These products maintain a thin film of oil under light and medium loads and provide protection against corrosion and rust even during idle periods. Servoline oils are recommended for all types of industrial machinery using once-through lubrication systems. Also recommended for use in the lubrication systems of machine tools, textile machinery and other machine parts which are lubricated by a thin film of oil. Heavier grades of Servoline oils can be used in the lubrication of small open gears under light duty conditions where oil is applied intermittently by means of an oil can.
Servoline 46	42 – 50	-	170	
Servoline 68	62 – 74	-	180	
Servoline 100	90 – 110	-	190	
Servoline 150	135 – 165	-	210	
Servoline 220	198 – 242	-	220	
Servoline 320	288 – 352	-	230	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servoloom 32	29 – 35	-	150	Servoloom Oils are straight mineral lubricating oil formulated for all-loss lubrication system of looms and drives used in textile and jute mills.
Servoloom 46	42 – 50	-	170	
Servoloom 68	62 – 74	-	180	
Servoloom 100	90 – 110	-	190	
Servoloom 150	135 – 165	-	210	
Servoloom 220	198 – 242	-	220	
Servoloom 320	288 – 352	-	230	
Servoloom 460	414 – 506	-	260	
Servoloom J32	29 – 35	-	150	Servoloom J Oils are general purpose, straight mineral lubricating oil for applications in non-critical all-loss lubricating systems. Products of appropriate viscosities are also used in textile and jute mills for lubrication of looms and other equipments.
Servoloom J150	135 – 165	-	210	
Servoloom J220	198 - 242	-	220	
Servoloom J320	288 – 352	-	230	
Servoloom J460	414 - 506	-	230	
Servo Ecofin J	12-16	-	160	Servo Ecofin J is an ecofriendly, bio-degradable Jute Processing Oil. It is recommended for use in conditioning of dry raw jute to impart properties suitable for Jute processing like carding, drawing, spinning, winding, etc. It is having minimum PAH content and hence particularly recommended for use in export market. Servo Ecofin J helps in smooth jute spinning operation due to excellent moisture retention property.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Textile Oils (Scourable Type)				
Servotexshine 68	62 - 74	90	204	Servotexshine oils are scourable type of textile oils designed for the lubrication of textile machinery particularly, the looms. These oils are fortified with special additives for providing excellent scourability properties, while imparting anti-rust, anti-foam and anti-wear characteristics. These oils have superior scourability characteristics of 97-99% stain removal as compared to the usual 27% scourability value achieved with the normally used mill lubricants.
Servotexshine 100	90 – 110	90	220	
Servotexshine 150	135 – 165	90	230	
Knitting Oils				
Servoknitclean 12	11 – 14	115	140	Servoknitclean Oils are stain -free knitting machinery oils for use in automatic circular knitting machines. They are formulated from light coloured mineral base oils and fortified with selected additive package for guaranteeing superior scourability properties and high anti wear and antirust properties. They provide improved lubrication, improvement in quality of knitted fabrics and can be used through manual as well as mist lubrication devices.
Servoknitclean 22	20 - 24	115	160	
Servoknitclean 32	29 – 35	115	140	
Servoknitclean 22 Plus	19.5 – 24.5	90	140	Servoknitclean 22/32 Plus oils are specially designed to provide excellent scourability performance in both hot and cold wash scouring conditions. Approved by the Textile Committee, Tirupur (Industry of textiles, Govt. of India), it has energy savings potential by following cold wash scouring procedures by the knitting mills.
Servoknitclean 32 Plus	29 – 35	90	160	
Textile Oils (Biodegradable / Synthetic)				
Servotexshine BD 68	64 – 74	-	204	Servotexshine BD oils possess good detergent qualities in addition to excellent oxidation resistance, anti-rust, anti-foam and anti-wear characteristics. These oils are eco-friendly and have 95% biodegradability per CEC-L-33-A-93.
Servotexshine BD 100	90 – 110	-	220	
Servotexshine BD 150	135 – 165	-	230	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosyntex	170 – 190	85(t)	250	Servosyntex is a synthetic high temperature chain lubricants , specially designed for high temperature chain lubrication in textile machinery. This is recommended for hto air Stenter clips, chains & sprockets,paper & leather industry and machinery operating under high temperature conditions.
Anti Static Oil Servotexstat LV 40 Servotex 2152	30 – 40 35 - 45	7.9 – 9.0 (pH value) 8.0 – 9.5 (pH value)	-	Servotexstat LV 40 and Servotex 2152 are antistatic spin finish oils based on unique chemistries of antistatic agents and essential constituents of lubricating oils. They lower friction between metal and yarn and impart – desired lubricity with antistatic protection to various kinds of fibres during yarn manufacturing, excellent wetting properties, reduced volatility, excellent water dispersibility resulting in stain-free finished yarns / fabric. These oils are used separately or in combination depending on the type of fibres being processed.
Coning Oil Servoconing Oil Servoconing 14	17 – 20 12 – 15	95 111(T)	180 150	These are specially formulated antistatic coning oils. They are recommended for use in Textile Industry as finishing agent. They are high refined, light coloured, low viscosity mineral oil based products containing suitable emulsifier, antistatic, friction reducing and anti-splashing agents to minimize the oil dosage during coning and twisting operation. They provide excellent lubricity to filaments and reduce friction during operation.
Synthetic Chain Lubricants Servochainlube S 135	125 – 150	106 (T)	290	Servochainlube S oils are specially formulated synthetic product for lubrication of bearings,chains,slides and gears in industrial applications where air temperature often exceeds 260°C.These products are suitable for use in ceramic paint, fiber glass plants, foundries steel mills, automotive plants,paper,ruber, textile industry etc.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servochaintex	170 –190	85 (T)	250	Servochaintex is a synthetic chain lubricant specially designed for high temperature chain lubrication. It is based on a unique type of base fluid and additive package. It has excellent oxidation and thermal stability and low volatility ensuring low lubricant consumption. It is recommended for use in Textile machinery like hot air stenter clips, chains & sprockets, paper & leather industry thermic systems and machineries operating under high temperature conditions.
Food Grade Chain Lubricants				
Servochainlube FG 150	135 – 165	145 (T)	230	Servochainlube FG Oils are specially designed, fully synthetic anti-wear chain oils for lubrication of drive and transport change in the food processing industry. Blended from selected synthetic fluids and additives, they are listed by National Sanitary Foundation (NSF), USA as category H1 Lubricant for use where there is potential of incidental food contact.
Servochainlube FG 220	198 – 242	150 (T)	230	
Industrial Gear Oils				
Servomesh SP 68	62 – 74	90	204	Servomesh SP oils are premium quality industrial gear lubricants having excellent thermal and oxidation stability, good demulsibility, low foaming tendency and provide rust and corrosion protection to metal surfaces. Servomesh SP oils meet AGMA standard 250.04, ASLE standard G-315, G-1000, G-1500, G-2150, IS:8406-1993, US Steel requirement No. 222 and 224 and IPSS:1-09-003 specifications. Servomesh SP 68, SP 100, SP 150, SP 220, SP 320, and SP 460 also meet Cincinnati Machines specifications No. P-63, P – 76, P – 77, P – 74, P – 59 and P-35 respectively. Servomesh SP oils are recommended for all heavy-duty enclosed gear drives with circulation or splash lubrication system operating under heavy or shock load conditions up to a temperature of 100°C. These oils can also be used for plain and roller bearings, sliding surfaces, chain drives, sprockets, flexible couplings employing splash, circulation or spray lubrication systems requiring EP type oils.
Servomesh SP 100	90 – 110	90	204	
Servomesh SP 150	135 – 165	90	204	
Servomesh SP 220	198 – 242	90	232	
Servomesh SP 257	250 – 280	90	232	
Servomesh SP 320	288 – 352	90	232	
Servomesh SP 460	414 – 506	90	232	
Servomesh SP 680	612 – 748	90	232	
Servomesh SP 1000	900 – 1100	80	280	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Anti Micropitting Gear Oils				
Servomesh Gold 150	135 – 165	95	204	Servomesh Gold oils are high performance industrial gear lubricants developed to provide maximum protection against conventional wear such as scuffing etc. and resistance against micro pitting fatigue while maintaining compatibility with common gearbox seal materials. These oils meet the requirement of DIN 51517 CLP (Part III) & have the technical approval of Siemens for Flender Gear units under Revision 15. Recommended for lubrication of helical, bevel,worm & planetary type of Gear units.
Servomesh Gold 220	198 – 242	95	232	
Servomesh Gold 320	288 – 352	95	232	
Servomesh Gold 460	414 - 506	95	232	
Servomesh XP 68	62 – 74	90	204	Servomesh XP 320 is an anti micro pitting oil with higher load bearing capacity (FZG>14) than conventional gear oils. It has been developed for use in heavy-duty enclosed gear drives with circulation or splash lubrication system operating under heavy or shock load conditions such as those in Steel plants. These oils meet the requirement of DIN 51517 CLP (Part III). Products have higher thermal oxidation stability with higher drain period potential. Products are in widely used in various new cement / steel & other heavy industries. Products have also approval of international OEM like KHD Humbolt,Germany. Products also meet Danieli technical standards.
Servomesh XP 100	90 – 110	90	204	
Servomesh XP 150	135 – 165	90	204	
Servomesh XP 220	198 – 242	90	230	
Servomesh XP 320	288 – 352	90	230	
Servomesh XP 460	414 - 506	90	232	
Servomesh XP 680	612 – 748	90	232	
Servomesh XP 1000	900 - 1100	80	280	
Servosynmesh EE1	288 – 352	150	210	Servomesh EE oils are high performance energy efficient industrial gear oils with very high viscosity index. These oils are recommended for enclosed industrial gear boxes.
Servosynmesh EE2	414 – 506	150	210	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosynmesh Gold 150	135 – 165	150	204	Servosynmesh Gold oils are high performance industrial gear lubricants are synthetically engineered products have very high viscosity index, superior wear protection against conventional wear such as scuffing etc. and resistance against micro pitting fatigue while maintaining compatibility with common gearbox seal materials. Recommended for lubrication of helical, bevel, worm & planetary type of Gear units. These product also have Flender approval under Revision-15 & Hansen Industrial Gear HP1/HP2/HPP/P-4 & M4ACC. Products have also approval of international OEM like KHD Humbolt, Germany. Products also meet Danieli technical standards.
Servosynmesh Gold 220	198 – 242	150	210	
Servosynmesh Gold 320	288 – 352	140	210	
Servosynmesh Gold 460	414 - 506	150	210	
Servosynmesh Gold 680	612 – 748	150	210	
Synthetic Gear Oils				Servosyngear oils are synthetic gear oils made of PAO based fluids and selected additives. They have excellent wear, corrosion and rust protection properties and enhanced oxidation stability. Their natural high VI combined with low traction coefficient reduce power consumption and make them energy efficient gear oils. They provide long equipment life. Servosyngear 3200 is specially developed for heavy duty traction gear cases of GE Locomotives.
Servosyngear 32	28.8 – 35.2	140	225	
Servosyngear 46	41.4 - 50.6	140	225	
Servosyngear 68	61.2 - 74.8	140	225	
Servosyngear 100	90- 110	148 (T)	225	
Servosyngear 150	135 - 165	150 (T)	225	
Servosyngear 220	198 - 242	152 (T)	225	
Servosyngear 320	288 - 352	155 (T)	225	
Servosyngear 460	414 - 506	160 (T)	225	
Servosyngear 680	612 – 748	205 (T)	225	
Servosyngear 3200	2900 - 3500	286 (T)	220	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosyngear HVI 100 Servosyngear HVI 220 Servosyngear HVI 320 Servosyngear HVI 460 Servosyngear HVI 680 Servosyngear HVI 1000	90 - 110 198 – 242 288 - 352 414 - 506 612 – 748 950 - 1150	200 220 220 220 220 250	250 250 250 250 250 250	Servosyngear HVI Oils are Polyalkylene Glycol base synthetic gear lubricants having inherent high viscosity index and excellent thermal and oxidation stability. They are specially recommended for worm gear lubrication and are excellent lubricants for all types of gears, anti-friction and plain bearings working under most severe conditions such as those in blast furnaces of Steel plants.
Servosyngear 100 SF Servosyngear 150 SF Servosyngear 220 SF Servosyngear 320 SF Servosyngear 680 SF Servosyngear 1000 SF	90 - 110 135 – 165 198 - 242 290 - 350 612 - 748 900 – 1100	134 (T) 135 140 (T) 135 155 (T) 135	230 220 230 220 230 260	Servosyngear SF Oils are synthetic hydrocarbon base industrial gear and bearing oils designed to provide outstanding performance in extreme service applications at high and low temperatures. They are compatible with bronze and provide better high temperature oxidation stability, antiwear properties, protection against rust and corrosion, extended oil life and reduced power consumption. Servosyngear 150 SF is specially recommended for lubrication of comber gear box in Textile industry. Servosyngear 1000 SF is recommended for anti-friction bearings of grinding rollers in cement mills.
Servosyngear 320 RR Servosyngear 460 RR	288-352 414 - 506	150 (T) 147 (T)	230 230	Servosyngear RR oils are new technology synthetic type industrial gear oils recommended for heavily loaded worm gear systems working at elevated temperatures. They have high thermal stability and provide reduced wear, increased oil life and excellent resistant to oxidation and aging. Servosyngear 320 RR has been specially developed for lubrication of Bombardier Traction Motor Gear Box fitted to EMUs of Indian Railways. Servosyngear 460 RR has been developed for traction motor gear case of General Motor Locomotives.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Anti-Micropitting Synthetic Gear Oils Servosyngear 150 Plus Servosyngear 220 Plus Servosyngear 320 Plus Servosyngear 460 Plus Servosyngear 680 Plus Servosyngear 1000 Plus	135 – 165 198 - 242 288 - 352 414 - 506 612 - 748 900 – 1100	140 140 153 (T) 159 (T) 167 (T) 187 (T)	240 240 240 240 240 240	Servosyngear Plus Oils are synthetic industrial gear lubricants which provide higher protection from micropitting fatigue. They have excellent thermal and oxidation stability and provide extra protection against wear, rust and corrosion. They are recommended for lubrication of gears working under heavy or shock load conditions and which may be subjected to micropitting. Their natural high VI and low pour point make them suitable for continuous all weather applications. Servosyngear Plus are approved by Flender under Revision 15 .
Synthetic Bio-degradable Gear Oils Servosyngear BD 150 Servosyngear BD 220	135 – 165 198 -242	148 (T) 144 (T)	230 250	Servosyngear BD Oils are polyol ester based gear and circulating system lubricants, designed to lubricate spur, helical and planetary gear units, couplings, rolling and sliding bearings in applications where the use of mineral oil based lubricants pose certain environmental risks such as in off-shore installation.
Foodgrade Gear Oils Mineral Oil based Servomesh FG 68 Servomesh FG 100	64 – 72 90 - 110	90 90	204 204	Servomesh FG Oils are formulated with specially selected white mineral oil fluids and foodgrade additives to meet NSF H-1 approval requirements. They possess excellent demulsibility, metal compatibility and good anti-wear properties required for food processing gear systems. These products are approved from M/s. NSF-USA.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Foodgrade Gear Oils Synthetic Oil based Servosyngear FG 220 Servosyngear FG 320 Servosyngear FG 460 Servosyngear FG 680	198 – 242 288 - 352 414 - 506 612 - 748	140 (T) 144 (T) 147 (T) 154 (T)	240 240 240 240	Servosyngear FG Oils are high performance industrial gear oils specially developed for the lubrication of enclosed gears in food processing machineries. Blended with specially selected synthetic fluids and additives, these products are listed by National Sanitary Foundation (NSF), USA under category H1 for use where there is potential of incidental food contact.
Synthetic Paper Machinery Lubricants Servosyn PM 220 Servosyn PM 320 Servosyn PM 460	198 – 242 288 – 352 414 - 506	135 135 140	230 230 230	Servosyn PM oils are specially formulated synthetic circulating oils for longer protection of bearings and gears of machineries used in paper mills under severe operating conditions. It provides outstanding protection against rust and corrosion, excellent lubricity, superior thermal and oxidation stability and longer oil life.
Oil Mist Lubricants Servomist Lube 220 Servomist Lube 320 Servomist Lube 460	210 – 230 288 – 352 425 - 500	90 90 90	232 232 232	Servomist Lubes are premium quality oil mist lubricants with excellent film strength, and thermal-oxidation stability characteristics. They are designed to exhibit good misting properties as required in oil mist lubricant systems for industrial gear applications.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Synthetic Chain Lubricants Servochainlube S 135 Servochainlube S 220	130 – 145 198 – 242	106 100	290 300	Servochainlube S Oils are specially formulated synthetic product for lubrication of bearings, chains, slides and gears in industrial applications where air temperature often exceeds 260 deg C. They are suitable for use in ceramic paint, fibber glass plants, foundries steel mills , automotive plants, paper, rubber, textile industry etc .
Foodgrade Chain Lubricants Servochainlube FG 150 Servochainlube FG 220	135 – 165 200 - 240	149 (T) 151 (T)	230 230	Servochainlube FG Oils are specially designed , fully synthetic anti-wear chain oils for lubrication of drive and transport change in the food processing industry. Blended from selected synthetic fluids and additives, they are listed by National Sanitary Foundation (NSF), USA as category H1 Lubricant for use where there is potential of incidental food contact.
Oil Film Bearing Oils Servofilm 5 Servofilm 10 Servofilm 12 Servofilm 15 Servofilm 32 Servofilm 46 Servofilm 68 Servofilm 81 Servofilm 100 Servofilm 121	4 – 6 9 – 11 11-13 13- 17 29 – 35 42 – 50 62 – 74 74 - 88 90 – 110 110 - 130	- 95 95 95 95 95 95 90 90 90	125 150 160 160 194 194 204 204 216 220	Servofilm oils have good oxidation and thermal stability and excellent ability to separate from water and meet IPSS 1-09-001-81. They are non-corrosive and are recommended for oil film bearings in steel mills and in circulation systems, where an non-additive type oil is required to obtain higher demulsibility and air release characteristics. Servofilm 40 CL is a colourless, low aromatic product blended with selected base fluids for use as a carrier oil in textile and dye industry.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servofilm 150	135 – 165	90	230	<p>Servofilm oils have good oxidation and thermal stability and excellent ability to separate from water and meet IPSS 1-09-001-81. They are non-corrosive and are recommended for oil film bearings in steel mills and in circulation systems, where a non-additive type oil is required to obtain higher demulsibility and air release characteristics.</p> <p>Servofilm 40 CL is a colourless, low aromatic product blended with selected base fluids for use as a carrier oil in textile and dye industry.</p>
Servofilm 176	160 - 190	90	230	
Servofilm 220	198 – 242	90	230	
Servofilm 257	250 – 280	90	232	
Servofilm 320	288 – 352	90	232	
Servofilm 460	414 – 506	90	240	
Servofilm 12 Plus	9 -13	95	160	
Servofilm 32 Plus	29 – 35	95	194	
Servofilm 81 Plus	78 - 86	90	204	
Servofilm 100 Plus	70 - 95	100	216	
Servofilm 40 CL	36 - 44	95	200	
Morgan Bearing Oils				<p>Servosteel oils are premium quality bearing oils possessing superior oxidation and thermal stability. These oils separate from water quickly and have excellent film strength property to minimise wear in roll-neck bearings of steel mills. Servosteel oils meet requirements of Morgoil bearing lubricant specified by Morgan Construction Co., U.S.A. These oils fully meet performance requirements of IPSS:1-09-001-81.</p>
Servosteel 220	198 – 242	90	230	
Servosteel 257	250 – 280	90	232	
Servosteel 320	288 – 352	90	250	
Servosteel 381	370 – 400	90	262	
Servosteel 460	414 – 506	90	262	
Servosteel 521	500 – 550	90	280	
Servosteel 680	612 – 748	85	240	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servosteel 220 Plus	198 – 242	95	230	Servosteel Plus oils are superior quality Non-EP type steel mill bearing oils which provide outstanding water separation, good resistance to thermal degradation and oxidation and protection against rust and corrosion. They meet the advanced Morgan Specification requirement (of March 2002) and also IPSS:1-09-001 -81.
Servosteel 257 Plus	255 – 265	95	232	
Servosteel 320 Plus	288 – 352	95	250	
Servosteel 460 Plus	414 – 506	90	262	
Servosteel EP 100	90 – 110	95	220	Servosteel EP oils are premium quality, extreme pressure, bearing and circulating oils which have very good load bearing ability in addition to excellent demulsibility characteristics. Servosteel EP oils are recommended for use in no-twist-rod mills and also in applications where severe load conditions are encountered.
Servosteel EP 150	135 – 165	90	230	
Servosteel EP 220	198 – 242	90	230	
Servosteel EP 381	370 – 400	90	230	
Servosteel EP 460	414 – 506	90	262	
Servosteel EP 100 Plus	90 – 110	100	235	Servosteel EP Plus oils are heavy duty bearing and circulating oils developed specially for the lubrication of bearings and gear boxes of 'Wire Rod' Mills. Formulated with superior hydro treated base oils and ashless additives, these oils meet the Morgan oil Advanced Lubricant new oil revision 2.1 March 2002 specification including dynamic demulsibility endurance tests requirement. Servosteel EP Plus Oils possess high oxidation stability, superior anti wear characteristics and provide good protection against rust and corrosion. Servosteel EP 100 Plus is widely used in steel plants & have shown superb performance. Product has Clarks laboratory USA approval.
Servosteel EP 150 Plus	135 – 165	95	230	
Servosteel EP 220 Plus	198 – 242	95	230	
Servosteel EP 460 Plus	414 – 506	90	262	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Compressor Fluids				
Servopress 32	29 – 35	95	196	Servopress oils are specially developed compressor oils, formulated with superior hydro treated base stocks, to provide satisfactory lubrication under prolonged high temperature and load conditions. These oils meet the requirement of DIN 51506 VD-L group and ISO DIS-6521 specifications for air compressor oil. Servopress oils are excellent cylinder lubricants for high performance reciprocating and rotary air compressors and can be used up to 220°C air discharge temperature.
Servopress 46	42 – 50	95	200	
Servopress 68	62 – 74	95	204	
Servopress 100	90 – 110	95	210	
Servopress 150	135 – 165	95	220	
Servopress 220	198 – 242	90	230	
Servopress 320	288 - 352	90	250	
Servo Burckhard Reciclub	198 – 242	90	230	Servo Burckhard Reciclub is specially formulated for reciprocating compressors of M/s Burckhard. Oil is recommended as service fill compressor oil for Burckhard reciprocating compressors.
Servopress FG 46	42 – 50	90	204	Servopress FG Oils are industrial compressor oils for food processing industry and are registered with NSF, USA as H1 category of food grade lubricants. They possess superior thermal; oxidative stability, good metal compatibility and low carbon forming tendency.
Servopress FG 68	62 – 74	90	204	
Servopress 100 RR	90 - 110	95	210	Servopress RR oils are specially formulated air compressor lubricants having superior thermal and oxidation stability, better water separation ability, and high load carrying capacity. They minimise carbon deposit and wear under prolonged high temperature and load conditions. They also provide extended oil service life and reduced oil consumption. Servopress 100 RR and 150 RR are recommended by RDSO for compressor lubrication in GM EMD Locomotives and compressor lubrication in ALCO locomotives respectively.
Servopress 150 RR	135 - 165	95	220	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servopress T 32 Servopress T 46 Servopress T 57 Servopress T 68	29 – 35 42 – 50 54 – 60 62 – 74	100 98 95 95	215 215 215 215	Servopress T oils are formulated with superior hydro treated base stocks and have good demulsibility property and low deposit and sludge forming tendency. Servopress T oils meet the specific requirement of ammonia oxidation and air blow test and are recommended for lubrication of ammonia and syn-gas centrifugal and screw type compressors.
Servopress C 100 Servopress C 220	90 – 110 198 - 242	90 90	192 222	Servopress C oils are compounded to give excellent resistance to washing action of water. These oils provide excellent protection against rust and corrosion and have good fluidity at low temperatures. Servopress C oils are recommended for cylinder lubrication of single and multi stage air compressors handling moist air. These oils form stable emulsion with water and provide excellent lubrication of cylinder liners, piston rings, valves etc. Servopress C oils are not recommended for crankcase lubrication.
Servopress LS 220 Servopress LS 320 Servopress LS 460	198 – 242 288 – 352 414 – 506	90 90 90	220 226 260	Servopress LS oils are specially developed low sulphur (0.25% wt. max.) oils for cylinder lubrication of high pressure syn-gas reciprocating compressors. These oils minimise wear of cylinder liners and rings and ensure long life of the catalyst.
Servopress AC 46	43-48	95	210	Servopress AC 46 is energy efficient compressor oil having superior oxidation stability and lower carbon forming tendency. The product is recommended for Atlas Copco screw compressors.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servopress 46XL Servopress 68XL	43-48 62 – 74	95 95	204 204	Servopress XL oils are high performance rotary screw compressor oils specially developed to provide extended drain intervals against conventional compressor fluids when used under normal conditions. These oils provide improved thermal and oxidation stability over a wide range of temperatures, reduced carbon forming tendency & reduced volatility. Products are recommended 2000 hrs drain period for crew compressors.
Servopress 46 XL Plus Servopress 68 XL Plus	43-48 62 – 74	95 95	204 204	Servopress 46 XL Plus is premium high performance screw compressor oil having superior thermal and oxidation stability, reduced carbon forming tendency, wear protection and extended drain interval. Recommended for screw air compressors. Products are recommended 4000 hrs drain period for crew compressors.
Semi-synthetic Compressor Oil Servopress SS 68	62 – 74	127	210	Servopress SS 68 is Semi-synthetic compressor oil consisting of PAO and superior quality mineral base oil and additives. The product exhibits superior high temperature performance characteristics and oxidation stability to that of conventional mineral base oil formulation.
Servosynco SS 68 Servosynco SS 100	60 – 75 90 – 110	124 (T) 128 (T)	230 230	Servosynco SS oils are Semi-synthetic compressor oil consisting of PAO and superior quality mineral base oil and additives. The product exhibits superior high temperature performance characteristics and oxidation stability to that of conventional mineral base oil formulation.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Pour Point, °C Max	Flash Point COC, °C Min.	Description / Application
Synthetic Compressor Fluids Servosynco 270	265 – 280	200	(-) 3	220	Servosynco 270 is a PAG based synthetic compressor oil having high viscosity index and natural anti-wear properties. Servosynco 270 is intended to be used in once through lubrication of cylinders of compressors handling petrochemicals such as polyethylene with operating pressure of 4000 bar in the hyper stage compressor.
Servosynco E 32 Servosynco E 46 Servosynco E 68 Servosynco E 100 Servosynco E 150 Servosynco E 220	29 – 35 42 – 50 62 – 74 90 – 110 135 – 165 198 - 242	130 (T) 142 (T) 150 (T) 153 (T) 158 (T) 160 (T)	(-) 42 (-) 45 (-) 42 (-) 39 (-) 30 (-) 30	210 210 210 210 210 220	Servosynco E oils are specially designed PAO based synthetic, long drain compressor oils for high pressures air compressors. They provide excellent lubricity and low oil consumption rate. Due to lower pour point, these oils offer scope for use at lower ambient temperatures with easy startability. Moreover, due to higher flash point and auto ignition temperature compared with conventional petroleum oils, Servosynco E Oils enhance safety factor.
Servosynco DE 32 Servosynco DE 68 Servosynco DE 100 Servosynco DE 150	29 – 35 62 – 74 90 – 110 135 – 165	121 (T) 67 (T) 57 (T) 67 (T)	(-) 39 (-) 21 (-) 21 (-) 18	230 230 230 230	These are Diester based synthetic compressor oils, recommended for single and multi-stage air compressors and once through cylinder lubrication. These are particularly effective for continuous high temperature applications with discharge temperature upto 200°C with minimum deposit formulation. They have built-in detergency properties which results in longer lasting air compressor parts and reduced oil separator varnishing and sticking of air compressor valves.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Pour Point, °C Max	Flash Point COC, °C Min.	Description / Application
Servosynco PE 22	20 - 26	133 (T)	(-) 45	245	These are Polyol ester based fully synthetic compressor oils designed to lubricate reciprocating air compressors working under severe operating conditions, air discharge temperature exceeding 200°C and rotary compressors. These oils possess superior oxidation stability, reduced carbon deposits tendency, high flash point and low volatility.
Servosynco PE 32	29 – 35	134 (T)	(-) 45	246	
Servosynco PE 46	42 – 50	118 (T)	(-) 39	252	
Servosynco PE 68	62 – 74	106 (T)	(-) 33	254	
Servosynco PE 100	90 – 110	103 (T)	(-) 27	270	
Servosynco PE 150	135 - 165	110 (T)	(-) 21	270	
Servosynco PE 220	200 - 242	87 (T)	(-) 15	270	
Servosynco AN 32	29 – 35	131	(-) 42	220	Servosynco AN Oils are formulated by a synthetic blend of PAO and Alkylated Naphthalenes. This product provide improved thermal and oxidation stability compared to PAO based compressor oils.
Servosynco AN 46	40 – 52	144	(-) 42	220	
Servosynco AN 68	62 – 74	149	(-) 39	230	
Servosynco AN 100	90 - 110	150	(-) 36	230	
Servocryo SHC 32	29 – 35	130 (T)	(-) 54	215	Servocryo SHC 32 is fully synthetic compressor oil specially developed for application in aluminium industry. Has inherent high viscosity index, excellent low temperature fluidity and high thermal and oxidation stability. Provides excellent performance in applications such as billet casting in Aluminium Industry. This grade is also recommended for graphite ring lubrication in WAGSTAFF Billet casting.
Servocryo SHC 100	90 - 110	219 (T)	(-) 36	215	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Pour Point, °C Max	Flash Point COC, °C Min.	Description / Application
Servocress 68 Servocress 100 Servocress 150 Servocress 220	61 – 75 90 – 110 135 – 165 198 - 242	210 210 220 230	(-) 36 (-) 33 (-) 36 (-) 30	215 215 215 215	Servocress oils are fully synthetic compressor oils for lubrication of LPG & other hydrocarbon gas compressors working under sub-zero temperature. These oils possess high viscosity index and anti-wear properties. These products have special capability to resist dilution with hydrocarbon gases.
Servocress WI 46 Servocress WI 100 Servocress WI 150 Servocress WI 220	41.4 - 50.6 90 - 110 135 – 165 198 - 242	175 175 175 175	(-) 42 (-) 39 (-) 39 (-) 33	200 200 200 200	Servocress WI oils are water insoluble PAG based fully synthetic compressor oils. These grades are designed for Hydrocarbon gas compressor oil designed for propane refrigeration compressors and also suitable for moist HC gas mixtures.
Food Grade Compressor Oils Servosynco FG – H1 32 Servosynco FG – H1 46 Servosynco FG – H1 68 Servosynco FG – H1 100	28 – 36 40 – 52 60 – 75 90 - 110	135 (T) 131 (T) 131 (T) 131 (T)	(-) 45 (-) 42 (-) 39 (-) 39	220 250 250 250	Servosynco FG – H1 Oils are compressor oils for food processing industry and are registered with NSF, USA as H1 category of food grade lubricants.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	Pour Point, °C Max.	Flash Point COC, °C Min.	Description / Application
Refrigeration Compressor Oils				
Servofriz 12	12 - 14	(-) 39	144	Servofriz oils possess high fluidity at very low temperature, resist deposit formation and have reduced tendency to foam. These oils ensure high condenser efficiency and reduced compressor valve maintenance due to less deposits. These oils meet IS:4578-1997 (Ra 2004) specification. Servofriz 68 also meets Carrier Corporation, U.S.A. specification PP 46-1. Servofriz oils are recommended for a wide range of refrigeration compressors using all conventional refrigerants (CFCs) except sulphur dioxide and are suitable for both reciprocating as well as rotary compressors.
Servofriz 22	20 - 24	(-) 39	150	
Servofriz 32	29 – 35	(-) 30	158	
Servofriz 46	42 – 50	(-) 27	164	
Servofriz 68	62 – 74	(-) 24	174	
Servofriz 100	90 – 110	(-) 24	200	
Servofriz F 32	29 – 35	(-) 36	158	Servofriz F 32, F 46 and F 57, apart from having the characteristics of Servofriz oils have very low Freon Flocc Points i.e. (-) 45°C, (-) 40°C and (-) 40°C respectively. These oils are recommended for the lubrication of hermetically sealed refrigeration compressors.
Servofriz F 46	42 - 50	(-) 27	164	
Servofriz F 57	54 – 60	(-) 24	168	
Servofriz NH 32	29 – 35	(-) 27	150	Servofriz NH 32 contains a special additive to impart antiwear and rust protection characteristics and is recommended for cylinder lubrication of refrigeration compressors, with ammonia as refrigerant requiring a low pour anti-wear oil.
Servofriz NH 68	62 – 74	(-) 24	170	Servofriz NH 68 is a specially blended refrigeration compressor oil with ammonia as refrigerant for use in ice plants and cold storages.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	Pour Point, °C Max.	Flash Point COC, °C Min.	Description / Application
Servofriz F 32 Plus	28.8 - 35.2	(-) 40	170	Servofriz 32 Plus is premium refrigeration compressor oil blended with superior naphthenic oil. Product is compatible with R-22 refrigerant. Product recommended for rotary/reciprocating compressors.
Semi-Synthetic Refrigeration Compressor Oils				
Servofriz S 22	20 – 24	(-) 42	144	Servofriz S oils are premium lubricants having low pour point and meet the lubrication requirement of reciprocating and rotary refrigeration compressors. Servofriz S oils are compatible with R-22 refrigerant. These products are recommended for use with all fluorocarbon refrigerants and with hydrocarbons and ammonia in refrigeration and air conditioning applications where the evaporation temperatures are lower than the pour point of the oil.
Servofriz S 32	29 – 35	(-) 39	150	
Servofriz S 46	42 – 50	(-) 33	150	
Servofriz S 57	54 – 60	(-) 30	150	
Servofriz S 68	62 – 74	(-) 27	150	
Servofriz S 150	135 - 165	(-) 24	220	
Synthetic Refrigeration Oils				
Servofriz SHC 32	29 – 35	(-) 45	225	Servofriz SHC Oils are fully synthetic refrigeration oils designed for use in industrial refrigeration systems using R 12, R 22, ammonia and carbon dioxide as refrigerants. They provide outstanding lubrication, improved antiwear protection, excellent thermal and oxidation characteristics and longer oil life.
Servofriz SHC 68	62 – 74	(-) 42	250	
Servofriz SHC 100	90 – 110	(-) 39	250	
Servofriz SHC 220	200 - 240	(-) 33	250	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	Pour Point, °C Max.	Flash Point COC, °C Min.	Description / Application
Eco-friendly Synthetic Refrigeration Oils Servofriz Car 46 Servofriz Car 68 Servofriz Car 80	41 – 50 64 - 74 72 – 88	(-) 39 (-) 36 (-) 36	200 200 200	Servofriz Car oils are environment friendly synthetic refrigeration fluids for automobile air conditioning compressors using R134a as refrigerant. These oils exhibit very good miscibility with R-134a and provide superior lubricity. Recommended for Car Air Conditioning Compressors.
Servofriz ECO 10 Servofriz ECO 22 Servofriz ECO 32 Servofriz ECO 46 Servofriz ECO 68 Servofriz ECO 100 Servofriz ECO 150 Servofriz ECO 170 Servofriz ECO 220 Servofriz ECO 320	9-11 19 – 25 28 – 36 42 - 50 62 – 74 90 – 110 135 – 165 165 – 185 198 – 242 288 – 352	(-) 51 (-) 42 (-) 39 (-) 36 (-) 27 (-) 24 (-) 18 (-) 18 (-) 15 (-) 12	175 190 190 210 230 230 230 250 250 250	Servofriz ECO oils are ester based environment friendly, fully synthetic refrigeration oils designed specifically for lubrication of refrigeration compressors and systems using ozone friendly HFC refrigerants. These are miscible with R 134a refrigerants. Provide improved lubricity and wear protection. Recommended for use in domestic refrigeration, air conditioning and industrial refrigeration systems using HFCs and R 22 as refrigerants.
Food Grade Refrigeration Oils Servofriz SHC FG 68	62 - 74	(-) 42	250	This is a synthetic food grade refrigeration oil recommended for use in refrigeration compressor systems where chances of incidental food contact is there. Recommended for use with R22, CO ₂ and ammonia refrigerants.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Pour Point, °C Max.	Flash Point COC, °C Min.	Description / Application
Stationary Diesel Engine Oils Servolube 68 Servolube 100 Servolube 150 Servolube 220	62– 74 90– 110 135 – 165 198 - 242	90 90 90 90	(-) 6 (-) 6 (-) 6 (-) 3	210 216 224 228	Servolube oils are non-detergent type stationary diesel engine oils, recommended for lubrication of slow and medium speed stationary diesel engines where operating conditions do not require a detergent oil. These oils are also found to give satisfactory performance in the lubrication of reciprocating air compressors.
Vacuum Pump Oils Servovacuum VM 4	47 – 58 @ 50°C	95	(-) 15	230	Servovacuum VM 4 is a specially developed product having low vapour pressure (1×10^{-6} mm of Hg at 20°C) and high thermal stability. It meets GOST:23013-78 specification for vacuum pump oil and is recommended for high vacuum producing diffusion pumps.
Synthetic Vacuum Pump Oils Servovacuum SHC 46 Servovacuum SHC 68 Servovacuum SHC 100	42 – 50 62 – 72 90 - 110	130 (T) 130 (T) 141 (T)	(-) 45 (-) 45 (-) 27	235 235 220	Servovacuum SHC oils are fully synthetic vacuum pump oils specially developed for modern industrial applications which require extremely low vacuums. These oils possess low volatility, low pour point, good anti-wear and frictional characteristics and provide steady vacuum.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Pour Point, °C Max.	Flash Point COC, °C Min.	Description / Application
Gas Holder Oils					
Servoseal G 46	42 – 50	90	(-) 15	200	Servoseal oils have been developed as a sealant for the gas holders in the steel industry and specially formulated to be compatible with the material of construction of the gas holders and the seals. Servoseal protect the metal surfaces from rust and corrosion and are unaffected by the gas holder gases. These oils pass the stringent MAN test for water separating characteristics.
Servoseal G 81	77 – 86	90	(-) 15	204	
Servoseal G 100	100 – 120	95	(-) 15	204	
Pneumatic Tool Oils					
Servoneum 68	62– 74	90	(-) 9	190	Servoneum oils have excellent load carrying ability and rust preventive properties Servoneum oils maintain oil protective films both at low and high pressure and do not give obnoxious odour even with equipment operating in confined spaces. These oils are used for lubrication of pneumatic equipment such as rock drill, jack hammers, chippers, wagon drills etc., and are also used in small in-plant pneumatic tools like grinders, filing tools, drills, tappers, impact wrenches etc.
Servoneum 100	90 – 110	90	(-) 9	194	
Servoneum 181	174 – 186	90	(-) 9	200	
Servoneum 220	198 – 242	90	(-) 9	230	
Servoneum 320	288 – 352	90	(-) 3	230	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Machine Tool Way Oils Servoway 32 Servoway 68 Servoway 100 Servoway 220	29 – 35 62 – 74 90 – 110 198 - 242	- - - -	160 170 170 190	Servoway oils have tackiness, anti-rust and anti-foam additives enabling higher loading of machine tools, minimum stick-slip and chatter, and provide improved surface finish to the job. These oils protect parts against rust and corrosion and reduce oil consumption due to good adhesive characteristics. Servoway 68 and 220 meet ASLE standard W 315 and W 1000 as well as Cincinnati Machines specifications P-47 and P-50 respectively. These oils are excellent products for slide way lubrication of planers, grinders, horizontal boring machines, shapers, jig borers etc., involving high precision work and are also recommended for lubrication of gears by oil-can.
Hydraulic-cum-Machine Tool Way Oils Servoway H 32 Servoway H 57 Servoway H 68	29 – 35 54 – 60 62 – 75	90 90 90	194 198 200	Servoway H oils are combined hydraulic and machine way lubricants. These oils possess adequate lubricity to eliminate stick-slip and chatter under moderate load conditions and at the same time serve as hydraulic media in non-critical systems. Servoway H 32 meets ASLE standard W 150 and Cincinnati Milacron specification P-53. These oils are exclusively recommended for machine tools, which have combined hydraulic and way lubrication systems. Servoway H oils are not recommended for critical hydraulic systems or as a substitute for Servoway oils.
Steam Cylinder Oils Servocyl C 460 Servocyl C 530 Servocyl C 680 Servocyl C 800	414 – 506 520 – 560 612 – 748 720 - 880	90 90 85 85	280 280 280 280	Servocyl C oils are compounded type steam cylinder oils having excellent oiliness and film strength properties. These oils resist water washout and minimise deposit formation even at elevated temperatures. Servocyl C oils are recommended for steam engines operating under wet/ saturated steam conditions. These oils are widely used in calendar bearings and sugar mill roll bearings and are also recommended for lubrication of worm gears. These oils are not suitable for applications, where the steam condensate is re-used.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Steam Cylinder Oils				
Servocyl M 680	612 – 748	85	280	Servocyl M oils have excellent chemical and thermal stability and load carrying ability. These oils reduce steam consumption due to good sealing characteristics and minimise frictional losses. These oils are recommended for cylinder lubrication of steam engines handling superheated steam, where the condensate is separated from oil and re-used for process work. Servocyl M oils are not suitable for wet steam conditions. These oils are also used in oil tempering and wire drawing applications with satisfactory results.
Servocyl M 1000	900 – 1100	80	280	
Servocyl M 1500	1300 - 1650	80	280	
Sugar Mill Roll Bearing Oils				
Servo SM 85	38 –45 @ 100°C	-	130	Servo SM oils meet the lubrication requirements of heavily loaded mill roll bearings in sugar mills. These oils ensure efficient lubrication even in the presence of cane juice. These oils prevent wear and corrosion of bearings and have excellent resistance to leakage. Servo SM oils are also recommended in centralised lubrication systems of slow speed spur and helical gears in certain industries and for open gear lubrication by slush pan method.
Servo SM 175	78 – 88 @ 100°C	-	130	
Servo SM 260	120 – 130 @ 100°C	-	130	
Servo SM 85 (NB)	38 – 45 @ 100°C	-	230	Servo SM(NB) Oils are non-bituminous, specially formulated from selected lube base oils and containing non-toxic mild EP additives to meet the requirements of heavily loaded, slow speed, roll bearings of sugar mills. They provide excellent lubrication and prevent wear and corrosion of bearing under all operating conditions.
Servo SM 120 (NB)	58 – 64 @ 100°C	-	230	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Servo SM Syn 1000	950 – 1150 at 100°C	-	230	This 'bitumen free' product has been developed for lubrication of Sugar mill bearings. It is based on special polymers which provide high tackiness, resistance to water wash out and good sealing against entering of juice/bagasse.
Bearing Oils (Compounded Type)				
Servoshaft 150	135 – 165	-	204	Servoshaft oils are specially developed for the lubrication of exposed parts subjected to excessive water wash in marine and industrial applications. Servoshaft oils are used in plain bearings, gears and slides of steam engines, punch presses, etc., where conventional oils are generally found inadequate. These oils are also recommended for certain wire drawing applications. Servoshaft C 150 is having compounding agent to improve load bearing characteristics and resistance to leakage of oil.
Servoshaft C 150	135 – 145	-	192	
Open Gear Compounds				
Servocoat 110	80 – 120	-	250	Servocoat are open gear compounds having good load carrying ability and are recommended for open gear, wire rope and chain drive lubrication. Servocoat compounds are also for the lubrication of kiln tyres operating at high temperature in cement mills and chemical plants. These compounds should not be used in food processing industries. Servocoat 170 T has special tackiness additive and has been developed specifically to meet the requirements of Indian Railways.
Servocoat 120	200 – 250	-	250	
Servocoat 140	400 – 550	-	280	
Servocoat 170 T	740 – 810	-	280	
Servocoat 190	900 - 1100	-	280	

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Special Open Gear Compounds Servotak 40 Servotak 40 NC	1400-1600 at 40°C 1400 -1600 at 40°C	- -	- -	Servotak 40 is an open gear compound of bituminous base containing a non-inflammable diluent. It has good load carrying ability. This compound has a low pour point (-) 12° C, which makes it suitable for use in low ambient temperature conditions. It is recommended for open gears working under heavy and shock loads and varying temperature conditions. Servotak 40 forms a strong adhesive film on the metal surface, which does not get squeezed out during usage and does not get hardened or chipped off under low temperature conditions. Servotak 40 NC contains non-chlorinated non inflammable dilutant .
Servo Gear Compound 30	575– 625 at 50°C	-	-	Servo Gear Compound 30 provides excellent film strength and load bearing ability to withstand high pressure encountered in heavily loaded open gears. This grade is recommended for lubrication of girth gears, open gears, cable and wire ropes. It is widely in use in various mining industries.
General Purpose Machinery oils Lubrex 22 Lubrex 32 Lubrex 46 Lubrex 68 Lubrex 100 Lubrex 150 Lubrex 220 Lubrex 320 Lubrex 460	19 – 24 29 – 35 42 – 50 62 – 74 90 – 110 135 – 165 198 – 242 288 – 352 414 – 506	- - - - - - - - -	150 150 160 160 170 204 220 220 240	Lubrex oils are normally recommended for non-critical all loss lubrication systems and hand oiling applications involving lubrication of bearings, open gears, lightly loaded slides and guide ways of machine tools. Lubrex oils of appropriate viscosity are widely used in textile mills for lubrication of looms and other equipments, which do not require additive treated oils. These oils can also be used as fluid sealing medium for gas holder where the gases do not react with mineral oils and as filter media in oil-bath type air cleaners. Lubrex 22 is recommended for flushing of automotive and industrial equipments. The characteristics of Lubrex 22 make it possible to easily clean all inaccessible internal surfaces of various equipments.

INDUSTRIAL OILS

Product	Kin. Viscosity cSt at 40 °C	VI Min.	Flash Point COC, °C Min.	Description / Application
Axle Oils				
IOC Roel 280	76 – 86 at 60°C	40	160 PMCC	IOC Roel oils have good inherent oxidation stability, thereby ensuring long service life. These oils fully meet IS:1628-1986 (Second Revision) Reaffirmed 2002 specifications for axle oils. IOC Roel oils are used by Railways and Steel Plants for lubrication of plain bearings, axle boxes of locomotives, wagons and other rolling stock due to very good load bearing and anti-wear properties.
IOC Roel 320	90 – 103 at 60°C	40	180 PMCC	

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
General Equipment & Machinery Greases				
Servogem 2	Light Brown	265 – 295	180	Servogem 2 and 3 are multipurpose greases recommended for anti-friction and plain bearings lubrication. Servogem 2 and 3 meet the requirement of British Timken ALG bearing 1/57, IS:7623-1993 (Second Revision) Reaffirmed 2006, IPSS:1-09-006-1997 specifications and U.S. Steel 374 requirement. These greases are widely used in steel plants, heavy engineering units, textile mills, petrochemical and chemical units etc.
Servogem 3	Light Brown	220 – 250	180	
Servogem EP 000	Brown	445 - 475	160	Servogem EP greases possess extreme pressure (EP) properties and prevent welding and seizure of moving parts often caused by shock loading. Servogem EP greases meet IPSS:1-09-005-1999 and IS:7623-2001(Second Revision) Reaffirmed 2001, specification. These greases are recommended for both plain and anti-friction bearings in a wide variety of applications such as automotive, earth moving equipments, gear couplings, electric motors, mining equipments and general industrial machinery. Servogem EP 2 (C) grease is a lime base grease developed to meet the IPSS 1-09-009-1997 requirements. The product is suitable for lubrication of severely loaded bearings at a temperature of(-) 20 to +65°C where ingress of water cannot be avoided. Servogem EP 0(N) has better water washout resistance and higher antiwear properties. Servogem EP 2(S) has superior thermal and oxidation stability and resistance to water washout. Servogem EP 2X is a calcium complex grease conforming to IS:7623 Grade 2 2001 except thickener type.
Servogem EP 00	Brown	400 – 430	170	
Servogem EP 0	Brown	355 – 385	180	
Servogem EP 0 (N)	Dark Brown	355 – 385	190	
Servogem EP 1	Brown	310 – 340	180	
Servogem EP 2	Brown	265 – 295	180	
Servogem EP 2 (C)	Brown	310 – 330	100	
Servogem EP 2 (S)	Dark brown	285 - 305	180	
Servogem EP 2X	Brown	265 – 295	180	

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
High Temperature Greases Servogem HT Servogem HT 3 Servogem HTXX	Brown Brown Black	280 – 300 220 - 250 280 - 305	280 280 300	Servogem HT and HTXX are non-soap base smooth structure greases having excellent ability to withstand high temperature and severe shock load conditions. Servogem HTXX has high load bearing ability. These greases meet U.S. Steel 372 requirement, IPSS:1-09-008-1997 and IS:12790-1999 Reaffirmed 2004, specification and are recommended for the lubrication of machine elements, plain bearings and anti-friction bearings operating at high temperatures.
Complex Greases Servorex L0 Servorex L1 Servorex L2	Black Black Black	370 – 400 340 – 385 310 – 340	204 204 204	Servorex greases are calcium-complex base greases for anti-friction and plain bearings operating at medium speed under heavy and/or severe shock loads. Due to their excellent water repellent characteristics these greases are successfully used for bearing lubrication of steel mills, cane crushers and mill rolls of sugar factories. Servorex greases are used by various steel plants in centralised grease lubrication systems and are also recommended for grease lubricated gear couplings.
Servoplex LC 1 Servoplex LC 2 Servoplex LC 3	Brown Brown Brown	290 – 315 280 – 305 220 – 250	260 260 260	Servoplex LC are lithium complex greases having high water tolerance and mechanical stability combined with excellent high temperature performance. Servoplex LC are ideally suited for application by centralised grease systems due to good resistance to oil separation under pressure and mechanical stability. Servoplex LC greases are widely in use in Steel Plants, Mining and Engineering Industries.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servoplex GC 1-1000	Black	310 – 340	180	Servoplex GC 1-1000 is a lithium complex, NLGI 1 grease formulated with a highly viscous base oil and is specially designed for lubrication of couplings of various designs. It provides effective lubrication and protection against wear in heavily loaded gear couplings and resists separation of the oil from the soap thickener at high rotating speeds.
High Temperature Greases Servogem Super HT (0) Servogem Super HT (1) Servogem Super HT Servogem Super HT (T) Servogem Super HT (B) Servogem Super HTXX	Brown Brown Brown Brown Brown Black	355 – 385 310 - 340 280 – 305 275 – 295 265 – 280 280 - 305	280 303 300 280 280 300	Servogem Super HT and Super HTXX are premium quality modified calcium sulphonate complex greases suitable for lubrication over a wide temperature range of (-)100C to + 1800C and has excellent pumpability characteristics making it specially suitable for centralised lubrication systems of large industrial units. Servogem Super HT Greases are recommended for wide range of industrial applications where high temperatures are encountered. Servogem Super HTXX is incorporated with solid lubricants for superior performance under conditions of high load, high temperature & ingress of water. These greases are ideal choice for Steel Plant applications such as continuous casters, couplings, oscillators, run out rolls, blowers, furnace doors etc. They are also suitable for Mining Industries for applications such as rock crushers, conveyor, drilling machinery etc.
Servogem Super JB 2	Black	265 – 295	260	Servogem Super JB2 grease is designed for lubrication of journal bearings in Sugar Mills.
Fire resistant Greases Servogem Fyrex	Brown	310 – 340	180	Servogem Fyrex is a fire resistant grease developed for lubrication in roller bearings of conveyor where there is a possibility of hot or molten metal coming into contact with the bearings. Such applications are mostly in Steel plants.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servogem Sintr EP 2	Dark Brown	310 – 330	180	Servogem Sintr EP2 is a lithium EP grease developed for use in Sinter plant application in Steel mills. The grease meet IPSS:1-09-005-99 specification.
Servoplex AL 00 Servoplex AL 2	Brown Light Brown	400 – 430 265 – 295	160 260	Servoplex AL greases are premium quality Aluminium-complex grease which provide excellent performance in anti-friction bearings and increased lubrication life compared to lime, sodium and lithium greases. Servoplex AL 2 is recommended for application areas such as steel plants, mining, textile etc. where conditions of high load, temperature and ingress of water exists. Servoplex AL 00 is suitable for gear lubrication. The products are available with base oils of different ISO VG grease.
Servogem TX Servogem TXX	Light Brown Black	265 – 295 265 – 295	260 260	Servogem TX & TXX are Titanium – Lithium Complex greases possessing inherent high load carrying capacity, enhanced oxidation stability, anti-rust and anti-corrosion properties. They are recommended for high temperature applications in steel plants, power plants, paper and packaging industry etc. Servogem TXX contains solid lubricant and takes care of severe lubrication requirements of high temperature, heavy load conditions. These greases are compatible with Lithium, Lithium Complex, Aluminium Complex, Clay based greases etc.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servoplex GP-3	Off white	220 – 250	220	Servoplex GP-3 is a lithium complex grease developed against SKF MT-33 specification. The grease is meeting the noise level rating of GN3 of SKF MT33.
Servoplex PU-2	Purple	265 – 295	260	Servoplex PU-2 is a polyurea based grease for use in Steel plant applications. It has wide operating temperature range from (-) 30 deg C to 180 deg C. It possesses excellent thermal stability, water and corrosion resistance and high service life.
Servoplex BQ- 2	Off white	265 – 295	220	Servoplex BQ-2 is a lithium complex grease developed against SKF VT 354 specification. The grease is meeting the noise level rating of GN2 and high temperature life test as per SKF VT 354 specifications.
Chain Greases				
Servo Chain Compound	Tacky Brown	70 – 90 (Unworked)	75	Servo Chain Compound is recommended for lubrication of chains and is applied by dipping the chain in the molten compound so that it penetrates well in-between the narrow clearances of the pin-bush and the bush rollers. Servo Chain Compound provides resistance to formation of tight links, thereby reducing wear and elongation of chains and also protects the sprocket and transmission components against rust, corrosion and wear even in contact with high water. Servo Chain Compound (LGB) has superior antiwear properties and resistance to corrosion.
Servo Chain Compound (LGB)	Yellow Brown	60 – 80 (Unworked)	80	
Servo Chaingrease WG	Creamy White	75 - 95	85-105	Servo Chaingrease WG has been specially developed for lubrication of heavy duty automobile chains. The grease has excellent oil holding capacity.
Servo Rolon Grease	Cream	355 - 385	-	Rolon Servo Grease is a specially formulated liquid chain grease for lubrication of automotive chain drives. It contains volatile solvent and should be kept away from naked flame.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Graphited Greases Servogrease Graphited 4080	Black	300 – 350	88	An Aluminium Stearate grease compounded with Graphite. It meets the IS:408 specification and is used for corrosion prevention of ERC (Elastic Rail Clips) of Railway tracks.
Servogrease Graphited 5081 Servogrease Graphited 5082 Servogrease Graphited 5083	Black Black Black	310 – 340 265 – 295 175 – 205	95 100 95	Servogrease Graphited are recommended for general lubrication under comparatively high load and low relative displacement of interacting surfaces. These greases meet IS:508-1987 (Reaffirmed 2004) specifications for Grade 1, Grade 2 & Grade 3 respectively. These greases are recommended for leaf springs, hydraulic rams, plungers, slides, elevator cables, pantograph pans, steel wire ropes & certain anti-seize purposes.
Cement Plant Greases Servogrease 300	Black	310 – 340	180	Servogrease 300 is a priming and pre-start lubricant recommended for lubrication of freshly installed large open girth gear drives of rotary kilns, cement mills, sintering plants, ball mills, tube mills etc. This grease has adhesive and extreme pressure characteristics to take care of protection from initial damages. Servogrease 300 is applied with a brush.
Servogrease CG 10 Servogrease CG 20 Servogrease CG 50 Servogrease CG 50 (0)	Black Black Black Black	380 – 420 400 - 430 400 – 430 355 - 385	180 180 180 180	Servogrease CG are sprayable adhesive lubricant, which has been developed for very severe lubrication conditions encountered in very slow speed, large open gear drives. The lubrication films adhere strongly to the gear surface and are unaffected by temperature changes. They are recommended for lubrication of open gear drives in cement plant, steel plant and mining industry such as rotary kilns, cement mills, sintering plants, ball mills etc. They pass FZG 12th stage. Servogrease CG 50(0) is of NLGI zero consistency.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servogrease RN	Black	400 – 430	180	Servogrease RN is a running in lubricant recommended during commissioning of large open gear drives of rotary kilns, cement mills, sintering plants, ball mills etc. It passes FZG 12th Stage. It is spray able also.
Water Resistant Greases				
Servogrease WR 1(B)	Black	295 - 315	190	Servogrease WR Greases are smooth structured grease based on Lithium –Calcium mixed soap specially designed to meet the lubrication requirement of areas where excessive water ingress cannot be avoided. They possess excellent water resistance, EP, anti-rust and anti-wear properties for meeting the severe lubrication requirements in steel mill and other applications. They are suitable for centralized lubrication system. Servogrease WR2 (460) is formulated with base oil viscosity of ISO VG 460. Servogrease WR 1(B) and WR 2(B) have superior EP characteristics.
Servogrease WR 2	Black	275 – 295	175	
Servogrease WR 2 (460)	Brown	280 – 300	175	
Servogrease WR 2(B)	Black	275 – 295	175	
Servogrease WR 2 (VSP)	Brown	280 – 305	175	
Wire Rope Greases				
Servogrease WRL 00	Black	400 – 430	180	Servogrease WRL greases are Aluminium Complex Grease with good adhesive, extreme pressure and anti-wear characteristics. They are specially developed for lubrication of wire ropes in draglines, cranes, shovels, elevators, drilling rigs etc. They protect wire ropes from rust and corrosion and increase their life.
Servogrease WRL 2	Black	265 – 295	250	

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servogem SI 0	Black	370 – 400	220	Servogrease SI 0 is a semi fluid grease containing solid lubricants and extreme pressure additives for lubrication of large open gear drives working under heavy load, low speed and high ambient temperature conditions in sponge iron industry, construction, mining, rotary kilns, Sugar mills etc. It can be used through dip as well as sprayable system.
Cup Greases				
Lubrex Cup Grease 2	Brown	260 – 300	100	Lubrex Cup Greases are smooth structured calcium soap greases possessing good water repellent characteristics. These greases are recommended widely for plain bearings operating under moderate to low temperatures and where the churning and vibrations are not excessive.
Lubrex Cup Grease 3	Yellow Brown	220 – 250	95	
Synthetic Greases				
Servoplex SHC 120	Light Brown	265 – 295	250	Servoplex SHC greases are lithium complex soap grease formulated with synthetic hydrocarbon base fluids and fortified with selected additives for superior performance under high load and varying temperature conditions. They have excellent thermal and oxidation stability, resistance to water and provide excellent protection against wear and corrosion and longer service life. Product is developed to meet product requirement of M/s. Bombardier.
Servoplex SHC 220	Off-white	265 - 295	250	
Servoplex SHC 460	Light Brown	290 – 320	260	
Foodgrade Greases				
Servogrease FG 2	Off-white	265 – 295	250	Servogrease FG are general purpose synthetic grease for food processing industry. These products have been developed by incorporating specialised FDA approved raw materials and additives. They are listed by National Sanitary Foundation (NSF), USA as food grade lubricants type H1 for applications where the grease may have incidental food contact.
Servogrease FG EP 2	Colourless	265 – 295	250	
Servosyngrease WM 2	Brown	265 – 295	250	Servosyngrease WM 2 is a synthetic grease with excellent corrosion protection and water resistant, with wide working temperature range, for lubrication of main shaft bearings of wind mills.

INDUSTRIAL GREASES

Product	Colour	Worked Penetration at 25°C after 60 strokes	Drop Point °C, Min.	Description / Application
Servogrease ASZC	Brown	285 – 315	180	Servogrease ASZC is an anti-seize compound containing micro-size copper flakes and solid lubricants. It has superior mechanical stability, improved water spray off and excellent resistance to corrosion. It is suitable for applications on threaded connections and can be used in the temperature range of (-) 18 deg C to (+) 600 deg C
Servo Grease ZDP 1	Grey	290 – 310	190	Servogrease ZDP1 is a drill pipe thread compound grease developed for application on tool joints, drill collars and other rotary shouldered connections at Oil and gas exploration rigs to provide protection against seizure from excessive torque and also as leak proof seal at high temperature and pressures.
Servo Press Mould Grease	Brown	295 – 315	180	Servo Press Mould Grease is specially developed for the lubrication of press mould equipment to centralised lubrication system in tyre industry.
Servo Grease Estel 1 Servo Grease Estel 2	Brown Brown	310 – 340 265 – 295	180 180	Servo Grease Estel are semi synthetic, ester based., biodegradable grease with excellent water resistance property and are recommended for plain & rolling element bearings and couplings where soil and water contamination is expected e.g. machinery used in forest tree, farming, paper mills etc.

VISCOSITY CONVERSION TABLE

CST	Engler ^o	SUS	R.W.No.1 Sec	CST	Engler ^o	SUS	R.W.No.1 Sec	CST	Engler ^o	SUS	R.W.No.1 Sec	CST	Engler ^o	SUS	R.W.No.1 Sec	CST	Engler ^o	SUS	R.W.No.1 Sec	CST	Engler ^o	SUS	R.W.No.1 Sec		
2.0*	1.14	33	31	15.0	2.32	77	68	28.0	3.82	132	117	41.0	5.47	191	168	54.0	7.11	250	221	67.0	8.82	310	274		
2.5*	1.18	34	32	15.5	2.38	79	70	28.5	3.88	135	118	41.5	5.53	193	170	54.5	7.17	253	223	67.5	8.88	313	276		
3.0*	1.22	36	33	16.0	2.43	81	71	29.0	3.95	137	120	42.0	5.59	195	172	55.0	7.24	255	225	68.0	8.95	335	278		
3.5*	1.27	38	35	16.5	2.49	83	73	29.5	4.01	139	122	42.5	5.66	197	174	55.5	7.30	257	227	68.5	9.02	337	280		
4.0*	1.31	39	36	17.0	2.54	85	75	30.5	4.07	141	124	43.0	5.72	200	176	56.0	7.37	260	229	69.0	9.08	319	282		
4.5*	1.35	41	37	17.5	2.59	87	77	30.5	4.13	143	126	43.5	5.78	202	178	56.5	7.44	262	231	69.5	9.15	322	284		
5.0*	1.40	42	38	18.0	2.64	89	78	31.0	4.20	146	128	44.0	5.85	204	180	57.0	7.50	264	233	70.0	9.21	324	286		
5.5*	1.44	44	40	18.5	2.70	91	80	31.5	4.26	148	130	44.5	5.91	207	182	57.5	7.57	266	235	70.5	9.28	326	288		
6.0*	1.48	46	41	19.0	2.76	93	82	32.0	4.32	150	132	45.0	5.98	209	185	58.0	7.63	269	237	71.0	9.34	329	290		
6.5*	1.52	47	42	19.5	2.81	96	84	32.5	4.38	152	134	45.5	6.04	211	187	58.5	7.70	271	239	71.5	9.41	331	292		
7.0*	1.56	49	44	20.0	2.87	98	86	33.0	4.45	155	136	46.6	6.11	213	189	59.0	7.76	273	241	72.0	9.48	333	294		
7.5*	1.61	50	45	20.5	2.93	100	88	33.5	4.51	157	138	46.5	6.17	216	191	59.5	7.83	276	243	72.5	9.54	336	296		
8.0*	1.65	52	46	21.0	2.98	102	90	34.0	4.57	159	140	47.0	6.24	218	193	60.0	7.90	278	245	73.0	9.61	338	298		
8.5*	1.70	54	48	21.5	3.04	104	91	34.5	4.63	161	142	47.5	6.30	220	195	60.5	7.96	280	247	73.5	9.67	340	300		
9.0*	1.75	56	49	22.0	3.10	106	93	35.0	4.70	164	144	48.0	6.37	223	197	61.0	8.03	283	249	74.0	9.74	343	302		
9.5*	1.79	57	51	22.5	3.16	108	95	35.5	4.76	166	146	48.5	6.43	225	199	61.5	8.09	285	251	74.5	9.80	345	304		
10.0	1.84	59	52	23.0	3.22	111	97	36.0	4.83	168	148	49.0	6.50	227	201	62.0	8.16	287	254	75.0	9.87	347	306		
10.5	1.88	61	53	23.5	3.28	113	99	36.5	4.89	170	150	49.5	6.56	230	203	62.5	8.23	289	256						
11.0	1.93	62	55	24.0	3.34	115	101	27.0	4.96	173	152	50.0	6.63	232	205	63.0	8.29	292	258						
11.5	1.97	64	57	24.5	3.40	117	103	37.5	5.02	175	154	50.5	6.70	234	207	63.5	8.36	294	260	For higher viscosity multiply centistokes value by					
12.0	2.02	66	58	25.0	3.46	119	105	38.0	5.08	177	156	51.0	6.76	236	209	64.0	8.42	296	262						
12.5	2.07	68	60	25.5	3.52	121	107	38.5	5.14	179	158	51.58	6.83	239	211	64.5	8.49	299	264						
13.0	2.12	70	61	26.0	3.58	124	109	39.0	5.21	182	160	52.0	6.89	241	213	65.0	8.55	301	266						
13.5	2.17	72	63	26.5	3.64	126	111	39.5	5.27	184	162	52.5	6.94	243	215	35.5	8.62	303	268						
14.0	2.22	74	65	27.0	3.70	128	113	40.0	5.34	186	164	53.0	7.00	246	217	66.0	8.69	306	270		0.132		4.632		4.08
14.5	2.27	75	66	27.5	3.76	130	115	40.5	5.40	188	166	53.5	7.05	248	219	66.5	8.75	308	272						

*The first part of table marked with an asterisk should not be used for conversion of °E, R.W. No. 1 & SUS to CST.

Note 1 :The above table does not take into account variation of conversion factors of conversion factors relating centistokes to Saybolt and Redwood units with temperature, the figures given being based on the conversion at 60°C. The value for these two scales and the Engler readings have been rounded off to the number of significant figures shown.

Note 2 :Conversion of centistokes to centipoises is effected by multiplying the former by density of the oil at the same temperature as that the viscosity relates.

VISCOSITY CONVERSION TABLE

GRADE	Neutrals			
	Kinematic Viscosity @40°C		Kinematic Viscosity@100°C	
	cSt	SUS	cSt	SUS
70N	13.3	70.8	3	37
80N	15.6	80.3	3.35	37.3
90N	18	89	3.4	37.5
100N	21.5	104	4	39
140N	30.7	144	4.5	41
150N	31.6	148	4.9	42.4
160N	33.7	158	5.2	43.3
170N	34	159	5.4	44
180N	38.5	181	5.7	44.9
200N	44.5	204	6.2	46
250N	56.1	257	6.5	47
300N	61.3	285	7	49
315N	70	315	7.9	52
330N	70.9	328	8.4	53.7
350N	76	358	8.8	55
400N	86	398.6	9.8	58
450N	98	454	10.5	61
500N	107	496	11	64
600N	130.4	604	12.1	66
650N	141	665	14.8	71
700N	151	668	14	73
135BS	413.2	1875	28.6	135
145 BS	523.3	2425	30.9	145
150 BS	568	2632	33	155
160 BS	600	2800	35.2	166
175 BS	616	2855	36	169.7
185 BS	654.7	3034	37.6	177
225 BS	1030	4800	49.3	229

ISO VISCOSITY GRADES TO SUS AT 37.8 °C AND 98.9 °C

ISO	Viscosity Range	Approximate Viscosity Range	Approximate Viscosity Range SUS at 98.9 °C		
			95 VI	65 VI	35 VI
GRADE	cSt at 40 °C	SUS at 37.8 °C	95 VI	65 VI	35 VI
2	1.98-2.42	32.8-34.4	-	-	-
3	2.88-3.52	36.0-38.2	-	-	-
5	4.14-5.06	40.4-43.5	-	-	-
7	6.12-7.48	47.2-52.0	-	-	-
10	9.00-11.00	57.6-65.4	34.6-35.7	34.2-35.3	33.8-34.9
15	13.5-16.5	75.8-89.1	37.0-38.3	36.4-37.8	36.0-37.3
22	19.8-24.2	105-126	39.7-41.4	39.1-40.6	38.5-40.0
32	28.8-35.2	149-182	42.9-45.0	42.0-43.8	41.4-42.9
46	41.4-50.6	214-262	47.1-49.9	45.4-47.8	44.2-46.2
68	61.2-74.8	317-389	53.0-56.9	50.3-53.4	48.6-51.1
100	90.0-110	469-575	61.4-66.9	56.8-61.0	54.0-57.2
150	135-165	708-869	74.0-81.9	66.6-72.7	62.1-67.2
220	198-242	1046-1283	90.3-101	79.3-87.6	72.6-79.5
320	288-352	1531-1878	112-126	95.7-106	86.3-95.3
460	414-506	2216-2717	139-158	116-130	104-115
680	612-748	3298-4046	178-202	145-162	127-142
1000	900-1000	4885-5994	227-257	181-204	156-175
1500	1350-1650	7385-9063	293-331	229-256	204-219

*Conversion based on 95V

API Base Oil Classification

Base Oil category	Sulphur (%)	Saturates (%)	Viscosity Index (VI)
Group I	> 0.03	< 90	≥80 to 120
Group II	≤ 0.03	≥ 90	≥80 to 120
Group III	≤ 0.03	≥ 90	≥ 120
Group IV	All polyalphaolefins (PAO)		
Group V	All others not included in Group I, II, III or IV		

VISCOSITY CONVERSION TABLE

SAE VISCOSITY GRADES FOR ENGINE OILS (1)(2) – SAE J 300 Jan 2015

Low Temperature Viscosities			High Temperature Viscosities		
SAE Viscosity Grade	Cranking Viscosity(3) (mPa•s @ °C)	Pumping Viscosity(4) (mPa•s @ °C) w/no yield stress	Low-Shear Rate Kinematic Viscosity(5) (mm2/s) at 100°C		High-Shear Rate Kinematic Viscosity(6) (mPa.s) at 150°C
			Min	Max	Min
	Max	Max			
0W	6200 @ - 35	60,000 @ - 40	3.8		-
5W	6600 @ - 30	60,000 @ - 35	3.8	-	-
10W	7000 @ - 25	60,000 @ - 30	4.1	-	-
15W	7000 @ - 20	60,000 @ - 25	5.6	-	-
20W	9500 @ - 15	60,000 @ - 20	5.6	-	-
25W	13,000 @ - 10	60,000 @ - 15	9.3	-	-
8	-		4	<6.1	1.7
12	-	-	5	<7.1	2
16	-		6.1	<8.2	2.3
20	-		6.9	<9.3	2.6
30	-	-	9.3	< 12.5	2.9
40	-	-	12.5	< 16.3	3.5 (0W-40,5W-40, & 10W-40)
40	-	-	12.5	< 16.3	3.7(15W-40,20W-40,25w-40&40
50	-	-	16.3	< 21.9	3.7
60	-	-	21.9	< 26.1	3.7

1. NOTE: 1 mPa•s = 1 cP; 1 mm2/s = 1 cSt

2. All values ,with the exception of the low-temperature cranking viscosity, are critical specifications

3. ASTM D 5293: cranking viscosity-The non-critical specification protocol in ASTM D3244 shall be applied with a P value of 0.95

4. ASTM D: 4684 Note that the presence of any yield stress detectable by this method constitutes a failure regardless of viscosity

5. ASTM D 445

6. ASTM D 4683,ASTM D4741,ASTM D5481, or CEC L-036-A-90

AUTOMOTIVE GEAR LUBRICANT VISCOSITY CLASSIFICATION SAE J306

SAE Viscosity Grade	Max Temperature for Viscosity of	Kinematic Viscosity at 1000 C (cSt)3	
	150,000 cP (0C)(1,2)	Min(4)	Max
70W	- 55(5)	4.1	-
75W	-40	4.1	-
80W	-26	7	-
85W	-12	11	-
80	-	7	<11.0
85	-	11	<13.5
90	-	13.5	<18.5
110	-	18.5	<24.0
140	-	24	<32.5
190	-	32.5	<41.0
250	-	41	-

Note - 1 cP = mPaos; 1 cSt = 1 mm2/s

1 Using ASTM D 2983

2 Additional low temparture viscosity requirements may be appropriatefor fluids intended for use in light- duty synchronized manual transmissions.

3 Using ASTM D 445

4 Limit must also be met after testing in CEC L-45-A-99, Method C(20 Hours).

5 The precision of ASTM D 2983 has not been established for determinations made at temperaturesbelow -400C.

This fact should be taken into consideration in any producer -consumer relationship.

NLGI CLASSIFICATION FOR GREASES

NLGI No.	ASTM Penetration* at 250C	NLGI No.	ASTM Penetration* at 250C
000	445-475	3	220-250
00	400-430	4	175-205
0	355-385	5	130-160
1	310-340	6	85-115
2	265-295		

*After working 60 strokes (ASTM D 2017)

INDIAN OIL CORPORATION LTD. G-9, ALI YAVAR JUNG MARG BANDRA (E), MUMBAI - 400 051.

SISM (Lubes) / SRSM (Lubes)

Delhi State Office

Indian Oil Corporation Ltd.
2nd Floor, World Trade Centre,
Babar Road, Barakhamba Lane,
New Delhi-110001.
Ph. 011-23418552/ 23413506

SISM (Lubes) / SRSM (Lubes)

Punjab State Office

Indian Oil Corporation Limited
IndianOil Bhawan, Plot No. 3A,
Sector 19 A, Madhya Marg,
Chandigarh - 160019.
Ph. 0172-2542266/ 2702512

SISM (Lubes) / SRSM (Lubes)

Rajasthan State Office

Indian Oil Corporation Ltd.,
IndianOil Bhawan, Ashok Chowk,
Nr. Radha Swami Satsang Bhawan,
Adarsh Nagar, Jaipur - 302004.
Ph. 0141-2606512/ 2619864

SISM (Lubes) / SRSM (Lubes)

Uttar Pradesh State Office-I

Indian Oil Corporation Ltd,
IndianOil Bhawan,
TC-39 V, Vibhuti Khand,
Gomti Nagar, Lucknow.- 226010.
Ph. 0522-2305710/ 2305747

SISM (Lubes) / SRSM (Lubes)

Uttar Pradesh State Office-II

Indian Oil Corporation Ltd.,
E - 8, Sector - 1,
Noida – 201301.
Ph. 0120-2540614/ 2474028

SISM (Lubes) / SRSM (Lubes)

Bihar State Office

Indian Oil Corporation Ltd.,
Loknayak Bhavan,
Dak Bunglow Road, Patna – 800001
Ph. 0612-2201060/ 2227761

SISM (Lubes) / SRSM (Lubes)

North East Integrated State Office

Indian Oil Corporation Limited,
IndianOil Bhawan, Sector III, Guwahati
Refinery Township Noonamati
Nr.Narengi Flyover, Guwahati - 781021
Ph. 0361-2657551/ 2651957

SISM (Lubes) / SRSM (Lubes)

Odisha State Office

Indian Oil Corporation Ltd
IndianOil Bhawan,
A/2 Chandrasekharpur
Bhubaneswar – 751024.
Ph. 0674-2745833/ 2745843

SISM (Lubes) / SRSM (Lubes)

West Bengal State Office

Indian Oil Corporation Ltd.,
2nd Floor Central Wing, 2,
Gariahat Road (South),
Dhakuria, Kolkata – 700068.
Ph. 033-24145518/ 24145210

SISM (Lubes) / SRSM (Lubes)

Gujarat State Office

Indian Oil Corporation Ltd.,
204, Shikhar Complex,
Mithakhali Six Roads, Navrangpura,
Ahmedabad – 380009.
Ph. 079-26441603/ 26563126

SISM (Lubes) / SRSM (Lubes)

Madhya Pradesh State Office

Indian Oil Corporation Ltd.,
IndianOil Bhawan,
16 Arera Hills, Jail Road,
Bhopal – 462011.
Ph. 0755-2552924/ 2552979

SISM (Lubes) / SRSM (Lubes)

Maharashtra State Office

Indian Oil Corporation Ltd.,
254 - C, Dr. Annie Besant Road,
Prabhadevi,
Mumbai – 400 025.
Ph. 022-24901291/ 24814143

SISM (Lubes) / SRSM (Lubes)

Karnataka State Office

Indian Oil Corporation Ltd.,
Indian Oil Bhavan,
No. 29, P. Kalinga Rao Road
Bangalore – 560 027.
Ph. 080-22291349/ 22291346

SISM (Lubes) / SRSM (Lubes)

Kerala State Office

Indian Oil Corporation Ltd.,
Panampilli Avenue,
Panampilli Nagar,
Cochin – 682036, Kerala
Ph. 0484-2825504/ 2825505

SISM (Lubes) / SRSM (Lubes)

Tamil Nadu State Office

Indian Oil Corporation Ltd.,
Indian Oil Bhavan,
139, Mahatma Gandhi Road
Chennai – 600034
Ph. 044-28339135/ 28339175

SISM (Lubes) / SRSM (Lubes)

Andhra Pradesh State Office

Indian Oil Corporation Ltd.,
3-6-436 to 438, Naspur Road,
Himayathnagar,
Hyderabad – 500029.
Ph. 040-27686260/ 27686250



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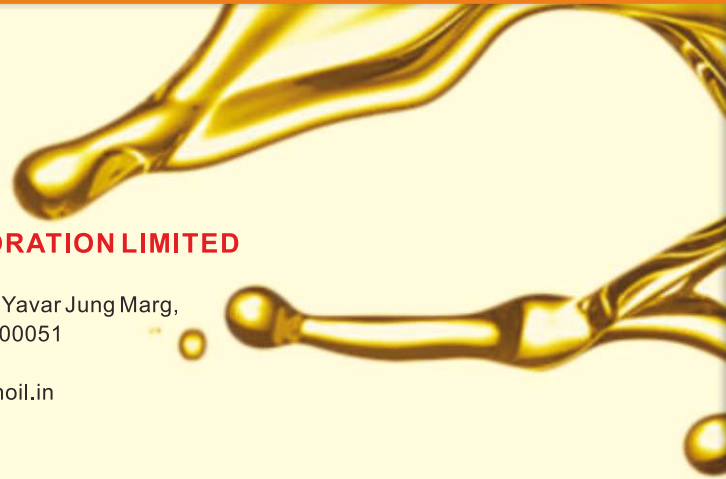


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INDIAN OIL CORPORATION LIMITED

(Marketing Division)

IndianOil Bhavan, G-9, Ali Yavar Jung Marg,

Bandra (East), Mumbai-400051

Ph. : +91 22 26447386

E-mail : servocare@indianoil.in