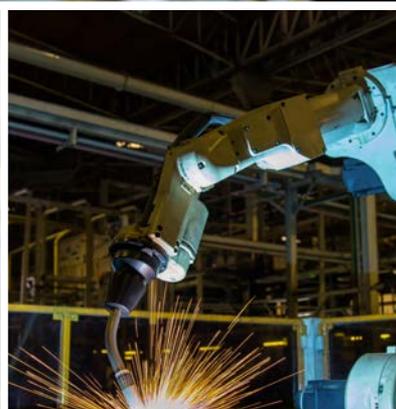


# Industrial oil as a service

SKF RecondOil



**RecondOil**<sup>®</sup>



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This catalogue shows a selection of DST compatible, high-performing SKF oils. The oils are highly customizable and can be developed and tailored for specific applications or industries.

# The industrial oil challenge

One of the main causes of premature equipment failure is lubricant contamination. In fact, up to 40% of maintenance costs are lubricant related, making proper lubrication management vital for profitability. And the lubricants themselves come at a high cost - not only in monetary terms but above all for the environment.

To meet global demand, large amounts of crude oil need to be extracted. And once extracted, the crude oil needs to be shipped, refined, shipped again and then modified to fit its purpose - before even reaching distributors and end users.

What's more, when it reaches the end of its intended life, the oil needs to be disposed of. Today, only a small part of it is recycled, often into base lube oil that is stripped of the additives from the original modification process. The recycled base oil then, again, needs to be shipped, re-modified and redistributed. In most cases, however, it is dumped or burnt as fuel.

In every step along its supply chain and life cycle, industrial oil causes environmental impact and creates CO<sub>2</sub> emissions - be it from the machinery involved in the extraction process, the engines burning gasoline while the oil is being shipped from place to place, or the burning of used oil.

## What if you could use the same oil again and again?

Today's linear use of industrial oil - where oil is circulated until it degrades, then gets discarded and replaced with new oil - is extremely unsustainable and inefficient. But an oil's lifetime is limited by degradation. And since viable methods to remove the causes of degradation have not been available, a linear use of oil has been the norm.

Different solutions for removing contaminants from industrial oil have been around for quite some time. However, getting rid of particles smaller than a micron has been nearly impossible with conventional methods. Over time, these miniscule particles accumulate and act as catalysts for oxidation, which causes the oil to degrade.

Conventional filters that can remove submicron particles also risk stripping the oil of the additives that give the oil specific properties and functionality. Eventually, the oil has lost its functionality and has to be replaced to not damage the application or the process.

But what if you could reuse all your industrial oil? Again, and again, without losing any of its original qualities.



# Complete recovery and reuse of oil

With SKF RecondOil, a circular recovery and reuse of industrial lubrication oil is possible. We can help you cut lubrication costs, and at the same time reduce environmental impact and CO<sub>2</sub> emissions.

Our Double Separation Technology (DST) can capture and separate particles and other impurities down to nano-size from the oil. By removing the nano particles – and all other particles as well for that matter – we maintain the oil's original properties and prevent it from aging.

And in contrast to conventional filtering technologies, DST allows continuous regeneration of the same lubrication oil – without stripping it of the additives that provide the characteristics that your machines and production processes require.

In fact, with DST, we can purify the oil to higher levels of cleanliness than completely new oil. As a result, in some processes, the DST treated, ultra-clean oil provides higher performance than new, off-the-shelf virgin oil. In other words – the output of a production process could be higher and more stable.

DST enables completely circular recovery and reuse of industrial oils – with all original properties retained. And by regenerating the same oil – over and over again – an uncompromised circular use is created.



# DST – a proven technology

DST is a patented technology, with roots in biochemistry. In contrast to conventional filter technologies, DST is an advanced process, involving chemistry, process know-how and mechanical separation. It's the only industrialized solution available today that can remove nano particles out of industrial oil.

The DST process takes place in a system that is either integrated into an applications existing oil circulation system, or in stand-alone units.

The systems are scalable, and their size depends on the volume of oil treated, level of contamination, and required throughput; we can adapt the technology to the system at hand.

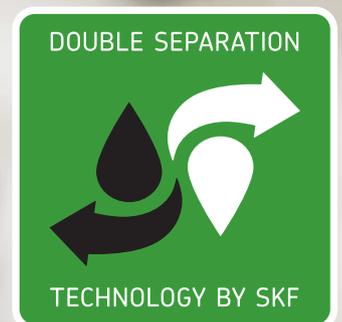
The technology has been extensively tested, in real operating conditions. During testing, we have been able to achieve particulate matter reduction of very small particles (less than <0.2 micron) by as much as 90-99%\*.

\* Measured against ISO 4406:1999

## SKF high-performance oil

By combining our patented Double Separation Technology (DST) with high-performing SKF oil, we can extend the lifespan of the oil almost endlessly.

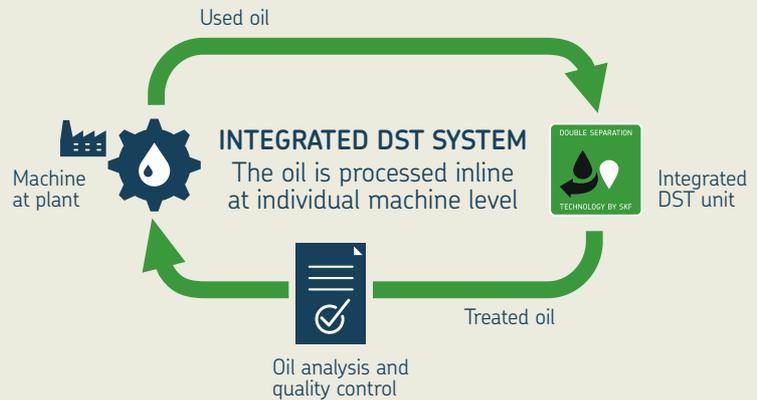
DST and SKF high-performance oils enable a completely circular use of industrial oil. SKF oils are designed for machine performance, regeneration and circular use. They are made with top-quality, long-lasting base oil, which we combine with highly specialized additives formulated by our team of oil experts. The additives are highly customizable to meet your specific needs. We can also develop new formulas to solve specific problems in your production process.



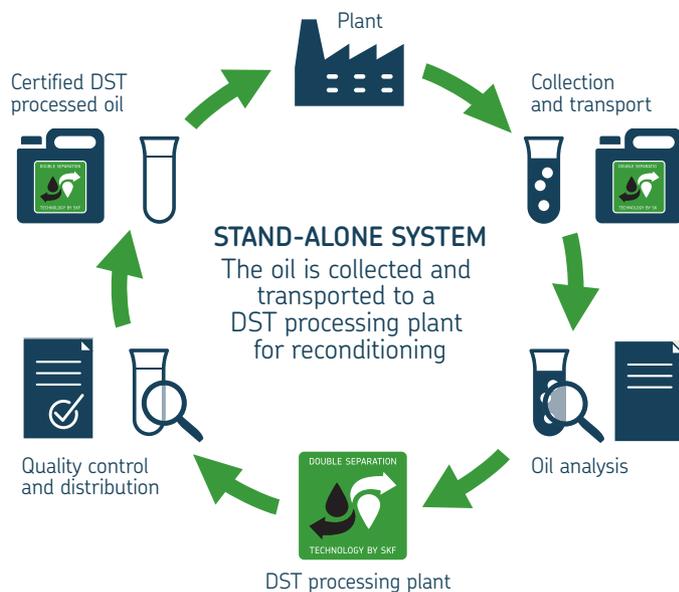
## There are two main approaches to DST oil regeneration:

### Integrated DST system

With an integrated DST system\*, the oil is regenerated in line with your machine's existing lubrication system. The DST system performs a kidney function to keep the oil in circulation continuously clean. This means super-clean oil can be circulated again and again, enabling constant top performance and top final product quality – with no oil changes or disposal of used oil required.



### Stand-alone DST system



A single Stand-alone DST system\* can be used to regenerate a variety of different oils.

Once the oil in your machine has reached the highest acceptable point of degradation and contamination it can be transported to the Stand-alone DST system for regeneration. In the meantime, your machine is refilled with a new batch of oil.

The collected oil is regenerated: all contaminants are removed, additives are adjusted, and the oil quality is checked and approved for reuse. In this way, we create a completely sustainable, circular loop of industrial oil.

And since no more purchases or disposal of industrial oil are required, more frequent oil changes are viable – offering a significant impact on performance and product quality.

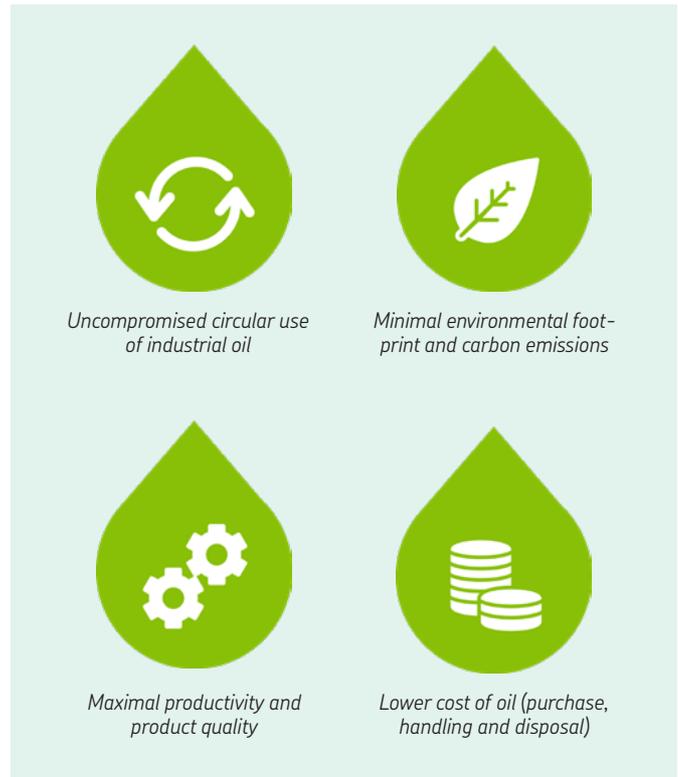
\* In Sweden and Mexico the DST systems are currently offered through exclusive licenses and not SKF RecondOil directly.

# Oil as a service – buy once, use forever

With SKF RecondOil's Oil as a service, we're changing the business models for industrial oil.

Your oil purchase and disposal costs are significantly reduced and replaced with our profitable oil as a service fee or performance-based contracts. With our performance-based contracts, you're charged on your operations performance measured against predetermined KPIs – productivity, less downtime, energy use or other relevant parameters – that we establish together with you.

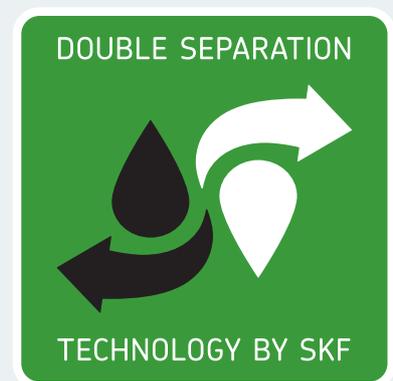
Rather than paying for equipment and oil in a traditional, transactional model, both you and SKF are benefitting from maximising your machinery's productivity, reliability and efficiency. This means you no longer have to view industrial oil as a costly, environmentally harmful consumable, but instead as an enabler of a cost-effective, circular process.



## Seven years without oil changes – and counting

A Swedish steel maker installed an in-line DST regeneration system in one of their production lines. As a result, the company went from a 12-week oil change cycle to not having to replace the oil at all for seven years.

So far, 32 oil changes have been avoided, and the same oil is still being regenerated. The company has also seen a significant increase in productivity thanks to continuously super-clean oil, constant top product quality and avoided downtime.





# DST Gear

High quality mineral base oil



## Description

DST Gear is a series of industrial gear oils based on a high quality mineral base oil and high performance EP-additives to obtain the following properties:

- A very good resistance towards high and shock loads
- A good high temperature performance
- Good corrosion protection
- Excellent anti-wear properties
- A very good activity against foaming
- A low pour point

## Application

DST Gear is specially developed for the lubrication of almost any type of industrial gear box, even those exposed to high and shock loads.

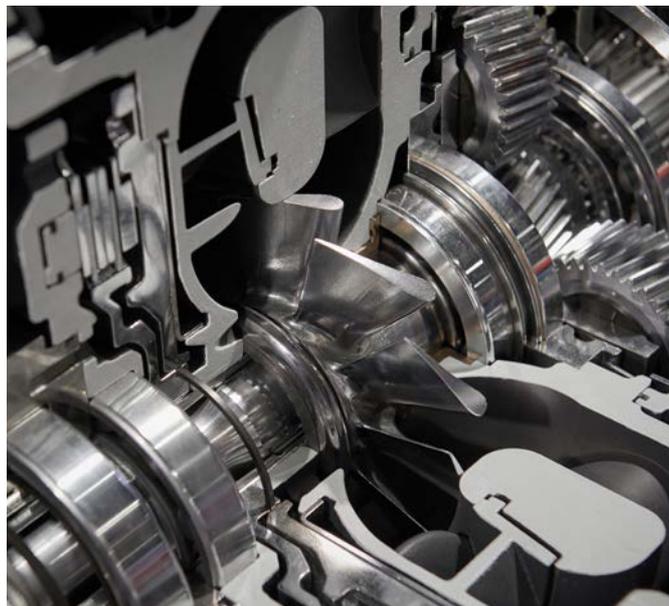
**Performance Level** DIN 51517-3 CLP  
AGMA 9005-F16  
AIST 224  
David Brown S1.53.101 E  
ISO 12925-1 Type CKD

## DST Gear

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	at 100 °C	Index	Flash Point COC °C	Pour Point °C	Designation
150	0,895	150	14,6	95	245	-21	DSTGE150
220	0,897	220	18,1	95	245	-18	DSTGE220
320	0,901	320	24,0	95	248	-15	DSTGE320

# DST Gear SY

## Synthetic gear oil



### Description

DST Gear SY is a series of industrial gear oils based on PAO with special additivation to enhance the following properties:

- A natural high viscosity index from the synthetic base oil
- Excellent high and low temperature performance
- A very good resistance towards high and shock loads
- A high resistance to micro-pitting
- A high resistance against corrosion and oxidation
- A long service life
- Excellent wear protection

### Application

DST Gear SY is a high performance gear oil suitable for the lubrication of the most heavily loaded mechanical gearboxes and bearings subjected to high thermal loading. In comparison with mineral industrial gear oils, a substantial extension of the oil drain interval can be obtained. DST Gear SY is compatible with seal materials and paints normally specified for use with mineral oils. Therefore no special change-over procedure is necessary.

**Performance Level** DIN 51517-3 CLP  
 AIST 224  
 AGMA 9005-F16  
 David Brown S1.53.106  
 ISO 12925-1 Type CKD

### DST gear SY

ISO VG	Colour	Density	Viscosity			Flash Point	Pour Point	Acid Number	Designation
		at 15 °C	at 40 °C	at 100 °C	Index	COC	°C	mg KOH/g	
		kg/l	mm <sup>2</sup> /s			°C	°C		
150	1,0	0,851	150	22,0	171	242	-45	0,80	DSTGESY150
220	1,0	0,854	220	27,2	159	234	-42	0,61	DSTGESY220
320	1,0	0,857	320	40,4	179	250	-48	1,10	DSTGESY320

# DST Hydraulic HLP

High quality anti wear hydraulic oil



## Description

DST Hydraulic HLP is a high quality anti-wear hydraulic oil based on selected Group II base oils with a natural high viscosity index. The use of a tailored additivation provides the following enhanced properties:

- An excellent wear protection
- A very good rust and corrosion protection
- Excellent oxidation stability
- Very good demulsification properties
- Very good de-aerating and anti-foam properties
- Good compatibility with seals and gaskets made from synthetic material
- Low pour point

## Application

DST Hydraulic HLP can be used for heavy duty hydraulic equipment, as well as for light duty gearboxes and bearings. DST Hydraulic HLP can also be used for lubrication systems, general lubrication and vacuum pumps (with the exclusion of turbines). DST Hydraulic HLP is not compatible with parts or equipment with a silver lining.

<b>Performance Level</b>	DIN 51524-2 HLP AFNOR NF E 48-603 HM ISO 11158 HM ASTM D 6158 HM Denison HF-0/HF-1/HF-2 Cincinnati Machine P-68 (ISO VG 32), P-70 (ISO VG 46) Eaton Brochure 694 for 35VQ25A GM LS-2
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## DST Hydraulic HLP

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	Viscosity at 100 °C Index	Flash Point COC °C	Pour Point °C	Designation	
32	0,858	32,0	5,68	110	204	-36	DSTHYHL32
46	0,864	46,0	7,02	112	234	-33	DSTHYHL46
68	0,868	68,9	9,11	107	240	-36	DSTHYHL68

# DST Hydraulic HVLP

High quality anti wear hydraulic oil



## Description

DST Hydraulic HVLP is a high quality multi-grade hydraulic oil with enhanced anti-wear properties. A tailored additive package enhances the following properties:

- A high and stable viscosity index
- An excellent wear protection
- A very good rust and corrosion protection
- Excellent oxidation stability
- Very good demulsification properties
- Very good de-aerating and foam suppressing properties
- Good compatibility with seals and gaskets made from synthetic material
- A low pour point

## Application

DST Hydraulic HVLP is a tailor-made quality hydraulic oil for heavy duty hydraulic systems on earthmoving equipment and of permanent installations that are working under high pressures over a wide temperature range. Carefully selected shear stable Viscosity Index Improvers guarantees that DST Hydraulic HVLP maintains its high viscosity index even under high loads. DST Hydraulic HVLP is not compatible in systems containing parts or equipment with a silver lining.

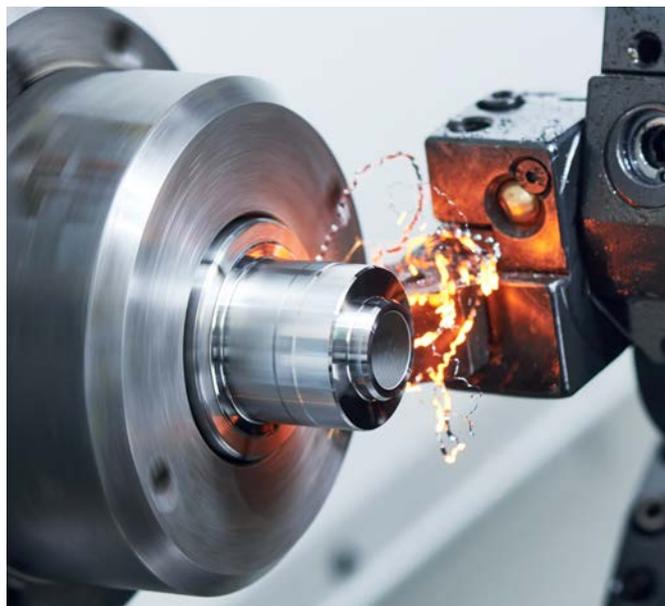
**Performance Level**  
 DIN 51524-3 HVLP  
 AFNOR NF E 48-603 HV  
 ISO 11158 HV  
 ASTM D 6158 HV  
 Denison HF-0/HF-1/HF-2  
 Cincinnati Machine P-68  
 (ISO VG 32), P-70 (ISO VG 46)  
 Eaton Brochure 694 for 35VQ25A  
 GM LS-2

### DST Hydraulic HVLP

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	at 100 °C	Index	Flash Point COC °C	Pour Point °C	Designation
32	0,856	32	6,89	179	226	-39	DSTHYHV32
46	0,863	46	8,33	158	205	-48	DSTHYHV46

# DST Hydraulic HLP ZF

High quality zinc-free hydraulic oil



## Description

DST Hydraulic HLP ZF is a series of high quality zinc-free anti wear hydraulic oil based on selected Group I refined base oils with a natural high viscosity index. Due to the addition of carefully selected additives the following properties are obtained:

- An excellent wear protection
- A very good rust and corrosion protection
- Excellent oxidation stability
- Very good demulsification properties
- Very good de-aerating and foam-suppressing properties
- Good compatibility with seals and gaskets made from synthetic material
- Low pour point

## Application

DST Hydraulic HLP ZF is a type of hydraulic fluid that can be used for heavy-duty hydraulic equipment, as well as for light-duty gearboxes and bearings. DST Hydraulic HLP ZF can also be used for lubrication systems, general lubrication and vacuum pumps (with the exclusion of turbines). This oil can be used in systems with silver parts.

<b>Performance Level</b>	DIN 51524-2 HLP AFNOR NF E 48-603 HM ISO 11158 HM ISO 6743/4 HM Denison HF-0/HF-1/HF-2 Cincinnati Machine P-68 (ISO VG 32), P-70 (ISO VG 46) Eaton (Vickers) M-2950-S AIST 126/127/136 SEB 181 222
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### DST Hydraulic HLP ZF

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	Viscosity at 100 °C mm <sup>2</sup> /s	Index	Flash Point COC °C	Pour Point °C	Acid Number mg KOH/g	Designation
32	0,856	32,0	5,49	115	222	-36	0,3	DSTHYHLZF32
46	0,865	46,0	6,90	103	215	-36	0,12	DSTHYHLZF46

# DST Hydraulic HVLP ZF

High quality zinc-free multigrade EP hydraulic oil



## Description

DST Hydraulic HVLP ZF is a high-grade zinc-free, multi-grade EP hydraulic oil, based on Group III base oils. Due to the addition of carefully selected additives the following properties are obtained:

- Very high and stable viscosity index and excellent wear protection
- Good shear stability ensuring high temperature lubricant film thickness
- A very good activity against corrosion protection and excellent oxidation stability
- Very good de-aerating and foam suppressing properties
- Good compatibility with seals and gaskets made from synthetic material
- Very good demulsification properties and a very low pour point

## Application

DST Hydraulic HVLP ZF is of tailor made quality for heavy duty hydraulic systems of earthmoving equipment and of permanent installations that have to work under high loads and low temperature. DST Hydraulic HVLP ZF may also be used for lubricating systems, general lubrication and vacuum pumps (with the exclusion of turbines). This oil can be used in systems with silver parts.

<b>Performance Level</b>	DIN 51524-3 HVLP AFNOR NF E 48-603 HV ISO 11158 HV ISO 6743/4 HV Denison HF-0/HF-1/HF-2 Cincinnati Machine P-68 AIST 126/127/136 SEB 181 222 Eaton (Vickers) M-2950-S
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### DST Hydraulic HVLP ZF

ISO VG	Density at 15 °C	Viscosity at 40 °C	at 100 °C	Index	Flash Point COC	Pour Point °C	Designation
	kg/l	mm <sup>2</sup> /s			°C	°C	–
32	0,843	34,2	11,2	340	162	-51	DSTHYHVZF32

# DST PMO\*

## High performance paper machine oil



### Description

DST PMO is a high performance mineral paper machine oil based on a modern, specially boosted ashless additive technology to create the following properties:

- Good anti-wear
- Effective protection against corrosion
- Excellent water separation
- Good air release
- Suitable for use with fine filtration
- Enhanced protection of gears

### Application

DST PMO has provided excellent results in circulating systems of major OEM's paper machines. Even in the wet environments of paper machines, DST PMO can be used for the lubrication of bearings, gears and auxiliary equipment. DST PMO can also be used in the hydraulic and lubrication systems in deflection-compensating rolls.

Performance Level    DIN 51517-2  
   FZG 12

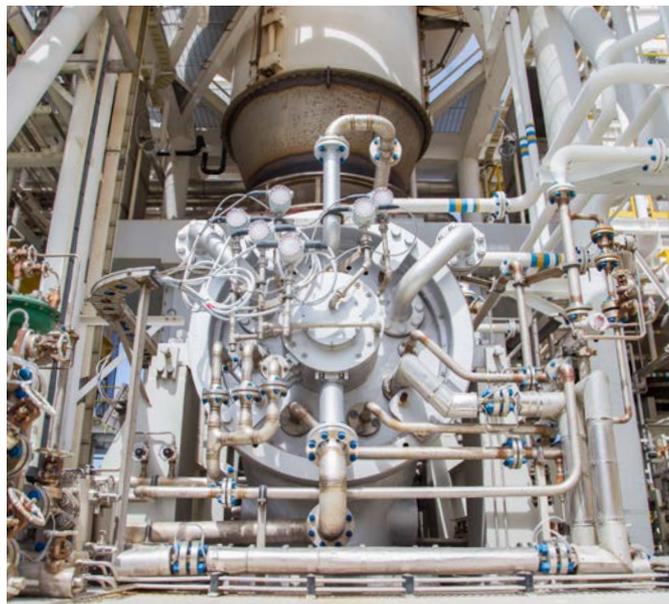
### DST PMO

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	at 100 °C	Index	Flash point COC °C	Pour Point °C	Designation
220	0,894	214,10	18,50	96	258	-12	DSTPM220

\* DST PMO is an application-specific oil that often interacts with SKF bearings and therefore requires SKF certification. SKF certification for DST PMO is under development.

# DST Turbo

High quality turbine oil



## Description

DST Turbo is a high quality turbine oil, based on specially selected quality group II base oils enriched with special DST compatible additives technology to attain the following properties:

- Superior oxidation stability, even at very high temperatures
- A very good corrosion protection of ferro- and non-ferro metals
- Very good de-emulsification properties
- Very good de-aerating properties
- Very good anti-foam properties
- A natural high and stable viscosity index

## Application

DST Turbo has been specially formulated to satisfy the demanding requirements of modern high output steam, gas, and water turbines. Together with the Recond Oil DST technology this turbine oil is especially suitable for long service life. In addition to turbine applications, DST Turbo is also suitable for the relubrication of hydraulic systems, compressors, high-speed gears and certain bearings and other applications requiring high quality rust and oxidation inhibited oils which separate readily from water.

<b>Performance Level</b>	Alstom HTGD 90 117 W0001 (non-EP) BS 489: 1999 DIN 51515-1 L-TD/-2 L-TG General Electric GEK 32568J/27070/28143B/46506E Siemens TLV 9013 04/9013 05 (non-EP)
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### DST Turbo

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	at 100 °C	Index	Flash Point COC °C	Pour Point °C	Designation
32	0,857	31,80	5,57	113	232	-15	DSTTU32

# DST Compressor

High quality synthetic compressor oil



## Description

DST Compressor Oil is a high quality compressor oil using a mix of synthetic base oils, with a natural high resistance against oxidation. Due to the addition of carefully selected additives the following properties are obtained:

- Low oil consumption due to low volatility
- Low carbon-forming tendencies
- Very good oxidation stability
- Very good corrosion protection
- Very good anti-wear properties
- Excellent thermal stability

## Application

DST Compressor Oil has been specially formulated to satisfy the demanding requirements of oil-flooded rotary vane and rotary screw compressors, screw type and reciprocating air compressors, pumps, vacuum pumps and blowers.

Performance Level ISO 6743-3A DAJ

### DST Compressor

ISO VG	Density at 15 °C kg/l	Viscosity at 40 °C mm <sup>2</sup> /s	at 100 °C	Index	Flash Point COC °C	Pour Point °C	Designation
46	0,834	44,1	7,79	147	266	-42	DSTC046



# Packing specifications

IBC = Intermediate Bulk Container

Volume	Dimensions (± 5 mm)	Weight, Empty (± 10 kg)	Pallet	UN-Approved
l	mm	kg		D/BAM
<b>1 000</b>	1 200 × 1 000 × 1 173	69	Wooden pallet, heat-treated	11 027/31HA



## Barrel: Metal Drum

Volume	Dimensions Diameter	Height	Weight, empty ( $\pm$ 10 kg)	UN-Approved	Certificate
l	mm	mm	kg		
208	585	884	8,5	UN/1H1/Y/200	ETI-93001



# Product cross reference guide<sup>1)</sup>

Industrial lubricant product category	Specs approved/suitable for use	SKF product and grades	Shell Offset	Chevron Offset	Mobil Offset
Mineral oil gear oil	DIN 51517-3 CLP AGMA 9005-F16 AIST 224 David Brown S1.53.101 E ISO 12925-1 Type CKD	<b>DST Gear</b> 150, 220, 320	Omala S2 G 150, 220, 320	Meropa 150, 220,320	Mobilgear 600 XP 150, 220, 320
Synthetic gear oil	DIN 51517-3 CLP AGMA 9005-F16 AIST 224 David Brown S1.53.106 ISO 12925-1 Type CKD	<b>DST Gear SY</b> 150, 220, 320	Omala S4 GX 150, 220, 320	Meropa Synthetic EP 150, 220, 320	Mobil SHC Gear 150, 220, 320
High quality AW hydraulic oil	DIN 51524-2 HLP AFNOR NF E 48-603 HM ISO 11158 HM ASTM D 6158 HM Denison HF-0/HF-1/HF-2 Cincinnati Fives (Cincinnati Machine P-68, P-70) Eaton Brochure 694 for 35VQ25A GM LS-2	<b>DST Hydraulic HLP</b> 32, 46	Tellus S2 M 32, 46	Rando HD 32, 46	DTE 24 DTE 25
High quality AW high vis hydraulic oil	DIN 51524-3 HVLP AFNOR NF E 48-603 HV ISO 11158 HV ASTM D 6158 HV Denison HF-0/HF-1/HF-2 Cincinnati Fives (Cincinnati Machine P-68, P-70) Eaton Brochure 694 for 35VQ25A GM LS-2	<b>DST Hydraulic HVLP</b> 32, 46	Tellus S2 V 32, 46	Rando HDZ 32, 46	Univis N 32, 46
High quality zinc free hydraulic oil	DIN 51524-2 HLP AFNOR NF E 48-603 HM ISO 11158 HM ISO 6743/4 HM Denison HF-0/HF-1/HF-2 Cincinnati Fives (Cincinnati Machine P-68, P-70) Eaton (Vickers) M-2950-S AIST 126/127/136 SEB 181 222	<b>DST Hydraulic HLP ZF</b> 32, 46	Tellus S3 M 32, 46	Clarity Synthetic Hydraulic 32	DTE Excel 32, 46
High quality zinc free high vis synthetic hydraulic oil	DIN 51524-3 HVLP AFNOR NF E 48-603 HV ISO 11158 HV ISO 6743/4 HV Denison HF-0/HF-1/HF-2 Cincinnati Fives (Cincinnati Machine P-68) Eaton (Vickers) M-2950-S AIST 126/127/136 SEB 181 222	<b>DST Hydraulic HVLP ZF</b> 32	Tellus S4 VX 32	–	DTE 10 Excel 32

<sup>1)</sup> This is a general overview, local variances may apply. Equivalents between products are not guaranteed. Please contact SKF to see if your current choice of oil is DST compatible.

Industrial lubricant product category	Specs approved/suitable for use	SKF product and grades	Shell offset	Chevron offset	Mobil offset
High performance paper machine oil	DIN 51517-2 FZG 12	<b>DST PMO</b> 220	Paper Machine Oil S2 220	Paper Machine Oil Premium 220	DTE PM 220
High quality turbine oil	Alstom HTGD 90 117 W0001 (non-EP) BS 489:1999 DIN 51515-1 L-TD/-2 L-TG General Electric GEK 32568J/27070/28143B/46506E Siemens TLV 9013 04/9013 05 (non-EP)	<b>DST Turbo</b> 32	Turbo T32 32	GTS Premium 32	Teresso 32
Synthetic compressor oil	ISO 6743-3A DAJ	<b>DST Compressor</b> 46	Corena S4 R 46	CETUS HIPERSYN 46	Rarus SHC 1025 46



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