

# COMPLETE LUBRICATION SOLUTIONS FOR INDUSTRIAL APPLICATION



## METAL WORKING FLUIDS



**M/S Uma Steel Traders**  
Authorised Servo Stockiest Industrial

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While **SERVO** from IndianOil is the leader in the overall lubricants industry including the automotive segment, **SERVO** has been the undisputed leader in the industrial segment over the past few decades. With its comprehensive range of industrial grades and extensive nation-wide supply network of industrial stockists, **SERVO** literally turns the wheels of Indian industry. Backed by one of Asia's finest R&D facilities, with cutting-edge lubrication technology, **SERVO** offers customized formulations to match the rigorous performance standards of OEMs for industrial grades of lubricants. **SERVO** counts among its major customers, leading industries across the country including vehicle manufacturers, steel plants, heavy engineering industries,

thermal & hydel power plants, mining giants, state transport corporations, cement manufacturers, shipping and dredging companies, railways and defense forces.

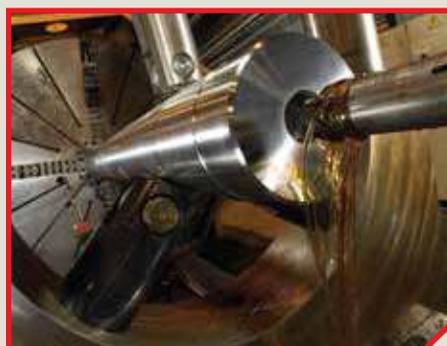
**SERVO** adds enormous value to its industrial lube customer base through professional guidance on lubrication through its army of technical services engineers who work hand in hand with the shop floor engineers, thus maximizing the advantages of **SERVO** industrial lubricants. **SERVO** offers a complete and one-stop lubrication solution for every possible industrial lubrication application.

### 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

<b>Neat Cutting Oils</b>	<b>Kinematic Viscosity, cSt at 40°C</b>	<b>Flash Point, COC, °C, Min.</b>
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	43.5 - 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
<b>Water Soluble Cutting Fluids</b>	<b>Kinematic Viscosity, cSt at 40°C</b>	<b>pH in Distilled Water (5% soln)</b>
Servocut S	20 - 50	8.5 - 10
Servocut Super	30 - 55	9 - 10
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, g/ml	pH in Distilled Water (2% soln)
Servosynth 2	1.202	10 - 11.5
Servosynth 5	1.210	10 - 11.5
Servosynth 10	1.165	9 - 10.5 (2.5%)
Servosynth NF 15	1.080	11 - 11.5

## SERVO FORMING & DRAWING OILS

Metal forming is a process in which the metal is forced to flow in order to acquire the desired dimensions by the use of suitable mechanical equipment. Metal forming includes pressing, stamping, deep drawing, wire drawing or tube drawing and forging; all performed cold to impart the drawn product with accurate tolerances, favorable grain structure, improved material properties and good surface finish.

Rod or bar drawing refers to the drawing of work of larger cross sections, while wire drawing refers to the forming of work of a relatively smaller profile. During these operations, considerable amount of heat and stress is generated.

Lubrication is an important factor during metal drawing and **SERVO** has a range of forming and drawing oils including Servoform and Servowiredraw that effectively help control the forces and metal flow, besides extending the life of the mould. They also reduce temperature and improve surface finish.



Forming & Drawing Oils marketed by IndianOil are given below:

Forming Oils			Drawing Oils		
Product	Kinematic Viscosity, cSt at 40°C	Flash Point, COC, °C, Min.	Product	Kinematic Viscosity, cSt at 40°C	Flash Point, COC, °C, Min.
Servoform 100	90 - 110	220	Servowiredraw	38 - 45	150
Servoform 220	220 - 240	200	Servowiredraw AL	2.2 - 2.8	96

## SERVO ROLLING OILS

Rolling involves plastically deforming a metal work piece by passing it between rolls to obtain the required thickness and shapes through flat and profile rolling.

Excessive surface wear of work rolls has been a major problem of industries, impacting their operating economics. More over, such wear with increasing demand for higher surface quality of rolled products requires frequent changes of work rolls with re-dressed rolls.

Without proper lubrication and cooling, all the moving and in-contact rolls/materials get abnormally heated up and suffer irreversible damage.

Reducing the coefficient of friction with **SERVO** high performing rolling oils not only brings down the frictional heat during rolling, but also immensely reduces the roll force required.

**SERVO** offers a comprehensive range of hot and cold rolling oils for aluminium, copper and steel with varying kinematic viscosities and flash points. These includes Servoarol, Servocubrol and Servosteerol rolling oils.



Rolling Oils marketed by IndianOil are given below:

	Kinematic Viscosity, cSt at 40°C	Flash Point, COC, °C, min.
<b>Aluminium Hot Rolling Oil (Soluble)</b>		
Servoarol 76	38 - 52	170
Servoarol 126	115 - 135	150
<b>Aluminum Cold Rolling Oil (Neat)</b>		
Servoarol Light	1.8 - 2.9	105
<b>Copper Cold Rolling Oil (Neat)</b>		
Servocubrol 10	9 - 11	130
<b>Steel Cold Rolling Oil (Soluble)</b>		
Servosteerol C 17	55 - 60	180
Servosteerol C 29	40 - 50	200
Servosteerol C 30	32 - 38	200
Servosteerol C 105	50 - 60	200

	Kinematic Viscosity, cSt at 40°C	Flash Point, COC, °C, Min.
Servosteerol C 5	40 - 44	170
Servosteerol SS C6	52 - 62	190
Servosteerol SS C28	50 - 60	190
Servosteerol SS C205	50 - 60	200
Servosteerol SS C215	50 - 60	200
Servosteerol SS C25	38 - 46	200
<b>Steel Hot Rolling Oil</b>		
Servosteerol H2	50 - 60	190
Servosteerol H3	75 - 85	200
Servosteerol H4	50 - 60	200
<b>Steel Cold Rolling Oil (Neat)</b>		
Servosteerol 15	22 - 26	160
Servosteerol 22	18 - 22	186
Servosteerol 22 (J)L	6.5 - 8.5	160

## SERVO QUENCHING OILS

Performance of steel improves greatly with quenching, which is a very important process in heat treatment. It involves rapid cooling which is generally achieved by cooling at the Critical Cooling Rate to avoid formation of soft constituents in the steel.

**SERVO** has an extensive range of cold & hot, slow & fast quenching oils and polymer quenchants available in low, medium & high viscosities. **SERVO** quenching oils include Servoquench, Servomartemp and Servopolyquench ranges.

While **SERVO** cold quenching oils are designed for general-purpose use at oil bath temperatures of up to 80°C, hot quenching oils are designed for use at higher temperatures up to 200°C. Servopolymer quenchants are PAG based quenching fluids formulated using selective polymers and additives for corrosion protection, stable pH control and superior biocide activity in water solution for uniform quenching performance. These can also be used as substitute for mineral oil based quenching oils for a healthy working environment.



Quenching Oils marketed by IndianOil are given below:

<b>Cold Quenching Oil (bulk oil temp &lt; 80 °C)</b>	<b>Kinematic Viscosity, cSt at 40°C (typical)</b>	<b>Flash Point COC, °C, Min.</b>	<b>Viscosity Index (typical)</b>	<b>Max. Cooling Rate °C/sec</b>
Servoquench 107	21	176	100	66
Servoquench 11	29.6	200	95	65
Servoquench 707	22.9	176	95	71.8
Servoquench C 11	32.1	200	110	68
Servoquench 507	32.7	200	104	70.0
Servoquench HS	15.1	160	103	78.3
Servoquench Super HS	15.2	160	116	92.7
Servoquench 807	19.8	170	106	91.5
Servoquench F1	31	220	115	96
Servoquench 207	18.3	170	120	104.8
<b>Hot Quenching Oil (bulk oil temp &lt; 200 °C)</b>	<b>Kinematic Viscosity, cSt at 40°C (typical)</b>	<b>Flash Point COC, °C, Min.</b>	<b>Viscosity Index (typical)</b>	<b>Max. Cooling Rate °C/sec</b>
Servomartemp	31	510	280	90
Servomartemp 170	16	170	260	92
Servomartemp 65	9	65	230	108
<b>Polymer Quenchants (bath temp : 25 to 55 °C)</b>	<b>Kinematic Viscosity, cSt at 40°C (typical)</b>	<b>Appearance - Visual</b>	<b>pH of 10% soln.</b>	<b>Rust Test - ASTM D 665A</b>
Servopolyquench 300	250	Clear Liquid	8.0 – 10.0	Pass
Servopolyquench 600	530	Clear Liquid	8.0 – 10.0	Pass
Servopolyquench 1500	1400	Clear Liquid	8.0 – 10.0	Pass

## **SERVO RUST PREVENTIVES**

Rust is corrosion that occurs on iron and steel surfaces in the presence of both oxygen and water.

Rusting turns strong metal into a flaky powder, slowly eating away at it, and costs the metal industry several billions of dollars every year.

**SERVO** has a wide range of rust preventives, including intermediary storage protection oils and long duration

protection oils available in different viscosity ranges and provide solutions across varied applications and needs.

**SERVO** rust preventives include oil based, solvent based bituminous & non bituminous grades.

**SERVO** rust preventives for electrostatic spray are approved by international OEMs including Peabody and Ravarini.



Rust Preventives Oils marketed by IndianOil are given below:

Rust Preventives (Oil Based)	Kinematic Viscosity, cSt at 40°C	Rust Protection-Humidity Cabinet Test (D 1748), Pass Hrs	Flash Point COC, °C, Min.
<b>General Grades</b>			
Servo RP 125	20 - 25	300	160
Servo RP 130	16 - 25	360	150
Servo RP 130 Plus	19 - 23	400	125
Servo RP 130 RS	22 - 24	550	125
Servo RP 130 B Super	15 - 16	600	120
Servo RP 130 Super	23 - 27	600	124
Servo RP 130 Super (T)	28 - 32	650	140
Servo RP 150	21 - 25	720	130
Servo RP 200	85 - 95	650	215
<b>With Load Bearing Ability</b>			
Servo RP 150 Plus	145 - 155	> 600	200
<b>Approved by International Electrostatic Spray OEMs</b>			
Servo RP 180 ES	68 - 78	650	220
Servo RP 190 ES	20 - 24	288	200
<b>For Bearing Industry</b>			
Servo RP B	170	> 850	208

Rust Preventives (Solvent Based - Non Bituminous)	Kinematic Viscosity, cSt at 40°C (typical)	Rust Protection-Salt Spray Corrosion Test (B 117), Pass Hrs	Flash Point COC, °C, Min.
Servo RP 102 WD	1.57	26	32
Servo RP 103 WD	1.88	32	32
Servo RP 104 WD	1.94	35	32
Servo RP 105 WD	13.7	75	60
Servo RP 106 WD	25	32	55
<b>Rust Preventives (Solvent Based - Bituminous)</b>			
RP 116 B	5.1	500	48
RP 116 BX	3.6	600	48



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