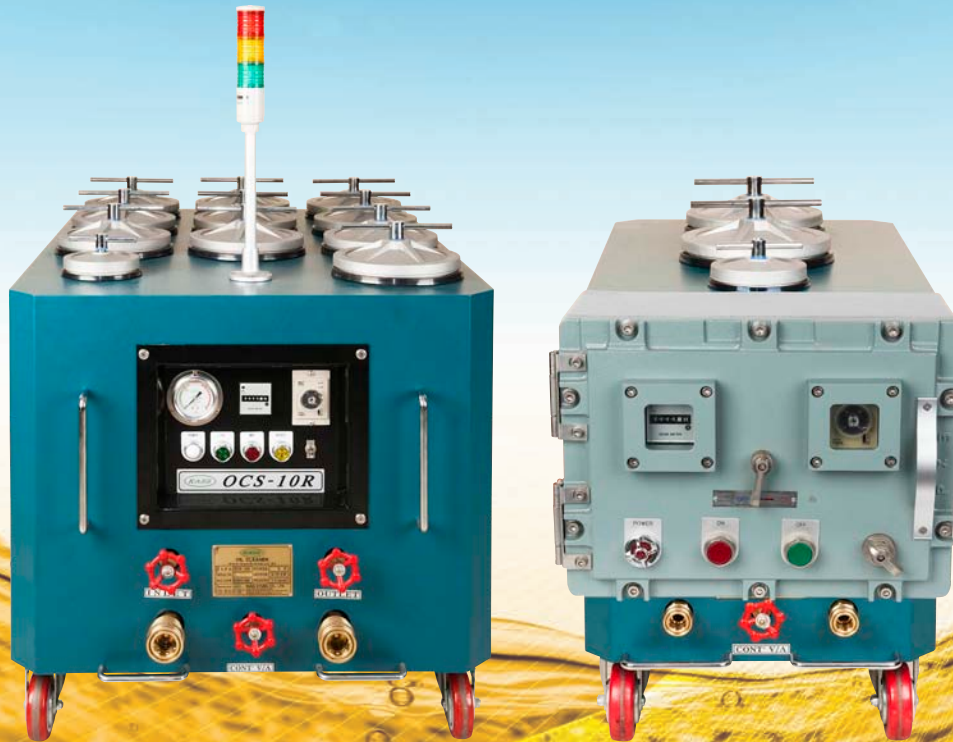


Kass Oil Purifier

• **OCS** Series • **KSS** Series • **ELEMENT** Series



SUNG KYUNG Co., Ltd.

We shall repay our clients who have shown us a great deal of faith and affection through the ceaseless development of products and improvement of qualities.

Sung Kyung Co., Ltd., since its incorporation, has been accumulating technological capabilities in the area of hydraulic machines, which are the key equipment in industrial sites. Our company has been putting our utmost efforts to develop new products, improve performances of products and customer service in order to accomplish our core goals of recycling resources and ensuing enhancement of economic values as well as improvement of productivity.

In particular, our core technology personnel is composed of professionals who have been working in various areas including hydraulics, mechanics, electrical and electronics over many years. On the basis of their technological experiences, we have been able to unify the entire processes of designing, manufacturing and installation of industrial oil purifier.

In addition, we have developed "integrated customer management program" on the foundation of many years of experiences in order to apply the integrated satisfaction processes such as on-site diagnosis, installation/construction and follow-up management as our efforts in providing better services to our customers.

With the company philosophy of creating added values and reinforcing the external competitiveness of our customers by manufacturing outstanding products in accordance with the demands of the customers on the basis of the our attitude of pursuing honesty and spirit of craftsmanship since our establishment, we have been dedicating ourselves in improvement of productivity and preservation of environment through provision of KASS Oil Purifier in the area of hydraulic machines that plays pivotal role in the domestic industries.

We shall return the affection and trusts of our clients through ceaseless development of products and improvement of quality.

Sincerely yours,
All the staff and executives as well as the president of the company

Designated as a Venture Company and Patent Registrations





Company History

The following are the footsteps of **SUNG KYUNG**, a company that puts utmost efforts on the foundation of honesty and spirit of craftsmanship.

- 2013** 09 CE-2 Certification
- 2012** 03 Development of OCS-12R and OCS-16R, and functions for removal of moisture and measurement of extent of contamination
- 2010** 08 CE-1 Certification
- 2007** 07 Clean workplace certification
- 2006** 05 Designation as a venture company
11 ISO 14001 Certification
11 RoHS Certification
- 2005** 03 Designated as an export-oriented company
- 2004** 09 Expansion and transfer of the headquarters and manufacturing plant to Bucheon Technopark
06 Export advisory company for KOTRA
04 Designation as a frontier company
- 2002** 05 Designation as a cooperative company of Woojin Selex
02 Development of a new product, mold temperature controller
- 2001** 11 ISO9001 Certification
- 2000** 03 Registration of utility model (No. 019228)
- 1999** 03 Established Daegu Branch
- 1998** 10 Registration of KASS trademark (No. 0440264)
11 Established Busan Branch
11 Utility model (No. 26596)
- 1997** 05 Development of a new product, OCS-2RS
11 Designated as a cooperative company of Hyundai Heavy Industry Co., Ltd.
- 1996** 10 Designated as a cooperative company of Hyundai Injection & Machinery Co., Ltd.
- 1995** 05 Changed the name of the company to SUNG KYUNG CO., LTD.
11 Development of a new product, OCS-2R
11 Development of a new product, OCS-6R
- 1994** 04 Designated as a cooperative company of Taewon Hydraulics Co., Ltd.
09 Expansion and transfer of the headquarters and manufacturing plant
- 1993** 03 Selected housing manifold separation
06 Designated as a cooperative company of Jinhwa Machinery Co., Ltd.
- 1992** 09 Establishment of Seoul System



MARKETS (DOMESTIC & OVERSEAS ACHIEVEMENT)

• Tire industry



• Ships industry



• Ship-building industry



• Production of steel plate industry



• Production of copper pipe industry



• Production of resin (raw material) industry



• Production of steel pipes industry



• Munition industry



• Production of forged products industry



• Production of copper plate industry



• Production of injection molding machine industry



• Production of non-ferrous products industry



• Power plant industry



• Production of paper industry



• Production of plastic products industry



• Production of press products industry



• Die-casting products industry



• Production of automobiles industry

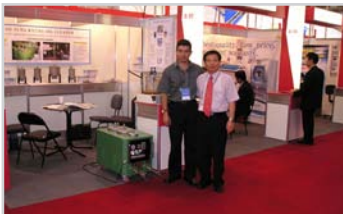




CHINA



BRAZIL



INDIA



AUSTRALIA



INDONESIA



VIETNAM



THAILAND



POLAND



FINLAND



PHILIPPINES



MALAYSIA



CHILE



JAPAN



SAUDI ARABIA



LIBYA



PAKISTAN



SRI LANKA

APPLICATIONS & FEATURES

Through innovation and taking up of challenges in order to maximize customer satisfaction

Sung Kyung Co., Ltd. has unified the entire process of designing, manufacturing and installation of industrial oil filter with the attitude of pursuing customer satisfaction and quality with utmost priority by focusing on creativity and professionalism. Researches of Sung Kyung Co., Ltd. will continue in the future.

OCS Series

It is a bypass type oil purifier that independently purifies oil with the independent built-in oil pump within the oil purifier. It has been used widely as a built-in and portable type on all equipment without any loss of pressure whatsoever.

Features

- Can be applied as a portable unit on all equipment that use hydraulic oil
- Used cellulose (fiber) material with powerful adsorption and absorption
- Excellence in removal of pollutants with size of more than 0.1μ and moisture (less than 250~300cc)
- Removal of pollutant particles within the pipes and valves within machine
- Purchase of a single unit of OCS- TYPE can be used for many different machines
- Restoration of desired cleanliness only with a single filtration
- Prevention of thermal degradation phenomenon of hydraulic oil
- Ease of replacement and cleaning of SUCTION STRAINER
- Ease of replacement and cleaning of SUCTION STRAINER
- Unmanned reservation operation function and recording of purification time
- Pump function: Convenience in replacement of hydraulic fluid and performing dual tasks
- Optional functions: NAS GRADE decoding function, visual observation function for the filtered oil, function to collect sample oil, function to measure moisture content, heating device, magnetic device, filter for each of the sizes of foreign particles and dedicated filter for moisture

Effectiveness of KASS OIL PURIFIER

- Extend the lifespan of the OIL by up to 7 folds by removing various foreign matters and moisture
- Reduction of cost of replacing oil and prevention of environmental pollution through extension of the lifespan and maintenance of quality of OIL
- Reduce the cost of repairs and extend the lifespan of machines by preventing the breakdown of pump or valves in advance
- A single unit can be used on numerous types of machines, thereby elevating economic effect and asset value of the unit
- Reduction in energy consumption and improvement of operation rate and machine efficiency by reducing the friction of the machine
- Improve the working condition by reducing the operational noise of machines, thereby enhancing the labor efficiency through improvement of efficiency of the workers
- Enable harmonious operation of machines by maintaining the appropriate temperature of OIL and machines, and improve the productivity by reducing the defectiveness rate of products

Applicable Oil



- Hydraulic oil
- Gear oil
- Rolling oil and thermal processing oil
- Turbine oil
- Cutting oil
- Spark erosion system oil
- Spindle oil
- Fuel oil, etc.
- Lubricant oil
- Compressor oil
- Electrical insulation oil
- Transmission oil
- Internal combustion engine oil
- Cleansing oil
- Freezer oil



SUNG KYUNG PRODUCTS



※ The outer appearances and functions of the products may be altered to improve performances.

Industry of Application



- Steel and iron mill
- Manufacturing plants for automobile and ships
- Manufacturing plants for automobile components
- Various facilities of power plant
- Manufacturing plants for injection molding machine
- Manufacturing plants for or components of injection molding machine
- Construction company
- Heavy industries
- Manufacturing plants for tires
- Manufacturing plants for hydraulic press
- Companies using hydraulic press
- Paper printing factories
- Manufacturing plants for casting and extrusion machine
- Manufacturers of various hydraulic machines
- Munition industry
- Various hydraulic units, etc.

PRODUCTS *OCS Series*



OCS-12R

Filtration output quantity	2,500 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	12EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	1"
Size of filtration particle	More than 0.1μ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	250kg
Moisture management capability	50ppm	External dimension	750W X 1140L X 1150H



OCS-10R

Filtration output quantity	2,000 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	10EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1μ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	200kg
Moisture management capability	50ppm	External dimension	750W X 1120L X 1150H



OSS-300ST

※ Can be used in large capacity oil purification with severe contamination





OCS-6R

Filtration output quantity	1,300 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	6EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	125kg
Moisture management capability	50ppm	External dimension	550W X 1100L X 740H



OCS-6R-NAS

SOCM diagnosis the facility and determines the contamination status of the lubricant oil by analyzing the extent of spontaneous particle pollution by receiving the signals from the oil discharge outlet of the Live Pressurized System. It is possible to measure the size distribution for each of the 4, 6 and 16 micron, which is the new ISO standard for extent of contamination, by using laser optics interception method. It can additionally measure the particle coefficient of more than 21 micron (supports 4 channels). Status of oil contamination can be displayed on LED display on the main unit in real time or can be viewed or its trend managed in real time on the PC screen through computer interface.

- Provision of information including real time extent of contamination and temperature
- Possible to take prompt measures for the breakdown of filter and bleeder
- Management of trend of the level of wear for the purpose of facility diagnosis
- Improvement of facility reliability, minimization of human errors that occur at the time of specimen sampling and analysis, and minimization of preservation cost and duration of operational halt due to breakdown



OCS-6R-SL

Filtration output quantity	1,300 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	6EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	125kg
Moisture management capability	50ppm	External dimension	560W X 1090L X 1000H



PRODUCTS *OCS Series*



OCS-5R

Filtration output quantity	1,130 ℓ/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	5EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1μ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	125kg
Moisture management capability	50ppm	External dimension	-



OCS-4R

Filtration output quantity	960 ℓ/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	4EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1μ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	95kg
Moisture management capability	50ppm	External dimension	500W X 940L X 730H



OCT-2T





OCS-2R

Filtration output quantity	500 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	2EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	1/2"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	88kg
Moisture management capability	50ppm	External dimension	400W X 850L X 650H



OCS-2RS

Filtration output quantity	500 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	2EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/4"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	56kg
Moisture management capability	50ppm	External dimension	-



OCS-1R

Filtration output quantity	180 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	1EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	3/8"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	23kg
Moisture management capability	50ppm	External dimension	300W X 440L X 540H



OCS-2R-EP (Explosion proof type)

Filtration output quantity	500 l/hr	Element	F-180
Power supply	220V, 1Ø, 380V, 3Ø	No. of filters used	2EA
Filtration capabilities	NAS 5-7 Grade	Suction strainer	100mesh
Range of usable pressure	0.1 ~ 0.55 MPa	IN, OUT diameter	1/2"
Size of filtration particle	More than 0.1µ	Maximum usable temperature	90°C
Maximum usable viscosity	VG220	Weight	88kg
Moisture management capability	50ppm	External dimension	400W X 850L X 650H



PRODUCTS *KSS Series*

KSS Series

KSS Series is a circulating oil purification system that filters portion of the oil that flows within the machine by the cellulose filter installed in the bypass concurrently with the operation and use of the machine through application of hydraulic structure of the bleeder.

Features

- No need for motive power as filtration is achieved by the hydraulic pressure of the machine itself
- Gradual improvement of oil purity (NAS 8-5 Grade) with increase in the operational hours of the machine
- No need for separate management due to the automated unmanned oil purification during the operation of the machine
- Ease of replacement of elements even in the middle of operation of the machine
- Can be installed even in narrow space due to its compact size
- Possible to observe the surface of elements, and diagnose the status of oil and presence of abnormality in the equipment even in the middle of operation of the machine

Effectiveness of KASS OIL PURIFIER

- Extend the lifespan of the OIL by up to 7 folds by removing various foreign matters and moisture
- Reduction of cost of replacing oil and prevention of environmental pollution through extension of the lifespan and maintenance of quality of OIL
- Reduce the cost of repairs and extend the lifespan of machines by preventing the breakdown of pump or valves in advance
- A single unit can be used on numerous types of machines, thereby elevating economic effect and asset value of the unit
- Reduction in energy consumption and improvement of operation rate and machine efficiency by reducing the friction of the machine
- Improve the working condition by reducing the operational noise of machines, thereby enhancing the labor efficiency through improvement of efficiency of the workers
- Enable harmonious operation of machines by maintaining the appropriate temperature of OIL and machines, and improve the productivity by reducing the defectiveness rate of products



KSS-180

Filtration output quantity	180 ℓ/ hr	Element	F-180
Filtration capabilities	NAS 5-7 Grade	Size of filtration particle	More than 0.1μ
Range of usable pressure	1 ~21 MPa	IN, OUT diameter	1/4", 3/8"
Weight	7.5kg	Dimension	200Ø X 340H



KSS-110

Filtration output quantity	90 ℓ/ hr	Element	F-180
Filtration capabilities	NAS 5-7 Grade	Size of filtration particle	More than 0.1μ
Range of usable pressure	1 ~21 MPa	IN, OUT diameter	1/4", 3/8"
Weight	4kg	Dimension	120Ø X 290H





PORTABLE VACUUM DEVICE FOR TRANSFORMER



Features

This treatment plant can be operated in a portably position, designed for outdoor operation and automatic operation.

- a) Filtering, de-gassing and dehydration of transformer oil under vacuum.
- b) Filtering and drying of transformer with high quality treated oil, where by high vacuum in the oil treatment plant.

Performance & Specification

MODEL		OFM-2000	OFM-4000	OFM-8000	OFM-10000
Capacity		2000ℓ/hr	4000ℓ/hr	8000ℓ/hr	10000ℓ/hr
Total Power		40Kw	40Kw	105Kw	135Kw
Heating Unit	Capacity	30Kw	40Kw	90Kw	120Kw
Oil Pump	Suction	Vacuum	Vacuum	2.2Kw	2.2Kw
	Discharge	2.2Kw	2.2Kw	2.2Kw	5.5Kw
Oil Rotary Vacuum Pump	Oil Rotary Vacuum	1,600	1,600	4,500ℓ/min	4,500ℓ/min
	Mechanical Booster	NO	330m ³ /hr	672m ³ /hr	1200m ³ /hr
	Ultimate Press	0.05 Torr	0.05 Torr	0.05 Torr	0.05 Torr
Tank Capacity		150ℓ	300ℓ	600ℓ	600ℓ
Fine Filter		1EA	2EA	3EA	4EA
Cooling Method		Air	Air	Air	Air Cooled
Power Supply Condition		User	User	User Spec.	User Spec.
Filtering Ability		0.5μ	0.5μ	0.5μ Less	0.5μ Less

OCS-1R-W



KSS-110-DEMO



HKS-60



HKS-60

Features

- Primarily separates the 0.5mm oil layer floating on the mixture of oil by means of floatation device and re-separates the mixed oil effectively in the secondary separation tank (99.9% separation)
- With total weigh of approximately 15kg, installation is convenient although it has maximum capacity. It uses low voltage and current of 220V, 25W and 0.23A
- Semi-permanent as it has no consumable components

SUNG KYUNG has added the function to control the oil level by means of buoyancy and specific gravity by developing floating substance, and developed device that separates oil and water that collects only the oil from the 0.5mm oil layer. With simple structure and ease of installation, it has the advantage of effectively separating the oil from water within short period of time.

Industry of Application

- Separation of mixture of petroleum and sand for recycling
- Preliminary and post processing of plating and thermal processing
- Recycling of sludge in crude oil tank
- Separation of water and oil in petro station and car washing centers
- Recycling of crude oil from the oily bilge water
- Recycling of oil pans
- Removal and separation of grease from the metal cutting oil
- Machine tool options

Specifications

Dimensions	400 X 310 X 290h	Output of pump motor	25W, 0.5A
Separation tank	400x190x290h	Q POT	Ø85*100st NBR (silicon)
Pumping tank	360x120x290h	Suction volume	120L/hr. Within 2m of suction lift
Power supply/voltage	Single-phase AC220V 60hz	Diameter of connection pipes	Suction inlet Ø16 / Discharging and waste water Ø25

Features

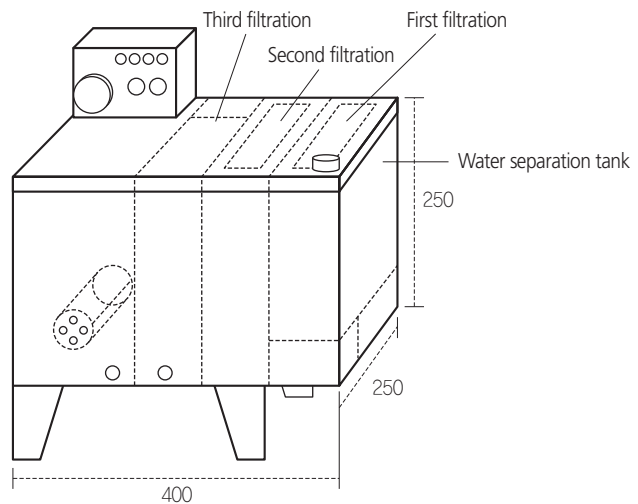
The oil-water separator, generally called as oil skimmer, is the device used to separate oil and water that are mixed. It has wide range of applications including the processing factories from which cutting oil, sliding oil and other oils are discharged in mixture, industrial sites, petrol station, car-wash centers and petroleum tanks with requirement to separate moisture from the oil.

This oil-water separation device absorbs viscous oil using belt, disc and filter, and separates the oil floating on the top of the water using specific gravity difference between water and oil. However, this device has some disadvantages including the prolonged period of time needed to separate oil as well as substantial quantity of water in the oil separated from water, resulting in low efficiency. Accordingly, it is difficult to recycle the oil and the cost of oil disposal increases by as much as the volume of water mixed with the oil. Therefore, there is a need for oil-water separator with a new structure which is sturdy and elevated efficiency in separation of water from oil.





OCS-1T (Recycling device for toggle oil)



Features

It applies the principle of resupplying the high purity oil back to the toggle device after having thoroughly separated and removed moisture and foreign matters contained in the contaminated lubricant oil discharged from the toggle device of injection machine.

- Sufficient supply of toggle oil that is 3 folds higher than the previous supply volume
- Reduction in the consumption of toggle oil
- Extension of lifespan of toggle device, reduction in cost arising from boring, and prevention of pause in work due to boring
- Installed simply by connecting the hose from the injection inlet of the toggle lubricant oil with the injection machine
- Remove the moisture by completely separating the water from oil by using the principle of specific gravity, and the oil filter makes contribution towards reduction of energy consumption and preservation of environment by recycling the contaminated oil into clean oil
- Eliminates the time taken for replacement of waste oil, simplifies the management of workers and turns the surrounding environment of work place more pleasant
- Extension of lifespan of the machine by minimizing the wear and tear of frictional surface through removal of foreign matter from the surface
- All the separated oil is recycled and the separated and discarded water can be processed without having to contaminate the sewage system
- Lubrication in the toggle area is increased by sufficiently supplying lubricant oil by more than 3 folds than the existing system and prevents the damages to the toggle area by missing the appropriate timing for supplementation of toggle oil, thereby extending the lifespan of the toggle area
- Dimensions: 400W x 250L x 250H WEIGHT: 14KG



PRODUCTS *Filter Element*

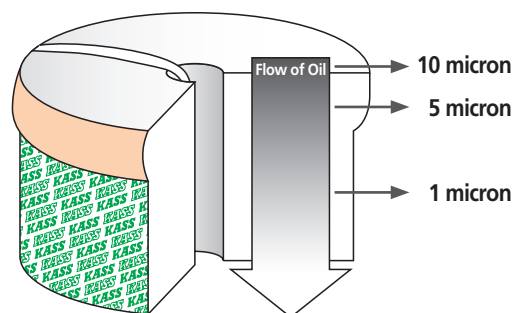
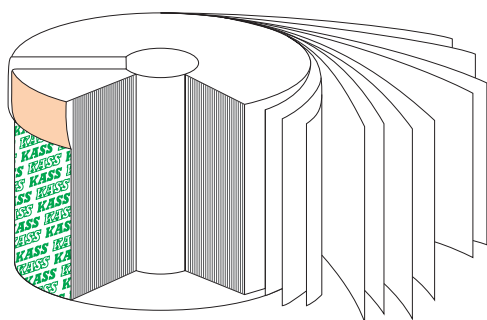
F-180



Specifications

Model	F-180	F-110
Internal diameter	40	40
External diameter	180	110
Height	114	114

Features



It is a Filter Element specially manufactured through unique engineering methods of KASS by strictly selecting the vegetable cellulose fiber pulp that contains abundance of hydrophilic hydroxyl-radical.

Various foreign matters with sizes of more than 0.1 micron including metallic particles arising from wear, and carbon, oxides, moisture and dusts generated or infiltrated into the machine during operation are removed through deep bed filtration and adsorption actions as they pass through the upper level of the element and 110mm filtration layer.

Air-tightness due to the oil that flows into the space between the layers of the filters that form the element of the ROLL prevents the passage through the layers of oil.

Pollutant flows downwards as they pass through the filters with thorough removal of the pollutants and moisture as they undergo countless number of repetitive filtering.

SF-100



Specifications

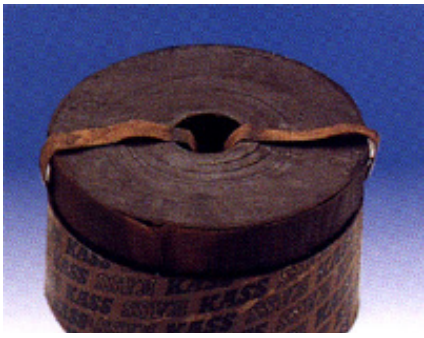
Model	SF-100
Internal diameter	40
External diameter	90
Height	125

- Protects the pump and extends the lifespan of the filter by removing large foreign particles primarily.
- Possible to use continuously by cleaning them frequently.



Confirmation and on-site diagnosis of Element

It is possible to assess the status of oil and the damages to the machine in advance by observing the configuration and pollutants on the entire and surface of the ELEMENT. Therefore, it is possible to prevent problems arising in the machines in advance by preparing countermeasures, and can efficiently manage and maintain machines.

Configuration (overall)		Treatment methods
Capturing of moisture		It cracks if there is large quantity of moisture in oil and it is recommended that you check and analyze the moisture contents in the oil, and repair the area of leakage.
Metallic powder		If there is large quantity of metallic powder on the surface of the ELEMENT due to wearing of the metal and copper components, find the areas of wear on the CYLINDER and take appropriate measures.
Foreign matters		Entire ELEMENT becomes contracted due to increase in internal pressure arising from the loss of ability to filter pollutants. Therefore, replace the ELEMENT as soon as possible.



OIL before filtration



OIL after filtration



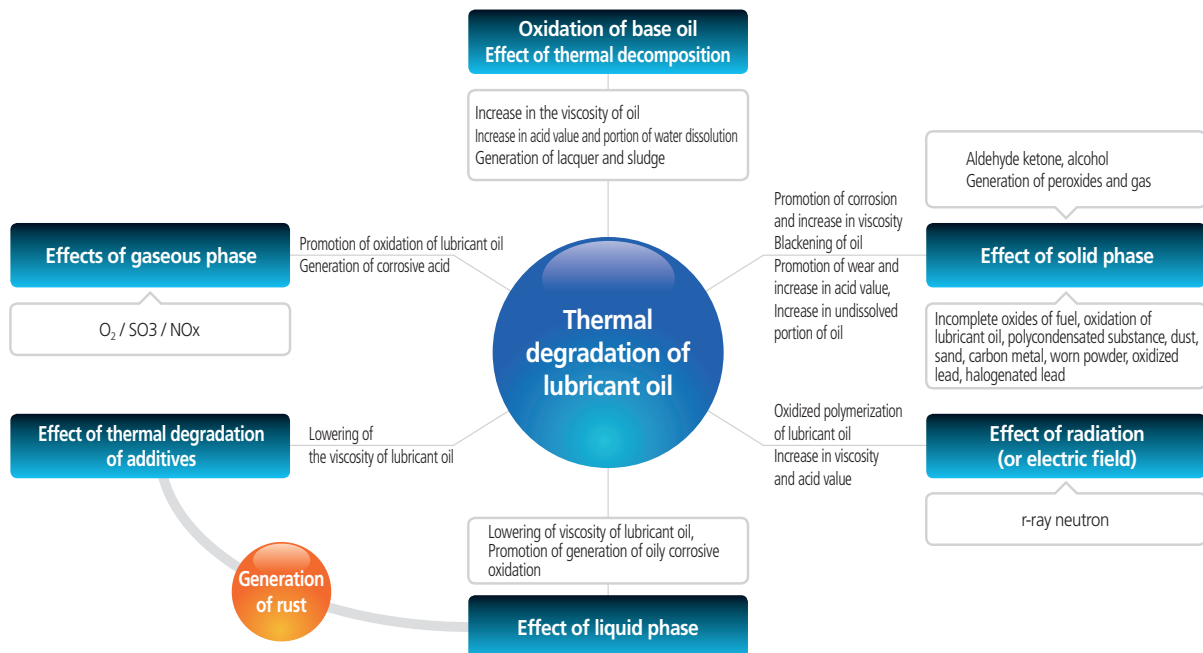
LUBRICANT OIL MANAGEMENT STANDARD

What is lubricant oil?

Lubricant oil is a liquid phase material for lubrication purposes produced by adding various additives to the base oil in order to give various functions appropriate for their application. Base oil can be divided into mineral oil, fatty oil and synthetic oil. However, mineral oil is used most widely due to various advantages including quality, durability, performances and prices. Fatty oil and synthetic oil are used only for special purposes.



The cause of lubricant deterioration



Problems arising from thermal degradation of oil

- Irregular operation of machine due to blocking of valve
- Cavitation phenomenon
- Lowering of the cooling effect of cooler
- Increase in wear
- Promotion of generation of sludge sediment
- Hindrance of manipulation of pump, valve and cylinder
- Wear in pump and valve
- Induce wear and increase in the oil leakage of rusted Packing section of the Piston Rod and Ram

Management of contamination of lubricant oil

- Investigation of pollutant
- Assessment of effect of contamination
- Measures for prevention of mixing of pollutants
- Measures to remove pollutants
- **Installation and management of oil purifier**
- Measurement of level of contamination of oil used
- Setting of standard for management of level of contamination

Prevention of external pollution :

- Attach Packing Gasket at the connection section, and Filter and Air Breather to the oil injection inlet

Issues to be considered for tank

- Attach appropriate Strainer
- Install appropriate Baffle Plate
- Install Return Pipe at height lower than the oil surface and at height 3 times the diameter of the pipe above the base of the tank
- Install Suction Pipe 50mm below the base of the tank
- Installation of Drain Cock
- Give inclination to the lower surface of the hydraulic tank
- Attach by-pass purification equipment to the tank
- Install magnetic filter to the base of tank

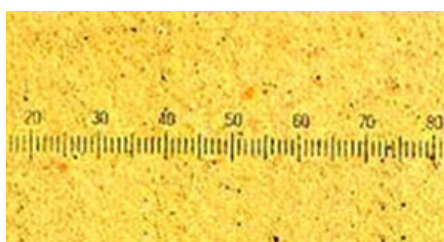


Method of determination of thermal degradation of oil used

The most essential data in regular analysis of the oil used are the data on status of operation of lubricant including duration of operation, oil temperature, quantity injected and details of purification actions.

Measurement of level of contamination

- Methods of measurement of filterability of pollutants include Microscopic Optical Particle Counting and Automatic Particle Counting. These methods indicate the size and quantity of existing pollutant.



Summary of particle count	
Size of particle	Number of particles per ml that are larger than the given size
2 μ m	2100
5 μ m	480
10 μ m	319
15 μ m	120
25 μ m	31
50 μ m	4

1) Direct determination method

- Clearly assess the phase of the new oil in advance.
- Examine the phase of the oil used by collecting the representative specimen.
- Set the standard of management and replace the used oil after having made comparative review of the new oil and used oil

2) Simple determination method

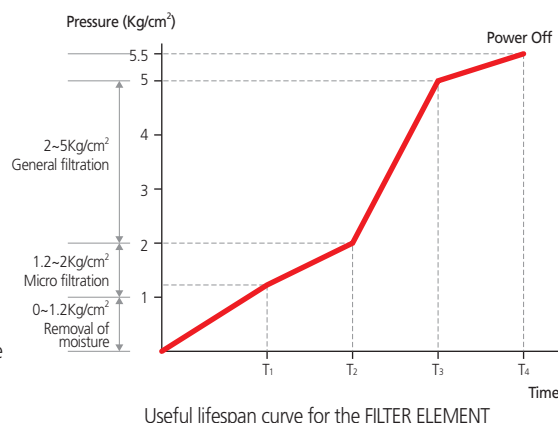
- Place the oil in transparent glass test tube and allow bright light to pass through the oil to make approximate assessment
- Clear: Good (here, it is irrelevant to the color of the oil itself)
- Hazy: Contaminated (need test analysis)
- Red or black: Oxidation (need test analysis)
- Emulsion: Moisture (need replacement with new oil)
- Determine the presence of fuel oil or contents of pollutants by smelling the oil.
- Dip finger in the oil and determine the level of viscosity and extent of impurities on the basis of the experiences of the examiner
- Place appropriate quantity of oil in test tube and heat the tip portion to the temperature of approximately 110°C to assess the existence of moisture in the oil by the sound of boiling of the water.
- Place same quantity of oil and water into the test tube and mix it aggressively. Let it alone and measure the time taken for the oil and water to be separated complete in order to investigate the sulfur emulsion of the oil.
- Use simplified viscometer, neutralization value test device, gravimeter or colorimeter if they are present at the site, or use simplified test device otherwise.

Method of prevention of thermal degradation of lubricant oil

- In order to extend the lifespan of the lubricant by economically maintaining good state of lubrication for a prolonged period of time and to prevent thermal degradation of lubricant oil being used, causes that promote oxidation of lubricant oil must be removed as well as quick removal of impurities or oxides generated in the process of lubrication by keeping the circulation system clean all the time, and replace or supplement new oil in a timely manner.
- Following precautions need to be taken to prevent thermal deterioration.
 - Avoid high temperature as much as possible
 - Avoid mixed use of oil (reactions of additives, maintain appropriate viscosity)
 - Use new machine installed after having thoroughly cleaned the machine (remove iron powder, rust powder and anti-rust agent, etc)
 - Completely remove the thermally degraded oil at the time of replacement
 - Quickly remove the impurities that enter the machine (moisture, dust, powder from wearing of metal and fuel oil, etc)
 - Maintain cleanliness of the circulation system by thoroughly cleaning the machine at least once a year

Lifespan of FILTER ELEMENT

- The differential pressure of the FILTER ELEMENT gradually increases as contaminated oil is being filtered. If this differential pressure reaches the designated value, the lifespan of the ELEMENT has expired and needs to be replaced immediately.
- Although the management of lifespan of FILTER is being done by means of total volume being filtered and total hours of use, this method is not rational since the state of FLUID is not consistent.



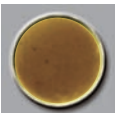
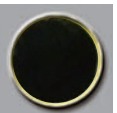
Standard for management of lubricants

	Ordinary hydraulic oil	Phosphate ester hydraulic oil	Industrial gear oil	Turbine oil	Thermally processed oil (type 1)
Viscosity cSt40°C (compared to new oil)	Within ±15%	Within ±20%	Precision±10% Non-precision±20%	±10~15%	50°C Less than +8.0%
Moisture Vol%	Less than 0.1	Less than 0.5	Less than 0.2	Less than 0.1	Less than 0.1
Total acid value mgKOH/g	Less than 0.5	Less than 0.1	Less than 0.5 in comparison to the new oil	No addition: Less than 1.0 Addition: Less than 0.3	Less than 3
Color (Union)	Less than +4	Less than 8	-	-	-
Proportion of mineral oil (%)	-	Less than 5	-	-	-
Non-dissolved n-pentane (wt%)	-	-	Less than 1.0	Less than 1.0	Less than 0.3
Non-dissolved benzene portion (wt%)	-	-	Less than 0.5	Less than 0.5	-
Steam emulsion sec	-	-	Less than 300	Less than 300	-
Cooled seconds from temperature of 800°C to 300°C	-	-	-	-	Oil temperature of 80°C Less than 9 seconds

References

1. Kinematic of viscosity (40°C,CENTI-STROKE): Characteristics of viscosity of substances (time taken to reach x conversion coefficient)
2. Moisture (Volume %): Ratio of volume of moisture contained in each 100 ml of oil
3. Non-dissolved portion (weight %): Ratio of weight of foreign matters that do not dissolve in pentane and toluene
4. Total acid value (mgKOH /g): Oxidation value of additives in oil (relative weight after base reaction)
5. NAS (00-12class): Method of indication of level of contamination of hydraulic oil of National Aeronautics and Space Industry Association

NAS GRADE

	Grade								
	...								
SIZE	...	5	6	7	8	9	10	11	12
5 ~ 15	...	8000	16000	32000	64000	128000	256000	512000	1024000
15 ~ 25	...	1425	2850	5700	11400	22800	45600	91200	182400
25 ~ 50	...	253	506	1012	2025	4050	8100	16200	32400
50 ~ 100	...	45	90	180	360	720	1440	2880	5760
More than 100	...	8	16	32	64	128	256	512	1024
	Applicable range						Range of subjects of oil purification		



SUNG KYUNG Co., Ltd.

Unit 301/203, Bucheon Technopark, #345 Seokcheon-ro, Ojeong-gu,
Bucheon-si, Gyeonggi-do, Korea

• Tel : 82-32-327-1095 (Ref.)
http://www.kasskorea.co.kr

• Fax : 82-32-327-1067
• E-mail : kass@kasskorea.co.kr