

LIST OF TRIPLE R INTERNATIONAL DISTRIBUTORS



CHINA

● TRIPLE R (HONG KONG) CORP.LTD.
 <HONG KONG OFFICE>
 (KALARIE & CO., LTD.)
 ROOM 306, JOIN-IN HANG SING CENTRE,
 71-75 CONTAINER PORT ROAD,
 KWAI CHUNG, N.T., HONG KONG
 sales@kalarie.com
 TEL : 852-2419-1616
 FAX : 852-2419-1549

<SHENZHEN OFFICE>
 (KALARIE INDUSTRIAL (SHENZHEN) CO.,LTD.)
 1F, WEARNES TECHNOLOGY BLDG.,
 10, KEFA RD.,
 GAOXINKEJIYUAN CENTRAL ZONE,
 NANSHAN DISTRICT,
 SHENZHEN, GUANGDONG, 518057 CHINA
 TEL : 86-755-2695-1178
 FAX : 86-755-2695-1578

KOREA

● THS / TOTAL HYDRAULICS SOLUTION
 213, OCHEN-RI, YEONIL-EUP
 NAM-GU, POHANG, KYUNGBUK, KOREA
 yhdod@hanmail.net
 TEL : 82-54-285-1027
 FAX : 82-54-285-1028

TAIWAN

● SAN SHIN CO.,LTD.
 NO.59,CHENG KUNG ROAD, 700 TAINAN,
 TAIWAN,R.O.C.
 MAILING ADDRESS : P.O.BOX 908, TAINAN,
 TAIWAN,R.O.C.
 sanshin@sanshin-co.com.tw
 TEL : 886-6-2234191
 FAX : 886-6-2200218

THAILAND

● SIAM TRIPLE R CO., LTD.
 262/75,77,79 ASEAN TOWER SUKHUMVIT
 71 ROAD,
 PRAKHANONG-NUA, WATTANA,
 BANGKOK 10110, THAILAND
 MOBILE : 6681-937-9800 (MR.TAMURA)
 info@triple-r.co.th
 TEL : 662-711-3301
 FAX : 662-711-2503

SINGAPORE

● SIMPLEX MARINE SERVICES PTE LTD
 13 JOO KOON CRESCENT, 4TH STOREY,
 SINGAPORE 629021
 simplex@singnet.com.sg
 TEL : 65-6268-8882
 FAX : 65-6266-0006

USA

● TRIPLE R AMERICA CO.LTD.
 040/60 INDUSTRIAL PARKWAY
 CHEEKTOWAGA, NY 14120 USA
 info@triple-rrr.com
 TEL : 1-800-668-8671
 FAX : 1-416-413-9387

NORTH AMERICA & CENTRAL AMERICA

● TRIPLE R AMERICA CO.LTD.
 2700 DUFFERIN STREET, UNIT 86
 TORONTO, ON M6B 4J3, CANADA
 info@triple-rrr.com
 TEL : 1-416-413-9202
 FAX : 1-416-413-9387

SOUTH AMERICA

● TRIPLE R OIL CLEANER SOUTH AMERICA LTDA
 RUA MANOEL TEIXEIRA, 41, PO MARIA HELENA
 SUZANO-SAO PAULO BRASIL-CEP: 08683-340
 contato@triple-rrr.com.br
 TEL : 55-11-47425836
 FAX : 55-11-47444587

AUSTRALIA

● TRIPLE R FILTRATION (AUST) PTY LTD
 521 PRINCESS DRIVE MORWELL
 VICTORIA 3840 AUSTRALIA
 m.yoshinaga@hyd-pneu.com.au
 TEL : 61-3-5134-1033
 FAX : 61-3-5133-9001

EUROPE

● TRIPLE R EUROPE N.V.
 COCKERILLKAAI 14
 B-2000 ANTWERPEN BELGIUM
 info@triple-r-europe.com
 TEL : 32-3-825-4647
 FAX : 32-3-825-5924

INDIA

● OM TRIPLE R INDIA PRIVATE LIMITED
 PLOT NO. 1196/B, ROAD NO. 59,
 JUBILEE HILLS
 HYDERABAD - 500 033 A.P INDIA
 info@triple-r-india.com
 TEL : 91-40-2360-6122
 FAX : 91-40-2360-6132



TRIPLE R CO.,LTD

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 5-11-7 Towa Adachi-ku, Tokyo 120 003 JAPAN
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 e-mail : info@triple-r.co.jp
 http://www.triple-r-worldwide.com(in English) http://www.triple-r.co.jp(in Japanese)



ISO9002:101/401:2004 (E01142)
 Certified at Tochigi factory

Sapporo 011-821-7307 Nagoya 052-702-0801
 Sendai 022-375-5533 Osaka 06-6331-5801
 Tokyo 03-3629-3101 Fukuyama 084-933-8171
 Kitakanto 0282-44-0366 Fukuoka 092-584-6561
 TROC(Triple R Overseas Corporation)
 phone:+81.3.5616.7731 / fax:+81.3.5616.7732

Triple R Group - Committed to ISO14001

TRIPLE R
<http://www.triple-r-worldwide.com>

Triple R Oil Cleaner-Excellence in Oil Filtration



Motto of RRR Group

1. We support resource conservation, and continue to be a world leader of advanced filtration & separation technologies.
1. The Triple R product range is diversified for applications in all industries and is manufactured to the highest worldwide standards.
1. Triple R Group employees and associates are dedicated and proactive and determined to achieve our mutual goals.

Our Belief

Triple R believes that it is a vital duty for everyone in the world to protect our beautiful environment for present and future generations. We operate our business responsibly as a filtration & separation system manufacturer in respect to resource conservation. Triple R Group members are all engaged in "RRR": Reduce, Reuse, and Recycle.

Our Environment Plans

1. We have created Environment Management Systems to promote environmental activities and improve our conservation standards.
2. We recognize the impact which our business has on the environment, set environmental targets, and operate to prevent pollution and continuously improve the processes.
3. We strictly comply with environmental laws, regulations, and agreements.
4. Main environmental objectives in our business are;
 - ① Reduces resource usage and industrial waste by providing & upgrading our RRR filtration & separation systems.
 - ② Reduces environmental load originated from our products.
 - ③ Promotes the developments of resource recycling technologies through our RRR filtration & separation systems, distributes and support the global market.
5. We ensure that all our members comprehend Our Environment Plans, and increase the awareness of conservation.
6. We put Our Environment Plans in writing and make it available to the public.

 Masaaki Morinaga, Representative Director

Triple R Group is committed to ISO 14001

Company Profile

Company summary:

1. Company name : Triple R Co., Ltd.
2. Address : 5-11-7 Towa Adachi-ku, Tokyo 120 0003 JAPAN
3. Founded : 1 November 1967
4. Established : 24 November 1969
5. Capital : JPY72,000,000.-
6. Financial year : April to March
7. Representative : Masaaki Morinaga, Representative Director
8. Company banks : The bank of Tokyo-Mitsubishi UFJ, Ltd., Ikebukuro Branch
 Sumitomo Mitsui Banking Corporation, Ayase Branch
9. Sales Head Office : 5-11-7 Towa Adachi-ku, Tokyo
 phone: +81.3.3620.3232 / fax: +81.3.5616.7732
 e-mail: info@triple-r.co.jp
 http: //www.triple-r-worldwide.com (in English)
 http: //www.triple-r.co.jp (in Japanese)

Sapporo branch :

6-1-12 1-jo Misono Toyohira-ku, Sapporo-city, Hokkaido
 phone: +81.11.821.7307 / fax: +81.11.821.7269
 e-mail: info-sapporo@triple-r.co.jp

Sendai branch :

2-9-8 Izumi Chuo Izumi-ku, Sendai-city, Miyagi
 phone: +81.22.375.5533 / fax: +81.22.375.9050
 e-mail: info-sendai@triple-r.co.jp

Kitakanto branch :

3000 Nishi-mizushiro Ohira-machi, Tochigi-city,
 Tochigi 329 4423 JAPAN
 phone: +81.282.44.0366 / fax: +81.282.43.8482
 e-mail: info-kitakantou@triple-r.co.jp

Tokyo branch :

5-11-7 Towa Adachi-ku, Tokyo
 phone: +81.3.3629.3101 / fax: +81.3.3620.0005
 e-mail: info-tokyo@triple-r.co.jp

Nagoya branch :

4-1306 Takahari Meito-ku, Nagoya-city, Aichi
 phone: +81.52.702.0801 / fax: +81.52.702.0807
 e-mail: info-nagoya@triple-r.co.jp

Osaka branch :

3-6-9 Hama Toyonaka-city, Osaka
 phone: +81.6.6331.5801 / fax: +81.6.6331.5843
 e-mail: info-osaka@triple-r.co.jp

Fukuyama office :

2-2-105 Imazu-cho, Fukuyama-city, Hiroshima
 phone: +81.84.933.8171 / fax: +81.84.933.8172

Fukuoka branch :

6-1-48 Itatsuki Hakata-ku, Fukuoka-city, Fukuoka
 phone: +81.92.584.6561 / fax: +81.92.584.6565
 e-mail: info-fukuoka@triple-r.co.jp

Company history:

◦Nov. 1967 We started market research and sales of RRR products in Japan, which Triple R Industry, Inc. located in USA developed.

◦Nov. 1969 Established Triple R Sales Co., Ltd., and developed the business in by-pass oil cleaner applications for engine oil for mainly automobiles (buses & trucks).

◦1973 When a discussion started about refined filtration systems for hydraulic fluid in addition to industrial car applications, the negotiation started with Triple R Industry, Inc. USA about the production in Japan.

◦Apr. 1974 Established Triple R Overseas Corporation, and started sales in international countries.

◦Nov. 1974 Established Triple R Industry Co., Ltd. in Japan, and acquired the license of the production & sales of all RRR products, and started production.

◦Oct. 1983 Established Tokyo Oil Analyst Co., Ltd. As the first oil analysis company affiliated with an oil cleaner manufacturing company in Japan, it conducts oil analysis tests and gives advices for more diversified hydraulic and fluid control.

◦Jun. 1986 Changed the company name from Triple R Sales Co., Ltd. to Triple R Co., Ltd.

◦May. 1987 Built a new Tochigi factory (Triple R Industry Co., Ltd.) in the current location. By having Production lines, Product Development, and Analysis lab in one location, we started to provide better solutions with our special technologies in filtration & separation systems to our customers.

◦Apr. 2002 Started the production & sales of Centrifuge series
 ◦Sep. 2003 TOSHIBA Machine Plastic Engineering transferred their Oil Cleaner Division to Triple R. Triple R produces and sells the product.

◦Apr. 2004 Launched Triple R Group Web site
 ◦Jun. 2004 Started the production & sales of Vacuum Water Separators

◦23 Jun. 2004 Kick-off for ISO 14001 Certificate acquisition
 ◦Oct. 2004 Started the production & sales of Magnetic Separators
 ◦15 Dec 2004 Certified for ISO 14001 (2004)
 ◦Nov. 2005 Started the production & sales of Magnet Conveyor
 ◦Mar. 2007 Acquired the license of the production & sales of "Quicktron" from Nippon Oil Corporation (current JX Nippon Oil & Energy Corporation), and started selling OSCA series with Quicktron attached.

◦Apr. 2008 Completed a backwashing cleaner system to be assembled as a part of a large cleaner system.
 ◦Feb. 2009 Started the construction of a new Tochigi factory No. 2 (Triple R Industry Co., Ltd.) in order to add more new automatic Element production lines.

Triple R Group companies

Triple R Industry Co., Ltd.

1. Address : 5-11-9 Towa Adachi-ku, Tokyo 120 0003 JAPAN
 phone: +81.3.3620.3232 / fax: +81.3.5616.7732

2. Established : 1 November 1974

3. Capital : JPY60,000,000.-

4. Financial year : October to September

5. Company bank : The bank of Tokyo-Mitsubishi UFJ, Ltd., Ikebukuro Branch
 The Ashikaga Bank, Ltd., Ohira Branch
 3000 Nishi-mizushiro Ohira-machi, Tochigi-city,
 Tochigi 329 4423 JAPAN
 phone: +81.282.43.3131 / fax: +81.282.43.8482
 e-mail: info-tochigi@triple-r.co.jp
 Facility land : 6,600 m²

6. Tochigi factory : 2531 Nishi-mizushiro Ohira-machi, Tochigi-city,
 Tochigi 329 4423 JAPAN
 phone: +81.282.43.3131 / fax: +81.282.43.8482
 e-mail: info-tochigi2@triple-r.co.jp
 Facility land : 6,800 m²

Triple R Overseas Corporation

5-11-9 Towa Adachi-ku, Tokyo 120-0003 JAPAN
 phone: +81.3.5616.7731 / fax: +81.3.5616.7732
 e-mail: info-overseas@triple-r.co.jp

Tokyo Oil Analyst Co., Ltd.

Head office : 5-11-9 Towa Adachi-ku, Tokyo 120-0003 JAPAN
Laboratory : 3000 Nishi-mizushiro Ohira-machi, Tochigi-city,
 Tochigi 329 4423 JAPAN
 phone: +81.282.43.0101 / fax: +81.282.43.8482
 e-mail: info@tokyo-oilana.com
 http: //www.tokyo-oilana.com



Triple R Group supports resource recycling technologies worldwide.

Triple R provides solutions for all industrial requirements

<p>① Car manufacturers,</p> 	<p>⑥ Construction machines,</p> 
<p>② Machine tools,</p> 	<p>⑦ Printing machines,</p> 
<p>③ Special machines,</p> 	<p>⑧ Electric Power,</p> 
<p>④ Steel & Iron,</p> 	<p>⑨ Generators,</p> 
<p>⑤ Paper industry,</p> 	<p>⑩ Ship building and shipping</p> 

① Car manufacturers	Various coolants (oil/water base) Hydraulic oil, Lubricating oil (Mineral base, Incombustible) Washing fluid, Working fluid	Water Oil Contaminants	Suitable models	BU series -P6 SE series -P7 OSCA series -P7 ~ P9 Vacuum Water Separation Systems -P9 Centrifuge series -P10 TRCS series -P10 CUBE series -P11 Magnet Conveyor series -P11 Magnet Separator series -P11 Quicktron series -P12 Backwashing filters -P12
② Machine tools	Various coolants (oil/water base) Hydraulic oil, Lubricating oil (Mineral base, Incombustible) Washing fluid, Working fluid	Water Oil Contaminants		
③ Special machines	Various coolants (oil/water base) Hydraulic oil, Lubricating oil (Mineral base, Incombustible) Washing fluid, Working fluid	Water Oil Contaminants		
④ Steel & Iron manufacturers	Various coolants (oil/water base) Hydraulic oil, Lubricating oil (Mineral base, Incombustible) Washing fluid, Working fluid	Water Oil Contaminants		
⑤ Paper industry	Hydraulic oil Lubricating oil	Water Contaminants		OSCA series -P7 ~ P9 Vacuum Water Separation Systems -P9
⑥ Construction machines	Various coolants (oil/water base) Hydraulic oil, Lubricating oil (Mineral base, Incombustible) Washing fluid, Working fluid	Water Oil Contaminants		BU series -P6 SE series -P7 OSCA series -P7 ~ P9 Vacuum Water Separation Systems -P9 Magnet Conveyor series -P11 Backwashing filters -P12
⑦ Printing machines	Lubricating oil	Water Contaminants		BU series -P6 SE series -P7 OSCA series -P7 ~ P9 TRCS series -P10 Magnet Conveyor series -P11 Backwashing filters -P12
⑧ Electric power	Turbine oil	Water Contaminants		OSCA series -P7 ~ P9 Vacuum Water Separation Systems -P9
⑨ Generators	Engine oil Fuel	Carbon Sludge		OSCA series -P7 ~ P9 TRCS series -P10 Centrifuge series -P10 CUBE series -P11
⑩ Ship building and shipping	Engine oil Fuel	Carbon Sludge		OSCA series -P7 ~ P9 TRCS series -P10 Centrifuge series -P10 CUBE series -P11

oil / fluid types

what does it remove or filter?



Triple R Group is committed to ISO14001

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

ELEMENT series



- Features**
- Removes contaminants which regular filters can not remove.
 - Removes micron size solid particles
 - Removes water
 - Removes and reduces oxidation products
 - Outside paper drum compresses the lower part to increase the density. (Multi-stage filtration protects from pressure surge.)
 - A non-woven sheet protects the base of the element.
 - Cost efficient and achieving superior results than other products.

*Please see ELEMENT series <brochure# 001> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

FILTER series



- Features**
- Longer life due to perfectly designed different density stages
 - Fine fibre layer has a certain amount of coarse fibre mixed in to create enough void area (empty space). That makes it possible to have distinctively longer life.
 - No binding agent, surface active agent, nor titanium oxide is used in core and filter material, so the filtered fluid remains pure. They are "pure" filters compatible to variety of chemicals.
 - Very fine polypropylene fibre made by special method is used for filters in order to achieve filtration ratio as good as absolute micron rate.
 - Complete QC system ensures uniform filtration density designs, and so reliable micron rate and durability result.
 - A gasket made with polyethylene, NBR, EPDM, or silicon is attached on both ends of filter, and creating a perfect sealing.
 - Wet sterilization, autoclave test, or repeated hot water treatment can be arranged at site.
 - No fibre release

*Please see FILTER series <brochure# 001> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

BACKWASHING FILTER



TRBS-100

TRBS-200

- Features**
- Perfect pre-filtration system when cleaning heavily contaminated fluid.
 - Maintenance free for a long period
 - Few consumables
 - Suitable for both oil-base and water-base fluid

Standard Specifications

■TRBS-100	
Outside dimensions	φ124×H305
Micron rate	23111 ^(100μ) , 23112 ^(75μ) , 23113 ^(50μ) , 23114 ^(20μ) , 23115 ^(10μ)
■TRBS-200	
Outside dimensions	φ124×H603
Micron rate	23211 ^(100μ) , 23212 ^(75μ) , 23213 ^(50μ) , 23214 ^(20μ) , 23215 ^(10μ)

*Please see BACKWASHING FILTER <brochure# 018> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

SS HOUSING series



- Features**
- Suitable for high viscosity fluid such as lubrication oil.
 - Suitable for high flow rate filtration
 - Suitable for high viscosity and heavily contaminated fluid

Standard Specifications

Product model	SS102-H114	SS103-H114	SS305-H114	SS306-H80
Outside dimensions (mm)	W300xL300xH600	W300xL300xH743	W480xL480xH1250	W480xL480xH1250
Weight (dry)	18kg	22kg	89kg	87kg

Product model	SS Suction LL	4PF20	6PF20	12PF20
Outside dimensions (mm)	W265xL265xH470	W300xL300xH885	W385xL385xH885	W480xL480xH1258
Weight (dry)	14kg	24kg	30kg	78kg

*Please see SS HOUSING series <brochure# 002> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

SU HOUSING series



- Features**
- Large selection of filters/elements and micron rates from suction filters to fine filtration elements in order to satisfy all requirements, and also flexible and easy installation.
 - Applications: many types of oil and water-base fluid

Standard Specifications

Product model	3PF10	3PF20	6PF10	6PF20	3WS20	6WS20
Outside dimensions (mm)	W200xL200xH635	W200xL200xH885	W300xL300xH670	W300xL300xH920	W300xL300xH920	W300xL300xH920
Weight (dry)	8.0kg	10.0kg	13.0kg	18.5kg	18.5kg	18.5kg

Product model	3OS10	6OS10	WD10	Suction filter L	Suction filter LL
Outside dimensions (mm)	W243xL243xH873	W300xL300xH920	W130xL130xH353	W184xL184xH257	W236xL236xH630
Weight (dry)	11.5kg	18.5kg	3.0kg	5.0kg	10.5kg

*Aluminium

*Please see SU HOUSING series <brochure# 003> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

BU series



- Features**
- Bleed-off from the high pressure point, so a pump motor is not necessary.
 - Compact and light model
 - Built-in flow control valve and relief valve, and assembly type for BU200/300.
 - High performance elements as standard specifications (β3=929)

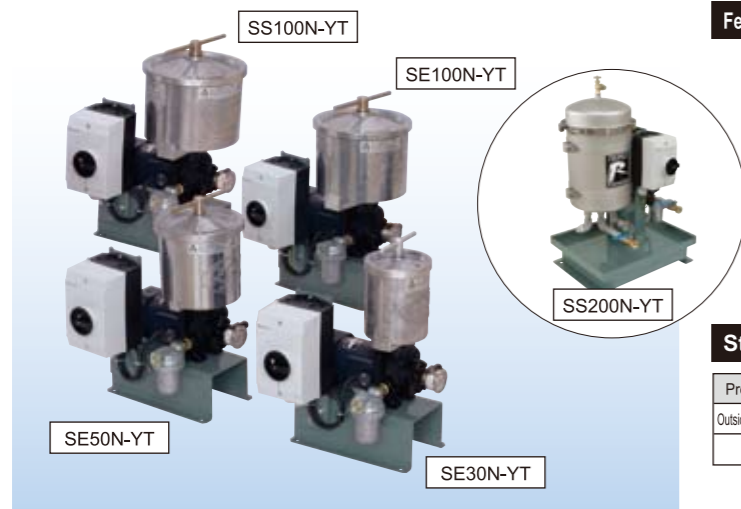
Standard Specifications

Product model	BU-30E	BU-50E	BU-100E	BU-200E	BU-300E
Outside dimensions (mm)	W140xL122xH285	W185xL166xH310	W230xL206xH320	W235xL235xH410	W235xL235xH765
Weight (dry)	2.5kg	4.0kg	6.5kg	8.0kg	12.0kg

*Please see BU series <brochure# 004> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

SE series



- Features**
- Compact and light model
 - High performance elements as standard specifications ($\beta_3=929$)
 - Removes contaminants which regular filters can not remove.
 - (1) Removes micron size solid particles
 - (2) Removes water
 - (3) Removes and reduces oxidation products
 - Low operation cost
 - Easy maintenance

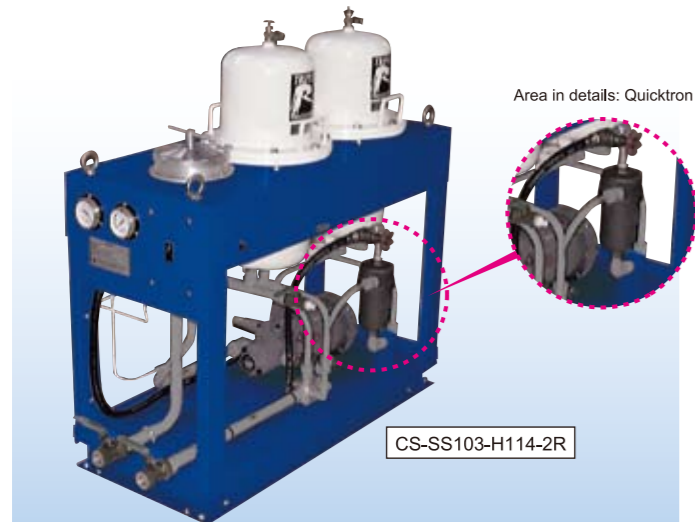
Standard Specifications

Product model	SE30N-YT	SE50N-YT	SE100N-YT	SS100N-YT	SS200N-YT
Outside dimensions (mm)	W256xL277xH399	W262xL277xH405	W282xL283xH420	W282xL283xH420	W418xL330xH667
Weight (dry)	11.5kg	12.0kg	14.0kg	15.5kg	25.0kg

*Please see SE series <brochure# 005> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series SS type / SS-PF type <Medium size>



- Features**
- Model for medium capacity
 - Space efficient (1/3 of a traditional products)
 - High performance elements as standard specifications ($\beta_3=929$)
 - Removes contaminants which regular filters can not remove.
 - (1) Removes micron size solid particles
 - (2) Removes water
 - (3) Removes and reduces oxidation products
 - (4) Removes air bubbles inside hydraulic circuit
 - Low operation cost

Photo model Specifications

Product model	CS-SS103-H114-2R
Outside dimensions (mm)	W406xL1042xH1007
Weight (dry)	135kg

*Please see OSCA series SS type / SS-PF type <brochure# 006> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series SS type / SS-PF type <Large capacity>



- Features**
- Model for large capacity
 - Space efficient (1/3 of a traditional products)
 - High performance elements as standard specifications ($\beta_3=929$)
 - Removes contaminants which regular filters can not remove.
 - (1) Removes micron size solid particles
 - (2) Removes water
 - (3) Removes and reduces oxidation products
 - (4) Removes air bubbles inside hydraulic circuit
 - Low operation cost

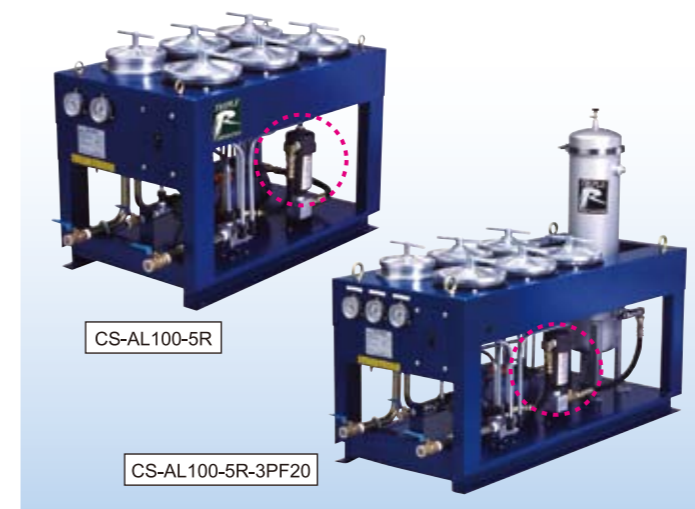
Photo model Specifications

Product model	CS-SS305-H114-2R	CS-SS315-H114-1R
Outside dimensions (mm)	W700xL1670xH1435	W1324xL1170xH1569
Weight (dry)	300kg	300kg

*Please see OSCA series SS type / SS-PF type <brochure# 006> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series AL type / AL-PF type



- Features**
- Space efficient (1/3 of a traditional products)
 - High performance elements as standard specifications ($\beta_3=929$)
 - Removes contaminants which regular filters can not remove.
 - (1) Removes micron size solid particles
 - (2) Removes water
 - (3) Removes and reduces oxidation products
 - (4) Removes air bubbles inside hydraulic circuit
 - Low operation cost
 - Easy maintenance

Photo model Specifications

Product model	CS-AL100-5R	CS-AL100-5R-3PF20
Outside dimensions (mm)	W500xL942xH650	W500xL1182xH1006
Weight (dry)	100kg	125kg

*Please see OSCA series AL type / AL-PF type <brochure# 007> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series SU type / SU-PF type



- Features**
- Model for medium capacity
 - Space efficient (1/3 of a traditional products)
 - High performance elements as standard specifications ($\beta_3=929$)
 - Removes contaminants which regular filters can not remove.
 - (1) Removes micron size solid particles
 - (2) Removes water
 - (3) Removes and reduces oxidation products
 - (4) Removes air bubbles inside hydraulic circuit
 - Low operation cost

Photo model Specifications

Product model	CS-SU103-2R	CS-SU103-2R-3PF20
Outside dimensions (mm)	W406xL993xH1030	W406xL1273xH1030
Weight (dry)	96kg	122kg

*Please see OSCA series SU type / SU-PF type <brochure# 008> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series WS type



- Features**
- Separates contaminants and water simultaneously
 - Glass compartment for a visual instant check for water separation progress
 - Water drainage outside of the working line
 - Simply use as a fine contamination filtration unit with or without water contamination.
 - Easy maintenance

Photo model Specifications

Product model	WS-WD
Outside dimensions (mm)	W505xL300xH500
Weight (dry)	25.5kg

*Please see OSCA series WS type <brochure# 009> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

OSCA series OS type



CS-3OS10-3PF20-AD

Features

- Triple filtration of the washing fluid to improve the washing performance.
 - (1) Removes solid particles mixed in washing fluid
 - (2) Collects, separates, and automatically drains oil mixed in washing fluid
 - (3) Collects and automatically drains floating oil on the surface.

* option:



Photo model Specifications

Product model	CS-3OS10-3PF20-AD
Outside dimensions (mm)	W450xL895xH435
Weight (dry)	Approx. 110kg

*Please see OSCA series OS type <brochure# 010> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

VACUUM WATER SEPARATOR series



TRVS-10E



TRVS-30E



TRVS-70E

Features

- High water and air bubble content in oil, it removes them from oil efficiently.
 - Dissolved water: 80%, Free water: 100%, Air bubbles in oil: 100%
 - Few consumables because it requires no filters.

Data from a Drier line application, Paper mill

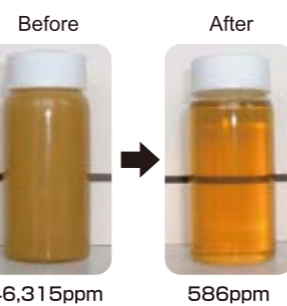
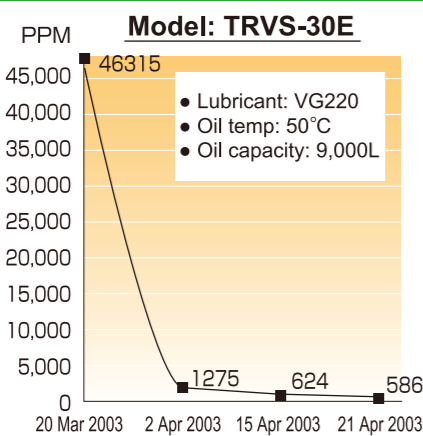


Photo model Specifications

Product model	TRVS-10E	TRVS-30E	TRVS-70E
Outside dimensions (mm)	W550xL1091xH1527	W570xL1442xH1516	W1050xL2050xH2350
Weight (dry)	260kg	380kg	1250kg

*Please see VACUUM WATER SEPARATOR series <brochure# 011> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

CENTRIFUGE series <Automatic>



TR-100A

TRS-200A

Features **MAX 300RPM!**

- Improved liquid/solid separation ratio
- Dehydrates sludge and so less weight & volume when collecting
- Improved finer sludge removal ratio

- Combination with RRR Oil cleaners; it improves the contaminant removal ratio from the fluid.
 - (1) Dehydrates fine sludge collected from fluid, so easy to handle the sludge disposal or recycling.
 - (2) Easily separates fine powders such as aluminium/stainless powder, carbon, lenses, glass powder, stone powder, and mud etc.
 - (3) No consumables such as filter paper.
 - (4) Extends service life of diamond grinder by 30%, and decreases scratches on glass products caused by grinding.
 - (5) Stops putrefaction of water-base fluid.
 - (6) Halves oil consumption, and stops oil deterioration.

Photo model Specifications

Product model	TRS-100A	TRS-200A
Outside dimensions (mm)	W630xL1210xH1768	W730xL1310xH1768
Weight (dry)	650kg	750kg

*Please see CENTRIFUGE series <Automatic> <brochure# 012> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

CENTRIFUGE series <Manual>



TR-30M-PM

TRS-50M-PM

TRS-80M-PM

Features

- (1) Stabilizes final product quality
- (2) Reduces machine repairs, and extends machine life
- (3) No filter paper, and so no blockages
- (4) Dehydrated sludge is easy to dispose of or recycle
- (5) Easy installation
- (6) No consumables

Photo model Specifications

Product model	TR-30M-PM	TRS-50M-PM	TRS-80M-PM
Outside dimensions (mm)	W397xL712xW1010	W473xL787xW1029	W685xL878xW1444
Weight (dry)	115kg	160kg	240kg

*Please see CENTRIFUGE series <Manual> <brochure# 012> for more details.

Car manfr Tools Special Steel & Iron Paper Construction Printing E Power Generator Shipping

TRCS series



TRCS-100

Features

- Combination of Oil Cleaners and Centrifuge; it improves the contaminant removal ratio from the fluid.
- Final filtration with 300 series elements significantly improves the cleanliness.

Photo model Specifications

Product model	TRCS-100
Outside dimensions (mm)	W400xL1590xW1950
Weight (dry)	500kg

*Please see TRCS series <brochure# 013> for more details.

CUBE series



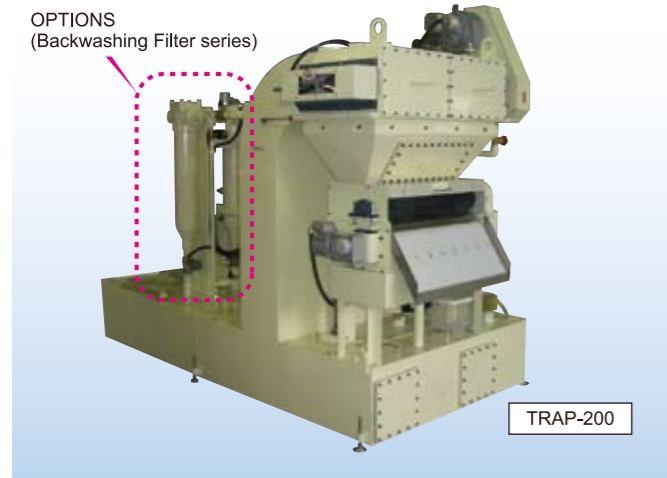
- Features**
- Fine Oil Cleaner: Combination of Fine filtration system and Centrifuge
 - Suitable for heavily contaminated fluid
 - Perfect fine filtration system for lubricant and fuel for large diesel engines

Photo model Specifications

Product model	CUBE30	CUBE60
Outside dimensions (mm)	W593xL787xH1136	W610xL1084xH1204
Weight (dry)	Approx 200kg	Approx. 260kg

*Please see CUBE series <brochure# 014> for more details.

MAGNET CONVEYOR series



- Features**
- Magnet Conveyor series uses magnets
 - Low operation cost because permanent magnets are used
 - Few parts replacements because permanent magnets are used
 - Intermittent operation improves filtration cleanliness while saving energy
 - Reduces waste management cost by pressing liquid from sludge before collection.
 - Presses and separates used oil / fluid from sludge, and Reuse oil / fluid.

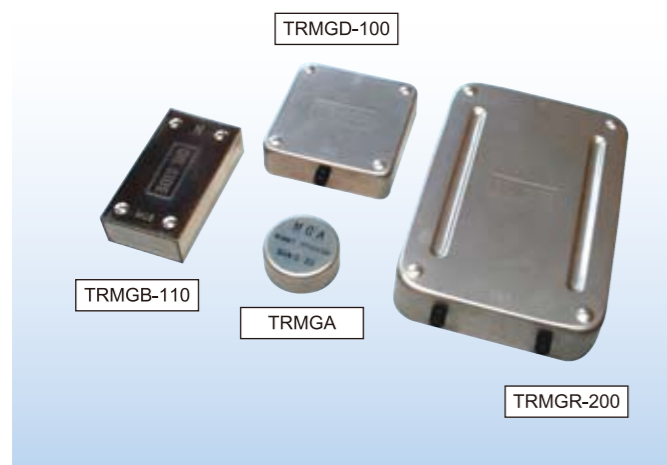
- Application list**
- Shaving machines
 - Honing machines
 - Super Finishing
 - Detail Form rolling machines
 - Grinding machines, etc.

Photo model Specifications

Product model	TRAP-200
Outside dimensions (mm)	W1500xL3000xH2100
Weight (dry)	2000kg

*Please see MAGNET CONVEYOR series <brochure# 015> for more details.

MAGNET SEPARATOR series



- Features**
- Permanent magnets with unique structure create high and wide magnetic fields
 - Coagulates, Settles, and Separates very fine contaminants with magnetic energy
 - No operation cost because permanent magnets are used
 - Eliminates 6 major cost factors, Reduces oil leakages, Accomplishes low cost & resource conservations by eliminating industrial waste, and Reduces environmental overload.

Standard Specifications

Product model	TRMGR-200	TRMGD-100	TRMGB-110	TRMGA
Outside dimensions (mm)	W200xL140xH40	W100xL100xH30	W110xL61xH27	φ54xH22
Weight (dry)	3.8kg	1.2kg	0.7kg	0.2kg

*Please see MAGNET SEPARATOR series series <brochure# 016> for more details.

QUICKTRON series



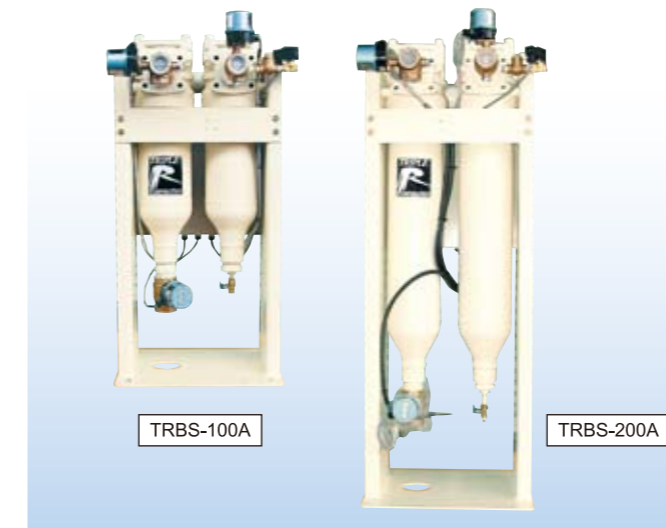
- Features**
- Removes fine air bubbles mixed in oil continuously by applying the cyclone model.
 - Removes air bubbles instantly
 - High performance
 - Compact equipment
 - Easy installation
 - Economical price

Photo model Specifications

Product model	TRQT-50	TRQT-100
Outside dimensions (mm)	φ88xH196	φ170xH270
Weight (dry)	810 g	2.7kg

*Please see QUICKTRON series <brochure# 017> for more details.

BACKWASHING FILTER series



- Features**
- Perfect pre-filtration system when cleaning heavily contaminated fluid
 - Maintenance free for a long time
 - Few consumables
 - Suitable for both water-base and oil-base fluid
 - Less backwashing fluid (drain) is required

Photo model Specifications

Product model	TRBS-100A	TRBS-200A
Outside dimensions (mm)	W500xL581xH1057	W500xL581xH1399
Weight (dry)	130kg	160kg

*Please see BACKWASHING FILTER series <brochure# 018> for more details.

MAGNET BARRIER SYSTEM

Create your own magnet barrier to fit the existing coolant tank.

Applications:

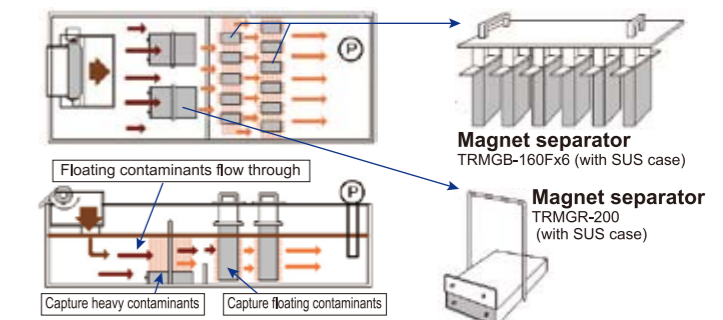
- Polishing or Grinding machines (flat-cylinder)
- Form rolling machines • Shaving machines • others



Layout example of TRMGB210 and TRMGD100 placed on the bottom of the tank

Because it is magnetic [permanent magnets]

Suitable for both oil-base and water-base fluid! Significant reduction of operation cost and maintenance cost! Collect & Reuse oil / fluid instead of draining, and extend oil / fluid change intervals! Suitable for both a single machine application and a central filtration system for multiple machines, and provides solutions for all industrial requirements in existing available space!



*Please see MAGNET BARRIER SYSTEM <brochure# 016> for more details.

Triple R Oil Cleaner System - Application Examples

Industry: Machine tools

Filtration system for gear grinding machines (model: TRAP-200-2F) Outside dimensions: W1850xL3000xH1900

- Standard specifications**
- ① Magnet conveyor: TRAP-200 x 1
 - ② Backwashing filter: TRBS-200 x 2
 - ③ Heat exchanger: AKZJ907-8kw x 2 (1 each for Dirty tank: 1200L, Clean tank: 1000L)

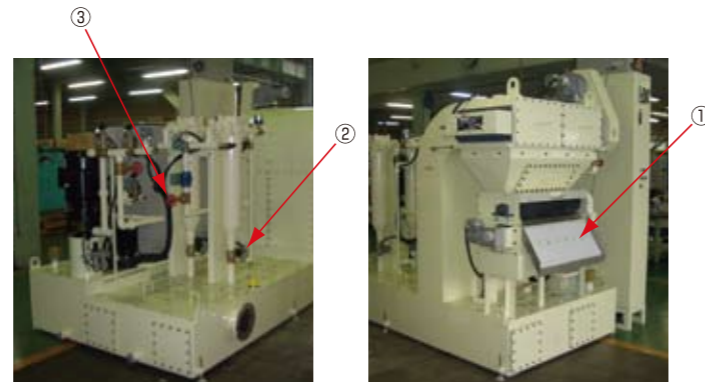
Oil / Fluid type Water / Mineral oil

Viscosity example	1 ~ 15mm ² /s (cSt)
Contaminants to remove	Steel powder

Benefits Improves machining quality, Significantly reduces the oil discharged with sludge, Less tank cleanings, Extends oil life

System's functions & roles

- ① Magnet conveyor: Removes a large amount of magnetic contaminants
- ② Backwashing filter: Captures contaminants which magnets did not remove (automatic backwashing when filters are clogged, and reuse filters)
- ③ Heat exchanger (oil temperature controller): Available option when you need a sophisticated temperature control for the oil.
- * Oil Cleaner or Filter: Available option when you need additional finer filtration.



Suitable applications Polishing or Grinding machines (flat, cylinder, etc) · Form rolling machines · Shaving machines · others

Car Manufacturers & Related industries

Filtration system for Steel plate washing machines (model: CS-SS305-H114-6R) Outside dimensions: W2200xL1350xH1538

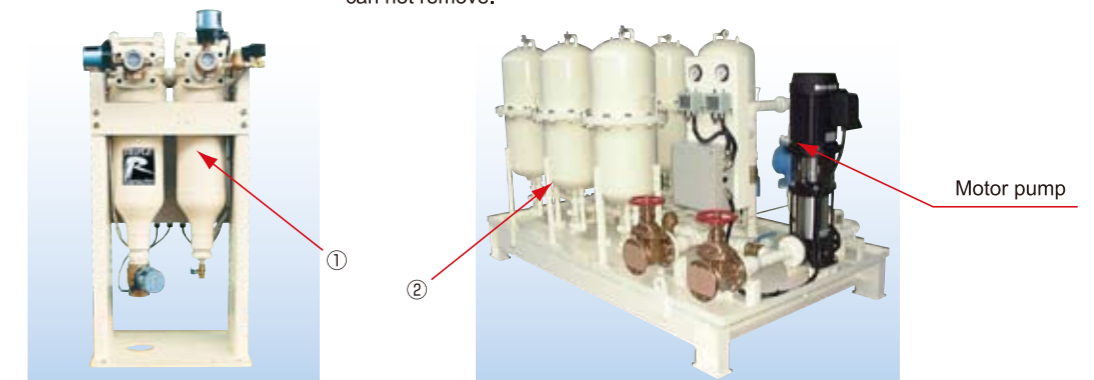
- Standard specifications** Fine Oil Cleaner: SS305-H114 x 6
(Clean tank: 1000L, Mid tank: 500L, Dirty tank: 500L)

Oil / Fluid type Steel plate washing oil

Viscosity example	approx. 2mm ² /s (cSt)
Contaminants to remove	Dusts washed from steel plates

Benefits Prevents scratches (pimples) while pressing

- System's functions & roles**
- ① Backwashing filter: Pre-filter when removing dusts washed away from steel plates (automatic backwashing when filters are clogged, and reuse filters.)
 - ② SS305-H114: High quality fine filtration of contaminants which backwashing filter can not remove.



Suitable applications At finished car assembling factory (steel plate press factory)

Water separator for lubricant used at rolling mill Outside dimensions: Backwashing filter W1850xL3000xH1900 Vacuum Water Separator W3100xL1640xH2140

- Standard specifications**
- ① Vacuum water separator: TRVS-70EH
 - ② Automatic Backwashing filter: TRBS-200A x 2
 - ③ Drain tank: 270L, Recovery tank: 115L

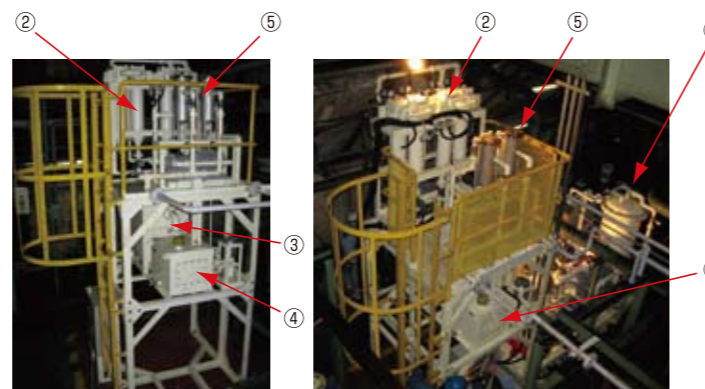
Oil / Fluid type Mineral oil

Viscosity example	460, 680mm ² /s (cSt)
Contaminants to remove	Water, all contaminants

Benefits Remove water and contaminants from lubricant and Reuse it instead of dispose of it as waste oil

System's functions & roles

- ① Vacuum water separator: Removes water mixed with lubricant inside tank
- ② Automatic Backwashing filter: Removes contaminants from oil with SUS notch wire filters No filter change because of automatic regular backwashing
- ③ Drain tank: 270L tank collects the dirty oil used for backwashing
- ④ Recovery tank: 115L tank collects the top layer of oil from drain tank after sedimentation
- ⑤ High viscosity filter: Suction filter suitable for high viscosity

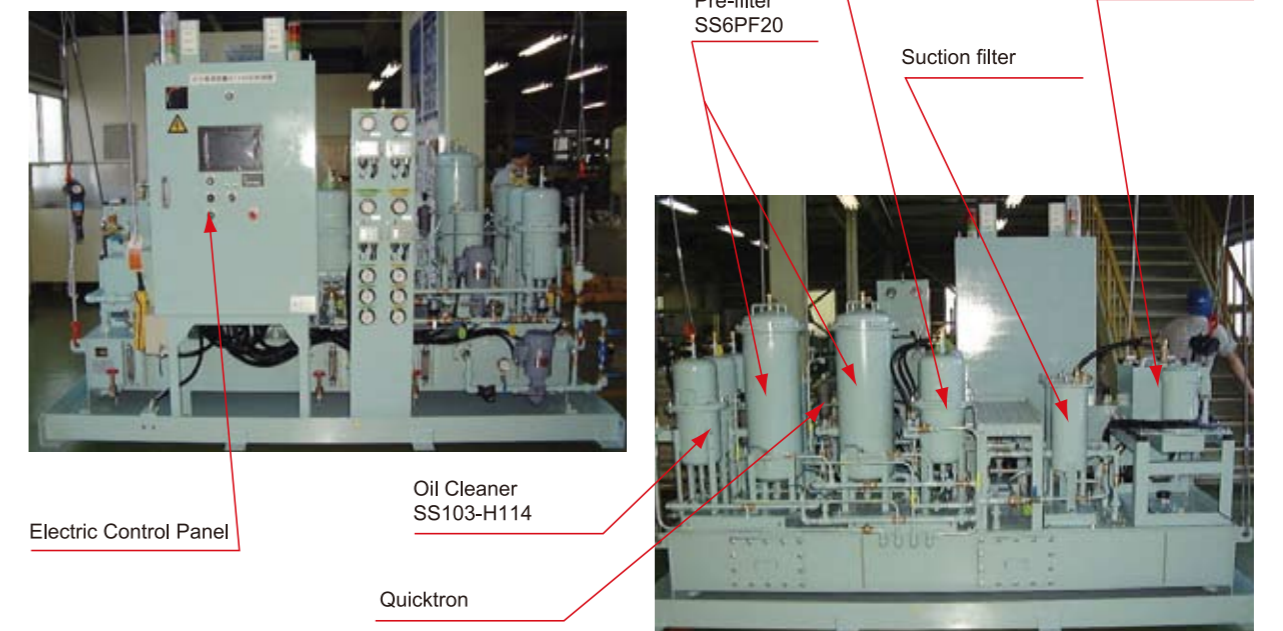


Suitable applications Lubricant used for production lines at steel mills

Filtration system for tester line oils (for example: tester line for ATF-CVT)

Benefits Reuse test oil and it improves the cleanliness level

Suitable applications For the specifications, please consult with a manufacturer.



Electric Control Panel

Oil Cleaner SS103-H114

Quicktron

Pre-filter SS6PF20

Suction filter

Oil Cleaner SS103-H114

Manual Centrifuge TRS-50M

Recommended* Target ISO Cleanliness Codes and media selection for systems using oil based fluids per ISO4406:1999 for particle sized 4μ[c] / 6μ[c] / 14μ[c]

	Pressure < 140 bar < 2000 psi	Media βx[c] = 1000 (βx = 200)	Pressure 212 bar 3000 psi	Media βx[c] = 1000 (βx = 200)	Pressure >212 bar > 3000 psi	Media βx[c] = 1000 (βx = 200)
Pumps						
Fixed Gear	20/18/15	22μ[c] (25μ)	19/17/15	12μ[c] (12μ)	-	-
Fixed Piston	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)	17/15/12	7μ[c] (6μ)
Fixed Vane	20/18/15	22μ[c] (25μ)	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Variable Piston	18/16/13	7μ[c] (6μ)	17/15/13	5μ[c] (3μ)	16/14/12	7μ[c] (6μ)
Variable Vane	18/16/13	7μ[c] (6μ)	17/15/12	5μ[c] (3μ)	-	-
Valves						
Cartridge	18/16/13	12μ[c] (12μ)	17/15/12	7μ[c] (6μ)	17/15/12	7μ[c] (6μ)
Check Valve	20/18/15	22μ[c] (25μ)	20/18/15	22μ[c] (25μ)	19/17/14	12μ[c] (12μ)
Directional (solenoid)	20/18/15	22μ[c] (25μ)	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Flow Control (modulating)	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Proportional Cartridge Valve	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)	17/15/12	7μ[c] (6μ)
Proportional Directional	17/15/12	7μ[c] (6μ)	17/15/12	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)
Proportional Flow Control	17/15/12	7μ[c] (6μ)	17/15/12	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)
Proportional Pressure Control	17/15/12	7μ[c] (6μ)	17/15/12	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)
Servo Valve	16/14/11	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)	15/13/10	5μ[c] (3μ)
Bearings						
Ball Bearings	15/13/10	5μ[c] (3μ)	-	-	-	-
Gearbox (industrial)	17/16/13	12μ[c] (12μ)	-	-	-	-
Journal Bearing (high speed)	17/15/12	7μ[c] (6μ)	-	-	-	-
Journal Bearing (low speed)	17/15/12	7μ[c] (6μ)	-	-	-	-
Roller Bearings	16/14/11	7μ[c] (6μ)	-	-	-	-
Actuators						
Cylinders	17/15/12	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)	15/13/10	5μ[c] (3μ)
Vane Motors	20/18/15	22μ[c] (25μ)	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Axial Piston Motors	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)	17/15/12	7μ[c] (6μ)
Gear Motors	20/18/14	22μ[c] (25μ)	19/17/13	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Radial Piston Motors	20/18/15	22μ[c] (25μ)	19/17/14	12μ[c] (12μ)	18/16/13	12μ[c] (12μ)
Test Stands, Hydrostatic						
Test Stands	15/13/10	5μ[c] (3μ)	15/13/10	5μ[c] (3μ)	15/13/10	5μ[c] (3μ)
Hydrostatic Transmissions	17/15/13	7μ[c] (6μ)	16/14/11	5μ[c] (3μ)	16/14/11	5μ[c] (3μ)

*Depending on system volume and severity of operating conditions, a combination of filters with varying degrees of filtration efficiency might be required (for example, pressure, return, and off-line filters) to achieve and maintain the desired fluid cleanliness.

Set the Target:

The first step in identifying a target ISO code for a system is to identify the most sensitive on an individual system, or the most sensitive component supplied by a central reservoir. If a central reservoir supplies several systems, the cleanliness must be maintained, or the most sensitive component must be protected by filtration that cleans the fluid to the target before reaching the component.

Additional Considerations:

Table recommends conservative target ISO cleanliness codes based on a several component manufacturers guidelines and extensive field studies for standard industrial operating conditions in systems using oil based fluids. If a non-oil based fluid is used (i.e. water glycol), the target ISO code should be set one value lower for each size (4μ, 6μ, 14μ).

If a combination of the following conditions exists in the system, the target ISO code should also be set one value lower.

* Component is critical to safety or overall system reliability.

* Excessive shock or vibration.

* Frequent cold start.

* Other Severe operation conditions.

Realise important savings thanks to fluid management

Typical example	No. of machines		20
	Operating hours / year		5.000 h
	Machine costs / year		40 \$
	Current availability % ~ Downtime %		90,00% ~ 10,00%
	DOWNTIME / h	$20 \times 5.000 \times 40 \$ \times 10\% =$	10.000 h
Downtime costs	Downtime caused by hydraulic faults = 35%	$35\% \text{ of } 10.000 \text{ h} =$	3.500 h
	of which 80% caused by contaminated fluid	$80\% \text{ of } 3.500 \text{ h} =$	2.800 h
	▶ Fluid-related downtime	$2.800 \text{ h} \times 40 \$ =$	112.000 \$
	▶ Labour costs for repair	$2.800 \text{ h} \times 35 \$ =$	98.000 \$
	Total of downtime costs	$112.000 \$ + 98.000 \$ =$	210.000
Savings	Fluid management can prevent 90% of the fluid-related costs	Remains: $2.800 \text{ h} - 90\% =$	280 h
	▶ Remaining downtime after fluid management	$(280 \text{ h} \times 40 \$) + (280 \text{ h} \times 35 \$) =$	21.000
	Cost savings	$210.000 \$ - 21.000 \$ =$	189.000
	Increased machine availability to 93,08%!	$10.000 \text{ h} - (2800 \text{ h} + 280 \text{ h}) = 6.920 \text{ h}$	93,08% ~ 6.92%