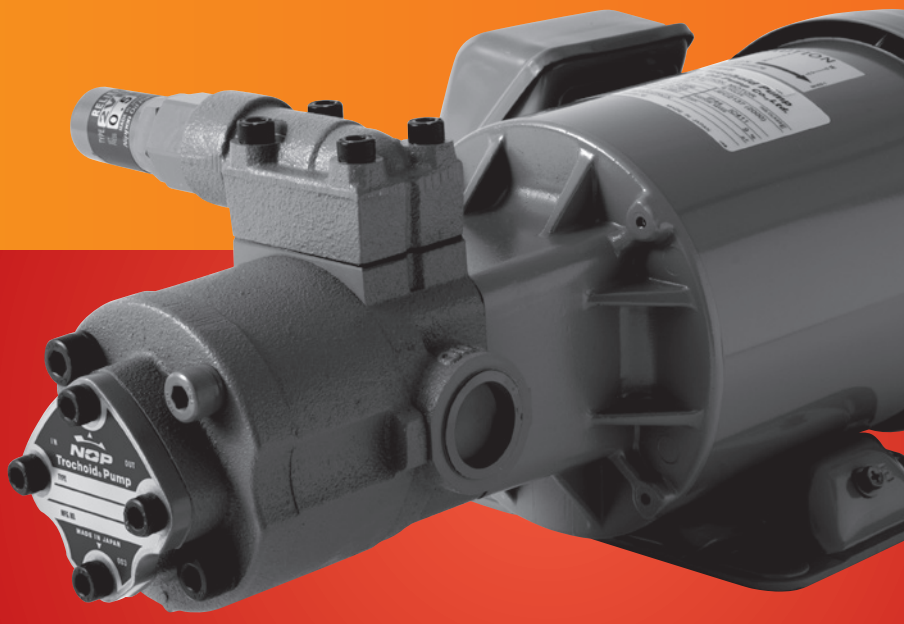
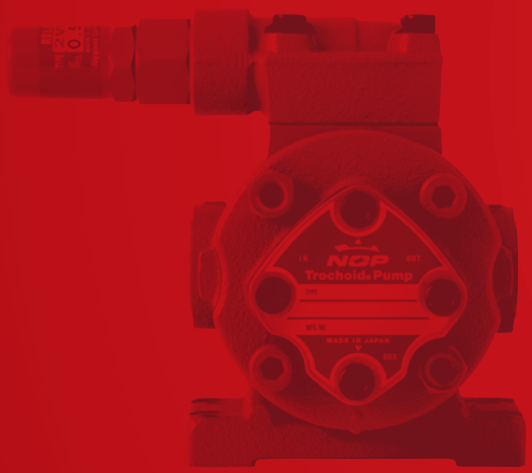
NOP®

DIGEST EDITION

Trochoid™ Pump

Products Guide



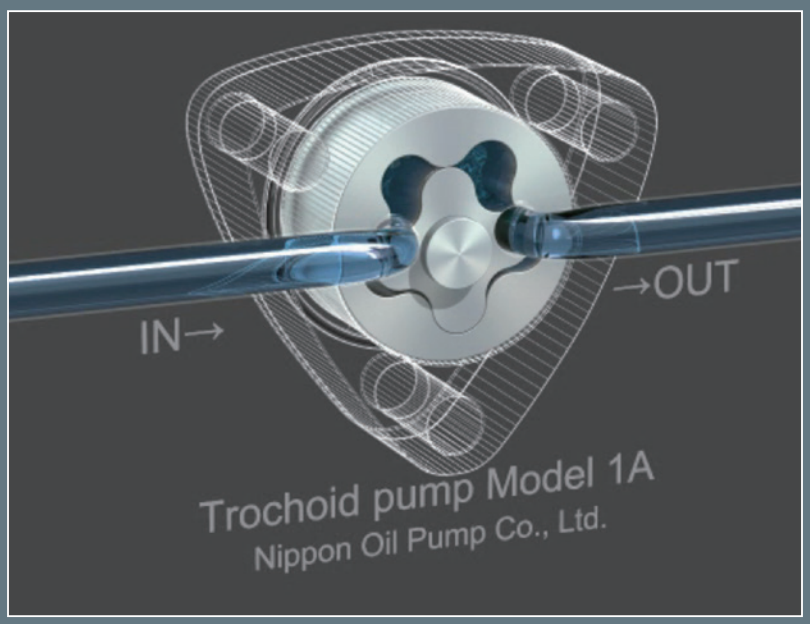


NOP®

Nippon Oil Pump Co., Ltd.

How Trochoid™ Pump works

Trochoid pump has an inner rotor and outer rotor coming into contact each other and create gap in between. As the pump rotates, the volume of the gap expands and shrinks continuously. Expansion of the gap creates vacuum and fluid is drawn into the pump and as the gap shrinks, compression occurs and fluid is pumped out.



While being proud of providing the best quality products, NOP is the world's top manufacturer of Trochoid™ Pump*[1] in terms of the production volume.

*[1]Trochoid™ Pump with integrated motor

1. Compact size

- Trochoid™ Pump is an internal gear pump, which is more compact than other pump types for the same capacity.
- The compactness of Trochoid™ Pump allows more flexibility in designing customer's application system.

2. Self-primimg

- Trochoid™ Pump is a displacement pump, which does not require priming oil.

3. Low noise and low pulsation

- Trochoid™ Pump's noise and pulsation caused by the gear meshing are low.

4. Long product life

- The high precision rotor and parts minimize wear and extend the product life.

5. Various lineup

- As Trochoid™ Pump has a simple structure, we can offer various models of Trochoid™ Pump simply by changing the inner rotor and seals on the pump.
- You can select a pump from our various lineup to satisfy your needs.

Note: Trochoid™ Pump may not be able to achieve the full performance if some object enters into the pump.

Select a pump

Trochoid™ Pump, Lunary™ Pump Quick Reference Guide P2
Trochoid™ Pump, Lunary™ Pump Performance Distribution Map P4
Trochoid™ Pump, Lunary™ Pump Oil Compatibility Table P6
Applications and Usage Examples of Trochoid™ Pump P8

Specifications

Small capacity

1ME (with integrated 3-phase motor) P10
1MB (Base-coupling mount type)
1A/1HG (Pumphead)
1MA (Pumphead for 1ME motor)
1A/1MA Performance Curve/1HG Performance Curve P11

Small to medium capacity

2MY-2HBM(with integrated 3-phase motor) P12
2MY-2HTM(with integrated 3-phase motor)
2MY-2HWM (with integrated 3-phase motor)
2MY-S Filter (with integrated 3-phase motor) P13
2MY-W Filter (with integrated 3-phase motor) P14
2MY-2HBM+2HB (Dual pump with integrated 3-phase motor) P15
2MB (Base-coupling mount type)
2HB/2HT (Pumphead) P16
2HBM/2HTM/2HWM (Pumphead for 2MY-motor)
2.5HGA (Pumphead) P17
2HB(M) Performance Curve/2HT(M) Performance Curve P18
2HW(M) Performance Curve/2.5HGA Performance Curve P19

Medium capacity

3MF (with integrated 3-phase motor) P20
N3F (Pumphead)
3MB-N3H (Base-coupling mount type)/N3H (Pumphead)
3MB-3V (Base-coupling mount type)/3V (Pumphead)/N3F Performance Curve P21
N3H Performance Curve/3V Performance Curve P22

Large capacity

4MB-4AM (Base-coupling mount type)/4AM (Pumphead) P23
4MB-4A (Base-coupling mount type)/4A (Pumphead)
MB-GPL (Base-coupling mount type)/GPL (Pumphead)
4AM Performance Curve/4APerformance Curve P24
GPL Performance Curve P25

Others

1RA/2RA (Pumphead) P26
3RD/4RD (Pumphead)
RELIEF VALVE P27
MB-GD (Base-coupling mount type)/GD (Pumphead)
MICRO TOP (Portable compact oil filter) P28
1PS (Oil cooler unit)
1RA Performance Curve/2RA Performance Curve P29
3RD Performance Curve/GD-VK Performance Curve P30
GD-H Performance Curve P31

Instructions of Trochoid™ Pump

· Lists of Applicable Seal Kit, Bearing, Seal and Gasket Material Options for Special Specification P32
· Trochoid™ Pump Discontinued Products List (Standard models) P33
· Viscosity Chart

- The model numbers given in this catalogs are examples with the most typical options.
  For other options, please refer to the e-catalog on our website. http://www.nopgroup.com/english/products/
- Max.pressures shown in this catalog are calculated under the following conditions:
  Test solution for general lubricant oil: ISO-VG46 Oil temperature: 40C
  Test solution for metal-cutting fluid and fuel oil: ISO-VG2 Oil temperature: 40C
- The model number ends with “IE3” if you select a three phase motor with rated power of over 750W.

Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

Trochoid™ Pump, Lunary™ Pump Quick Reference Guide

Select a satandard pump

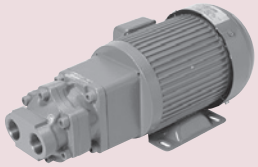
Compact Models

1ME



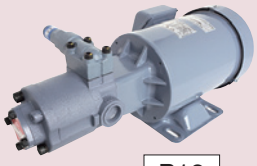
P10

3MF



P20

2MY

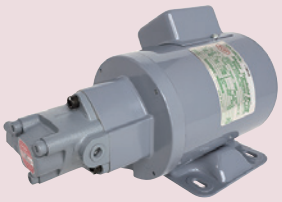


P12

Easy to attach and replace

Models with single-phase motor

1ME S



2ME S

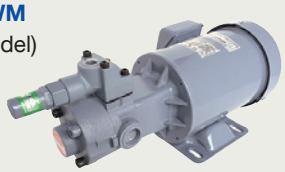


Note: For more information, please refer to our catalog.

Select a pump for a fluid

For cutting fluid

2MY-2HWM
(Basic model)



P12

2MY-S Filter

(Suction filter)

Cartridge type
(Easy to replace)



Element type
(Reusable)



P13

For high temperature oil

1A-VF
(Small flow rate)



P10

N3H-VF/VH
(Medium flow rate)



P20

2HB-VF/VH
(Small to medium flow rate)



P16

1ME200SH-1MAVB-BT
(High temperature edible oil)



Note: For more information, please refer to our catalog.

Select a pump for applications

More compact

Double filters
(To increase productivity)



P14

Dual pump
(To recover oil with a single unit)



P15

To cool oil

1PS



P28

To cleen oil

MICRO TOP

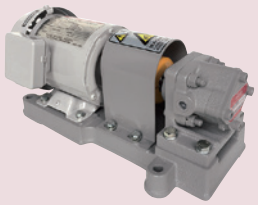


P28

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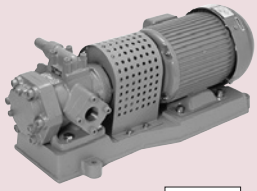
To attach a motor for specific use

1MB



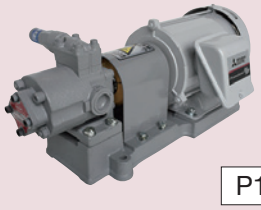
P10

3MB



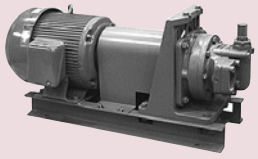
P20

2MB



P15

4MB



P23

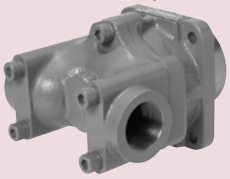
To use only a pump

1A/1HG
(Small flow rate)



P10

N3F/N3H
(Medium flow rate)



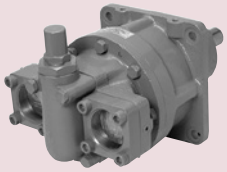
P20

2HB/2.5HGA
(Small to medium flow rate)



P16/P17

4AM/4A
(Large flow rate)



P23

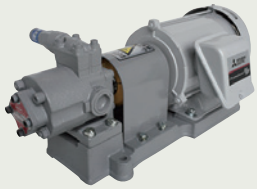
To convey fuel oils (Kerosen,diesel oil, heavy oil)

2HT
For low velosity oils



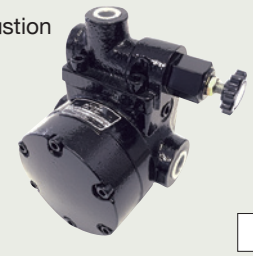
P16

2MB-2HT



P15

GD MB-GD
For spray combustion



P27

To convey high viscosity oil

3V/3MB-3V



P21

GPL/MB-GPL



P23

To transfer oil in the same direction regardless of its rotation direction

1RA **2RA** **3RD**



P26

To use only a valve

2VB/2VD/2VBD/
3VB/3VBD/
4VBP/4VBPD

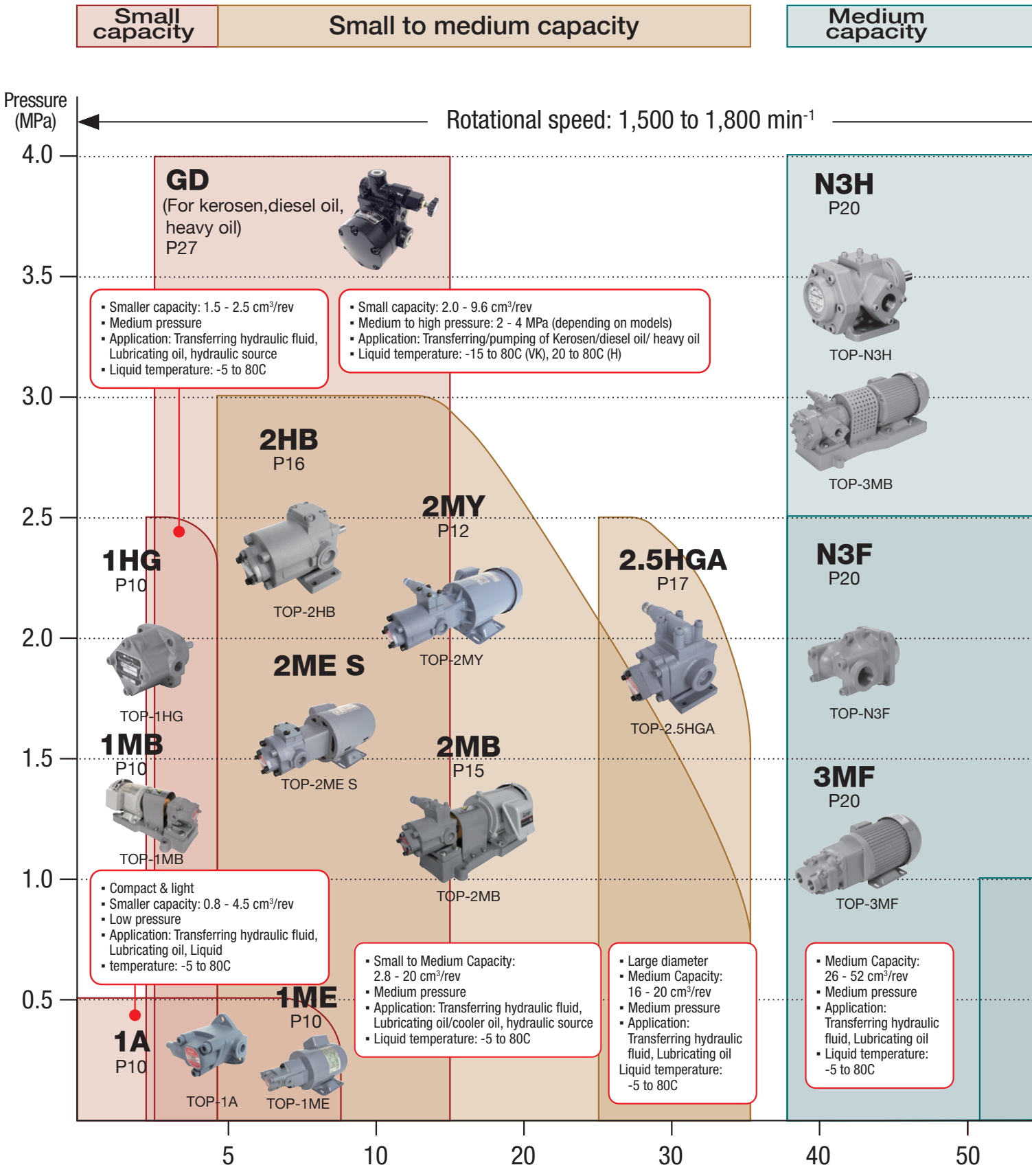


P27

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Trochoid™ Pump, Lunary™ Pump Performance Distribution Map

The pumps are classified based on the discharge flow rate and pressure on the following chart.
Please refer to the applicable pages for further information.



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Large capacity

Test oil: ISO-VG46 at 40C

Rotational speed: 1,000 to 1,200 min^{-1}

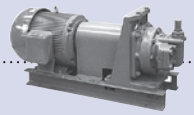
- Medium Capacity: 26 - 65 cm^3/rev
- Medium to high pressure
- Application: Transferring hydraulic fluid, Lubricating oil
- Liquid temperature: -5 to 80C

- Large Capacity: 115.5 - 280.5 cm^3/rev
- Medium pressure
- Application: Transferring hydraulic fluid, Lubricating oil
- Liquid temperature: -5 to 120C

4AM
P23



TOP-4AM



TOP-4MB

- Large Capacity: 349.8/580.8 cm^3/rev
- Small pressure
- Application: Transferring hydraulic fluid, Lubricating oil
- Liquid temperature: -5 to 120C

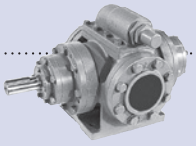
- High viscosity
- Large Capacity: 150/200/250 cm^3/rev
- Application: Transferring hydraulic fluid, Lubricating oil
- Liquid temperature: -5 to 80C

GPL/MB-GPL
Lunary™ Pump
P23
(960-1750min^{-1})



GPL

4A
P23



TOP-4A

3V
P21



TOP-3V

- High viscosity
- Medium Capacity: 39 - 65 cm^3/rev
- Medium pressure
- Application: Transferring hydraulic fluid, Lubricating oil
- Liquid temperature: -5 to 80C

100 200 300 400 500 600

Flow rate (L/min)

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Trochoid™ Pump, Lunary™ Pump Oil Compatibility Table

- The following table describes the examples of typical oils used in applications in the past, which is not an assurance of the recommended models, the specifications and the product life. It is rare, though some additives and other elements in oils may cause a trouble to the pump, so please inquire with the oil manufacturer about the comptibility with your liquid before use.
- For operating environments, please refer to the instruction manuals and specifications of Trochoid™ Pump, Lunary™ Pump.

	Oil / Model	Industrial lubricating oil	Hydraulic oil	Gear oil	Turbine oil	Engine oil	Trque converter oil	Spindle oil	Silicone oil
Small capacity	1A	○	○	○	○	○	○	×	○
	1A-VV (Special specification)	○	○	×	○	×	×	×	○
	1HG	○	○	○	○	○	○	□	○
	1HG-VV (Special specification)	○	○	×	×	×	×	□	X
	GD	×	×	×	×	×	×	×	×
Small to medium capacity	2HB	○	○	○	○	○	○	□	○
	2HB-VV (Special specification)	○	○	X	○	○	X	□	○
	2HT	×	×	×	×	×	×	×	×
	2HW	×	×	×	×	×	×	×	×
	2.5HGA	○	○	○	○	○	○	□	○
	2.5HGA-VV (Special specification)	○	○	○	○	○	○	□	○
Medium capacity	N3F	○	○	○	○	○	○	□	○
	N3F-VV (Special specification)	○	○	○	○	○	○	□	○
	N3H	○	○	○	○	○	○	□	○
	N3H-VV (Special specification)	○	○	○	○	○	×	×	○
	3V	○	○	○	○	○	○	×	×
	3V-VV (Special specification)	○	○	○	○	○	○	×	×
Large capacity	4AM	○	○	○	○	○	○	□	○
	4A	○	○	○	○	○	○	□	○
	GPL(Lunary™ Pump)	○	○	○	○	×	×	×	×
Reversible	1RA	○	○	○	○	×	×	×	×
	2RA	○	○	○	○	×	×	×	×
	3RD	○	○	○	○	×	×	×	×
	4RD	○	○	○	○	×	×	×	×

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○: The oil was used in the past with the pump following the specifications listed in the pump's catalog.
●: The oil was used in the past with the pump under 0.7MPa in discharge pressure. (The pump has a limit in discharge pressure)
□: The oil was used in the past with the pump under 0.7MPa in discharge pressure. (The pump has a limit in discharge pressure)
×: Unavailable.

- For special specifications, refer to P.32. Please contact us for more information.
- We can provide Trochoid™ Pump specifically designed for diesel oil, kerosene, heavy oil. Please contact us for more information.

Coocking oil	Quenching oil	Insulating/ Electric insulating oil	Metal cutting fluid (Straight oil/ Water soluble)	Diesel oil	Kerosene	Heavy oil	Oil / Model	
○	×	○	×	×	×	×	1A	Small capacity
○	X	○	×	×	×	×	1A-VV (Special specification)	
○	●	□	×	×	×	×	1HG	
○	●	□	X	●	X	●	1HG-VV (Special specification)	
×	×	×	×	○	○	○	GD	
○	●	□	×	×	×	×	2HB	Small to medium capacity
○	●	□	×	×	×	×	2HB-VV (Special specification)	
×	×	×	X	○	○	○	2HT	
×	×	×	○	×	×	×	2HW	
○	●	□	×	×	×	×	2.5HGA	
○	●	□	×	×	×	×	2.5HGA-VV (Special specification)	
○	●	□	×	×	×	×	N3F	Medium capacity
○	●	□	×	●	×	●	N3F-VV (Special specification)	
○	●	□	×	×	×	×	N3H	
○	×	□	×	●	×	●	N3H-VV (Special specification)	
○	×	×	×	×	×	×	3V	
○	×	×	×	×	×	×	3V-VV (Special specification)	
○	●	□	×	×	×	×	4AM	Large capacity
○	●	□	×	×	×	×	4A	
○	×	×	×	×	×	×	GPL(Lunary™ Pump)	
×	×	×	×	×	×	×	1RA	Reversible
×	×	×	×	×	×	×	2RA	
×	×	×	×	×	×	×	3RD	
×	×	×	×	×	×	×	4RD	

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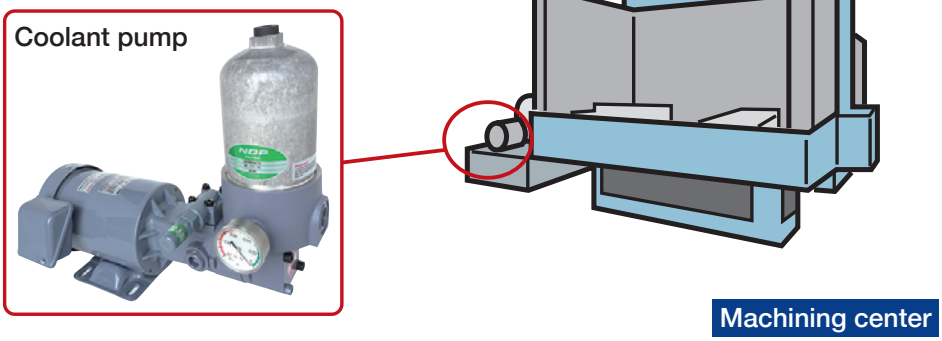
Applications and Usage Examples of Trochoid™ Pump

■Machine Tool

Lubrication, cooling, and recovery of sliding parts (spindle, gear, bed , etc.)

Supply of coolant flluid (cutting oil)

- Machining center
- Lathe
- Drilling machine
- Milling machine
- Others



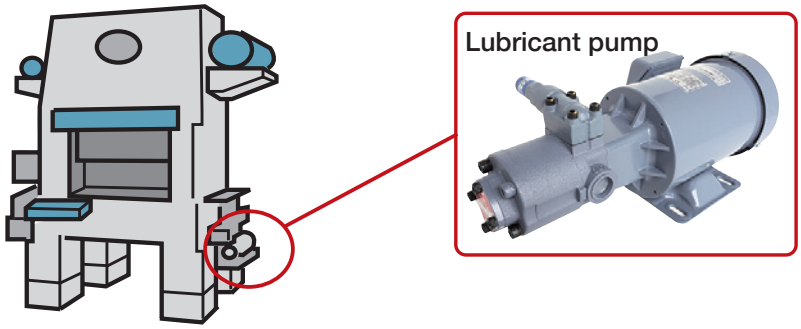
Machining center

■Industrial machinery

Lubrication, cooling, and filtration for gear and sliding parts

Hydraulic source for hydraulic equipment

- Press machine
- Compressor
- Printing machine
- Hydraulic unit
- Decelerator
- Speed-up gear
- Oil filtration device
- Others

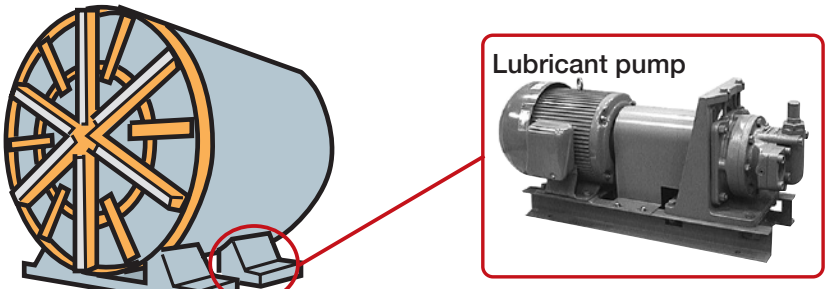


Press machine

■Construction, Civil engineering, and Agricultural machine

Lubrication for rotating parts,supply of engine oil

- Shield machine
- Crane
- Cruching machine
- Road roller
- Mowing machine
- Others

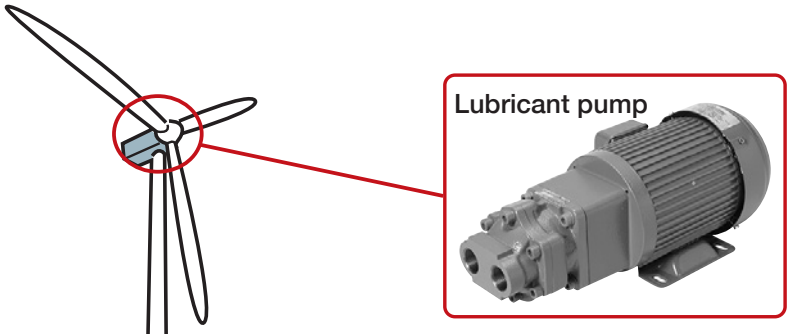


Shield machine

■Environmental equipment

Lubricating oil, fuel oil supply, filtration

- Incineration system
- Power-generation facility
- Waste oil fueling device
- Others



Wind-power generator

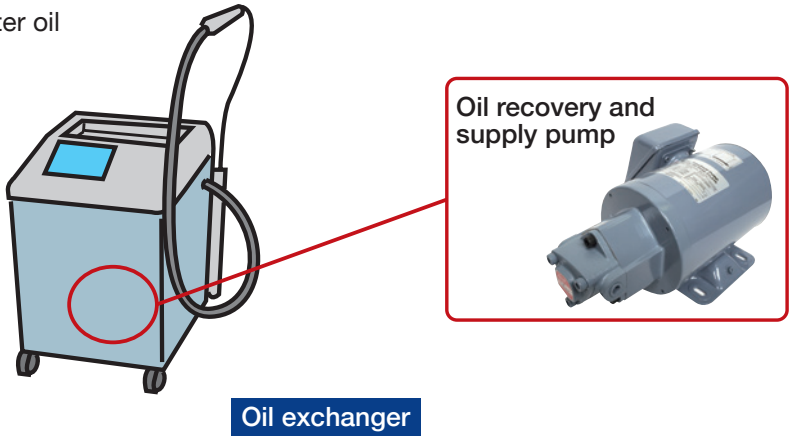
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■Automotive

Exchange/supply of engine oil, torque converter oil

Hydraulic source for hydraulic equipment

- Engine oil changer
- Test machine
- Car lifter
- Others

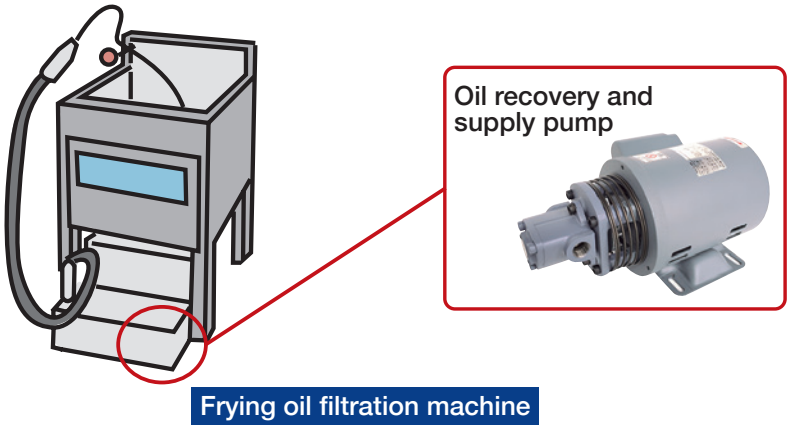


■Food

Transfer and filteration of edible oil

Hydraulic source for hydraulic equipment

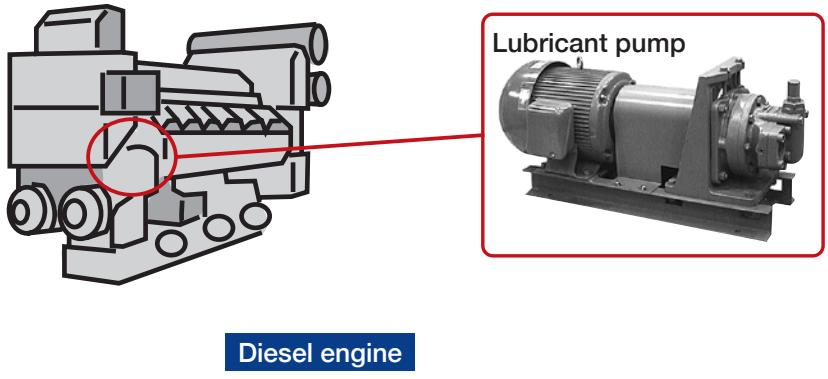
- Frying oil filtration machine
- Homogenizer (Disperser, emulsifier)
- Others



■Ship

Transfer of lubrication oil and fuel oils

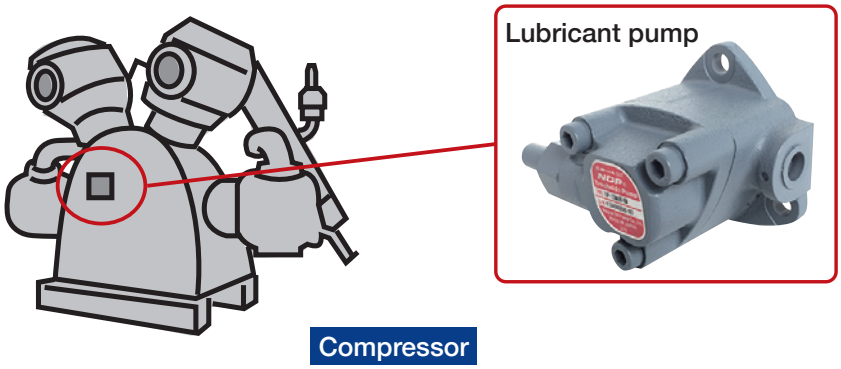
- Disel engine
- Emulsion production device
- Others



■Others

Lubrication for steel making and forging machine

- Lubrication for air conditioner
- Compressor



Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

1ME (WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-1ME ▲▲▲▲ - 1▲MA (VB)

Motor size

75-1	75W Motor	100	100W Motor
75-2	75W Motor, Vertically Mounted	200	200W Motor

Valve option



■ SPECIFICATION

Model \ Item	Motor speed 50Hz 1500min⁻¹				Motor speed 60Hz 1800min⁻¹			
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)		
		75W	100W	200W		75W	100W	200W
TOP-10MA	1.2	0.5	0.5	0.5	1.4	0.4	0.5	0.5
TOP-11MA	2.2	0.5	0.5	0.5	2.7	0.3	0.5	0.5
TOP-12MA	3.7	0.2	0.5	0.5	4.5	0.1	0.3	0.5
TOP-13MA	6.7	–	0.2	0.5	8.1	–	0.1	0.5

Note: 1ME series can not be provided with explosion-proof increased safety motor or motor with terminal box attached on the other side. For outdoor use, please consult us.

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation, Protection level IP44
200VAC 50/60Hz or 220VAC 60Hz, 4 poles, Continuous rating at 75W, 100W, 200W.

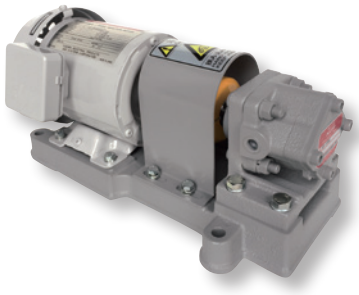
*The pump with a single phase power supply (100V) is also available. Output : 75W, 200W
Please contact us for more information.

1MB (BASE-COUPLING MOUNT TYPE)

Model TOP-1MB M/T ▲▲▲ - 1▲HGI

Motor size

M	Mitsubishi Motor	200	200W Motor
T	Toshiba Motor	400	400W Motor



■ SPECIFICATION

Model \ Item	Theoretical displacement (cm³/rev)	Theoretical discharge (ℓ/min)		Max. pressure (MPa)	Max. revolution (min⁻¹)	Approx. Weight (Kg)
		1500min⁻¹	1800min⁻¹			
TOP-11HG	1.5	2.2	2.7	2.5	3000	1.4
TOP-12HG	2.5	3.7	4.5	2.5	2500	1.5

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation, Protection level IP44
200VAC 50/60Hz or 220VAC 60Hz, 4 poles, Continuous rating at 200W, 400W

1A/1HG (PUMPHEAD)

Model TOP-1▲ A/HG (VB)

Valve option

A	Stanedard type
HG	High pressure type



■ SPECIFICATION

Model \ Item	Theoretical displacement (cm³/rev)	Theoretical discharge (ℓ/min)		Max. pressure (MPa)	Max. revolution (min⁻¹)	Approx. Weight (Kg)
		1500min⁻¹	1800min⁻¹			
TOP-10A	0.8	1.2	1.4	0.5	3000	0.5 (0.8)
TOP-11A	1.5	2.2	2.7	0.5	2000	0.5 (0.8)
TOP-12A	2.5	3.7	4.5	0.5	1800	0.6 (0.9)
TOP-13A	4.5	6.7	8.1	0.5	1800	0.8 (1.1)
TOP-11HG	1.5	2.2	2.7	2.5	3000	1.4
TOP-12HG	2.5	3.7	4.5	2.5	2500	1.5

1MA (PUMPHEAD FOR 1ME MOTOR)

Model TOP-1▲MA (VB)

Valve option



■ SPECIFICATION

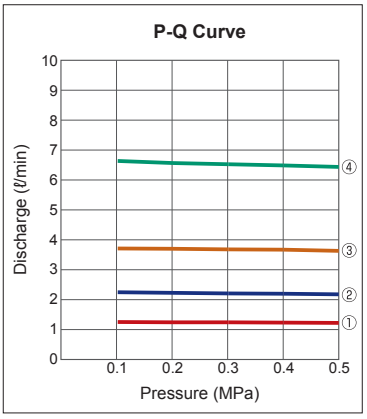
Model \ Item	Theoretical displacement (cm³/rev)	Theoretical discharge (ℓ/min)		Max. pressure (MPa)	Max. revolution (min⁻¹)	Approx. Weight (Kg)
		1500min⁻¹	1800min⁻¹			
TOP-10MA	0.8	1.2	1.4	0.5	3000	0.5 (0.8)
TOP-11MA	1.5	2.2	2.7	0.5	2000	0.5 (0.8)
TOP-12MA	2.5	3.7	4.5	0.5	1800	0.6 (0.9)
TOP-13MA	4.5	6.7	8.1	0.5	1800	0.8 (1.1)

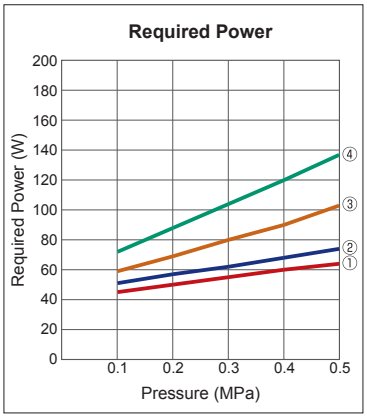
Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■1A/1MA Performance Curve

1450 min^{-1}

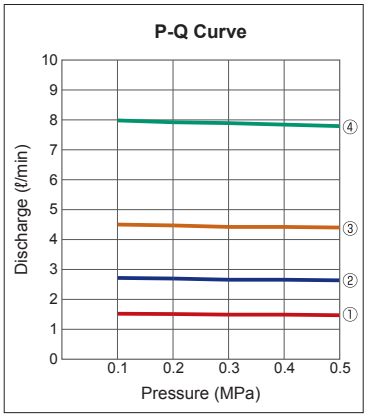
①10A ②11A
③12A ④13A

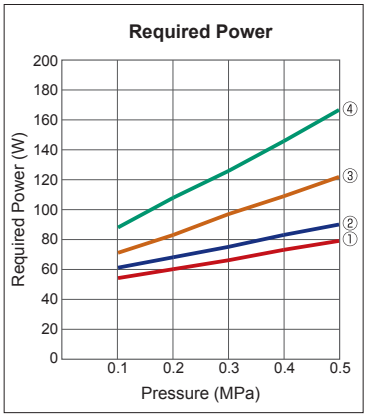




1750 min^{-1}

①10A ②11A
③12A ④13A

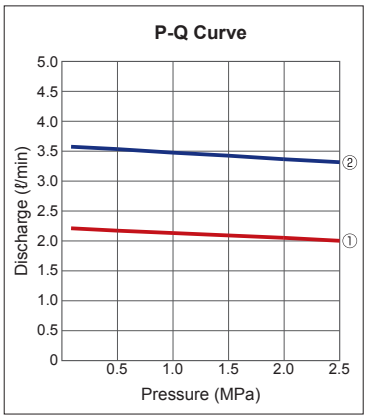


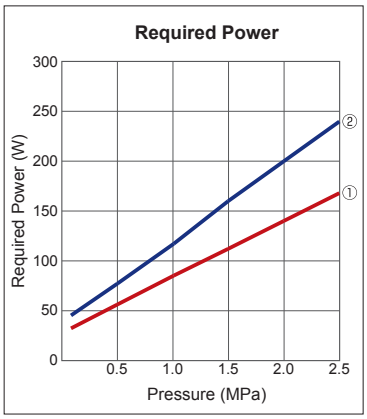


■1HG Performance Curve

1450 min^{-1}

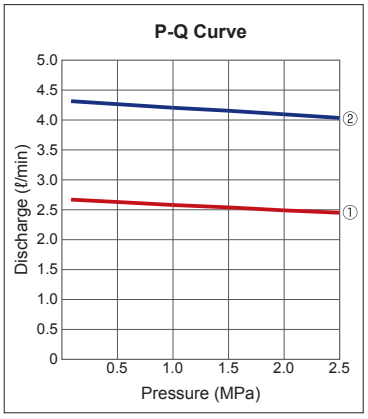
①11HG ②12HG

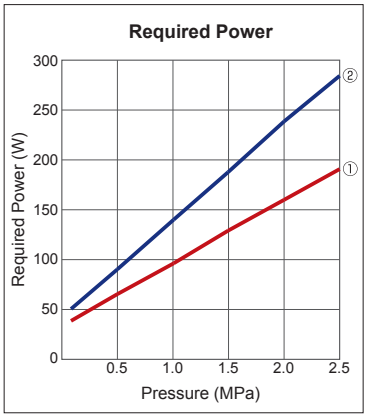




1750 min^{-1}

①11HG ②12HG

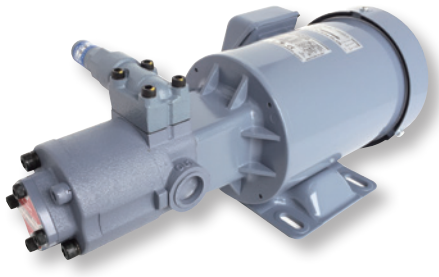




2MY-2HBM (WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-2MY▲▲▲▲ - 2▲▲HBM
Motor size

Non	*No valve*
VB	*With valve*
VD	*With valve (External return type)*



■ SPECIFICATION (For General Lubricant Oil)

Model \ Item	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-203HBM	4.2	1.7	3.0	3.0	3.0	5.0	1.3	3.0	3.0	3.0
TOP-204HBM	6.0	1.2	3.0	3.0	3.0	7.2	0.9	2.3	3.0	3.0
TOP-206HBM	9.0	0.7	1.8	2.5	2.5	10.8	0.5	1.4	2.5	2.5
TOP-208HBM	12.0	0.5	1.3	2.5	2.5	14.4	0.3	1.0	2.3	2.5
TOP-210HBM	15.0	0.4	1.1	2.5	2.5	18.0	0.3	0.9	2.0	2.5
TOP-212HBM	18.0	0.3	0.9	2.0	2.0	21.6	–	0.7	1.6	2.0
TOP-216HBM	24.0	0.2	0.7	1.5	1.5	28.8	–	0.5	1.2	1.5
TOP-220HBM	30.0	–	0.4	1.2	1.2	36.0	–	0.3	0.9	1.2

Note: TOP-2HB series is the updated model of TOP-2HA series. It is compatible with the old model in mounting dimensions and performance. Only the port type was changed from "G" to "Rc" type.

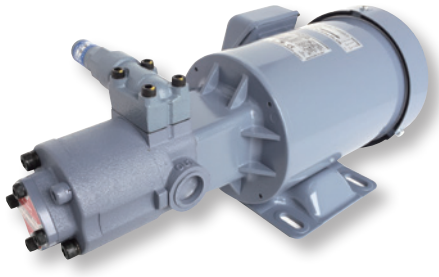
■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation (200, 400W), Class F insulation (750, 1500W), IE3(750, 1500W), CE-marking (750, 1500W), Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 200, 400, 750,1500W.
·Please consult us when ordering outdoor-type, increased safety-type, motor other than for standard voltage, one with CE marking, with terminal box attached on the other side, or other special motor.
*The pump with a single phase power supply (100V) is also available. Output : 200, 400, 750W

2MY-2HTM (WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-2MY▲▲▲▲ - 2▲▲HTM
Motor size

Non	*No valve*
VB	*With valve*
VD	*With valve (External return type)*



■ SPECIFICATION (For Diesel Oil, Kerosene, Heavy Oil)

Model \ Item	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-203HTM	4.2	0.7	0.7	0.7	0.7	5.0	0.7	0.7	0.7	0.7
TOP-204HTM	6.0	0.7	0.7	0.7	0.7	7.2	0.7	0.7	0.7	0.7
TOP-206HTM	9.0	0.7	0.7	0.7	0.7	10.8	0.6	0.7	0.7	0.7
TOP-208HTM	12.0	0.6	0.7	0.7	0.7	14.4	0.4	0.7	0.7	0.7
TOP-210HTM	15.0	0.5	0.7	0.7	0.7	18.0	0.3	0.7	0.7	0.7
TOP-212HTM	18.0	0.4	0.7	0.7	0.7	21.6	0.2	0.7	0.7	0.7
TOP-216HTM	24.0	0.3	0.7	0.7	0.7	28.8	–	0.6	0.7	0.7
TOP-220HTM	30.0	–	0.6	0.7	0.7	36.0	–	0.5	0.7	0.7

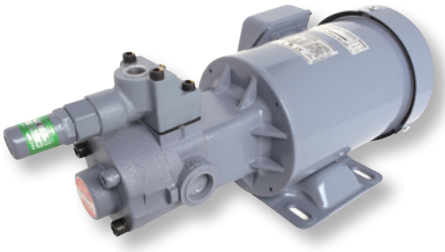
■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation (200, 400W), Class F insulation (750, 1500W), IE3 (750, 1500W), CE-marking (750, 1500W), Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 200, 400, 750,1500W.
·Please consult us when ordering outdoor-type, increased safety-type, motor other than for standard voltage, one with CE marking, with terminal box attached on the other side, or other special motor.

2MY-2HWM (WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-2MY▲▲▲▲ - 2▲▲HWM
Motor size

Non	*No valve*
VB	*With valve*
VD	*With valve (External return type)*



■ SPECIFICATION (For Metal-Cutting Fluid)

Model \ Item	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-204HWM	6.0	1.2	2.0	2.0	2.0	7.2	1.0	2.0	2.0	2.0
TOP-206HWM	9.0	0.8	1.8	2.0	2.0	10.8	0.6	1.6	2.0	2.0
TOP-208HWM	12.0	0.6	1.4	2.0	2.0	14.4	0.4	1.2	2.0	2.0
TOP-210HWM	15.0	0.4	1.2	2.0	2.0	18.0	0.3	1.0	1.9	2.0
TOP-212HWM	18.0	0.3	1.0	2.0	2.0	21.6	0.2	0.8	1.6	2.0
TOP-216HWM	24.0	0.2	0.8	1.5	2.0	28.8	–	0.6	1.2	2.0
TOP-220HWM	30.0	–	0.6	1.2	1.5	36.0	–	0.5	1.0	1.5

Note: "Trochoid" or "TROCHOID" is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■ FEATURES

·Designed in a special structure for coolant use
This coolant pump is designed to ensure excellent durability against coolant, because special design considerations are given to each part of the pump.

·High operating pressure
The pump can be used at the pressure up to 1.5 to 2.0MPa. Powerful jet from the high pressure nozzle removes cutting chips and cools blades effectively.

·Self-priming structure
While the conventional impeller pump is not self-priming and needs to be submerged in the tank or primed, 2HWM trochoid pump has a self-priming structure to eliminate such burdensome requirements.

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation (200, 400W), Class F insulation (750, 1500W), IE3 (750, 1500W), CE-marking (750, 1500W), Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 200, 400, 750,1500W.
·Please consult us when ordering outdoor-type, increased safety-type, motor other than for standard voltage, one with CE marking, with terminal box attached on the other side, or other special motor.

CLEAN HAT SERIES

2MY-S Filter (WITH INTEGRATED 3-PHASE MOTOR & SINGLE SUCTION FILETER)

Model TOP-2MY▲▲▲▲ - 2▲▲H **B/W** MPVB **/E**

Motor size

B	*For General Lubricant Oil*
W	*For Metal-Cutting Fluid*

Non	*Cartridge Type*
E	*Element Type*



■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-203HBMPVB (E)	4.2	1.7	2.5	2.5	2.5	5.0	1.3	2.5	2.5	2.5
TOP-204HBMPVB (E)	6.0	1.2	2.5	2.5	2.5	7.2	0.9	2.3	2.5	2.5
TOP-206HBMPVB (E)	9.0	0.7	1.8	2.5	2.5	10.8	0.5	1.4	2.5	2.5
TOP-208HBMPVB (E)	12.0	0.5	1.3	2.5	2.5	14.4	0.3	1.0	2.3	2.5
TOP-210HBMPVB (E)	15.0	0.4	1.1	2.5	2.5	18.0	0.3	0.9	2.0	2.5

■ SPECIFICATION (For Metal-Cutting Fluid)

Item / Model	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-204HWMPVB (E)	6.0	1.2	2.0	2.0	2.0	7.2	1.0	2.0	2.0	2.0
TOP-206HWMPVB (E)	9.0	0.8	1.8	2.0	2.0	10.8	0.6	1.6	2.0	2.0
TOP-208HWMPVB (E)	12.0	0.6	1.4	2.0	2.0	14.4	0.4	1.2	2.0	2.0
TOP-210HWMPVB (E)	15.0	0.4	1.2	2.0	2.0	18.0	0.3	1.0	1.9	2.0

■ MOTOR SPECIFICATION

·"203" is unavailable for the coolant models.
·Visocisty range of pumped liquid is 2-50mm^2/sec. The vacuum gauge will indicate beyond the green zone If pumped fluid exceeds the permissible viscosity range.

2MY-S Filter (WITH INTEGRATED 3-PHASE MOTOR & SINGLE SUCTION FILTER)

Model TOP-2MY▲▲▲▲ - 2▲▲HWNPEVB **Element type only*

Motor size



■ SPECIFICATION (For Metal-Cutting Fluid)

Item / Model	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-212HWNPEVB	18.0	0.3	1.0	2.0	2.0	21.6	–	0.8	1.6	2.0
TOP-216HWNPEVB	24.0	0.2	0.8	1.5	2.0	28.8	–	0.6	1.2	2.0
TOP-220HWNPEVB	30.0	–	0.6	1.2	1.5	36.0	–	0.5	1.0	1.5

■ MOTOR SPECIFICATION

·Visocisty range of pumped liquid is 2-50mm^2/sec. The vacuum gauge will indicate beyond the green zone If pumped fluid exceeds the permissible viscosity range.

2MY-W Filter (WITH INTEGRATED 3-PHASE MOTOR & DOUBLE SUCTION FILTERS)

Model TOP-2MY▲▲▲▲ - 2▲▲HWMDPVDE-005 **Element type only*

Motor size



■ SPECIFICATION (For Metal-Cutting Fluid)

Item / Model	Motor speed 50Hz 1500min^{-1}					Motor speed 60Hz 1800min^{-1}				
	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)				Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa)			
		200W	400W	750W	1500W		200W	400W	750W	1500W
TOP-204HWMDPVDE	6.0	1.2	2.0	2.0	2.0	7.2	1.0	2.0	2.0	2.0
TOP-206HWMDPVDE	9.0	0.8	1.8	2.0	2.0	10.8	0.6	1.6	2.0	2.0
TOP-208HWMDPVDE	12.0	0.6	1.4	2.0	2.0	14.4	0.4	1.2	2.0	2.0
TOP-210HWMDPVDE	15.0	0.4	1.2	2.0	2.0	18.0	0.3	1.0	1.9	2.0
TOP-212HWMDPVDE	18.0	0.3	1.0	2.0	2.0	21.6	–	0.8	1.6	2.0

Note: Visocisty range of pumped liquid is 2-50mm^2 /sec. The vacuum gauge will indicate over the green zone If pumped fluid exceeds the permissible viscosity range.

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation (200, 400W), Class F insulation (750, 1500W), Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 200, 400, 750,1500W

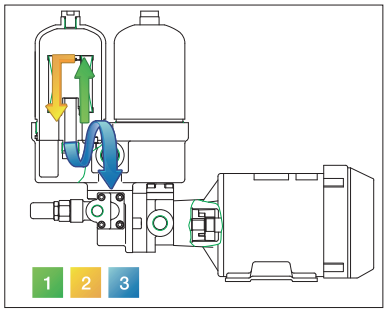
■ FILTER OPTIONS FOR "CLEAN HAT" SERIES

Filter Type	Model Name	Mesh Size
Cartridge for 2HBMPVB Cartridge for 2HWMPVB	F913-3-150W	150
Element for 2HBMPVBE Element for 2HWMPVBE	351-04-60W 351-04-100W 351-04-150W	60 100 150
Element for 2HWNPE	351-06-60W 351-06-100W 351-06-150W	60 100 150

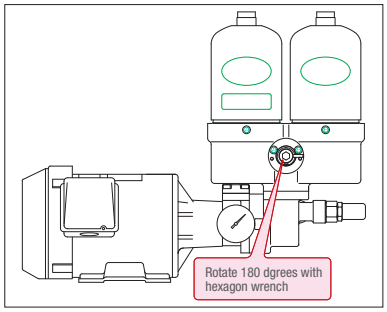
Note: Please specify the model number when ordering filters.

Note: If you also need to purchase O ring in the element case, order "G75" type for the filter of which model number begins with "351-04", and order "G95" type if it begins with "351-06".

Flow of oil inside the filter



How to switch between filters



Safety precautions for the cartridge replacement

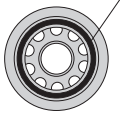
Before replacing the cartridges, make sure that there is no oil remaining inside the cartridge. You can drain the oil by loosening the air suction plug on the side of suction port (Indicated on yellow label on the case)

Note: ①Loosen the adjustment knob and hold it for 10 seconds. ②Replace the cartridges. ③After the replacment is complete, tighten the adjustment knob back in place.

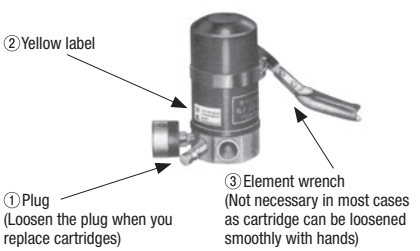
The oil remaining inside the cartridge will be released to the tank through the suction line. This process normally takes about 10 seconds before the oil is completely drained from the cartridge. Note: Make sure no check valve is installed on the suction line.

The cartridge is removable with hands by rotating it counter-clockwise and if it is still too tight, use element wrench (Available in a shop or from us). When you replace with new cartridge, tighten the cartridge onto the screw on subplate. Cartridge may draw air if it is not tight. You can tighten the cartridge more tightly by using element wrench.

Note: Do not damage O ring in the element or it may draw air.



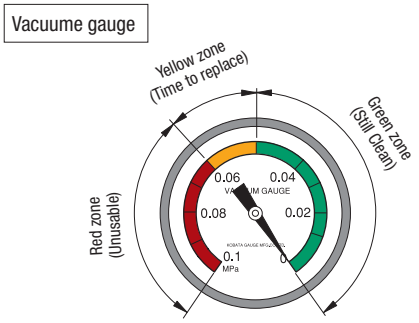
2HBMPVB (Cartiridge type)



When to replace cartridge and clean element

·For cartridge type, replace the cartridges when the pointer on the pressure gauge indicates the yellow zone. Cartridge is installable and removable easily with hands.

·For element type, rotate the element and remove it from the element case and clean it when the pointer on the pressure gauge indicates the yellow zone.



Note: "Trochoid" or "TROCHOID" is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

2MY-2HBM+2HB (DUAL PUMP WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-2MY ▲▲▲▲ - 2▲▲HBM (VB) +2▲▲HB

Motor size — *Valve option*

	Non: *No valve*
VB	VB: *With valve*
VD	VD: *With valve (External return type)*



■ SPECIFICATION (For Metal-Cutting Fluid)

Model \ Item	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})
TOP-203HBM+203HB	2.8+2.8	4.2+4.2	5.0+5.0	1.0×1.0	1800
TOP-204HBM+204HB	4.0+4.0	6.0+6.0	7.2+7.2	1.0×1.0	1800
TOP-206HBM+206HB	6.0+6.0	9.0+9.0	10.8+10.8	1.0×1.0	1800
TOP-208HBM+208HB	8.0+8.0	12.0+12.0	14.4+14.4	1.0×1.0	1800
TOP-210HBM+210HB	10.0+10.0	15.0+15.0	18.0+18.0	0.9×0.9	1800
TOP-212HBM+212HB	12.0+12.0	18.0+18.0	21.6+21.6	0.7×0.7	1800
TOP-216HBM+216HB	16.0+16.0	24.0+24.0	28.8+28.8	0.5×0.5	1800
TOP-220HBM+220HB	20.0+20.0	30.0+30.0	36.0+36.0	0.4×0.4	1800

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class E insulation (200, 400W), Class F insulation (750, 1500W), IE3(750, 1500W), CE-marking (750, 1500W), Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 200, 400, 750,1500W.
·Please consult us when ordering outdoor-type, increased safety-type, motor other than for standard voltage, one with CE marking, with terminal box attached on the other side, or other special motor.

2MB (BASE-COUPLING MOUNT TYPE)

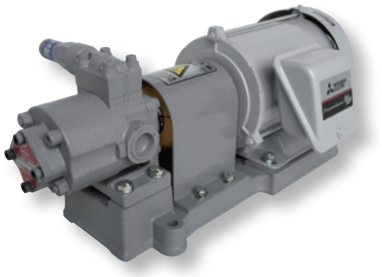
Model TOP-2MB M/T ▲▲▲▲ - 2▲▲H B/T VB/VD

Motor size

M	*Mitsubishi Motor*
T	*Toshiba Motor*

B	*For General Lubricant Oil*
T	*For Diesel Oil, Kerosene, Heavy Oil*

Non	*No valve*
VB	*With valve*
VD	*With valve (External return type)*



■ SPECIFICATION (For General Lubricant Oil)

Model \ Item	Motor speed 50Hz 1500min^{-1}: Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 200W	400W	750W	1500W	2000W	Motor speed 60Hz 1800min^{-1}: Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 200W	400W	750W	1500W	2000W
TOP-203HB	4.2	1.7	3.0	3.0	3.0	3.0	5.0	1.3	3.0	3.0	3.0	3.0
TOP-204HB	6.0	1.2	3.0	3.0	3.0	3.0	7.2	0.9	2.3	3.0	3.0	3.0
TOP-206HB	9.0	0.7	1.8	2.5	2.5	2.5	10.8	0.5	1.4	2.5	2.5	2.5
TOP-208HB	12.0	0.5	1.3	2.5	2.5	2.5	14.4	0.3	1.0	2.3	2.5	2.5
TOP-210HB	15.0	0.4	1.1	2.5	2.5	2.5	18.0	0.3	0.9	2.0	2.5	2.5
TOP-212HB	18.0	0.3	0.9	2.0	2.0	2.0	21.6	–	0.7	1.6	2.0	2.0
TOP-216HB	24.0	0.2	0.7	1.5	1.5	1.5	28.8	–	0.5	1.2	1.5	1.5
TOP-220HB	30.0	–	0.4	1.2	1.2	1.2	36.0	–	0.3	0.9	1.2	1.2

Note: TOP-2HB is the updated series of TOP-2HA. It is also compatible with the old series in performance and mounting dimensions. Only the port type was changed from G to Rc type.

■ MOTOR SPECIFICATION

·Compatible motor: 200, 400, 750, 1500, 2200W.

■ SPECIFICATION (For Diesel Oil, Kerosene, Heavy Oil)

Model \ Item	Motor speed 50Hz 1500min^{-1}: Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 200W	400W	750W	Motor speed 60Hz 1800min^{-1}: Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 200W	400W	750W
TOP-203HT	4.2	0.7	0.7	0.7	5.0	0.7	0.7	0.7
TOP-204HT	6.0	0.7	0.7	0.7	7.2	0.7	0.7	0.7
TOP-206HT	9.0	0.7	0.7	0.7	10.8	0.6	0.7	0.7
TOP-208HT	12.0	0.6	0.7	0.7	14.4	0.4	0.7	0.7
TOP-210HT	15.0	0.5	0.7	0.7	18.0	0.3	0.7	0.7
TOP-212HT	18.0	0.4	0.7	0.7	21.6	–	0.7	0.7
TOP-216HT	24.0	0.3	0.7	0.7	28.8	–	0.6	0.7
TOP-220HT	30.0	–	0.6	0.7	36.0	–	0.5	0.7

■ MOTOR SPECIFICATION

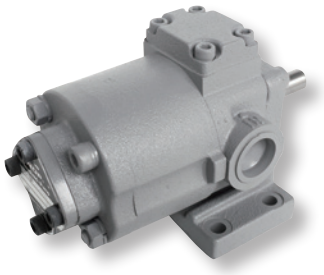
·Compatible motor: 200, 400, 750W.

2HB/2HT (PUMPHEAD)

Model TOP-2▲▲H **B** / **T** **VB** / **VD**

B	For General Lubricant Oil
T	For Diesel Oil, Kerosene, Heavy Oil

Non	No valve
VB	With valve
VD	With valve (External return type)



■SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-203HB	2.8	4.2	5.0	3.0	3000	3.5 (3.9)
TOP-204HB	4.0	6.0	7.2	3.0	3000	3.6 (4.0)
TOP-206HB	6.0	9.0	10.8	2.5	2500	3.8 (4.2)
TOP-208HB	8.0	12.0	14.4	2.5	2500	4.0 (4.4)
TOP-210HB	10.0	15.0	18.0	2.5	2500	4.1 (4.6)
TOP-212HB	12.0	18.0	21.6	2.0	2000	4.3 (4.7)
TOP-216HB	16.0	24.0	28.8	1.5	1800	4.6 (5.1)
TOP-220HB	20.0	30.0	36.0	1.2	1800	5.0 (5.5)

Note: Values in ( ) are approx. weights of the pump when the valve is attached.
TOP-2HB is the updated series of TOP-2HA. It is compatible with old series in performance and mounting dimensions. Only the port type was changed from G to Rc type.

■SPECIFICATION (For Diesel Oil, Kerosene, Heavy Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-203HT	2.8	4.2	5.0	0.7	1800	3.5 (3.9)
TOP-204HT	4.0	6.0	7.2	0.7	1800	3.6 (4.0)
TOP-206HT	6.0	9.0	10.8	0.7	1800	3.8 (4.2)
TOP-208HT	8.0	12.0	14.4	0.7	1800	4.0 (4.4)
TOP-210HT	10.0	15.0	18.0	0.7	1800	4.1 (4.6)
TOP-212HT	12.0	18.0	21.6	0.7	1800	4.3 (4.7)
TOP-216HT	16.0	24.0	28.8	0.7	1800	4.6 (5.1)
TOP-220HT	20.0	30.0	36.0	0.7	1800	5.0 (5.5)

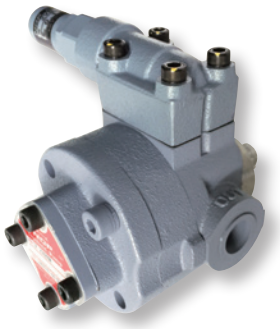
Note: Values in ( ) show approx. weights of the pump when the valve is attached.

2HBM/2HTM/2HWM (PUMPHEAD FOR 2MY-MOTOR)

Model TOP-2▲▲H **B** / **T** / **W** **M** **VB** / **VD**

B	For General Lubricant Oil
T	For Diesel Oil, Kerosene, Heavy Oil
W	For Metal-Cutting Fluid

Non	No valve
VB	With valve
VD	With valve (External return type)



■SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-203HBM	2.8	4.2	5.0	3.0	3000	2.5 (3.2)
TOP-204HBM	4.0	6.0	7.2	3.0	3000	2.6 (3.3)
TOP-206HBM	6.0	9.0	10.8	2.5	2500	2.8 (3.5)
TOP-208HBM	8.0	12.0	14.4	2.5	2500	3.0 (3.7)
TOP-210HBM	10.0	15.0	18.0	2.5	2500	3.1 (3.8)
TOP-212HBM	12.0	18.0	21.6	2.0	2000	3.3 (4.0)
TOP-216HBM	16.0	24.0	28.8	1.5	1800	3.7 (4.4)
TOP-220HBM	20.0	30.0	36.0	1.2	1800	4.0 (4.7)

Note: Values in ( ) show approx. weights of the pump when the valve is attached.
TOP-2HB is the updated series of TOP-2HA. It is also compatible with old series in performance and mounting dimensions. Only the port type was changed from G to Rc type.
2HBM and 2HWM series come with 2MY coupling and screws for the attachment.

■SPECIFICATION (For Diesel Oil, Kerosene, Heavy Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-203HTM	2.8	4.2	5.0	0.7	1800	3.5 (3.9)
TOP-204HTM	4.0	6.0	7.2	0.7	1800	3.6 (4.0)
TOP-206HTM	6.0	9.0	10.8	0.7	1800	3.8 (4.2)
TOP-208HTM	8.0	12.0	14.4	0.7	1800	4.0 (4.4)
TOP-210HTM	10.0	15.0	18.0	0.7	1800	4.1 (4.6)
TOP-212HTM	12.0	18.0	21.6	0.7	1800	4.3 (4.7)
TOP-216HTM	16.0	24.0	28.8	0.7	1800	4.6 (5.1)
TOP-220HTM	20.0	30.0	36.0	0.7	1800	5.0 (5.5)

Note: Values in ( ) show approx. weights of the pump when the valve is attached.

Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■ SPECIFICATION (For Metal-Cutting Fluid)

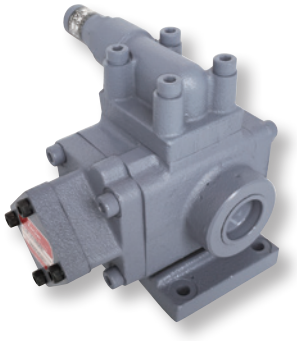
Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min)		Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
		1500min^{-1}	1800min^{-1}			
TOP-204HWM	4.0	6.0	7.2	2.0	1800	2.6 (3.3)
TOP-206HWM	6.0	9.0	10.8	2.0	1800	2.8 (3.5)
TOP-208HWM	8.0	12.0	14.4	2.0	1800	3.0 (3.7)
TOP-210HWM	10.0	15.0	18.0	2.0	1800	3.1 (3.8)
TOP-212HWM	12.0	18.0	21.6	2.0	1800	3.3 (4.0)
TOP-216HWM	16.0	24.0	28.8	2.0	1800	3.7 (4.4)
TOP-220HWM	20.0	30.0	36.0	1.5	1800	4.0 (4.7)

Note: Values in ( ) show approx. weights of the pump when the valve is attached.

2.5HGA (PUMPHEAD)

Model TOP-2▲▲▲HGA (VB)

Valve option



■ FEATURES

·This pump has been developed as an intermediate model between Model 2 and Model 3. It does-not produce noise even during operation at a high speed. The relief valve is installed on the top of the pump. It is designed to allow shared use of the 3VB.

■ SPECIFICATION (For General Lubricant Oil)

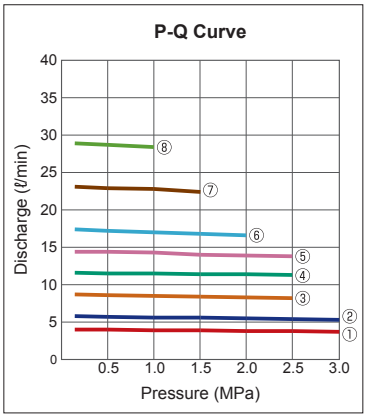
Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min)		Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
		1500min^{-1}	1800min^{-1}			
TOP-2516HGA	16	24	28.8	2.5	2500	6.9 (7.5)
TOP-2520HGA	20	30	36.0	2.0	2000	7.2 (7.7)

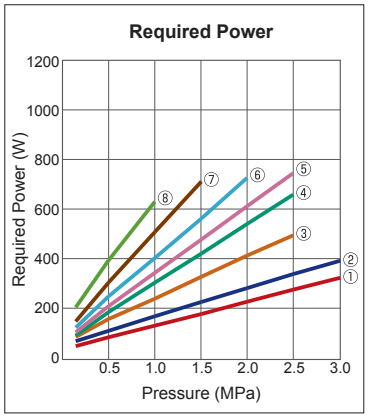
Note: Values in ( ) show approx. weights of the pump when the valve is attached.

■2HB(M) Performance Curve

1450 min^{-1}

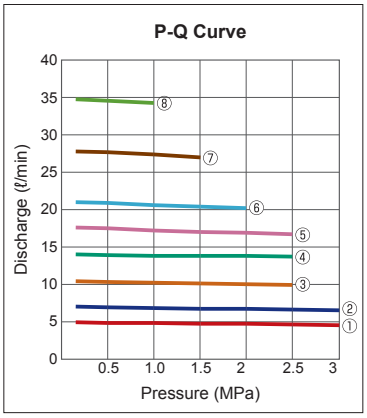
①203HB ②204HB
③206HB ④208HB
⑤210HB ⑥212HB
⑦216HB ⑧220HB

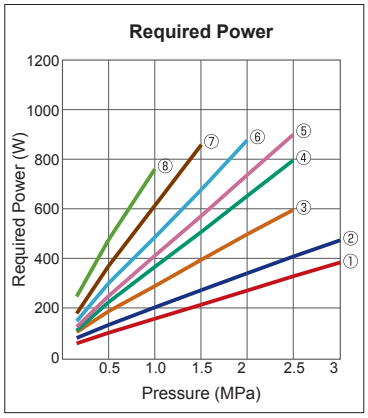




1750 min^{-1}

①203HB ②204HB
③206HB ④208HB
⑤210HB ⑥212HB
⑦216HB ⑧220HB

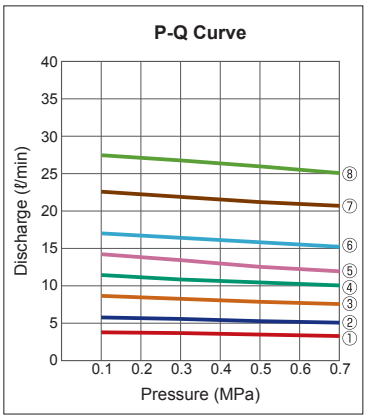


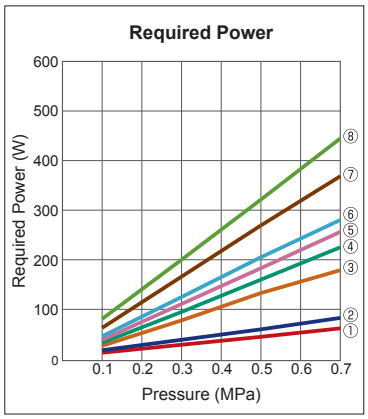


■2HT(M) Performance Curve

1450 min^{-1}

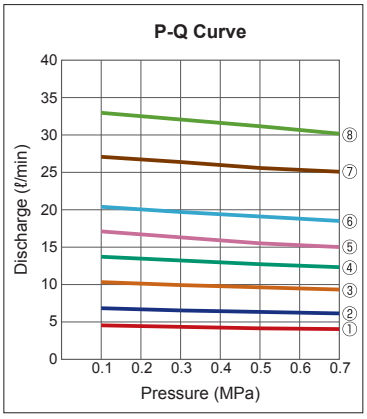
①203HT ②204HT
③206HT ④208HT
⑤210HT ⑥212HT
⑦216HT ⑧220HT

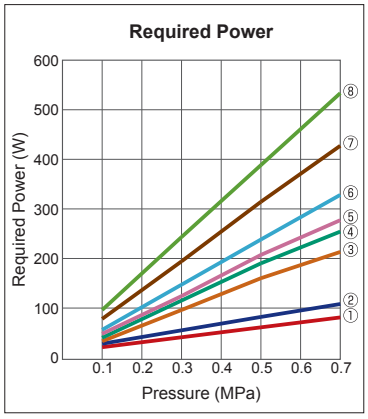




1750 min^{-1}

①203HT ②204HT
③206HT ④208HT
⑤210HT ⑥212HT
⑦216HT ⑧220HT



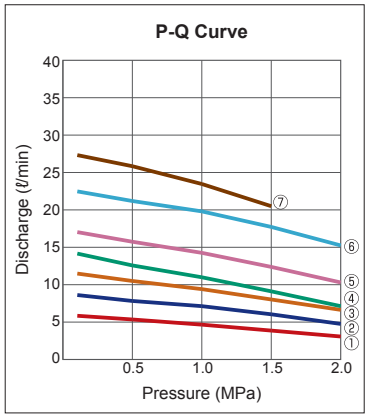


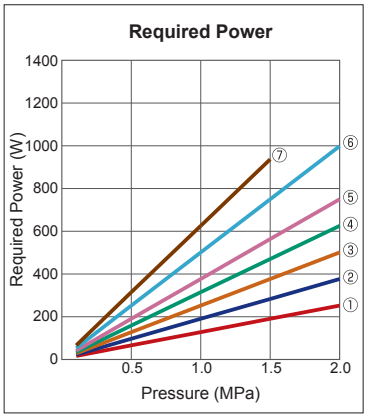
Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■2HW(M) Performance Curve

1450 min^{-1}

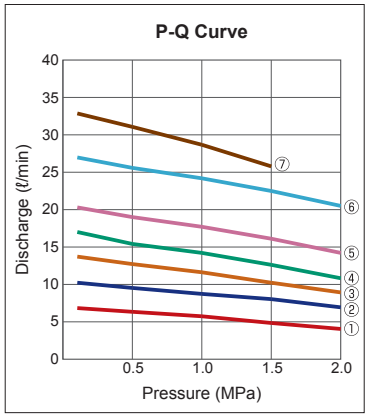
①204HWM ②206HWM
③208HWM ④210HWM
⑤212HWM ⑥216HWM
⑦220HWM

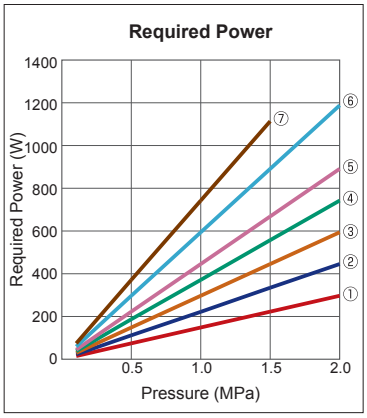




1750 min^{-1}

①204HWM ②206HWM
③208HWM ④210HWM
⑤212HWM ⑥216HWM
⑦220HWM

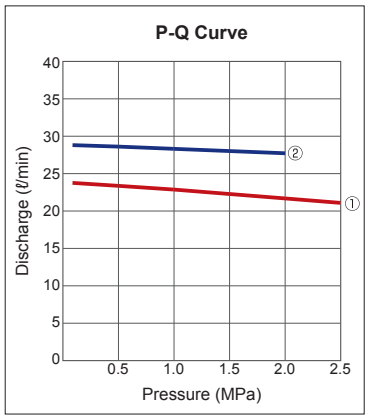


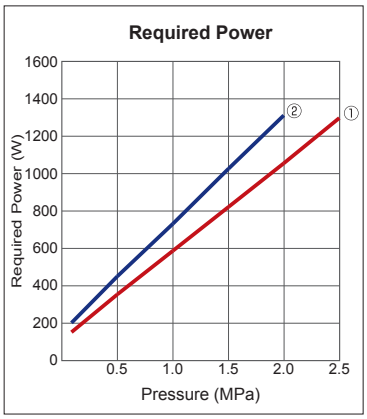


■2.5HGA Performance Curve

1450 min^{-1}

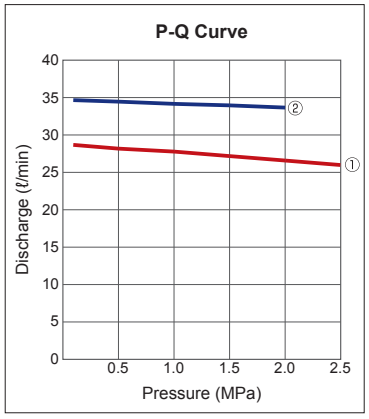
①2516HGA ②2520HGA

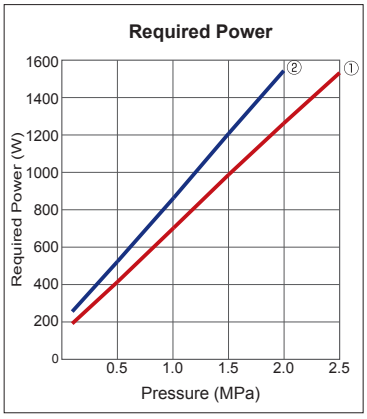




1750 min^{-1}

①2516HGA ②2520HGA





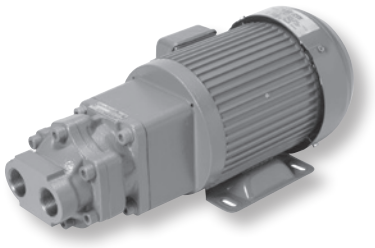
3MF (WITH INTEGRATED 3-PHASE MOTOR)

Model TOP-3MF▲▲▲▲ - N3▲▲ FA / FB (VB)

Motor size

Valve option

FA	Discharge port parallel to pump shaft
FB	Discharge port perpendicular to pump shaft



■ SPECIFICATION

Model \ Item	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 750W	1500W	2200W	Theoretical discharge (ℓ/min)	Max. pressure for motor output (MPa) 750W	1500W	2200W
	Motor speed 50Hz 1500min^{-1}				Motor speed 60Hz 1800min^{-1}			
TOP-N320 FA / FA VB / FB	39.0	0.4	1.3	2.1	46.8	0.2	1.0	1.7
TOP-N330 FA / FA VB / FB	58.5	0.1	0.8	1.3	70.2	—	0.6	1.0
TOP-N340 FA / FA VB / FB	78.0	—	0.5	0.9	93.6*	—	0.3	0.6

Note: The value"*" can not always be achieved as it is subject to operating conditions and specifications.
TOP-N3F is the updated series of TOP-3F. It is also compatible with old series in performance and mounting dimensions.

■ MOTOR SPECIFICATION

·3-phase squirrel-cage induction motor, Totally enclosed, Class F insulation, IE3.
CE-marking, Protection level IP44, 200VAC 50/60Hz, 220VAC 60Hz, 4 poles with continuous rating at 750, 1500, 2200W
·Please consult us when ordering outdoor-type, increased safety-type, motor other than for standard voltage, one with terminal box attched on the other side, or other special motor.

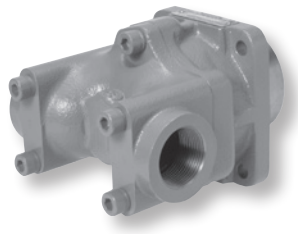
N3F (PUMPHEAD)

Model TOP-N3▲▲ FA / FB [ ] / M (VB)

Valve option

FA	Discharge port parallel to pump shaft
FB	Discharge port perpendicular to pump shaft

Non	For mounted on 3MF motor
M	For using other pump driving forces



■ SPECIFICATION

Model \ Item	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-N320 FAM	26	39.0	46.8	2.5	1800	8.0
TOP-N320 FAMVB						10.5
TOP-N320 FBM						9.0
TOP-N330 FAM	39	58.5	70.2	2.5*	1800	8.0
TOP-N330 FAMVB						10.5
TOP-N330 FBM						9.0
TOP-N340 FAM	52	78.0	93.6*	2.0*	1800*	8.0
TOP-N340 FAMVB						10.5
TOP-N340 FBM						9.0

Note: The value"*" can not always be achieved as it is subject to individual operating conditions and specifications.
TOP-N3F is the updated series of TOP-3F. It is also compatible with the old series in performance and mounting dimensions.
N3FAM and N3FBM can not be coupled with 3MF motor.

3MB-N3H (BASE-COUPLING MOUNT TYPE)
N3H (PUMPHEAD)

Model TOP-3MB M / T ▲▲▲▲ - N3▲▲H (VB)

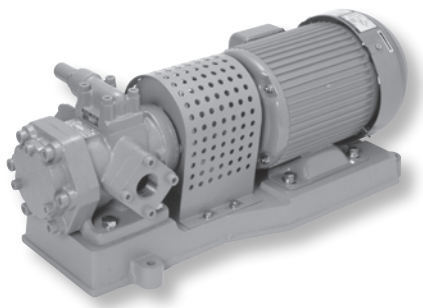
Motor size

Valve option

M	Mitsubishi Motor
T	Toshiba Motor

TOP-N3▲▲H (VB)

Valve option



■ SPECIFICATION

Model \ Item	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-N320H	26.0	39.0	46.8	4.0	1800	14.8 (15.4)
TOP-N330H	39.0	58.5	70.2	4.0*	1800	14.9 (15.5)
TOP-N340H	52.0	78.0	93.6	3.0*	1800	14.9 (15.5)
TOP-N350H	65.0	97.5	117.0	2.0*	1800	15.6 (16.2)

Note: The value"*" can not always be achieved as it is subject to individual operating conditions and specifications.
Values in ( ) show approx. weights of the pump when the valve is attached.
TOP-N3H is the updated series of TOP-3H. It is compatible with the old series in performance and mounting dimensions.

■ MOTOR SPECIFICATION

·Compatible motor: 1500, 2200, 3700, 5500W.

Note: "Trochoid" or "TROCHOID" is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

3MB-3V (BASE-COUPLING MOUNT TYPE)
3V (PUMPHEAD)

Model TOP-3MB [M/T] ▲▲▲▲-3▲▲V (VB)

- [M/T]: M Mitsubishi Motor; T Toshiba Motor
- ▲▲▲▲: Motor size
- (VB): Valve option

TOP-3▲▲V (VB)

- (VB): Valve option



■ SPECIFICATION (For High Viscosity Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-330V	39.0	58.5	70.2	1.0	1800	19.3 (20.7)
TOP-340V	52.0	78.0	93.6	1.0	1800	19.5 (20.9)
TOP-350V	65.0	97.5	117.0	1.0	1800	19.3 (20.7)

Note: For delivering oil with high viscosity (46-2000mm^2/sec), such as high viscosity lubricant oil or gear oil.
Values in ( ) show approx. weights of the pump when the valve is attached.

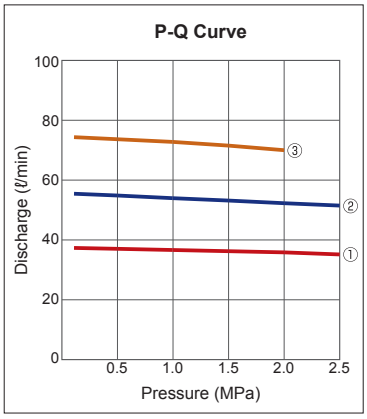
■ MOTOR SPECIFICATION

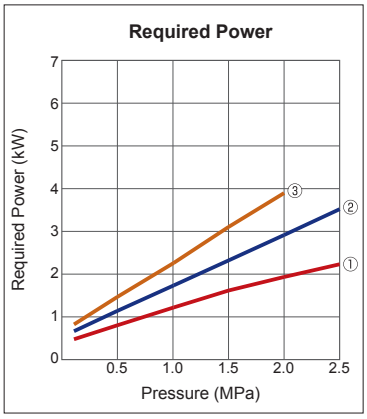
·Compatible motor: 2200, 3700, 5500W.

■ N3F Performance Curve

1450 min^{-1}

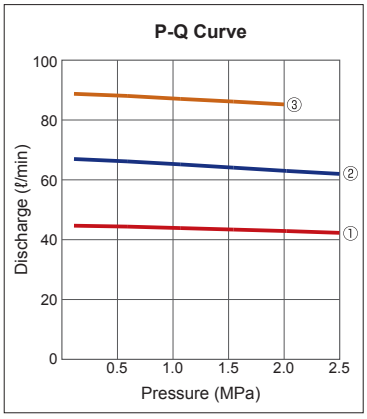
①N320F ②N330F ③N340F

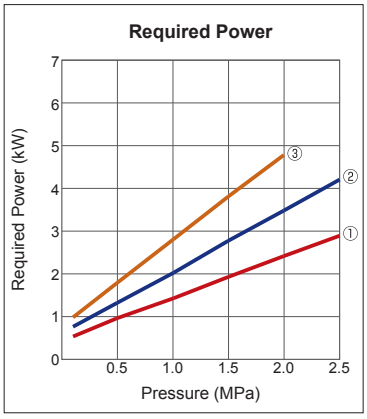




1750 min^{-1}

①N320F ②N330F ③N340F

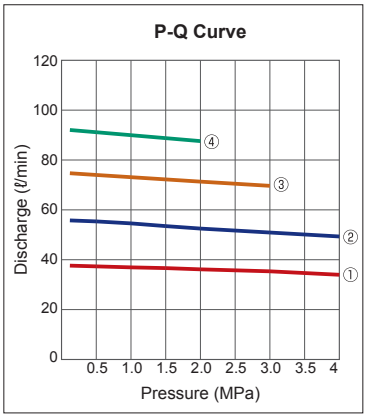


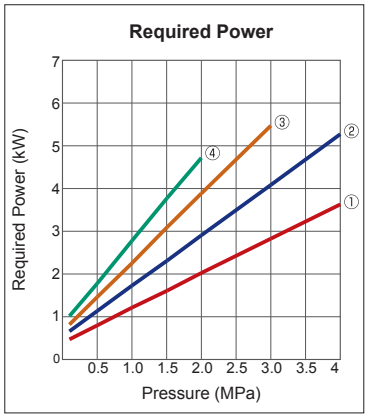


■N3H Performance Curve

1450 min^{-1}

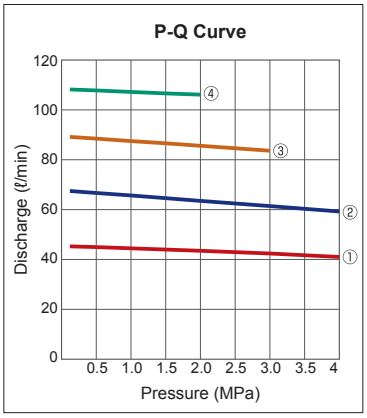
①N320H ②N330H
③N340H ④N350H

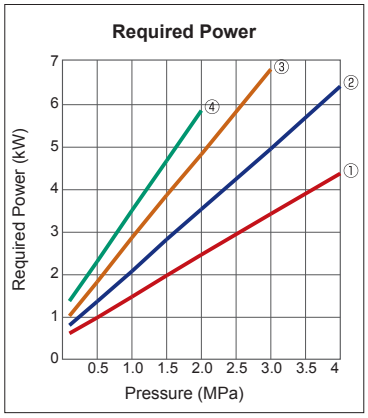




1750 min^{-1}

①N320H ②N330H
③N340H ④N350H

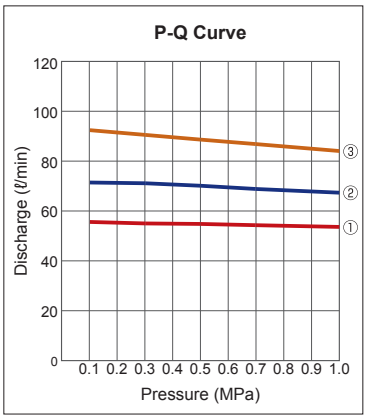


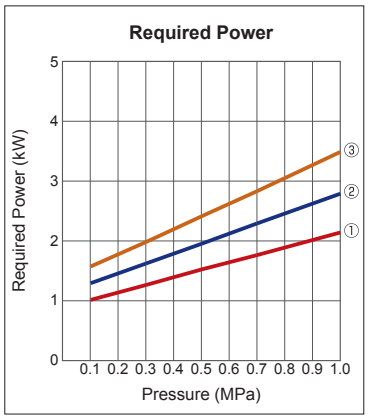


■3V Performance Curve

1450 min^{-1}

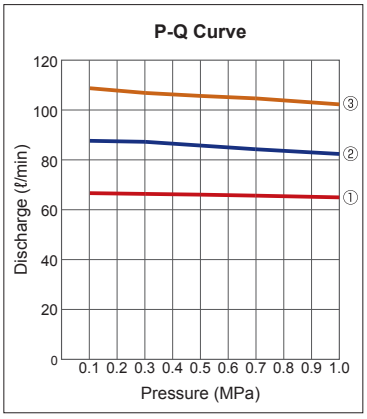
①330V ②340V
③350V

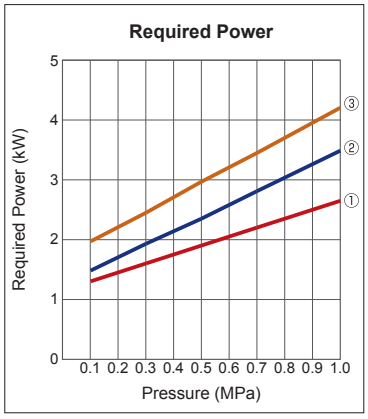




1750 min^{-1}

①330V ②340V
③350V



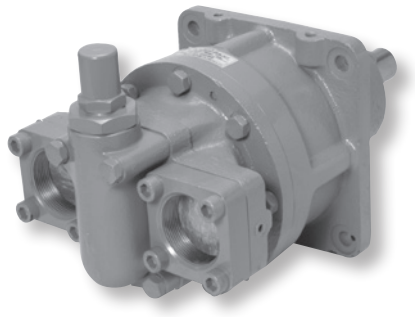


Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

4MB-4AM (BASE-COUPLING MOUNT TYPE)
4AM (PUMPHEAD)

Model TOP-4MB [M/T] ▲▲▲▲-6-4▲▲▲AMIVB — Motor size; M Mitsubishi Motor, T Toshiba Motor

TOP-4▲▲▲AM (I) VB — Angle plate option



■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-4100AM	115.5	2.0	1800	28.0
TOP-4130AM	148.5	2.0	1800	30.0
TOP-4150AM	171.6	2.0	1500	31.0
TOP-4200AM	231.0	2.0	1500	34.0
TOP-4250AM	280.5	2.0	1200	42.0

Note: Add 9 Kg to the total weight when the angle plate (I) is attached.
Values in ( ) show approx. weights of the pump when the valve is attached.

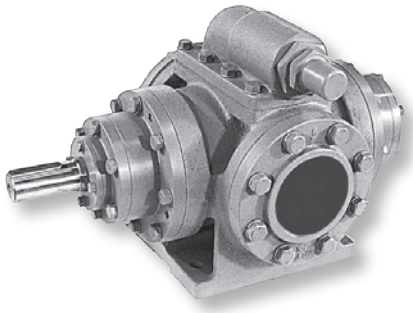
■ MOTOR SPECIFICATION

·Compatible motor: 3700, 5500, 7500W, 6 Poles.

4MB-4A (BASE-COUPLING MOUNT TYPE)
4A (PUMPHEAD)

Model TOP-4MB [M/T] ▲▲▲▲-6-4▲▲▲AVB — Motor size; M Mitsubishi Motor, T Toshiba Motor

TOP-4▲▲▲VB



■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-4300AVB	349.8	1.0	1200	120.0
TOP-4500AVB	580.8	1.0	1200	125.0

■ MOTOR SPECIFICATION

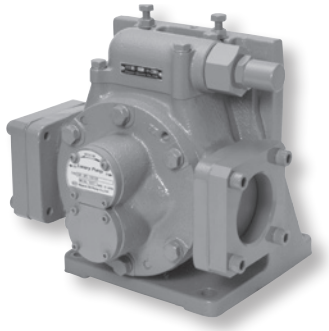
·Compatible motor: 5500, 7500,11000, 15000W, 6 Poles.

LUNARY GEAR PUMP

MB-GPL (BASE-COUPLING MOUNT TYPE)
GPL (PUMPHEAD)

Model MB [M/T] ▲▲▲▲-6-GPL-▲▲▲IVB — Motor size; M Mitsubishi Motor, T Toshiba Motor

GPL-▲▲▲ [I/F] VB — I With angle plate, F No angle plate



■ STRUCTURE

This pump employs gears with special teeth called Lunary™ (patented), and rotates at continuous one-point contact. The conventional one-point contact gear (segmental gear, sinusoidal gear, etc.) is based on correction or combination of the theoretical curve, so the slip ratio tends to increase. However, the Lunary gear provides high durability to the pump with low slip ratio because an ideal closed curve is gained from a theoretical straight line and ellipse.

■ FEATURES

(1) Pulsation and noise are extremely limited due to lack of confinement.
(2) This pump is effectively used with highly viscous oil because there is no cavitation.
(3) Durability is provided by a patented Lunary gear.
(4) Use of a shaft input is eliminated to cut down costs.

■ SPECIFICATION (For High Viscosity Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1000min^{-1}	Theoretical discharge (ℓ/min) 1200min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
GPL-150VB	150	150	180	1.0	1800	29.0
GPL-200VB	200	200	240	1.0	1800	30.0
GPL-250VB	250	250	300	1.0	1800	32.0

Note: For transfering oil with high viscosity (46-2000mm^2/sec), such as high viscosity lubricant oil or gear oil.
Add 13 Kg to the total weight when the angle plate (I) is attached.

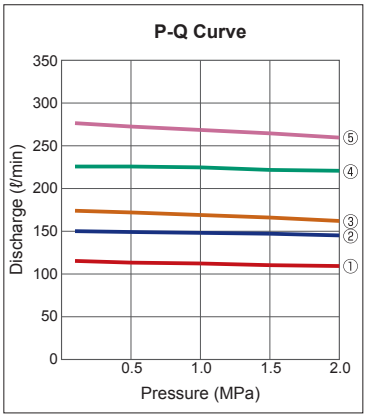
■ MOTOR SPECIFICATION

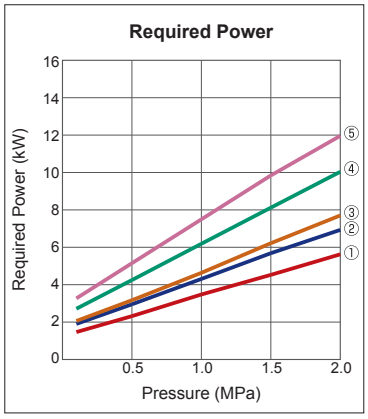
·Compatible motor: 3700, 5000, 7500W.

■4AM Performance Curve

960 min^{-1}

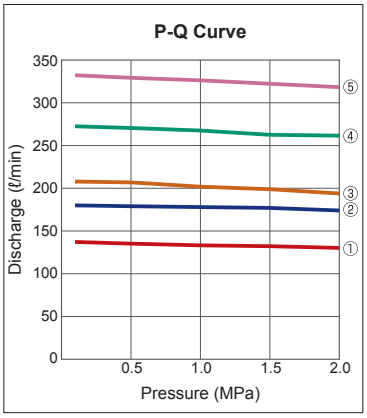
①4100AM ②4130AM
③4150AM ④4200AM
⑤4250AM

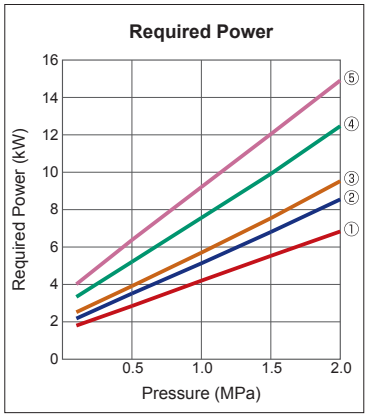




1160 min^{-1}

①4100AM ②4130AM
③4150AM ④4200AM
⑤4250AM

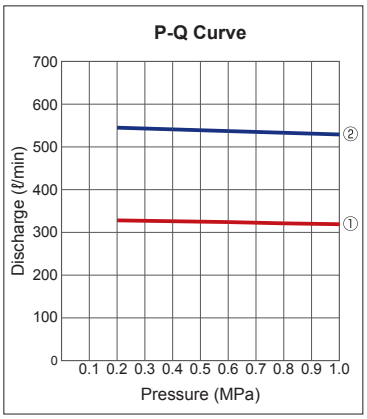


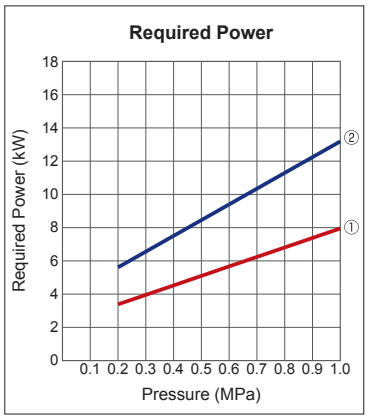


■4A Performance Curve

960 min^{-1}

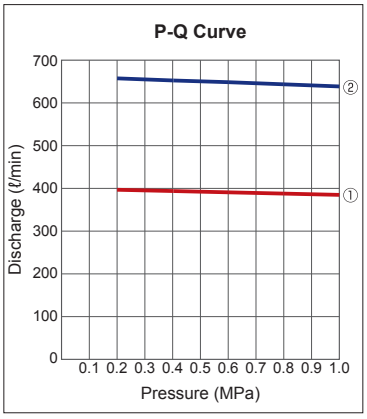
①4300AVB ②4500AVB

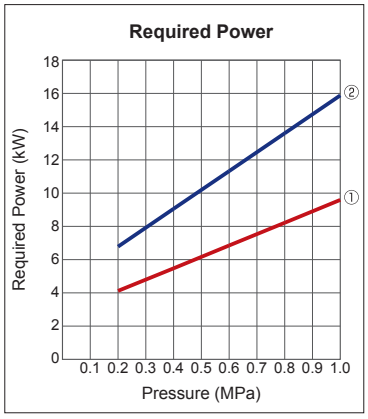




1160 min^{-1}

①4300AVB ②4500AVB



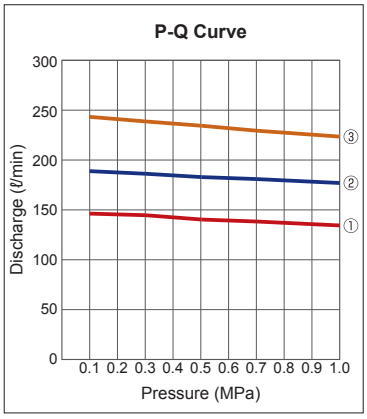


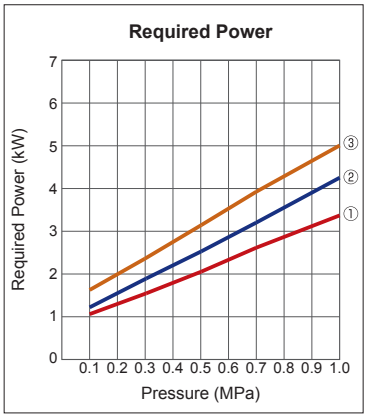
Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■ GPL Performance Curve

960 min^{-1}

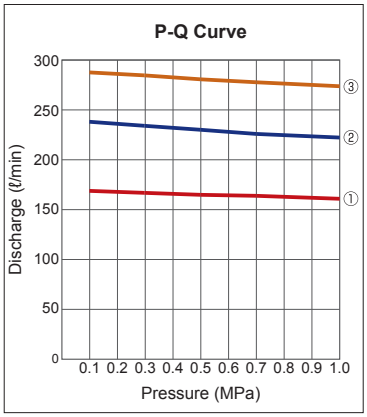
①GPL-150VB
②GPL-200VB
③GPL-250VB

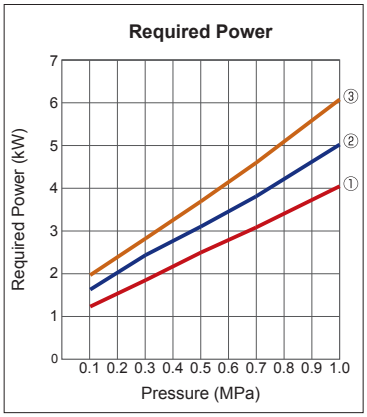




1160 min^{-1}

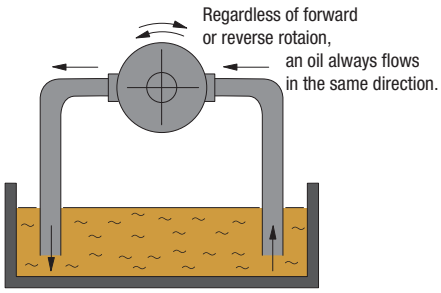
①GPL-150VB
②GPL-200VB
③GPL-250VB





REVERSIBLE TROCHOID PUMP

■ FEATURES



When the pump rotation is reversed, a reversing ring within which rotors are mounted will also rotate following the rotation direction by 180° degrees and thereby reverse the eccentricity of the pump. Because of that, pumping flow direction always stay the same regardless of its rotation direction.

1RA/2RA (PUMPHEAD, REVERSIBLE)

Model TOP-1RA-▲▲▲
TOP-2RA-▲▲C



■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-1RA-100	1.1	1.6	2.0	0.5	2000	1.1
TOP-1RA-200	1.8	2.7	3.2	0.5	2000	1.2
TOP-1RA-300	2.5	3.7	4.5	0.5	2000	1.3

■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-2RA-4C	4.0	6.0	7.2	0.5	2000	3.9
TOP-2RA-8C	8.0	12.0	14.4	0.5	2000	4.2
TOP-2RA-12C	12.0	18.0	21.6	0.5	1800	4.5

3RD/4RD (PUMPHEAD REVERSIBLE)

Model TOP-3RD-▲▲T
TOP-4RD-100-043



■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1000min^{-1}	Theoretical discharge (ℓ/min) 1200min^{-1}	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-3RD-10T	13.0	13.0	15.6	0.5	1800	10.0
TOP-3RD-15T	19.5	19.5	23.4	0.5	1800	10.0
TOP-3RD-20T	26.0	26.0	31.2	0.5	1800	10.5
TOP-3RD-25T	32.5	32.5	39.0	0.5	1800	11.0
TOP-3RD-30T	39.0	39.0	46.8	0.5	1800	11.5

■ SPECIFICATION (For General Lubricant Oil)

Item / Model	Theoretical displacement (cm^3/rev)	Max. pressure (MPa)	Max. revolution (min^{-1})	Approx. Weight (Kg)
TOP-4RD-100-043	100	0.5	1000	30.5

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RELIEF VALVE



■ FEATURES

When pressure inside the hydraulic circuit has reached the valve set value, the valve opens to relieve part of or whole oil to the return side, thereby keeping the circuit pressure constant. It is also used to limit the maximum pressure to protect the pump and equipment.

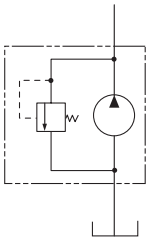
Relief valves are available in a range from 2 to 4 VBP(D) according to the capacity and set pressure.

■ TYPE OF RELIEF VALVES

Item \ Series	2	3	4
Used as a safety valve for temporary pressure reduction to protect the pump and equipment	2VD	3VD	4VD
Used as a pressure control valve for hydraulic system (or lubricating oil circulating system) (mounted on sub-plate)	2VBD	3VBD	4VBPD
Used as a pressure control valve for lubricating oil circulation system (or hydraulic system) (without sub-plate)	2VD	—	—
pressure control range (MPa)	0.08–2.5	0.08–3.0	0.15–2.0
Flow rate (MAX)	36	100	200

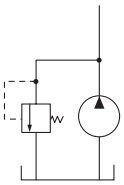
■ RELIEF VALVE CIRCUIT DIAGRAM AND INSTALLATION METHOD

Model VB



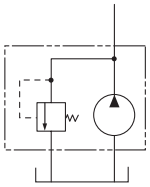
Installed directly on the pump

Model VBD



Installed on the circuit

Model VD



Installed directly on the pump(only 2VD)

FUEL PUMP

MB-GD (BASE-COUPLING MOUNT TYPE)
GD (PUMPHEAD)

Model TOP-MB [M/T] ▲▲▲ - GD-2▲▲ [VK/H]

[M/T] Motor size

M	Mitsubishi Motor
T	Toshiba Motor

VK	For diesel oil/kerosene/heavy oil A
H	For heavy oil B/heavy oil C

TOP-GD-2▲▲ [VK/H]

VK	For diesel oil/kerosene/heavy oil A
H	For heavy oil B/heavy oil C



■ SPECIFICATION

Model \ Item		Theoretical displacement (cm^3/rev)	Theoretical discharge (ℓ/min) 1500min^{-1}	Theoretical discharge (ℓ/min) 1800min^{-1}	Max. pressure (MPa)		Max. revolution (min^{-1})	Approx. Weight (Kg)
202VK	202H	2.0	3.0	3.6	2.0	4.0	3600	6.4
203VK	203H	2.8	4.2	5.0	2.0	4.0	3600	6.5
204VK	204H	3.6	5.4	6.4	2.0	4.0	3600	6.7
206VK	206H	5.6	8.4	10.0	2.0	4.0	3600	7.3
208VK	208H	7.6	11.4	13.6	2.0	4.0	1800	7.6
210VK	210H	9.6	14.4	17.2	2.0	4.0	1800	8.1

Note: **VK: Set pressure of relief valve (fully closed) at factory is 2.0MPa.
***H: Set pressure of relief valve (fully closed) at factory is 2.5MPa.

■ MOTOR SPECIFICATION

·Compatible motor: 750, 1500W.

MICRO TOP (SMALL AND HANDY SIZE OIL FILTER)

Model TFP400-S [100 / 200] -2512A- [00 / 03 / 10]

100	100V(Single phase)
200	200V (Single phase)

00	No filter with a closing lit
03	With 3μ filter
10	With 10μ filter



■ SPECIFICATION

The Micro-top is a convenient and economical oil filtering device designed in a compact configuration. It is a handy lightweight device which you can take with you wherever you want to go. It is completely equipped with the cords and hoses. It can be operated by a mere touch of a push button. This product serves as a multi-purpose device for your factory.

■ APPLICATION

- Removal of contaminants from oil inside the hydraulic tank
- Replacement and supply of oil for construction machinery and industrial vehicles
- Lubrication and oil removal
- Protection of oil against deterioration and contamination
- Cleaning of oils

■ SPECIFICATION

Theoretical discharge (ℓ/min)	12/50Hz, 14.4/60Hz
Discharge pressure (MPa)	0.3
Filter(microns)	3 or 10 microns
Motor	Single phase: 100V/200V only, 400W
Accessories	Vinyl hoses for sunction and discharge wires (2 meters each)
Approx.weight (kg)	15

1PS (OIL COOLING UNIT)

Model 1PS75-2-12MAVB-C [23 / 24]

Motor size

23	Pump on the left (When viewed from level gauge side)
24	Pump on the right (When viewed from level gauge side)

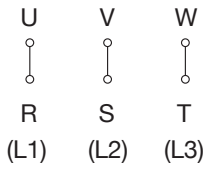


■ APPLICATION

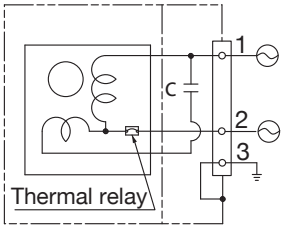
For cooling machinaries or other industrial equippment

Wiring diagram

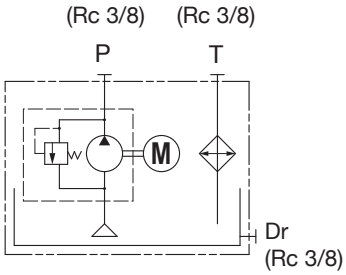
(Motor for pump)



Connection diagram



Hydraulic circuit diagram

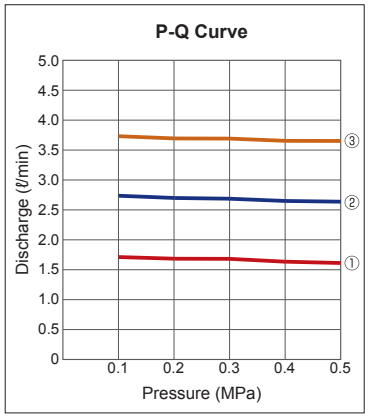


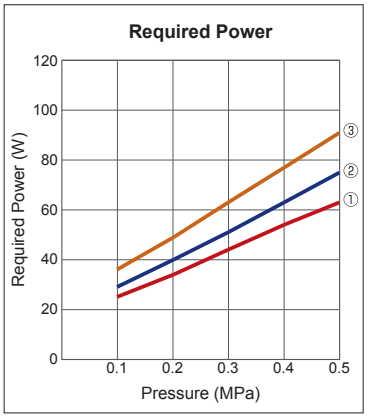
Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■1RA Performance Curve

1450 min^{-1}

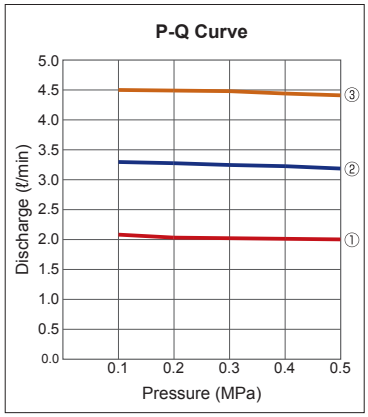
①1RA-100 ②1RA-200
③1RA-300

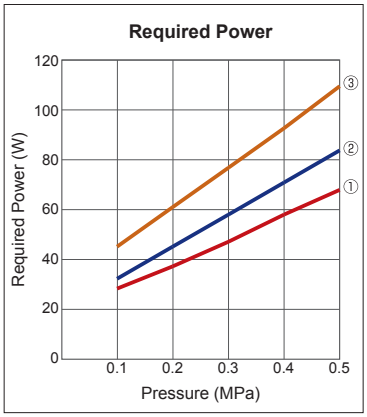




1750 min^{-1}

①1RA-100 ②1RA-200
③1RA-300

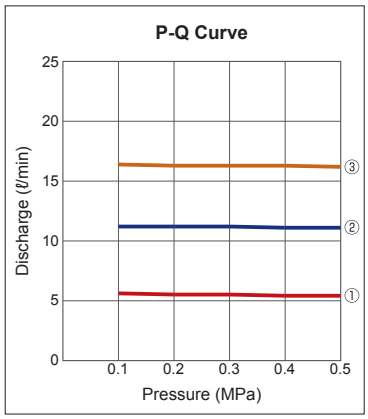


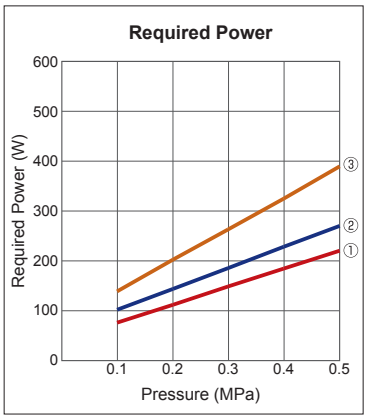


■2RA Performance Curve

1450 min^{-1}

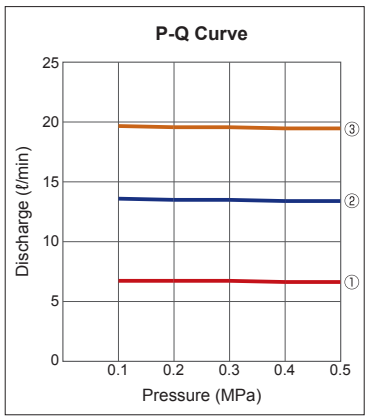
①2RA-4C ②2RA-8C
③2RA-12C

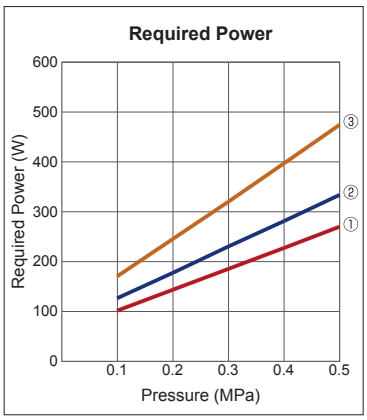




1750 min^{-1}

①2RA-4C ②2RA-8C
③2RA-12C

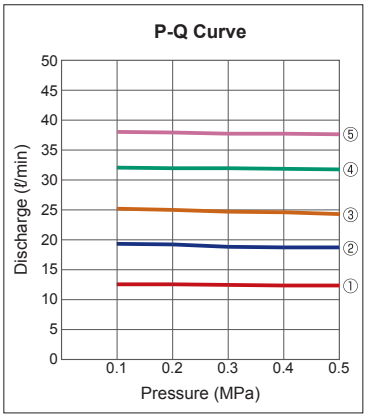


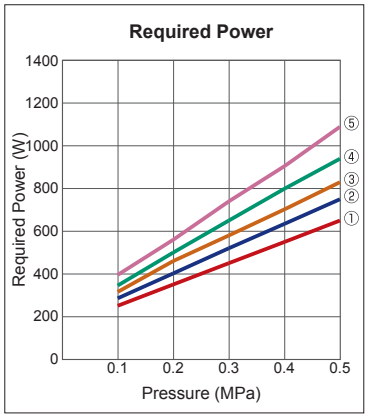


■3RD Performance Curve

960 min^{-1}

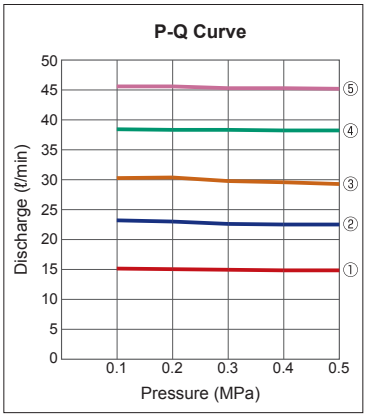
①3RD-10T ②3RD-15T
③3RD-20T ④3RD-25T
⑤3RD-30T

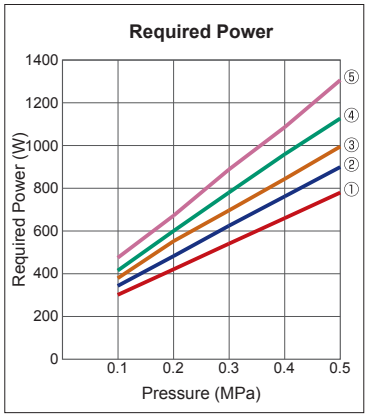




1160 min^{-1}

①3RD-10T ②3RD-15T
③3RD-20T ④3RD-25T
⑤3RD-30T

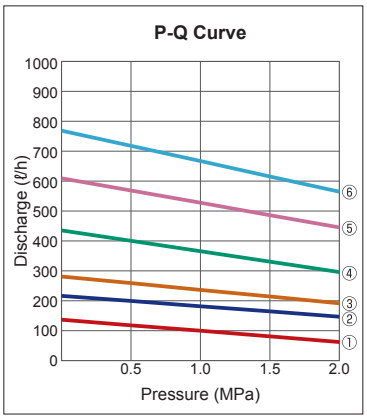


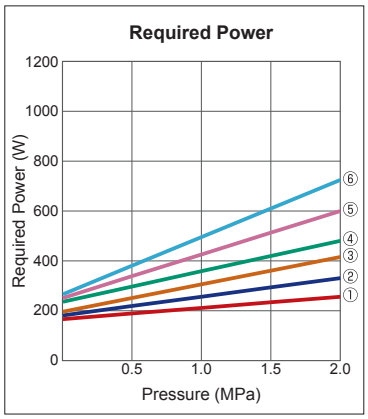


■GD-VK Performance Curve

1450 min^{-1}

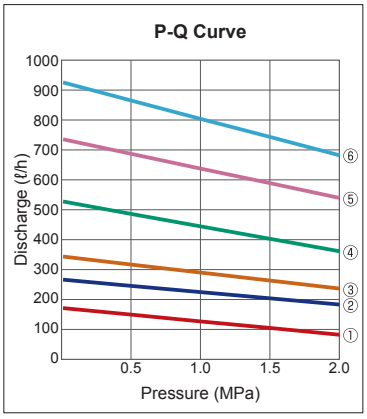
①GD-202VK
②GD-203VK
③GD-204VK
④GD-206VK
⑤GD-208VK
⑥GD-210VK

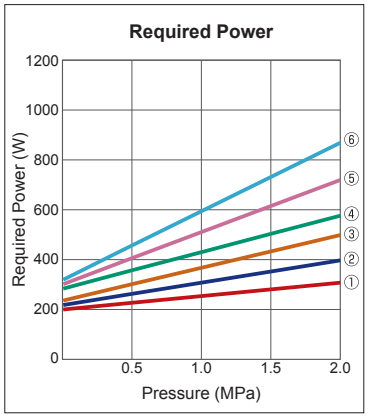




1750 min^{-1}

①GD-202VK
②GD-203VK
③GD-204VK
④GD-206VK
⑤GD-208VK
⑥GD-210VK



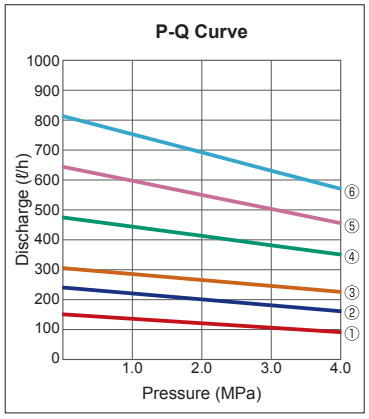


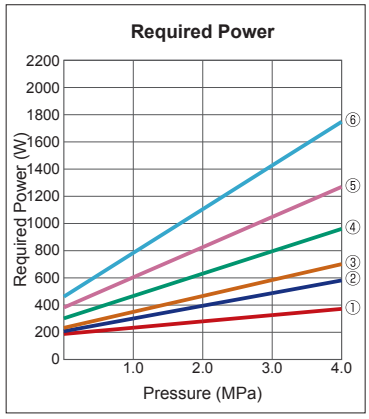
Note: “Trochoid” or “TROCHOID” is a registered trademark of Nippon Oil Pump Co., Ltd. in Japan, USA, EU, UK, China, South Korea, Taiwan, Vietnam, India, Thailand and Indonesia.

■ GD-H Performance Curve

1450 min^{-1}

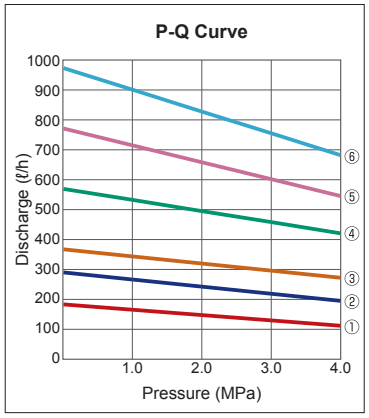
①GD-202H
②GD-203H
③GD-204H
④GD-206H
⑤GD-208H
⑥GD-210H

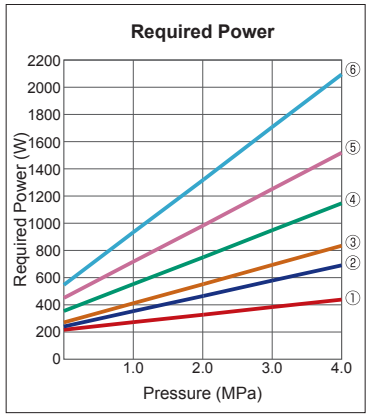




1750 min^{-1}

①GD-202H
②GD-203H
③GD-204H
④GD-206H
⑤GD-208H
⑥GD-210H





Lists of Applicable Seal Kit, Bearing, Seal and Gasket Material Options for Special Specification

- Unauthorized disassembling and/or modifying voids product warranty and inspection.
- Please specify a model no. of pump, MFG no. and serial no., when ordering.
- The bearing is not included in the seal kit. Please order separately.

■ Applicable Seal Kit List

Item / Pump model	Oil seal		O-ring		Gasket	
	Model no.	Q'ty	Model no.	Q'ty	Model no.	Q'ty
1A	SC08227	1	JASO 1033	1	–	–
1HG	TC12327	1	S38 S42	1 1	–	–
2HB	SC15357	2	S53	2	Gasket Top cover gasket	1 1
2.5HGA	SC19358	1	S65	1	Gasket Top cover gasket	1 1
N3FA **N3FB**	TC25528	1	G90	1	–	–
N3H	TC25528	1	G90 G60 G45	1 1 2	Gasket	1
3V	TC254511	1	G60 G115	2 1	–	–
4AM	TC355511	1	142.47×3.53 G75 S65 P38	1 1 2 2	–	–
4A	SC456812	2	142.47×3.53 G100	2 2	Flange gasket Gasket	2 1
GPL	TC355212	1	G145 P38 G45	1 2 3	Flange gasket	4
1RA	SC8227	1	38×1.5	1	–	–
2RA	TCV12.45×30×9	1	–		Metal gasket	1
3RD	TCV204011	1	–		Gasket	1

■ Applicable Bearing List

Item / Pump model	Bearing	
	Model no.	Q'ty
1HG	6201	2
2HB	6202 6301	1 1
2.5HGA	6201 TAF192720	1 2
N3FA **N3FB**	6205 TA2225Z	2 1
N3H	6205 6305	2 1

Item / Pump model	Bearing	
	Model no.	Q'ty
4AM	6307 NA6908	2 1
4A	6309 N309	2 2
GPL	TR354830 6205	4 1
3RD	51104	1

■ Seal and Gasket Material Option List for Special Specification

Item / Pump model	code	Application	Oil seal	O-ring	Bearing	Gasket	Torochoid rotor
			Material name				
1A	**US**	For special fluid	Silicon	Silicon	—	—	Standard
	VF	For high temperature (Fluid temperature: up to 120C/Discharge pressure: up to 0.5MPa)	FKM	FKM			Standard
	VV	For special fluid	FKM	FKM			Standard
1HG	**VF**	For high temperature (Fluid temperature: up to 120C/Discharge pressure: up to 0.7MPa)	FKM	FKM	Standard		Standard
	VV	For fuel oils and specific oils. (Discharge pressure for fuel oil: up to 0.7MPa)	FKM	FKM	Standard		Standard
2HB	**US**	For special fluid	Silicon	Silicon	Standard	Standard	Standard
	UT	For special fluid	Teflon	Teflon square ring	Standard	Teflon sheet	Standard
	VF	For high temperature (Fluid temperature: up to 120C/Discharge pressure: up to 0.7MPa)	FKM	FKM	Standard	Teflon sheet	Standard
	VV	For fuel oils and other special oils. (Discharge pressure for fuel oil: up to 0.7MPa)	FKM	FKM	Standard	Teflon sheet	Standard
	VH	For high temperature (Fluid temperature: up to 200C/Discharge pressure: up to 0.7MPa)	Inside: Teflon Outside: FKM	Teflon square ring	C3	Teflon sheet	208~220 Specific rotor
N3H	**UT**	For special fluid	Teflon	Teflon square ring	Standard	Teflon sheet	Standard
	VF	For high temperature (Fluid temperature: up to 120C/Discharge pressure: up to 0.7MPa)	FKM	FKM	Standard	Teflon sheet	Standard
	VV	For fuel oils and other special oils (Discharge pressure for fuel oil: up to 0.7MPa)	FKM	FKM	Standard	Teflon sheet	Standard
	VH	For high temperature (Fluid temperature: up to 200C/Discharge pressure: up to 0.7MPa)	Teflon	FKM	C3	Teflon sheet	Specific rotor
3V	**VF**	For high temperature (Fluid temperature: up to 120C/Discharge pressure: up to 0.7MPa)	FKM	FKM	Standard	Teflon sheet	Standard
	VV	For special fluid	FKM	FKM	Standard	Teflon sheet	Standard
4AM	**VH**	For high temperature (Fluid temperature: up to 200C/Discharge pressure: up to 0.7MPa)	Teflon	FKM:G75x1 FKM:S65x1 Teflon square rings	6307C3×2 NA6908×1	—	Standard

- VF and VH are unavailable for Trochoid pumps with an integrated motor, such as 1ME, 2MY, 2ME, 3MF and other models. (High temperature oil might damage the motor.)
- Ensure that the maximum discharge pressure of the pump is below 0.7MPa for VF and VH. (High temperature oil might lower its viscosity and lubricity and that may damage the pump under the high discharge pressure.)
- Fuel oils can be used with "vv". (Ensure that the maximum discharge pressure is below 0.7MPa. They have generally low-viscosity and hence low-lubricity.)
- Teflon is a registered trademark of Du Pont de Nemour.
- The standard material of oil seal and o-ring of Trochoid pump is NBR (nitrile rubber) except 2HT, 2HW, 4AM and 4A models. If the material does not match your oil, please specify your required seal materials.

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Trochoid™ Pump Discontinued Products List (Standard models)

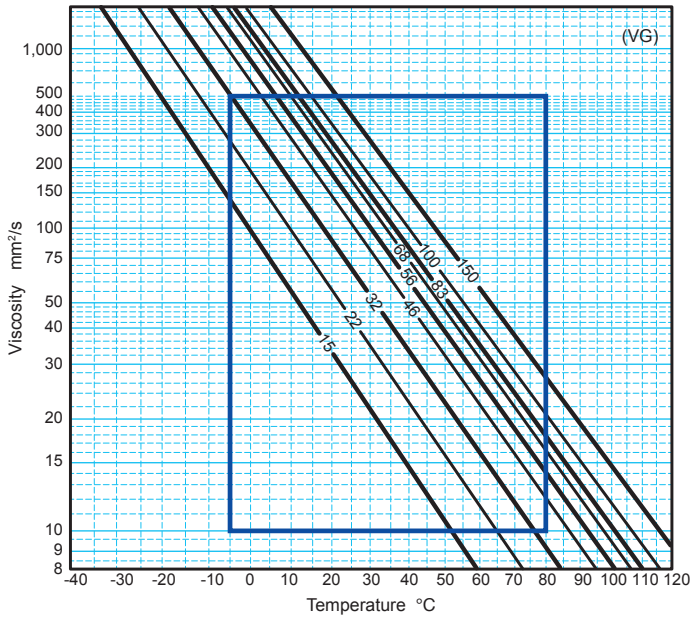
As of Sep. 20, 2018

Representative model	Production end date	Supply end date	Technical support end date	Successor model	Remarks
Trochoid™ Pump 2▲▲HA (M)	Nov./1995	Nov./2003	Nov./2008	Trochoid™ Pump 2▲▲HB (M)	External dimensions and mount dimensions are the same as 2 ▲▲ HB (M). The bore diameter of the new model is changed from parallel thread to tapered thread. (G type » Rc type)
2▲▲LE (M)	Nov./1995	Nov./2000	Nov./2005	2▲▲HB (M)	There are some differences in the appearances, but it is compatible with 2Δ ΔHB(M). (Note: The material of the substitute is cast.)
3▲▲LE	Nov./1995	Nov./2000	Nov./2005	N3▲▲H	There are some differences in the appearances, but it is compatible with N3 ▲▲ H.
3▲▲H	June/1997	June/2002	June/2007	N3▲▲H	Mount dimensions are the same
1RA-▲FS	Dec./2001	Dec./2006	Dec./2011	1RA-▲▲00	Mount dimensions are the same. The number of cover tightening bolt was reduced from 3 to 2.
1▲▲GA	Sept./2002	Sept./2007	Sept./2012	N/A	Maximum discharge pressure: 7 MPa Flow rate: 2.25 to 4.5 ℓ/min
2▲▲GA	Sept./2002	Sept./2007	Sept./2012	N/A	The design-changed model was supplied by December 2013.
2▲▲HAE (M) 2▲▲HBE (M)	Nov./2003	Nov./2008	Nov./2013	2▲▲HB (M)	External dimensions and mount dimensions are the same as 2▲▲HB (M).
3▲▲FA 3▲▲FAVB 3▲▲FB	Nov./2003	Nov./2008	Nov./2013	N3▲▲FA N3▲▲FAVB N3▲▲FB	Mount dimensions are the same as N3▲▲ F.
Motor for Trochoid™ Pump 1MT▲▲▲ 2MT▲▲▲	June/1984	June/1989	June/1994	Motor dedicated to Trochoid™ Pump 1ME▲▲ 2ME▲▲	Motor manufacturer was changed.
1ME75-3 1ME75-4	Dec./2002	May/2007	May/2012	N/A	Integrated into 1ME 75-2. (Position of flange is different)
Three-phase induction motor over 750 W, IE1 (compliant with motor efficiency regulations) 2MY▲, 2MB▲, 3MB▲, 4MB▲, 3MF▲	Mar./2015	—	Feb./2020	Premium efficiency: IE3 (displayed at the end of model no.)	The change doesn't apply to explosion-proof and cold-resistant motors. (The final order of IE1 motor was accepted until September 26, 2014)
Mitsubishi Electric safety increase explosion-proof motor 2MBM, 3MBM, 4MBM, Increased safety type	Dec./2014	—	Jan./2019	Nidec Toshiba 2MB▲, 3MB▲, 4MB▲, Increased safety type	Motor of Mitsubishi Electric is an explosion-proof type.
Three-phase induction motor over 750 W,GB3 2MB▲-GB3 2MY▲-GB3	May/2017	—	Apr./2022	2MB▲-GB2	Due to the change of Motor Efficiency Regulations in China
Oiling machine OMN-▲▲HVB OMN-▲▲LVB	Jan./1995	Jan./2001	Jan./2006	N/A	Oiling machine
MLB-▲	Jan./1995	Jan./2001	Jan./2006	N/A	Oiling machine
Oil cooling unit 1PS160-2-13MAVB-C18	Nov./2014	Dec./2015	Feb./2019	Oil cooling unit 1PS160-2-12MAVB-C	Resin tank » metal tank

Note: Supply end date indicates the month when all orders for products and parts ended.
Technical support end date indicates the month when any consultation or thechnical support about the products becomes unavailable.

Viscosity Chart

The area inside the blue box indicates the operational range of Trochoid pump.



Note: The allowable viscosity range for 3V and GPL is 46 to 2,000 mm²/s.

Scan the QR code for more technical data

NOP® Trochoid™ Pump

HP: search **NOP Trochoid pump** http://www.nopgroup.com/english/products/catalog/

Safety notice: For safe operation of our products, please peruse the User's Instruction Manual provided with the product.

NOP® Nippon Oil Pump Co., Ltd.

This catalog is valid through september, 2024.

For further information:

Search **NOP PUMP**

HP: http://www.nopgroup.com/english

Tel : +81-3-6402-4041
Fax: +81-3-3436-1777

SumitomoHamamatsucho Bldg. 8F,
1-18-16 Hamamatsucho, Minato-ku, Tokyo, Japan
105-0013

Your dealer:

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