

## COMPLETE LUBRICATION SOLUTIONS FOR INDUSTRIAL APPLICATION



**REF: MSO/L/SSI-M/01**

**Date: 28.01.2020**

**TO WHOMSEVER IT MAY CONCERN**

**Dear Sir/Mam,**

We hereby confirm that M/s. Hindustan Lubes is our only authorized Servo Stockist for the districts of Mumbai, Raigad and Ratnagiri for supply of Lubricants for Industrial purpose to our esteemed customers for their own consumption till 27.01.2022.

For operational convenience and ensure scheduled execution of required lubricants of end consumers, it is requested to kindly place orders for supply all IOCL make Lubricants & Greases under brand name of “SERVO” on our IOCL Authorized Industrial Stockiest “M/s Hindustan Lubes”. The responsibility of Quality lies with IOCL.

The contact details are as given below:

**Mr. Sunil Shah( Proprietor)**

**M/s Hindustan Lubes**

**407, Zafryn Chambers,**

**Opp.Sewri Railway Station,**

**Sewri (EAST), Mumbai- 400 015.**

**Tel-022-24131828 / 24132831**

**Email: [servostockist@rediffmail.com](mailto:servostockist@rediffmail.com)**

**[sales@hindustanlubes.com](mailto:sales@hindustanlubes.com)**

Hope the above is in line with your requirement and we eagerly look forward to receive your valuable orders to be placed on IOCL Authorized SERVO Stockist “M/s. Hindustan Lubes”

Warm Regards

**For Indian Oil Corporation Limited.**



**( Sheren Gupta)**

**Sales Officer (Lubes-Technical Sales)**

**Indian Oil Bhavan**

**BKC, Bandra(e)-400051**





**IndianOil**

## About INDIAN OIL

IndianOil is India's flagship Maharatna national oil company with business interests straddling the entire hydrocarbon value chain- from refining, pipeline transportation and marketing of petroleum products to Research & Development, Exploration & Production, marketing of natural gas and petrochemicals. It is the largest commercial enterprise in the country. By venturing in to the Renewable and Nuclear Energy, the company has grown and evolved itself from a pure petroleum refining and marketing company to a full-fledged Energy Company.

Indian Oil is ranked 137th among the world's largest (and first among Indian enterprises) in the prestigious "Global 500" listing for the year 2018.

The Energy of India, IndianOil accounts for nearly half of India's petroleum products market share, with sales of 88.76 million tonnes in 2017-18. Over 35% national refining capacity and 71% downstream sector pipelines throughput capacity are with IndianOil. What's more, the IndianOil Group owns and operates 11 of India's 23 refineries, with a combined refining capacity of 80.7 million metric tonnes per annum (MMTPA). We led the industry in keeping its commitment to supply cleaner, 100% BS-IV compliant automotive fuels across the country from 1st April, 2017 and advanced supply of BS-VI auto fuels to Delhi/NCR w.e.f 1st April, 2018.

IndianOil's nearly 13,400 km cross-country pipelines network facilitates the transportation of crude oil to refineries and finished products to high-demand centers in an efficient, economical and environment-friendly manner. Its throughput capacity of 94.20 MMTPA for crude oil and petroleum products and 9.5 MMSCMD for gas makes it one of the largest pipeline networks in the world.

As the commercial enterprise with the largest customer interface in India, IndianOil has the onerous task of reaching precious petroleum fuels to every nook and corner of the country through its network of over 48,000 customer touch-points, surmounting the challenges of tough terrain, climate and accessibility. This includes 27,000+ fuel stations, including over 7,000 Kisan Seva Kendra (KSK) outlets in rural markets.

While serving millions of customers from diverse segments, IndianOil has also built up a portfolio of leading energy brands, including Indane LPG cooking gas, SERVO lubricants, XTRAPREMIUM petrol, XTRAMILE diesel, PROPEL petrochemicals, etc. Besides the corporate brand, both SERVO and Indane are over 50 year old brands and have earned the coveted Superbrand status.

IndianOil's sprawling R&D Centre at Faridabad, one of Asia's finest in downstream petroleum R&D, offers competitive advantage to the Corporation through world-class technology and process solutions and innovative products. With four decades of pioneering work in lubricants formulation, refinery processes and pipeline transportation, the Centre has garnered 611 patents, of which over 388 are international patents.

Over the past decade, IndianOil has assiduously built its new businesses, that is, petrochemicals and natural gas marketing, to a level where they have achieved integration into the core verticals. The Corporation's upstream forays into exploration & production have also yielded significant results in the form of a sizeable portfolio of oil & gas assets.





## About SERVO

SERVO brand, from IndianOil, is the brand leader among lubricants and greases in India and has been conferred the 'Consumer Superbrand' status by the Superbrands Council of India. Recognized for its brand leadership by the World Brand Congress and as a Master Brand by CMO, Asia, SERVO has now carved a significant niche in over 30 countries across the globe.

With over 1000 commercial grades and over 1,500 formulations encompassing literally every conceivable application, SERVO serves as a one-stop shop for complete lubrication solutions in the automotive, industrial and marine segments.

Recognized for cutting-edge technology and high-quality products, SERVO is backed by IndianOil's world-class R&D and an extensive blending and distribution network. IndianOil's sprawling Research & Development Centre at Faridabad near Delhi is one of Asia's finest, and plays a key role in supporting the Corporation's business interests by developing economical, environment friendly technology solutions. Established in 1972, it has delivered pioneering results & won recognition for four decades of pioneering work in lubricants formulation, refinery processes, pipeline transportation, alternative fuels and fuel efficient appliances, and holds 384 active patents, of which 233 are international patents.

IndianOil has fourteen Lube Blending and Small Can Filling units at various locations in the country, one drum manufacturing plant at Chennai and one grease manufacturing plant situated at Vashi near Mumbai. Highest priority is accorded to quality assurance, safety and environment protection with the ultimate objective of achieving customer delight. All the plants are accredited with ISO 9001 Quality Management Systems (QMS). Most modern Quality Control Laboratory forms an integral part of all above locations. The laboratories are equipped with state-of-the-art facilities for evaluation and testing of base oils, additives and finished products as per Indian and International Standards like BIS, ASTM, IP, DIN, JIS, DEFSTAN, FTMS and ISO etc. Strict Quality Control is exercised as per laid down procedures of ISO 9001/ ISO TS 16949 QMS with respect to raw material receipts, blending, finished and packed lubricants and greases towards ensuring quality products reach the end customers.

In the retailing segment, besides IndianOil petrol stations, SERVO range of lubricants is available through a network of a unique SERVO Stockist Management System (SSMS) across the country. The products are available in every corner of the country through various retailing initiatives like SERVOPRESS stations, bazaar outlets and thousands of auto spare parts shops across the country along with a unique concept of Gramin SERVO Stockists to reach the rural hinterland.

SERVO from IndianOil meet the requirements of all core industrial sectors of India spanning defence, railways, cement, coal, steel, sugar, power, marine, surface transport, engineering, fertilizers, etc. IndianOil's SERVO grades of lubricants are patronized by these core sector industries for over five decades now. IndianOil takes pride in having a product for every application.

IndianOil's Technical Service Engineers are available on call to provide onsite Tribology consultancy and value added services. Backed by incisive knowledge of equipment, processes and machinery, IndianOil team can provide solutions to just about anything - automotive or industrial.



## SERVO HYDRAULIC OILS

### SERVO SYSTEM SERIES

Servosystem oils are recommended as fluid media for hydraulic systems and hydraulic pumps even under severe operating conditions in stationary and mobile equipment. These oils are also recommended for circulation, splash, bath and ring oiling systems of the bearings (both plain and anti-friction) and gears of industrial machinery that require a long life lubricant.

These oils can be used for chain drives and compressor crankcase lubrication. They are not suitable for lubrication of turbines and silver or silver coated components in any equipment.

ISO VG GRADE	32	46	68	100	150	220	320	460
Kinematic Viscosity, cSt @ 40°C	29-33	43-48	64-72	95-105	145-155	210-230	315-350	440-500
Viscosity Index, Min	95	95	95	90	90	90	90	90
Flash Point (COC), °C Min.	190	200	210	210	230	230	230	260
Pour Point, °C Max.	(-) 6	(-) 6	(-) 6	(-) 6	(-) 6	(-) 3	(-) 3	(-) 3
Rust Test, (D-665 A&B, 24 hrs.)	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

### SERVO SYSTEM HLP SERIES

Servosystem HLP oils are recommended as a fluid media in hydraulic systems, operating under extremely severe conditions. These oils are recommended for sophisticated high performance electro-hydraulic or numerically controlled systems. Servosystem HLP oils are also recommended for lubrication of screw compressors requiring oil of excellent thermal stability and low CCR value. These oils are not suitable where the components are of silver or silver coated.

ISO VG GRADE	15	22	32	46	68	100	150
Kin. Viscosity @ 40 °C, cSt	14.2-15.8	20-24	29-33	43-48	64-72	96-104	145-155
Viscosity Index, Min	100	100	100	98	95	95	90
Flash Point(COC), °C, Min	170	165	200	204	210	210	230
Pour Point, °C, Max	(-) 30	(-) 21	(-) 21	(-) 15	(-) 12	(-) 12	(-) 6
Emulsion Test D-1401, 40 37-3, Minutes, Max	15	15	15	15	15	20	20
FZG, Rating Stage, Failure	-	-	10	10	10	10	11



#### Hydraulic Oils - SERVO SYSTEM Series (HLP/XLP/HLP AF/HLP-D)

- Meet International Standards with respect to vane pump wear control, demulsibility, filterability and foam control
- Possess High Viscosity Index and FZG load carrying ability to protect hydraulic systems
- Outstanding oxidation and thermal stability ensuring long service life.



## HYDRAULIC OIL FOR MOBILE EQUIPMENTS

- Since there are no industry-wide standards for mobile hydraulic fluids, OEM recommendations, combined with fluid specifications, drive development and performance.
- It is a common practice in the construction and mining industries to use engine oil SAE 10, SAE 20 or SAE 30 with the lowest API rating as a substitute for hydraulic oil ISO 32, ISO 46 or ISO 68, respectively for hydraulic systems of heavy equipment.
- There is also a class of hydraulic fluids (DIN 51524) that contains dispersive and deterative additives much like engine oils. The use of these fluids is approved by many OEMs and can offer several advantages in mobile equipment such as preventing varnish, sludge.
- Some OEMs recommend using multi-grade oil in hydraulic systems for their mobile equipment. Viscosity index (VI) improves extend the operating temperature range for the fluids from cold starts to high-temperature operations. Multigrade oils with outstanding shear stability are the wave of the future as the equipment is able to perform work using less fuel, lowering the cost of operation. Servo hydraulic oil are available under
  - **Servosystem HLP Series** (VG 32, 46, 68, 100 & 150) premium AW hydraulic oils. The oil meets Denison HF-0 and DIN 51524 part 2 specs.
  - **Servo Hydrex Series** (VG 32, 46, 68 & 100), high viscosity index anti-wear hydraulic oil. It meets E & F specs and DIN 51524 Part-3 Specification. Servohydrex series meets requirements of LT CEL excavators.
  - **Servohydrex Plus Series** formulated with group-3 base oils is ideal for long drain in high capacity excavators at 4500 hours as compared to the conventional oils with 1500 hours drain period.
  - **Servohyvis EE 46** is formulated with DYNAVIS® Technology which stands for 'more power' and 'less fuel'. With this fluid, users can count on 'increased productivity, fuel savings, better reliability and sustained performance from construction equipment'.



### SERVO Hydraulic Oils

Product	Specification	Salient Features
Servo Ultra KB10	Komatsu-BEML specs	1000 hours drain
BEML Hydraulic EH 10 CD	BEML specs (BEML Hydraulics)	1000-1500 hours drain, high antiwear protection
Servosystem HLP 46/68	DIN 51524 (part II),	1000 hours drain, excellent filterability and hydrolytic stability
Servosystem XLP 46 / 68	DIN 51524 (part II)	1200 hours drain, greater wear protection
Servohydrex TH 46 / 68 / 100	DIN 51524 (part III), High Viscosity Index	1500 hours drain
Servo Excavator TH 46	Tata Hitachi approved	1500 hours drain
Servo Hydro Supreme 10	Meets Caterpillar requirements	Long drain (3000 hours), extra wear protection, excellent filterability & hydrolytic stability
Servohydrex TH 46 Plus	DIN 51524 (part III), Very High Viscosity Index	4000 hours drain interval high performance oil
Servohyvis EE 46	DIN 51524 (part III), Extra High Viscosity Index	4000 hours drain interval, up to 12% fuel savings

## INDUSTRIAL OILS - MACHINE TOOLWAY OILS

### SERVO WAY OILS

Servo way oil is recommended as high performance machine tool lubricants under extreme load and pressure conditions. This oil has been established for more than few decades in machine tool operation with an excellent uninterrupted performance in use.

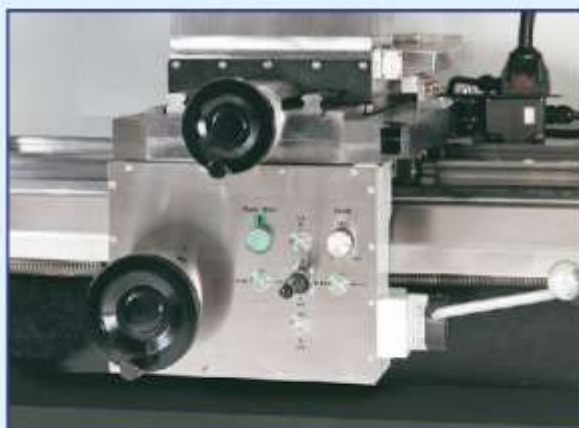
These oils are excellent products for slide way lubrication of planers, grinders, horizontal boarding machines, shapers jig borers etc., involving high precision work.

ISO VG GRADE	32	68	220
Kinematic Viscosity, cSt @ 40°C	29 - 33	64-72	212 – 228
Viscosity Index, Min C, Min	95	95	90
Flash Point (COC), °C Min.	160	170	190
Pour Point, °C Max.	0	0	0
Rust Test, (D-665 A&B, 24 hrs.)	Pass	Pass	Pass

### SERVO WAY H OILS

Servo way H oils are hydraulic and machine way lubricant specially formulated for efficient lubrication of a wide variety of industrial equipments. Servo way H oils are high performance way guide lubricants cum hydraulic oil having tackiness, antirust and anti foam additives to provide minimum stick-slip and chatter. It provides smooth sliding action and can also be used in Hydraulic application.

ISO VG GRADE	Servo Way H32	Servo Way H57	Servo Way H68
Kinematic Viscosity, cSt at 40°C	29 - 35	54 - 60	64-74
Viscosity Index Min	90	90	90
Flash Point COC, °C, Min.	200	198	200
Pour Point, °C, Max	0	0	0
Rust Test	Pass	Pass	Pass





## INDUSTRIAL OILS - SPINDLE OILS

### **SERVO** SPIN OILS

Servospin oils are recommended for use in high speed textile spindles and machine tool spindle bearings. These oils are also used in wood working machine spindle bearings.

Other high speed applications for Servospin oils include timing gears of positive displacement blowers, centrifugal tracer mechanism, hydraulic systems of precision machine tools.

ISO VG	2	5	12	22
Kinematic Viscosity, cSt @ 40°C	2.0 - 2.4	4.5 - 5.0	11-14	20-22
Flash Point (COC), °C, Min	70	70	144	160
Pour Point, °C Max.	0	0	(-)-3	(-)-3
Rust Test, (D-665A, 24 hrs.)	Pass	Pass	Pass	Pass
Colour	1.5	2.0	2.5	2.5

### **SERVO** SPIN EE - ENERGY EFFICIENT SPINDLE OILS

Servospin EE oils are recommended for use in high speed textile spindles and machine tool spindle bearings. These oils are also used in wood working machine spindle bearings. Other high speed applications for Servospin EE oils include timing gears of positive displacement blowers, centrifugal tracer mechanism, hydraulic systems of precision machine tools.

ISO VG	10	22
Kinematic Viscosity, cSt @ 40°C	9-11	20 - 24
Viscosity Index	90	90
Flash Point (COC), °C, Min	144	160
Pour Point, °C Max.	(-) 12	(-)-3
Colour	2.5	2.5



#### SERVO RANGE OF PRODUCTS INCLUDE -

SERVO TEXSHINE  
SERVO SPIN EE  
SERVO KNITCLEAN  
SERVO LOOM

- There's one name that ensures the nation's spinning mills keep running without fail
- They are specially designed for the textile industry Choose 100% performance every time, with SERVO



## INDUSTRIAL OILS - GEAR OILS

**SERVO** industrial gear oils (mineral as well as synthetic) provide superb wear protection against shock loading, superior anti-foaming, outstanding water separation, prevents rust and corrosion, superior compatibility with bearing & gear metallurgies which extends the life of the gear oil as well as the gearbox.

**SERVO** has a wide range of mineral & as well as synthetic gear oils in its range which provides energy efficiency and anti-micropitting properties. Servomesh Gold and Servosyngear Plus oils are approved by Flender-Siemens for their gear boxes.



### **SERVO** Mesh SP Series

ISO VG	68	100	150	220	257	320	460	680	1000
Kin. Viscosity, cSt @	64-72	95-105	145-155	210-230	250-280	320-350	420-500	615-660	980-1050
40°C	90	90	90	90	90	90	90	90	80
Viscosity Index, Min.	204	204	204	232	232	232	232	232	280
Flash Point (COC), °C,	(-)6	(-)6	(-)6	(-)3	(-)3	(-)3	(-)3	(-)3	(+)6
Min	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

### **SERVO** Industrial Gear Oils

Performance at a Glance			
Product	Wear Protection	Long Oil Life	Equipment Efficiency
Servomesh Gold Oils*	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆
Servomesh XP Oils	☆☆☆☆☆	☆☆☆☆☆	☆☆☆☆
Servomesh Plus Oils	☆☆☆☆	☆☆☆☆	☆☆☆
Servomesh EE Oils	☆☆☆	☆☆☆	☆☆☆
Servomesh SP Oils	☆☆	☆☆☆	☆☆

\*Approved by Flender-Siemens

Performance values are relative indication only

### **SERVO** Synthetic Gear Oils

Product	Type	VI	Remarks
Servosyngear series	PAO	140 - 145	ISO VG 100 - 3200
Servosyngear HVI series	PAG	200 - 250	ISO VG 100 - 1000
Servosyngear Plus series*	PAO based Anti-Micropitting	145 - 150	ISO VG 220 - 680
Servosyngear AMP series	PAO based Anti-Micropitting	155 - 160	ISO VG 320 - 460

\*Approved by Flender-Siemens

## SERVO CUTTING FLUIDS

In metal cutting processes excessive heat is generated at the tool-work-piece interface. If not mitigated, this could lead to wear & tear of work-piece and the tools. Cutting fluids are coolants and lubricants designed to cool, lubricate and cushion the surfaces during metal cutting processes.

**SERVO offers a range of environment friendly, world-class cutting oils that:**

- Keep the work-piece at a stable temperature.
- Maximize the life of the cutting tool by lubricating the working edge.
- Remove swarf from the point of machining and preventing rust.
- Ensure safety for the people handling it from toxicity, bacteria, and fungi.

SERVO offers neat cutting fluids, including Servocut, Servomet, Servohycut, Servohone, Servospark and Servogrind ranges for reduction of friction during broaching, honing, gear cutting, gun drilling etc. Oil-in-water emulsions prepared from SERVO cutting fluids are effective during grinding, milling, turning, boring etc., and have been further classified as mineral oil based soluble, semi-synthetic and synthetic cutting fluids. SERVO water soluble cutting fluids include Servocut, Servosynthcut and Servosynth ranges.

Cutting fluids marketed by IndianOil are given below:

Neat Cutting Oils	Kinematic Viscosity, cSt at 40°C	Flash Point, COC, °C, Min.
Servocut 51	20 - 24	160
Servocut 151	20 - 24	160
Servocut 201	31 - 35	170
Servocut 245	10 - 13	150
Servocut 253	9.5 - 12.5	120
Servocut 335	31 - 35	160
Servocut 345	40 - 44	180
Servocut 353	11.5 - 14.5	110
Servocut 355	35 - 39	170
Servocut 375	12 - 16	140
Servocut 945/ 945A	28 - 34	160
Servocut BR	45 - 49	170
Servocut BR 16	13 - 16	110
Servocut GR	2 - 2.5	90
Servocut ANC	11-14	160
Servomet 033	6.5 - 8.5	120
<b>Cutting-Cum-Hydraulic Oil</b>		
Servohycut DP 146	43.05 - 47.5	200
<b>Honing Oil</b>		
Servohone 7/ 7XL/ 7XL(T)	4 - 6	110
<b>Spark Erosion Fluids</b>		
Servospark 2	2 - 3	90
Servospark 3	3 - 4	110
<b>Strip Grinding Oil</b>		
Servogrind 12	11 - 15	160



Water Soluble Cutting Fluids	Kinematic Viscosity, cSt at 40°C	pH in Distilled Water (5% soln)
Servocut S	20 - 50	8.5 - 10
Servocut Super	30 - 55	9 - 10
Servocut Special	65 - 75	8.8 - 9.5
Servocut S 700	30 - 50	9-10
Servocut AL 23	44 - 59	8.5 - 9
Servocut EPS 452	30 - 46	8.5 - 9.2



Semi-Synthetic Cutting Fluids	Kinematic Viscosity cSt at 40°C	pH in Distilled Water (2.5% soln)
Servosynthcut 16	100 - 150	8.8 - 9.3
Servosynthcut 26	50 - 80	9 - 9.4 (5.0%)

Synthetic Cutting Fluids	Density @ 29.5 °C	pH in Distilled Water, g/ml (2% soln)
Servosynth 2	1.202	10 - 11.5
Servosynth 5	1.21	10 - 11.5
Servosynth 10	1.165	9 - 10.5 (2.5%)
Servosynth NF 15	1.08	11 - 11.5

## HEAVY DUTY DIESEL ENGINES OILS

Engines operating in limestone mines are built to handle bigger loads and the most severe operating conditions while delivering the best fuel economy per ton. A wide variety of equipment operates with such engines. These engines routinely average above 95% uptime in mining operations where load factors commonly exceed 40%.

Important factors to be considered while choosing an Engine Oil are:

- Appropriate SAE Viscosity, as recommended by OEM
- Adequate Performance Level as stipulated by API, ACEA etc.
- Viscosity consistency at wide operating temperatures
- Good TBN Characteristics.
- Good Soot Dispersancy
- Good Wear Protection.
- High Thermal & Oxidation Stability to minimize oil thickening & sludge.
- Long Oil drain, typically 500-1000 hours.
- Fuel economy improvement, without sacrificing durability.
- Changes in emissions and fuel efficiency regulations drive changes in engine hardware, which in turn, drive changes in heavy duty engine oil technology. Increased fuel economy and reduced greenhouse gases are being supported by lower 'high-temperature high-shear' engine oil viscosity.



### SERVO Heavy Duty Engine Oils

Product	Specification	Salient Features
Servo Premium CF-4 15W-40	API CF-4, SAE 15W-40	250 hours drain
Servo Pride XL 15W-40	API CH-4, SAE 15W-40	500 hours drain
Servo Pride Supreme 15W-40	API CI-4, SAE 15W-40	500 hours drain, EGR compatible
Servo Pride Supreme Plus 15W-40	API CI-4 Plus, SAE 15W-40	500 hours drain, EGR compatible, higher soot dispersancy
Servo Pride XL Plus 15W-40	API CI-4 Plus, SAE 15W-40	500 hours drain, EGR compatible, excellent soot dispersancy, cummins approved
Servo Pride TH Plus 15W-40	API CI-4 Plus, SAE 15W-40, For Tata Hitachi Eqpt.	500 hours drain, EGR compatible, higher soot dispersancy, Tata Hitachi approved
Servo Pride Max 15W-40	API CJ-4, SAE 15W-40	Low SAPS, compatible with DPF, ULS HSD fuel
Servo Pride XL Plus 10W-40	API CI-4 Plus, SAE 10W-40	500-1000 hours drain, EGR compatible, excellent soot dispersancy, fuel economy
Servo Pride XL 10W-30	API CH-4, SAE 10W-30	500 hours drain, fuel economy grade
Servo Pride XL Plus 10W-30	API CI-4+, SAE 10W-30	500-1000 hours drain, EGR compatible, excellent soot dispersancy, fuel economy grade



## COMPRESSOR OILS

Advancements in lubrication technology, especially in fully synthetic based products, have made significant breakthrough in extending equipment life and oil drain intervals in a range of industries.

- High quality synthetic lubricants deliver advantages which mineral oils cannot match. Under the severe operating conditions often experienced at a cement plant such as high temperatures, loads and pressures, synthetic lubricants offer better suitability.
- **Servosynco** E 32, 46, 68, 100, 150 & 220 - specially designed PAO based synthetic, long drain compressor oils for high pressures air compressors which provide excellent lubricity, low oil consumption rate and enhanced safety factor.

- **Servosynco** PE 32, 46, 68, 100, 150 & 220 - Polyol ester based fully synthetic compressor oils designed to lubricate reciprocating air compressors working under severe operating conditions, air discharge temperature exceeding 200°C. These oils possess superior oxidation stability, reduced carbon deposits tendency, high flash point and low volatility wear protection extended lubrication interval.



## GREASES

**SERVO** offers complete range of high-performance industrial greases which are backed by advanced technology for encountering harsh, humid, dusty environment of the cement industry. offers solutions for all the applications with a variety of thickener types (lithium, lithium complex, sulfonate complex, clay, polyurea, etc.) in mineral / semi-synthetic / synthetic base oils fortified with tailor made / synergistic additive compositions suitable to particular applications.

- **Servogem EP 00 / EP 0 / EP 1 / EP 2** - consist of lithium soap in highlyrefined base oil(s)

fortified with judiciously selected additives to provide extra protection against extreme pressure, wear, rusting and water washout.

- **Servogem Super HTXX** - based on calcium sulphonate thickener chemistry, possesses excellent extreme pressure/anti wear, anti-corrosion and anti-oxidant properties. Its unique combination of base oil & thickener fortified with solid additive in formulation boosts its inherent EP properties to take care of extremely high as well as shock loads. Servogem Super HTXX possesses excellent mechanical/ shear stability even in presence of water.

### SERVO GEM

NLGI GRADE	2	3
Colour	Light Brown	Light Brown
Structure	Smooth	Smooth
Soap Type	Lithium	Lithium
Worked Penetration @ 25°C, (60 Strokes)	265-295	220-250
Drop Point, °C Min.	180	180



### SERVO GEM EP

NLGI GRADE	00	0	1	2	3
Colour	Brown to Dark Brown	Brown to Dark Brown	Brown to Dark Brown	Brown to Dark Brown	Brown to Dark Brown
Structure	Smooth	Smooth	Smooth	Smooth	Smooth
Soap Type	Lithium	Lithium	Lithium	Lithium	Lithium
Worked Penetration	400-430	355-385	310-340	265-295	220-250
Drop Point, °C Min.	170	180	180	180	180
Timken OK Load, Min	40	40	40	40	40



## THERMIC FLUIDS

Heat transfer phenomena is one of the most important and requisite step in industrial processing for indirect heating. Heat transfer media are materials used in industrial processes to transfer heat. In engineering and particularly in chemical and process engineering large quantity of heat has to be transferred at elevated operating temperature. Thermal fluid heating is a type of indirect heating in which a liquid phase heat transfer medium is heated and circulated to one or more heat energy users within a closed loop system. In these cases, high boiling heat transfer media are recommended. HTF are thermally stable fluids used for indirect heating and cooling from -100°C to 400°C as circulatory media in hot oil systems. Different types of heat transfer fluids are used in industrial processes for transfer heat depending upon their operating temperature range.

### Requirements of Heat transfer fluid (HTF):

A heat transfer fluid must possess the following characteristics:

Low viscosity Lower the kinematic viscosity of the heat transfer fluid faster the heat transfer. Excellent thermal stability in the operating range High flash / fire point

- Low pour point
- High specific heat and thermal conductivity
- High resistance to oxidation
- High boiling point & low vapor pressure over the operating temperature range
- Broad fluid range applicability
- Low sludge formation and good solvency
- Non-toxic & odourless nature

Today market is dominated by mineral oils and synthetic fluids. Mineral oil based heat transfer fluids are mixtures consisting of paraffins or naphthenes based hydrocarbons, depending on origin. Mineral oils are generally recommended for a bulk oil temperature of 300°C beyond which they undergo oxidation and thermal cracking. Oxidation results in buildup of organic acids and the formation of insoluble materials or sludge, which causes the fluid viscosity to increase. Further the sludge is deposited on the heat transfer surfaces thereby reducing the rate of heat transfer.

Synthetic fluids are manufactured by petrochemical and chemical companies and consist primarily (with some exceptions) of components with an aromatic structure as the nucleus. Due to their molecular structure and the

strength of bonds between the atoms with the resultant high thermal stability, aromatic hydrocarbons are the most favorable class. Synthetic fluids offer the advantages of high boiling points, low vapor pressure, high auto ignition temperature, high thermal conductivity besides improved thermal/oxidation stability.

Our Servotherm oils have been specially developed for use as heat transfer medium in industrial application. These oils possess high viscosity index, excellent thermal and oxidation stability, low volatility and low vapour pressure to give long service life in well designed heat transfer systems. Servotherm Special is recommended for well-designed heat transfer system operating up to 315°C.

### Performance Benefits

- Give long service life since they have high resistance to thermal cracking and oxidation.
- Have high specific heat and good thermal conductivity at all temperatures, and consequently provide rapid heating and more flexibility in heat transfer systems.
- Perform efficiently in high as well as low temperature heating applications
- Ensure low power consumption since they maintain adequately low viscosity for easy pumpability over a wide range of temperature
- Do not have any toxicity and obnoxious odour
- Can be used in combined heating and cooling cycles

### Application

Servotherm oils are recommended as a fluid medium in various types of heat transfer system for indirect or secondary heating in industry. The use of these oils provide rapid heating and greater flexibility in heat transfer systems since they possess high specific heat and better thermal conductivity at all temperatures. These oils are suitable for use in both, closed as well as open type heat transfer systems. Servotherm oils have a high resistance to thermal cracking and hence maintain their heat transfer efficiency even when subjected to repeated high and low temperature cycles. The heat transfer system must be thoroughly cleaned and free from contaminants. All traces of dust, rust and residue of welding operations must be removed by flushing. After the flushing oil is drained the system must be free from moisture before it is charged with Servotherm oils. IndianOil offers mineral as well as synthetic base thermic fluids.

Grades (Mineral/ Synthetic)	Kinematic Viscosity, cSt at 40°C °C	TAN mg KOH/ gm	Flash Point, COC, °C, Min.	Max Operating Temperature
Servotherm Medium	29 - 33	0.02	208	315
Servotherm Special	28.5 - 33.5	0.05	208	315
Servotherm S Light	3.8 - 4.5	0.1	120	275
Servotherm S Medium	20 - 35	0.1	180	315
Servotherm S Special	14 - 24	0.05	208	320
Servotherm SHT 32	28 - 35.2	0.05	150	345
Servoduoetherm S	230 - 250	0.01	110	400
Servocyclotherm G	13 - 15	0.84	NA as water based	175
Servocyclotherm S	1.40 - 1070	0.01	71	250



## SELECTION CHART

Product	Operating Range	Description
Servotherm SHT-32	-24 °C to 345 °C	Designed for non pressurized/low pressure indirect heating systems
Servo Duotherm S	-12 °C to 400 °C	Heat Transfer Fluid which works both in Liquid & Vapor Phase
Servotherm S Special	-57°C to 320 °C	Replace mineral oil with a marginal cost difference but giving almost double life & Power Saving of conventional mineral oil. Because of superior detergency characteristics it can also be mixed with existing mineral oil for cleaning the heat exchanger lines. Thereby, cleaning the internal deposits leading to high heat transfer coefficients resulting in effective fuel savings.
Servotherm S Light	-60 °C to 250 °C	Works both in low & High Temperatures
Servocyclotherm S	-50 °C to 180 °C	Works both in low & High Temperatures. Replaces traditional Dual Steam/Brine or Steam/Glycol Systems. Used in Food Processing Industries.
Servotherm FG 32	-10 °C to 300 °C	Food Grade Thermic Fluid Made From White Mineral Oil
Servocyclotherm G	-50 °C to 170 °C	Works both in low & High Temperatures
Servotherm Special	-24 °C to 310 °C	High Quality Mineral Based Thermic Fluids



## SERVOTHERM SPECIAL (Mineral)

Servotherm oils are recommended as a fluid medium in various types of heat transfer system for indirect or secondary heating in industry. The use of these oils provide rapid heating and greater flexibility in heat transfer systems since they possess high specific heat and better thermal conductivity at all temperatures.

These oils are suitable for use in both, closed as well as open type heat transfer systems. Servotherm oils have a high resistance to thermal cracking and hence maintain their heat transfer efficiency even when subjected to repeated high and low temperature cycles. The heat transfer system must be thoroughly cleaned and free from contaminants. All traces of dust, rust and residue of welding operations must be removed by flushing. After the flushing oil is drained the system must be free from moisture before it is charged with Servotherm oils.

GRADE	SERVOTHERM SPECIAL
Kinematic Viscosity cSt @ 40 °C	28 - 35
Kinematic Viscosity cSt @ 100 °C	5.3
Viscosity Index, Min.	100
Flash Point (COC), 3C, Min.	214
Pour Point °C, Max.	-6

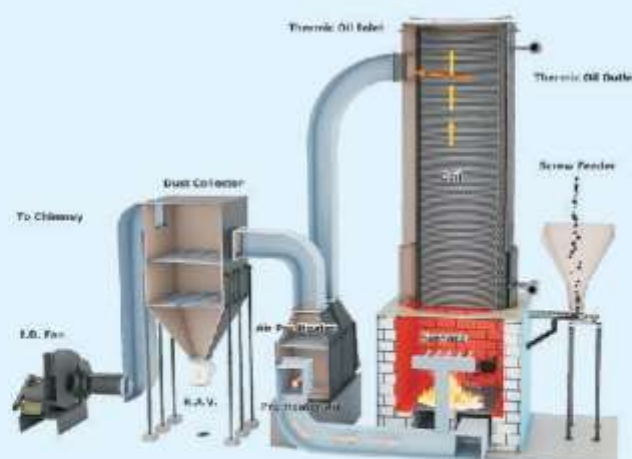
Servotherm Special is recommended for well designed heat transfer system operating upto 315°C.

## SERVOTHERM S SPECIAL (Synthetic)

Servotherm S Special is "fully synthetic" thermic fluid with comparable lower viscosity and thus better heat transfer properties. Servotherm S oils are recommended as a fluid medium in various types of heat transfer system for direct or secondary heating in industry. The use of these oils provide rapid heating and greater flexibility in heat transfer systems since they possess high specific heat and better thermal conductivity at all temperatures. Servotherm S oils have high resistance to thermal cracking and hence maintain their heat transfer efficiency when subjected to repeated high and low temperature.

GRADE	S SPECIAL
Kinematic Viscosity @ 40°C, cSt	14 - 24
Kinematic Viscosity @ 100°C cSt	3.88
Flash Point, COC, °C, Min	208
Copper Strip Corrosion @ 100°C, 3 Hrs, Max	1
Autoignition Temperature	378°C
TAN mg KOH/gm, Max	0.05

Servotherm S Special is recommended for bulk temperatures up to 320 °C.





**TRANSFORMER OILS - SERVOELECTRA SERIES  
(ELECTRA / PLUS /UX/IX)**



**TRANSFORMER OILS - SERVOELECTRA SERIES  
(ELECTRA / PLUS /UX/IX)**

- High quality insulation oils meeting National and International performance standards
- Approved by OEMs like BHEL, Crompton Greaves, Schneider, Voltamp, Railways, etc.
- In-use across different state utilities and important sectors like Steel, Power, etc.



**SERVO** -India's first choice



Industrial Oils | Automotive Oils | Marine Oils | Greases  
[www.servo.in](http://www.servo.in)