

Create the New Stream!



NOP Coolant Unit YTH

NOP Coolant Unit YTH Products Guide



NOP Coolant Unit YTH

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YTH direct website: <http://coolant-unit.nopgroup.com/en/>

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(Registration number(Japan): 5490356, Registration number(Taiwan): 01698716, and Registration number(Hong Kong): 302888506)



Notice related to safety:

For safe operation of our products, please peruse through the User's Instruction Manual included with the product without fail.

NOP® Nippon Oil Pump Co., Ltd.

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For further
information:

Search

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Your dealer:

NOP®
Nippon Oil Pump Co., Ltd.

E SERIES *Turbulence™ Filter*

High pressure

EP

Pump: **Plunger**
 Motor: **2200~3700 W/AC**
 Flow rate: **12~28.8 ℓ/min**
 Maximum Pressure: **7.0 MPa**



Medium pressure

ET·ES

Pump: **Trochoid™**
 Motor: **750~1500 W/AC**
 Flow rate: **12~28.8 ℓ/min**
 Maximum Pressure: **2.0 MPa**



C SERIES *Cyclone Filter*

Medium pressure
Basic Model

CT

Pump: **Trochoid™**
 Motor: **750~1500 W/AC**
 Flow rate: **12~28.8 ℓ/min**
 Maximum Pressure: **2.0 MPa**



Low pressure
Large flow

CI

Pump: **Impeller**
 Motor: **1500~3700 W/AC**
 Flow rate: **150~300 ℓ/min**
 Total pump head: **40~65 m**



NOP Coolant Unit YTH
All-in-one Coolant Unit

What is YTH?

THE YTH STORY 3

E Series: for High-to-medium Pressure

EP: Plunger-type All-in-one High-pressure Pump	
Model Numbering System	13
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ET·ES: Trochoid™-type All-in-one Medium-pressure Pump

Model Numbering System	19
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C Series: for Medium-to-low Pressure

CT: Basic Model All-in-one Medium-pressure Pump	
Model Numbering System	27
Features of CT	29
Performance Curves	31

CI: Large flow All-in-one Low-pressure coolant Pump

Model Numbering System	33
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TAZUNA™

TAZUNA™ (A Fluid Control System that Cuts Annual Power Consumption by Up to 61%) 39

Specification Tables for All Series

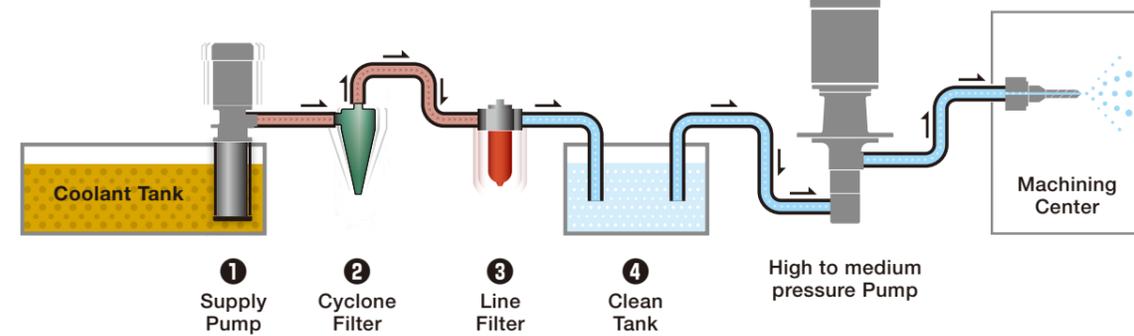
E and C Series 45



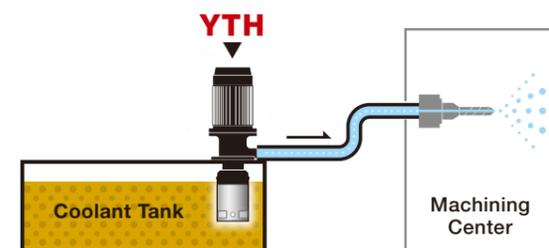
YTH products are compliant with the RoHS Directive and Reach Regulation.

**Various components of the coolant unit are all combined in one.
YTH greatly expands the working space and offers an easy-to-work and efficient environment**

Existing Flow (Conventional coolant unit)

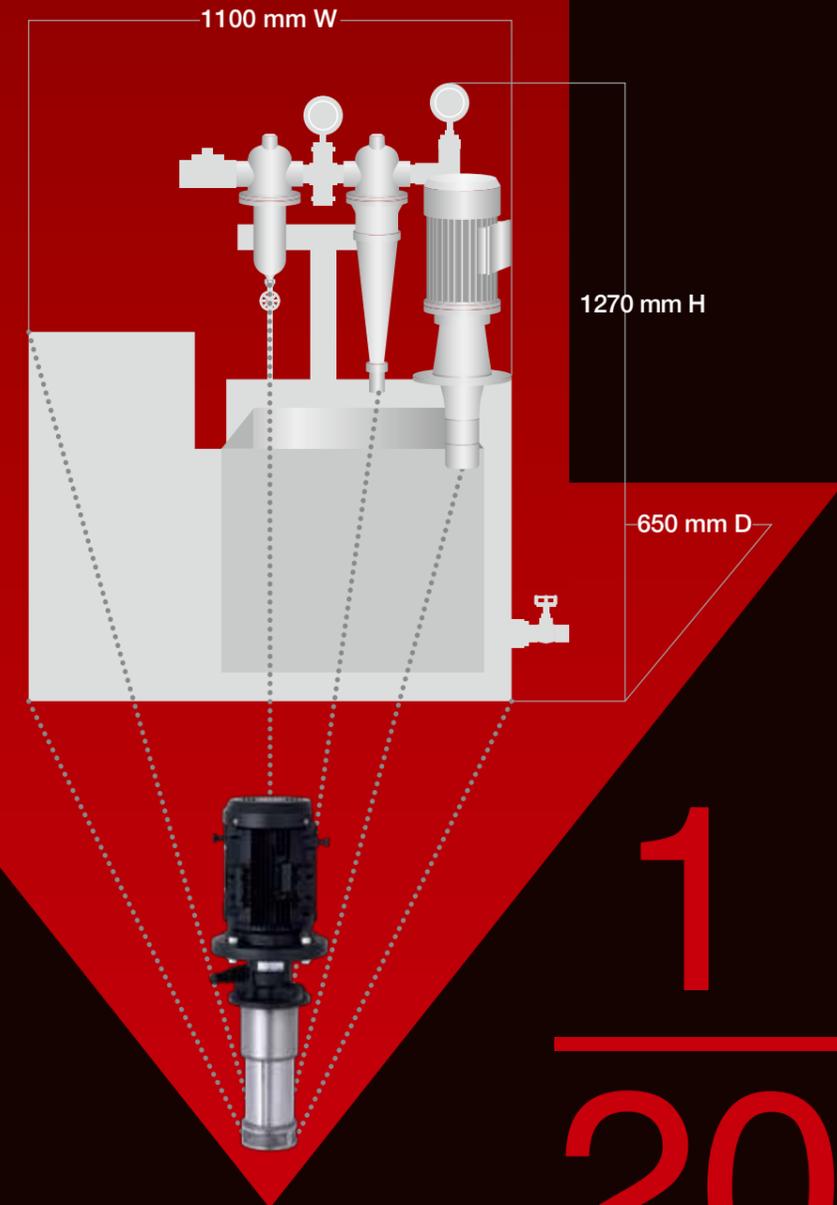


Proposal by YTH (except CI)



- ① NO supply pump
- ② NO cyclone filter
- ③ NO line filter
- ④ NO clean tank

Footprint of conventional coolant unit

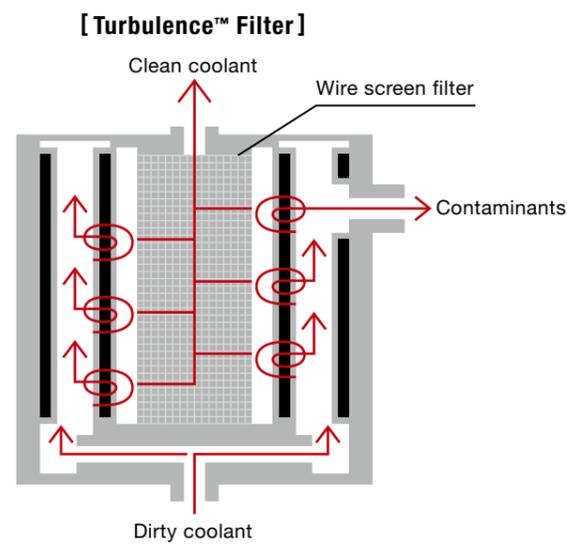


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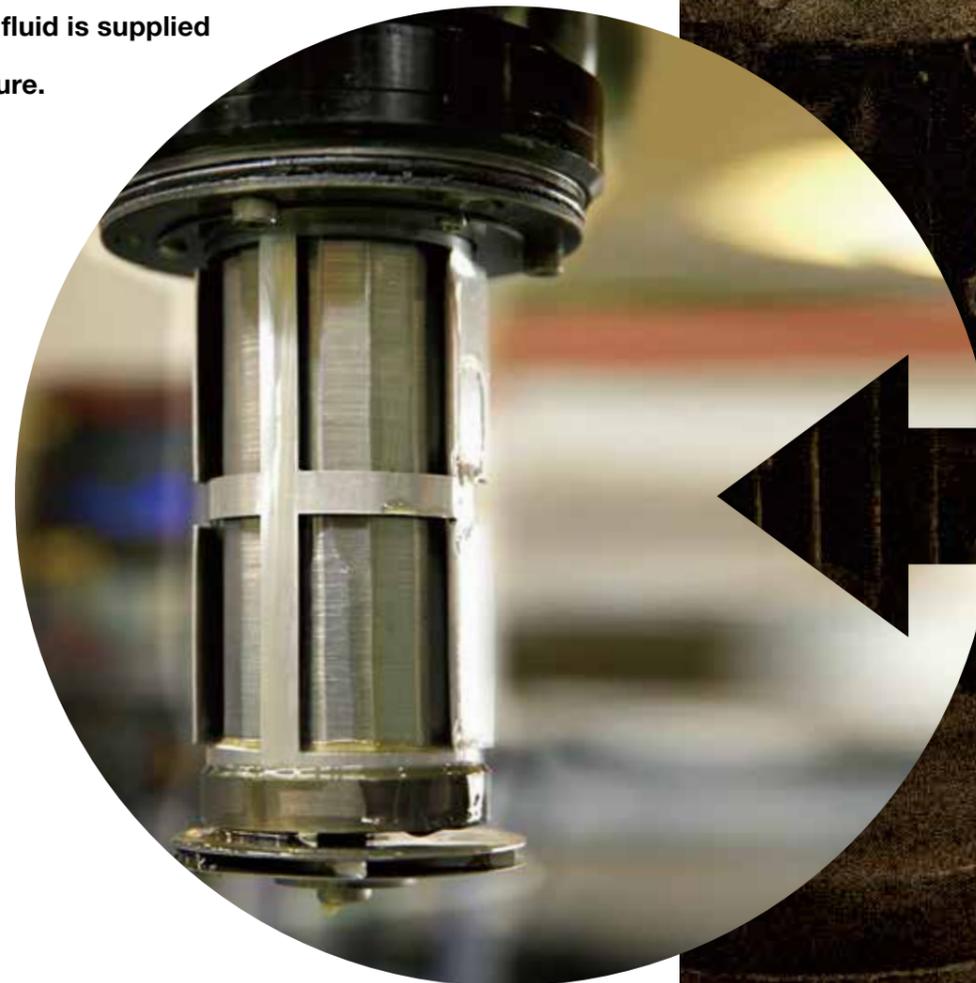
20

The YTH will never be clogged, and require no maintenance — even in a coolant tank like this.

Our special Turbulence™ design generates turbulence. The combined action of the turbulence and centrifugal force washes away chips from the filter automatically. Filter maintenance is no longer required — no more cumbersome cleaning work. Of course, a clog-free filter ensures a constant flow rate. The coolant fluid is supplied to the machining center at a stable pressure.



The centrifugal force and turbulence release and separate the contaminants from the mesh filter.



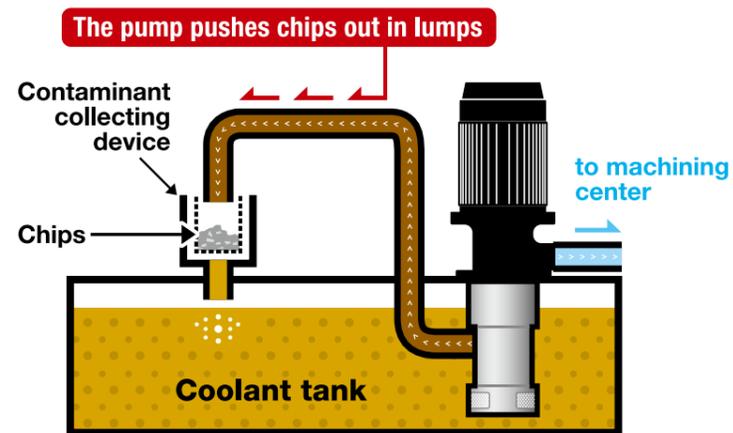
On the left is a photograph of an actual YTH (after 10,000 hours of operation) installed in this tank. The filter remains clean.

Chip recovery is simple! — the YTH separates and ejects chips in lumps.

The YTH cleans the coolant, but that is not all. It also collects cumbersome chip. YTH ejects separated chips from the drain port to the bucket.

Chip recovery is incomparably simpler than the conventional system.

The YTH can be used in combination with your existing chip conveyor system to collect and recycle chips.

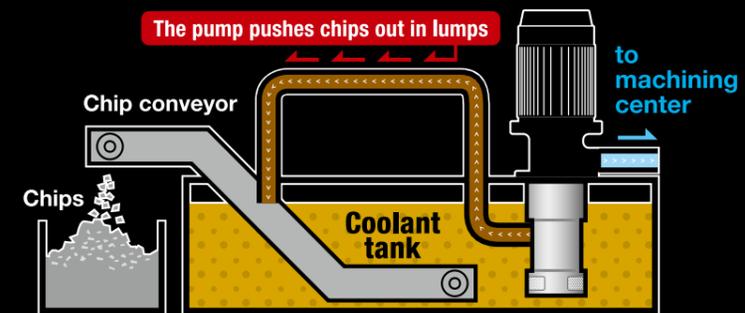


1 Bucket type

- Chip recovery method: Bucket collects chips for recycling
- Compatible machine tools: Machining centers /NC lathes
- Typical applications: For removal of chips and contaminant

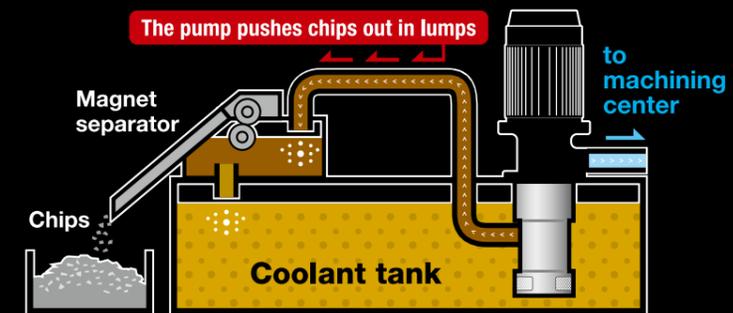
A sample of chips collection

A YTH may be combined with your existing chip conveyors and other accessory equipments.



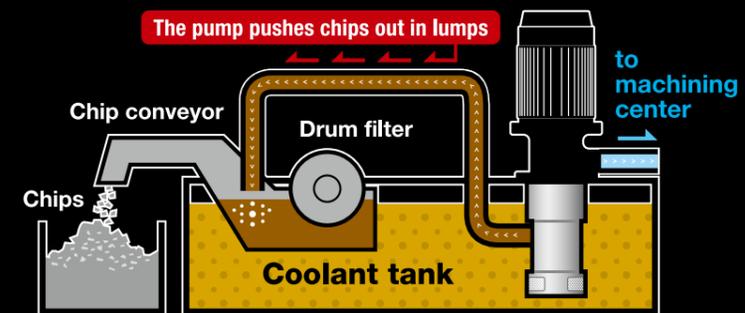
2 Chip conveyor type (allows for easiest installation)

- Chip recovery method: A chip conveyor collects chips for recycling
- Compatible machine tools: Machining centers, NC lathes
- Typical applications: For iron or other applications where large-size chips are produced in a good amount



3 Magnet separator type

- Chip recovery method: A magnet separator collects chips for recycling.
- Compatible machine tools: Machining centers, NC lathes
- Typical applications: For small-size chips are produced in a good amount



4 Drum filter type

- Chip recovery method: A chip conveyor collects chips for recycling while the dirty coolant is filtered by drum filter
- Compatible machine tools: Machining centers, NC lathes
- Typical applications: For non-magnetic material such as aluminum, contaminants and chips

**“No more waste, extra labor or hassle!
This has to be simple.” As a member
of a manufacturing team, this was
always in my mind.**

Every day at work, I have been always thinking that coolant units incur too much waste, trouble and hassle. Coolant unit areas are no exactly the kind of areas I would love to step into. Yet, I must get in there to care for the system before the pressure drops and causes the machining center to stop.

It is extremely difficult to perform maintenance of a large coolant unit if located in such a manner that only limited space is available for maintenance work (e.g. at that back of a machine adjacent to walls). In addition, stopping a production line to perform maintenance reduces productivity.

Further, even though the line is stopped, pumps remain running at full speed, thus wasting electricity. Such a conventional manner never leads to saving of power consumption, let alone reducing CO₂ emission to combat global warming.

Yuji Kawano

Yuji Kawano
Fellow



**NOP Coolant Unit
YTH**



E SERIES

A Turbulence™ filter is built in

**This is the High-Spec Series that
washes chips away automatically**



Received the "2015 JSME Excellent Product Award"

Plunger-type, All-in-one High-pressure Pump



Turbulence™ filter

Special turbulence cleans the filter automatically, rendering the filter clog free.



Plunger pump/ 7.0 MPa ~ 3.0 MPa

Piston action pushes fluid at high to medium pressure.



Compatible with the TAZUNA™ fluid control system (software)

TAZUNA reduces the electric power cost further by approximately 20%.
The pressure and flow rate are automatically adjusted.

Model Numbering System

TOP-YTH ① ② - ③ E VD ④ ⑤

① Motor capacity	2200: 2.2 kW	
	3700: 3.7 kW	
② Motor type*1	Standard motor	A3: AC 200/200/220/230 V 50/60/60/60 Hz 3 phase electric induction motor (IE3) with CE marking
	Local motor	AE: supplied by NOP Deutschland (Germany) AF: supplied by NOP Taiwan AJ: supplied by NOP Asia (China) AK: supplied by NOP India
③ Flow rate	P008: Plunger pump, 8 cc/rev	
	P010: Plunger pump, 10 cc/rev	
	P014: Plunger pump, 14 cc/rev	
	P016: Plunger pump, 16 cc/rev	

Filtering method	E: Turbulence™ filter type
Relief valve	VD: External return type
④ Relief pressure setting*2	70 : 7.0 MPa
	60 : 6.0 MPa
	35 : 3.5 MPa
	30 : 3.0 MPa
⑤ Filtering performance	C : 20 μm

*1 For further details about the local motor, please contact to our overseas branch or subsidiaries.

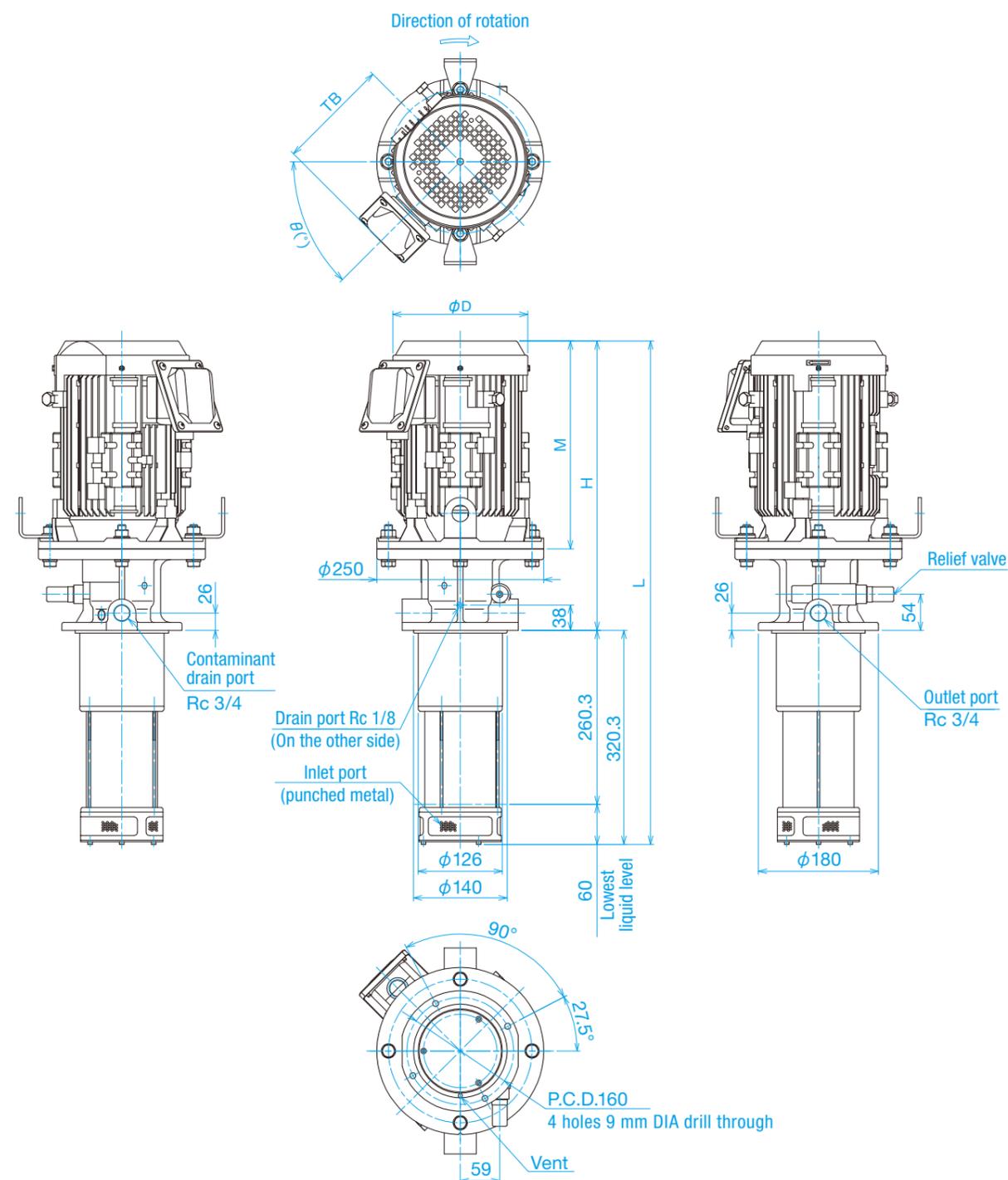
*2 Refer to page 45 for the compatible model for each relief pressure setting.

Specifications

Model	Item	Motor capacity (kW)	Flow rate (ℓ/min) 50Hz / 60Hz	Maximum pressure (MPa) 50Hz / 60Hz	Approximate weight (kg)
YTH2200A3-P008EVD* C	Item	2.2	12.0 / 14.4	7.0 / 7.0	53
YTH2200A3-P010EVD* C			15.0 / 18.0	7.0 / 6.0	
YTH2200A3-P016EVD* C			24.0 / 28.8	3.5 / 3.0	
YTH3700A3-P014EVD* C	Item	3.7	21.0 / 25.2	7.0 / 7.0	62
YTH3700A3-P016EVD* C			24.0 / 28.8	7.0 / 6.0	

* ④ Relief pressure setting

Dimensional Drawing (typical / Motor type : A3)



Model	L	H	M	φD	θ (°)	TB
YTH2200A3-P008EVD* C	753.3	433	311	202	45	168
YTH2200A3-P010EVD* C	753.3	433	311	202	45	168
YTH2200A3-P016EVD* C	753.3	433	311	202	45	168
YTH3700A3-P014EVD* C	768.3	448	326	243	45	187
YTH3700A3-P016EVD* C	768.3	448	326	243	45	187

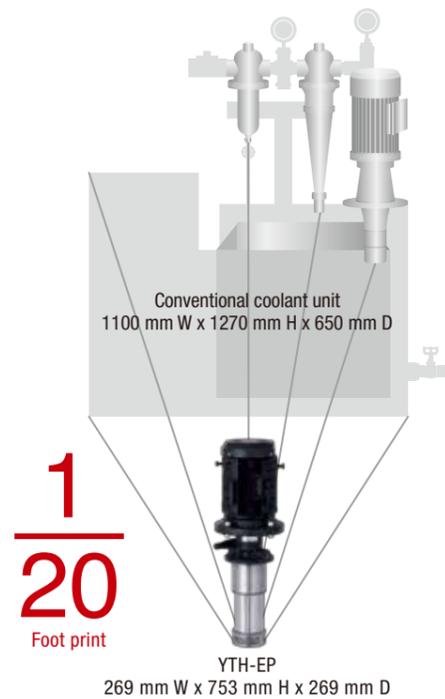
Drawings in PDF Drawings can be downloaded from the YTH website. <http://coolant-unit.nopgroup.com/en/>

Features of EP

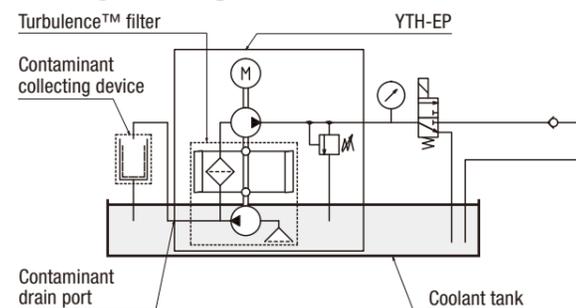
An All-in-one, High-to-medium Pressure Coolant Pump

All components of a coolant system are consolidated into a single YTH unit. No line and suction filters are required. The use of YTH-EP reduces the required space to about 1/20th by volume of that occupied by a conventional coolant system. The saved space expands the available plant space, resulting in a higher production efficiency.

- Maximum operating pressure: 7.0 MPa
- Maximum flow rate: 28.8 liters/min
- No suction filter is required
- No line filter is required
- No clean tank is required
- No transfer pump is required on the coolant tank end
- No plumbing is required to interconnect various components



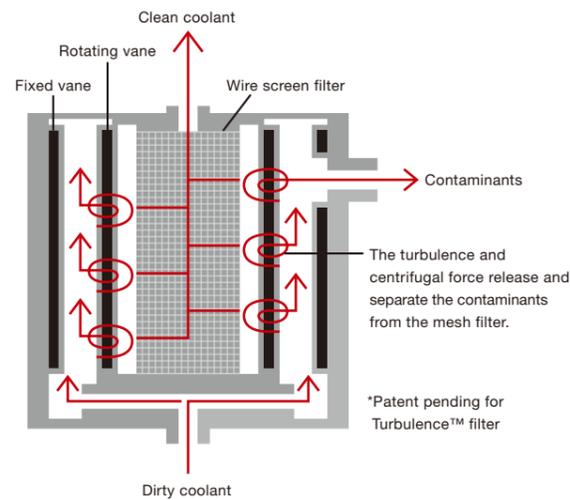
A sample configuration (Refer to page 8)



Automatic Self-cleaning Turbulence™ Filter

Our special Turbulence™ design generates turbulence. The combined action of the turbulence and centrifugal force washes away chips from the filter automatically. The result is a maintenance-free unit with a stable high pressure and large flow rate.

※Chips larger than 20μm in size is removed (when using water-soluble coolant fluid).



Compatible types of chips

Material	Iron	Casting	Aluminum
Compatibility	Excellent	Excellent	Excellent

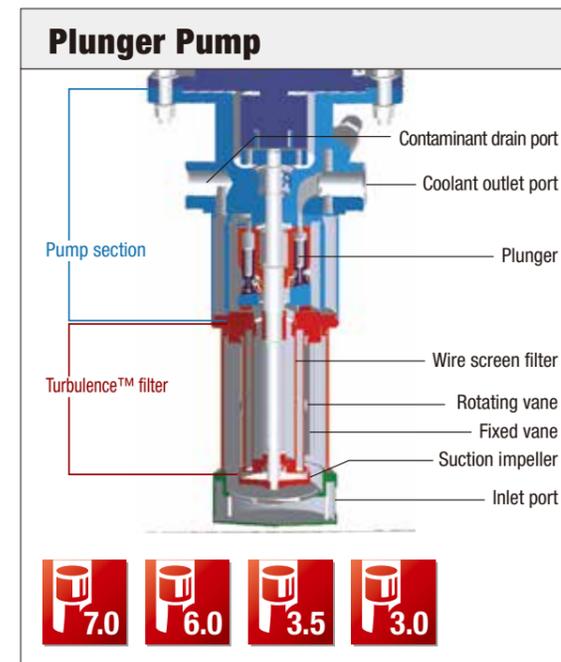
※Please contact us for the use of high hardness materials or Silumin (Silicon content of 6% or more).

Filtering performance

Suction strainer	3mm (Solids larger than this must be removed in the tank)
Filter	20μm

High efficiency plunger pump

- Compatible types of fluid
 - Water-soluble coolant fluid
 - Not for lubricant oil or fuel oil
 - Not for clear water, purified water, aqueous solutions and viscous fluids without rust-preventive property, corrosive liquid, solvents, and oils
- Relief valve is built into the unit

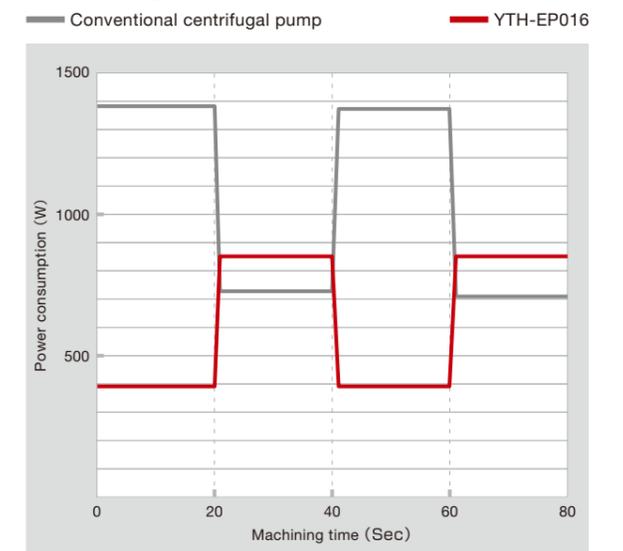


Huge Energy Saving Effect Reduces Utility Costs

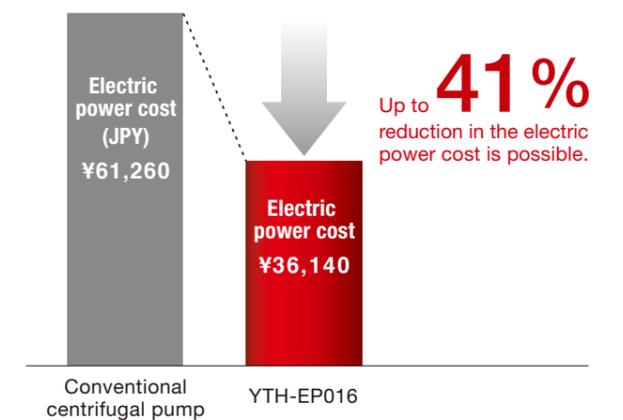
The use of YTH-EP results in huge energy savings over the conventional centrifugal pumps. The electric power cost is greatly reduced.

- Operating cycle: total 80 seconds cycle
 - Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
 - Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
- The calculation is based on operation 8hours/day, 365days/year, and the electric power billed at ¥20/kWh.
 - ※Results may differ according to the conventional pump specifications and the machining conditions (reference data)

Comparison of power consumption during machining operation



Comparison of annual electric power costs



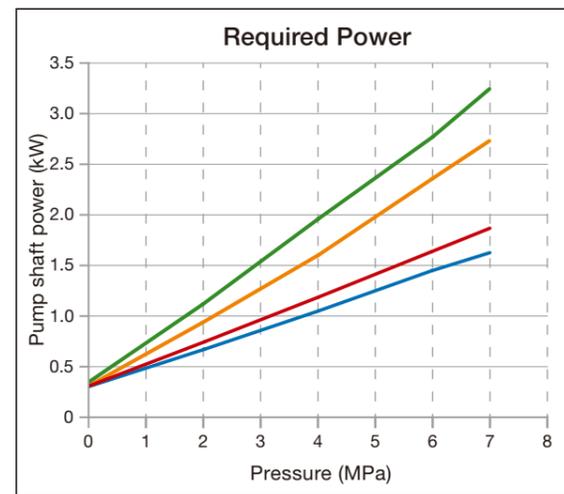
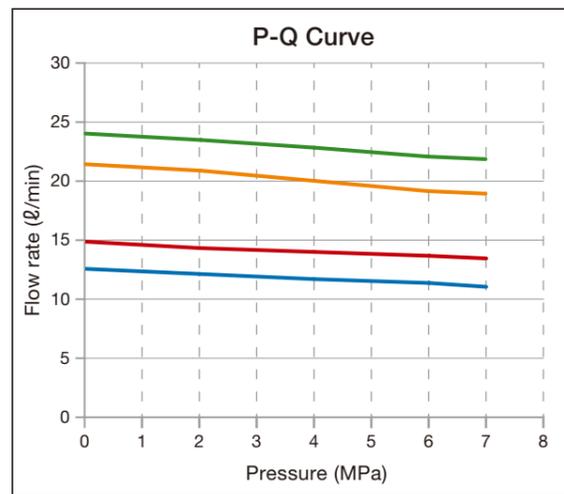
■ Performance Curves

Water-soluble coolant (general performance)

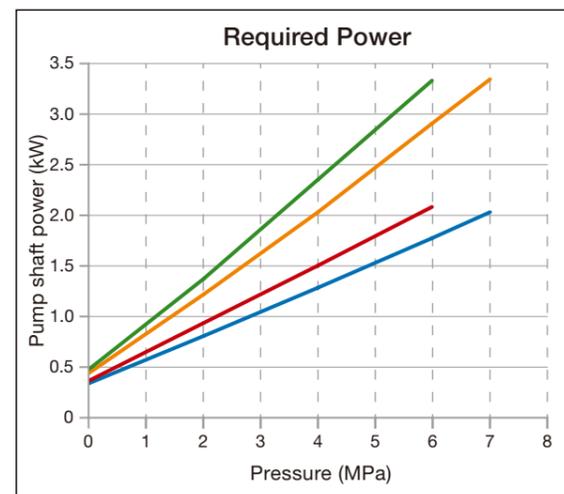
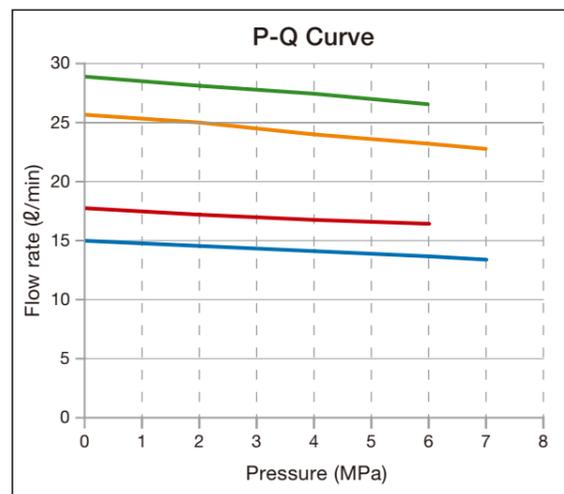
Oil used: JIS K2241, Type A3 solution containing 2% water-soluble cutting fluid

- EP008
- EP010
- EP014
- EP016

50Hz



60Hz



The revolutionary transformation
coolant pump

The all-in-one coolant unit

Less space required, less maintenance work,
and less hassle even in tough conditions

ET·ES

Received the "2015 JSME Excellent Product Award"

Trochoid™-type, All-in-one Medium-pressure Pump



Turbulence™ filter

Special turbulence cleans the filter automatically, rendering the filter clog free.



Trochoid™ pump/ 2.0 MPa, 1.5 MPa

A rotor turning in a trochoidal curve generates pressure to suck and discharge fluid. This is an extremely efficient self-priming pump.



Compatible with the TAZUNA™ fluid control system (software)

TAZUNA reduces the electric power cost further by approximately 20%. The pressure and flow rate are automatically adjusted.

Model Numbering System

TOP-YTH ① ② - ③ E VD ④ ⑤

① Motor capacity	750: 0.75 kW	
	1500: 1.5 kW	
② Motor type*1	Standard motor	A3: AC 200/200/220/230 V 50/60/60/60 Hz 3 phase electric induction motor (IE3) with CE marking
	Local motor	AE: supplied by NOP Deutschland (Germany) AF: supplied by NOP Taiwan AJ: supplied by NOP Asia (China) AK: supplied by NOP India
③ Rotor capacity	T208: Trochoid™ pump, 8 cc/rev	
	T216: Trochoid™ pump, 16 cc/rev	
	S208: Trochoid™ pump, 8 cc/rev*2	
	S216: Trochoid™ pump, 16 cc/rev*2	

Filtering method	E: Turbulence™ filter type
Relief valve	VD: External return type
④ Relief pressure setting*3	20 : 2.0 MPa
	15 : 1.5 MPa
⑤ Filtering performance	B : 50 μm (for spindle oil coolant)
	C : 20 μm

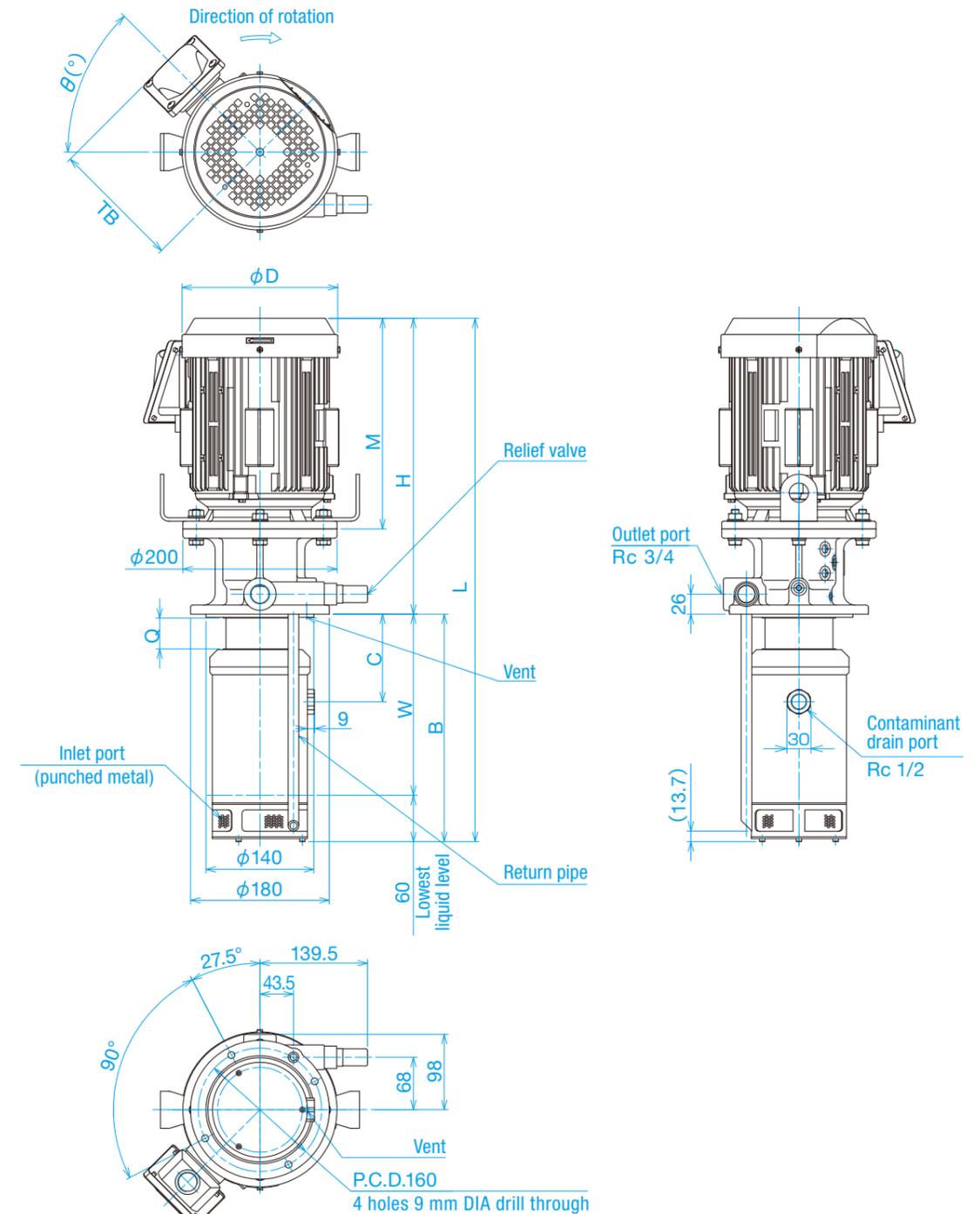
*1 For further details about the local motor, please contact to our overseas branch or subsidiaries.
*2 S is wear resistant type for hard and abrasive materials.
*3 Refer to page 45 for the compatible model for each relief pressure setting.

Specifications

Model	Item	Motor capacity (kW)	Flow rate (ℓ/min) 50Hz / 60Hz	Maximum pressure (MPa)	Approximate weight (kg)
YTH750A3-T208EVD**		0.75	12.0 / 14.4	2.0 / 2.0	34
YTH1500A3-T216EVD**		1.5	24.0 / 28.2	2.0 / 2.0	39
YTH750A3-S208EVD**		0.75	12.0 / 14.4	1.5 / 1.5	34
YTH1500A3-S216EVD**		1.5	24.0 / 28.2	2.0 / 2.0	39

* ④ Relief pressure setting, ⑤ Filtering performance

Dimensional Drawing (typical / Motor type : A3)



Model	L	B	C	W	Q	H	M	φD	θ(°)	TB
YTH750A3-T208EVD**	638.8	274.8	93.5	214.8	20	364	253.5	170	30	151
YTH1500A3-T216EVD**	678.3	294.8	113.5	234.8	40	383.5	273	202	45	168
YTH750A3-S208EVD**	638.8	274.8	93.5	214.8	20	364	253.5	170	30	151
YTH1500A3-S216EVD**	678.3	294.8	113.5	234.8	40	383.5	273	202	45	168

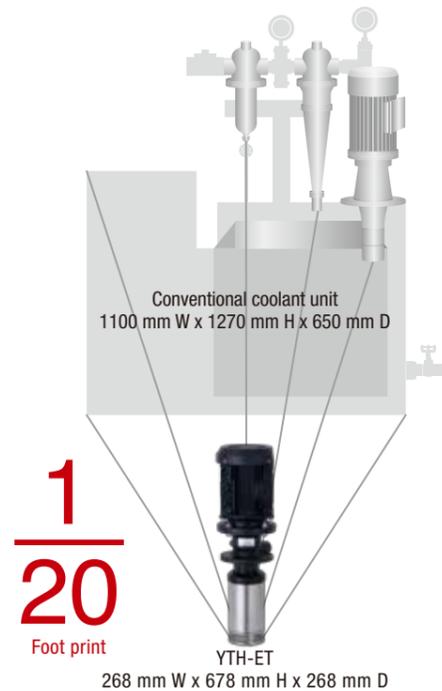
Drawings in PDF Drawings can be downloaded from the YTH website. <http://coolant-unit.nopgroup.com/en/>

Features of ET·ES

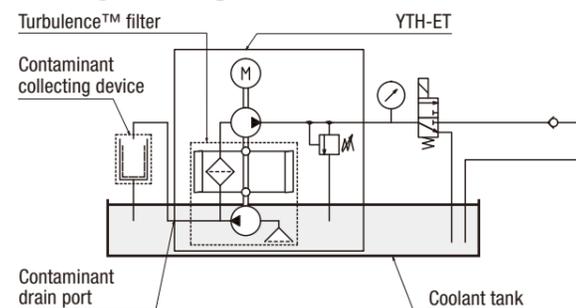
An All-in-one, Medium Pressure Coolant Pump

All components of a coolant system are consolidated into a single YTH unit. No line and suction filters are required. The use of YTH-ET reduces the required space to about 1/20th by volume of that occupied by a conventional coolant system. The saved space expands the available plant space, resulting in a higher production efficiency.

- Maximum operating pressure: 2.0 MPa
- Maximum flow rate: 28.8 liters/min
- No suction filter is required
- No line filter is required
- No clean tank is required
- No transfer pump is required on the coolant tank end
- No plumbing is required to interconnect various components



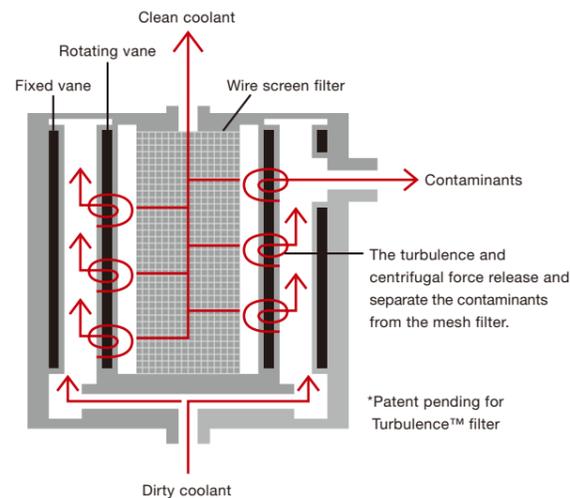
A sample configuration (Refer to page 8)



Automatic Self-cleaning Turbulence™ Filter

Our special Turbulence™ design generates turbulence. The combined action of the turbulence and centrifugal force washes away chips from the filter automatically. The result is a maintenance-free unit with a stable high pressure and large flow rate.

※Chips larger than 20µm in size is removed (when using water-soluble coolant fluid).



Compatible types of chips

Material	Iron	Casting	Aluminum
Compatibility	Excellent	Excellent	Excellent

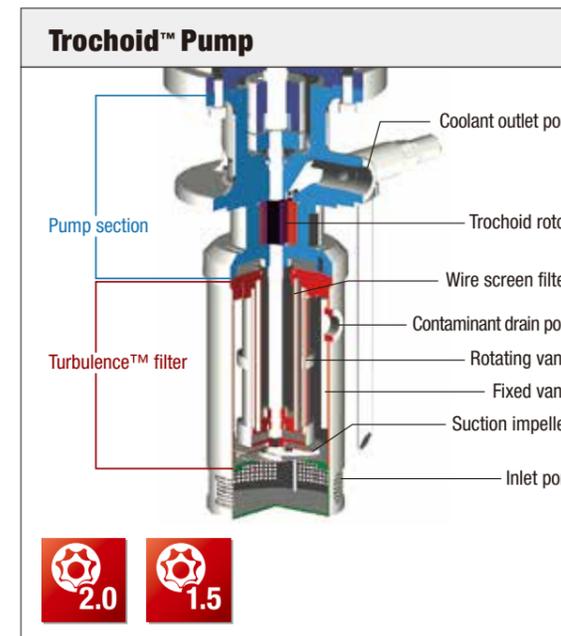
※Please contact us for the use of high hardness materials or Silumin (Silicon content of 6% or more).

Filtering performance

Suction strainer	3mm (Solids larger than this must be removed in the tank)
Filter	20 µm 50 µm (for spindle oil coolant) (Must be specified at the time of purchase.)

High efficiency Trochoid™ pump

- Compatible types of fluid
 - Water-soluble coolant fluid
 - Water-insoluble coolant fluid of 15 mm²/s or less viscosity
 - Not for lubricant oil or fuel oil
 - Not for clear water, purified water, aqueous solutions and viscous fluids without rust-preventive property, corrosive liquid, solvents, and oils
- Relief valve is built into the unit



S type (Wear resistance)

For its special wear resistant structure, S type can be installed on coolant tanks of machines which are machining materials which generate hard and abrasive Chips.

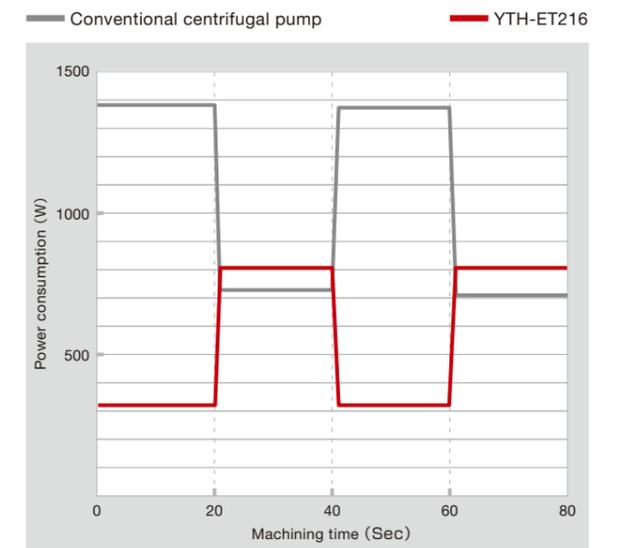
- Balance plate
Pump generates inner pressure to press the balance plate toward the Trochoid rotor side, which helps in reducing the clearance created due to wear and thereby minimize the pressure drop, ensuring desired performance for a longer time
- Shaft and bearing reinforcement
Improved wear resistance by employing sprayed ceramic on shaft bearing area and usage of ceramic bearing.
- Double seal & cartridge system
Seal Area is reinforced to prevent leakage and Cartridge System ensures ease of replacement

Huge Energy Saving Effect Reduces Utility Costs

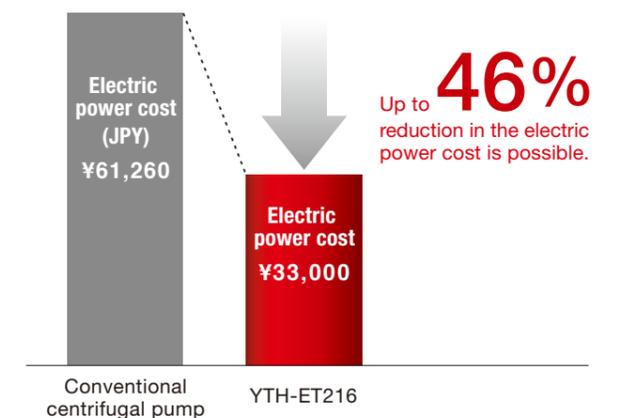
The use of YTH-ET results in huge energy savings over the conventional centrifugal pumps. The electric power cost is greatly reduced.

- Operating cycle: total 80 seconds cycle
Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
→ Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
- The calculation is based on operation 8hours/day, 365days/year, and the electric power billed at ¥20/kWh.
※Results may differ according to the conventional pump specifications and the machining conditions (reference data)

Comparison of power consumption during machining operation



Comparison of annual electric power costs



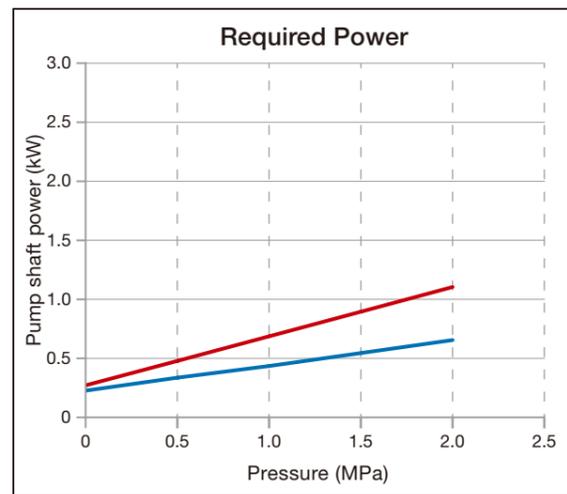
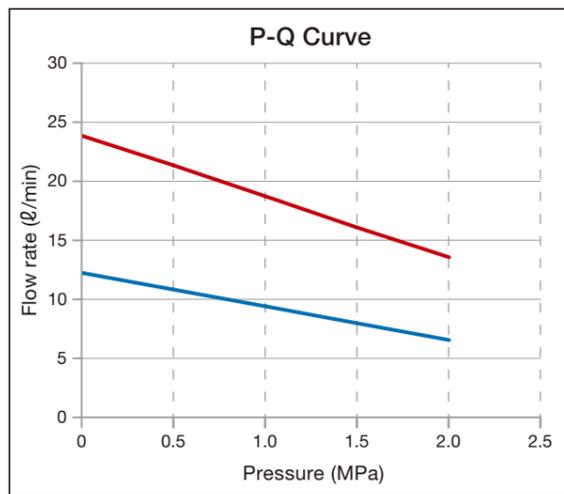
Performance Curves

Water-soluble coolant (general performance)

Oil used: JIS K2241, Type A3 solution containing 2% water-soluble cutting fluid

ET208·ES208
ET216·ES216

50Hz

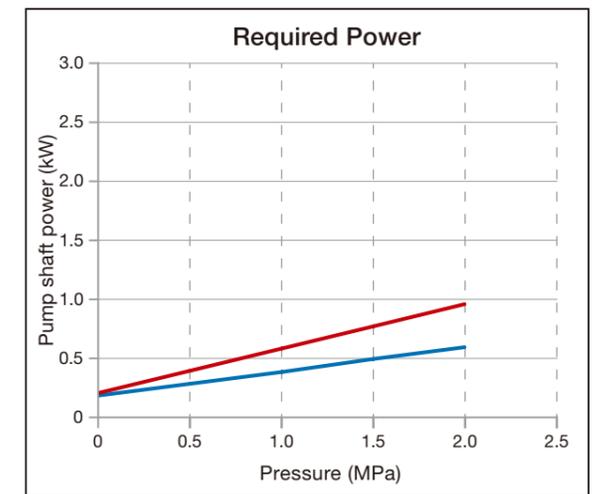
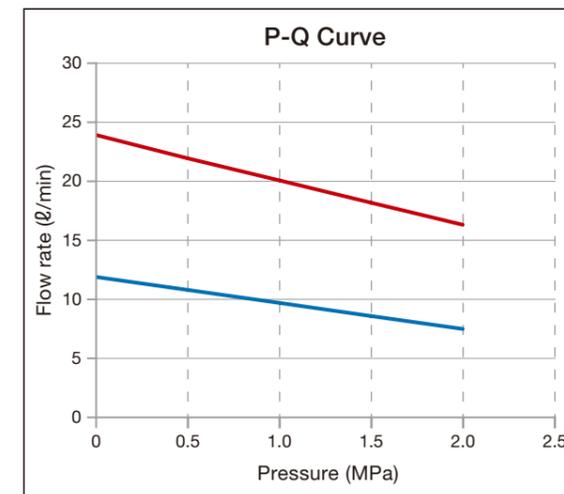


Spindle Oil (general performance)

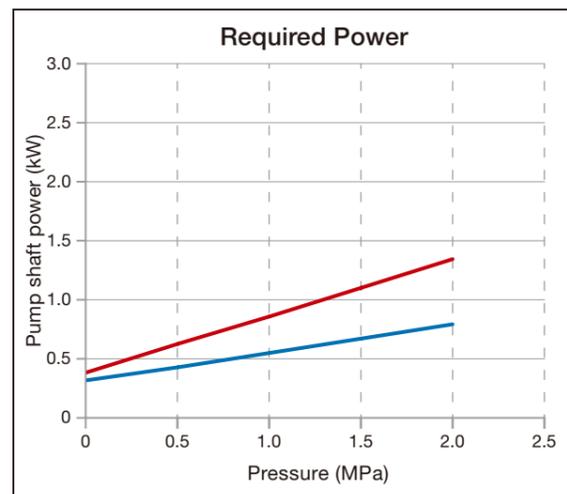
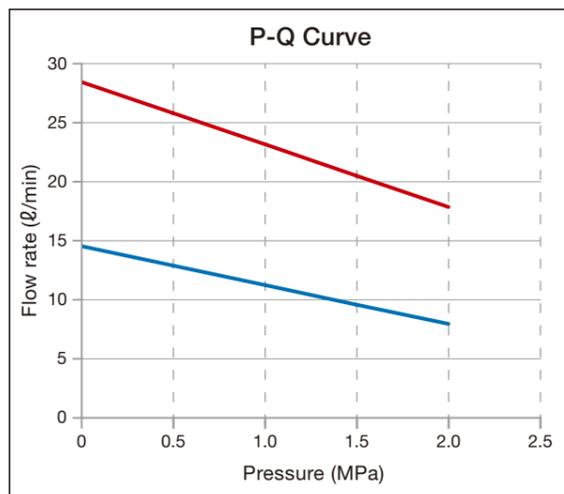
Oil used: ISO VG2 equivalent

ET208·ES208
ET216·ES216

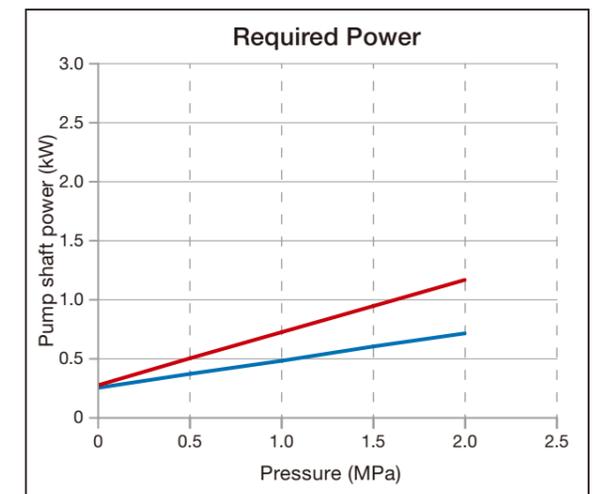
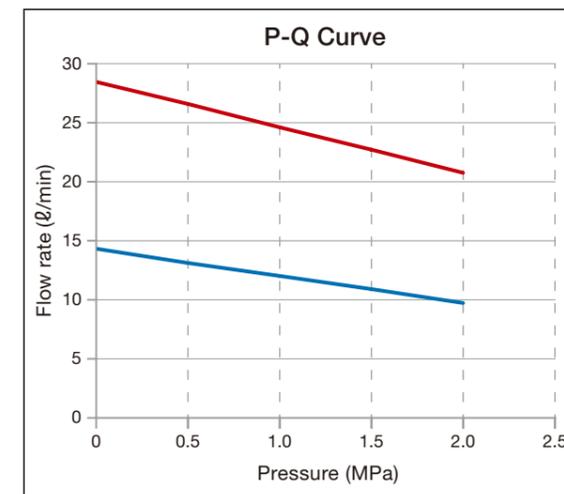
50Hz



60Hz



60Hz



**NOP Coolant Unit
YTH**



The Cyclone Filter is Built In

This is a YTH Basic Series

C S E R I E S

CT

Cyclone-type, All-in-one Medium-pressure Pump



Double-cyclone filter

Two layers of double cyclones (one large cyclone and six small cyclones) remove chips from the coolant fluid.



Trochoid™ pump/ 2.0 MPa, 1.5 MPa

A rotor turning in a trochoidal curve generates pressure to suck and discharge fluid. This is an extremely efficient self-priming pump.



Compatible with the TAZUNA™ fluid control system (software)

TAZUNA™ reduces the electric power cost further by approximately 20%. The pressure and flow rate are automatically adjusted.



Model Numbering System

TOP-YTH ① ② - ③ C VD ④

① Motor capacity	750: 0.75 kW		③ Rotor capacity	T208: Trochoid™ pump, 8cc/rev
	1500: 1.5 kW			T216: Trochoid™ pump, 16cc/rev
② Motor type*	Standard motor	A3: AC 200/200/220/230 V 50/60/60/60 Hz 3 phase electric induction motor (IE3) with CE marking	Filtering method	C: Double-cyclone type
	Local motor	AE: supplied by NOP Deutschland (Germany) AF: supplied by NOP Taiwan AJ: supplied by NOP Asia (China) AK: supplied by NOP India	Relief valve	VD: External return type
			④ Relief pressure setting	20 : 2.0 MPa
				15 : 1.5 MPa

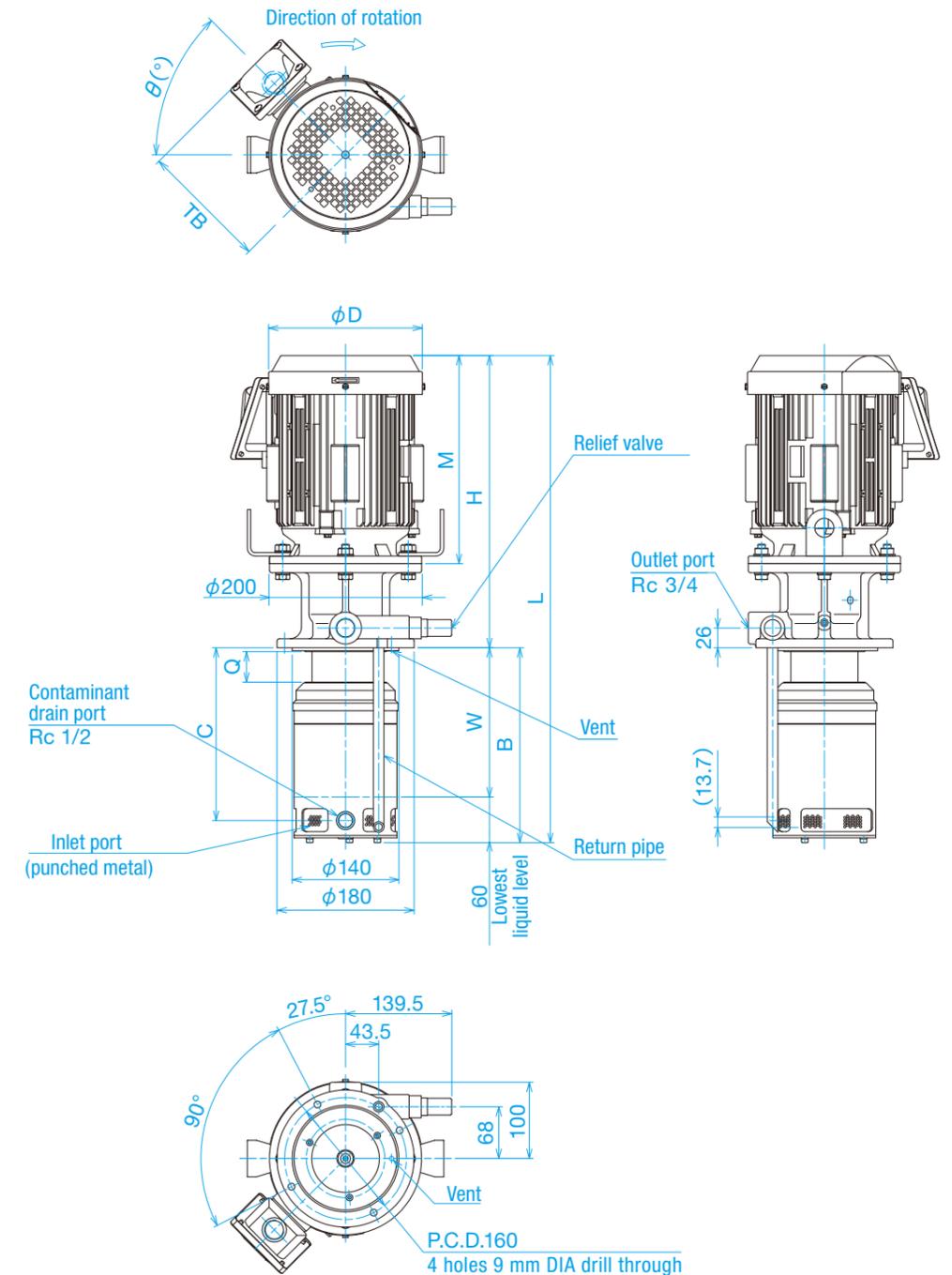
* For further details about the local motor, please contact to our overseas branch or subsidiaries.

Specifications

Model	Item	Motor capacity (kW)	Flow rate (ℓ/min) 50Hz / 60Hz	Maximum pressure (MPa)	Approximate weight (kg)
YTH750A3-T208CVD*		0.75	12.0 / 14.4	2.0	34
YTH1500A3-T216CVD*		1.5	24.0 / 28.8		39

* ④Relief pressure setting

Dimensional Drawing (typical / Motor type : A3)



(mm)

Model	L	B	C	W	Q	H	M	ϕD	θ (°)	TB
YTH750A3-T208CVD*	599.7	235.7	206.7	175.7	20	364	253.5	170	30	151
YTH1500A3-T216CVD*	639.2	255.7	226.7	195.7	40	383.5	273	202	45	168

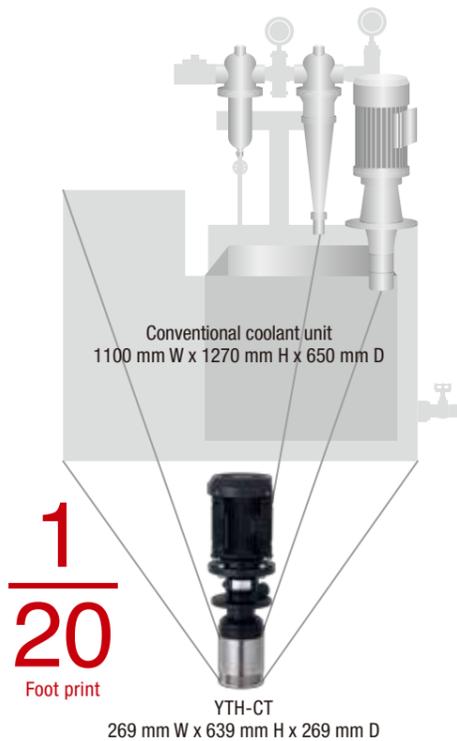
Drawings in PDF Drawings can be downloaded from the YTH website. <http://coolant-unit.nopgroup.com/en/>

Features of CT

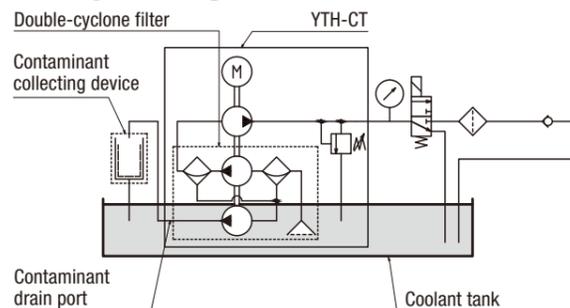
World's First — All-in-one, Medium-pressure Coolant Pump

This is a basic YTH model consolidating a large coolant system into one unit. Simply replace a conventional medium-pressure pump with YTH-CT to reduce the occupied space to 1/20th by volume. The saved space expands the available plant space, resulting in a higher production efficiency.

- Maximum operating pressure: 2.0 MPa
- Maximum flow rate: 28.8 liters/min
- No suction filter is required
- No clean tank is required
- Applicable only to continuous running (intermittent running is not applicable)
- No transfer pump is required on the coolant tank end
- No plumbing is required to interconnect various components



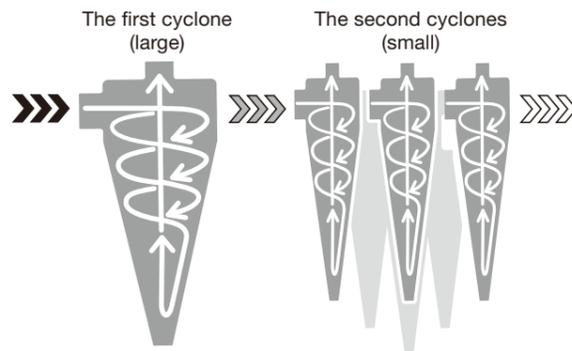
A sample configuration (Refer to page 8)



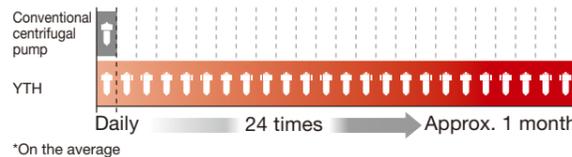
1+6 Double-cyclone Filter

A proprietary double-cyclone system removes chips*. The first cyclone removes larger debris, while the second cyclones remove smaller particles. The line-filter cleaning cycle is extended by 24 times.

* Chips larger than 20µm in size is removed (when using water-soluble coolant fluid).



Line-filter cleaning become once a month*



Compatible types of chips

Material	Iron	Casting	Aluminum	Copper
Compatibility	Excellent	Excellent	Good	Excellent

※ No liquid containing abrasive stone/grain is allowed
 ※ Please contact us for the use of High Silicon Aluminum

Filtering performance

Suction strainer	3mm (Solids larger than this must be removed in the tank)
Filter	50µm: 95% (specific gravity 2.7) 100µm: 99% (specific gravity 2.7)

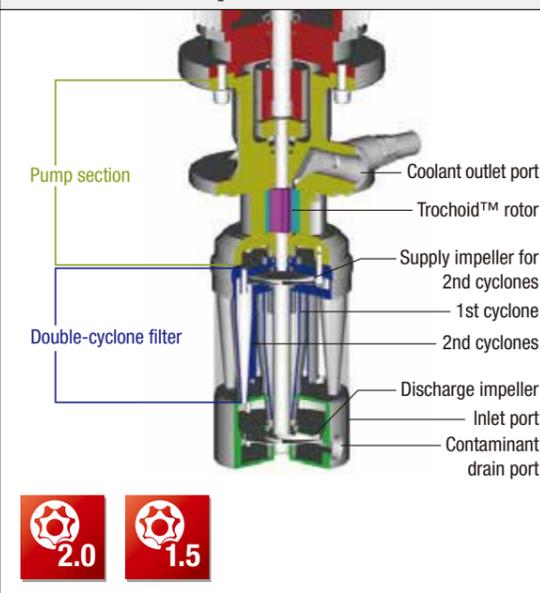
※ Filtering performance is effective only to continuous running (Ineffective results for intermittent running)

High-efficiency Trochoid™ Pump

YTH-CT uses a Trochoid™ pump which excels in fluid control efficiency. The double-cyclone system sorts out chips and enables direct connection to the coolant tank.

- Compatible types of fluid
 - Water-soluble coolant fluid
 - Not for water-insoluble coolant fluid, lubricant oil or fuel oil
 - Not for clear water, purified water, aqueous solutions and viscous fluids without rust-preventive property, corrosive liquid, solvents, and oils
- Relief valve is built into the unit.

Trochoid™ Pump

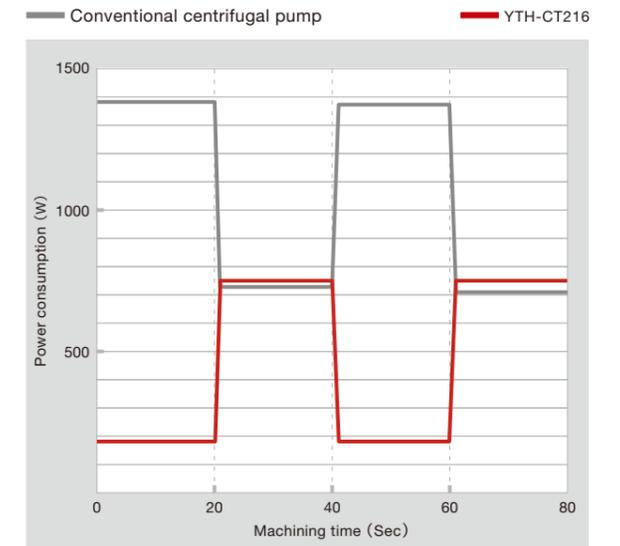


Huge Energy Saving Effect Reduces Utility Costs

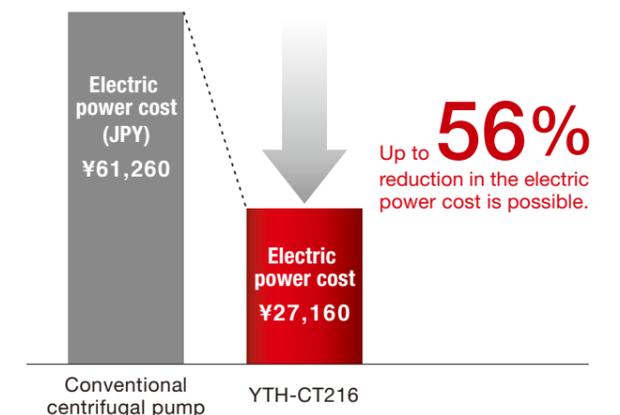
The use of YTH-CT results in huge energy savings over the conventional centrifugal pumps. The electric power cost is greatly reduced.

- Operating cycle: total 80 seconds cycle
 - Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
 - Unload (0MPa) 20 sec. → Coolant through (1.1 MPa) 20 sec.
- The calculation is based on operation 8hours/day, 365days/year, and the electric power billed at ¥20/kWh.
 - ※ Results may differ according to the conventional pump specifications and the machining conditions (reference data)

Comparison of power consumption during machining operation



Comparison of annual electric power costs



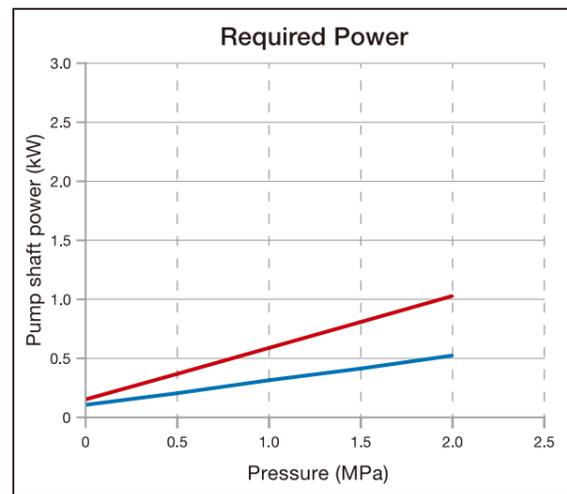
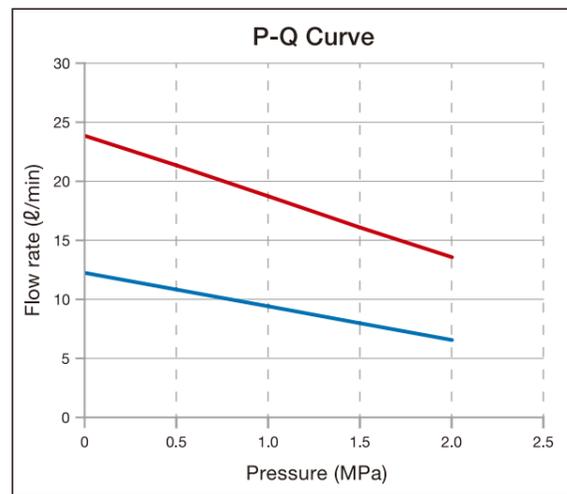
Performance Curves

Water-soluble coolant (general performance)

Oil used: JIS K2241, Type A3 solution containing 2% water-soluble cutting fluid

CT208
CT216

50Hz

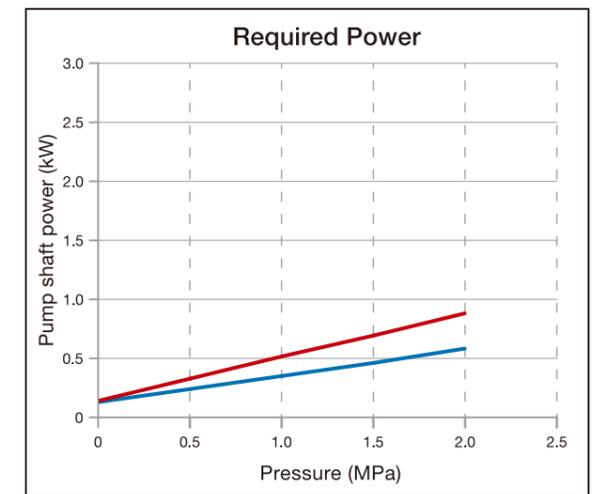
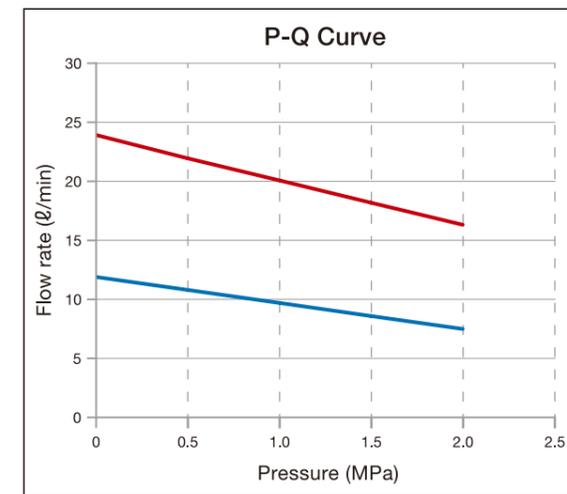


Spindle Oil (general performance)

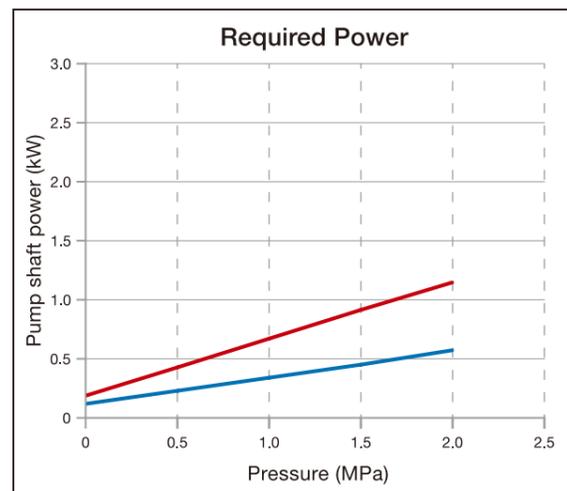
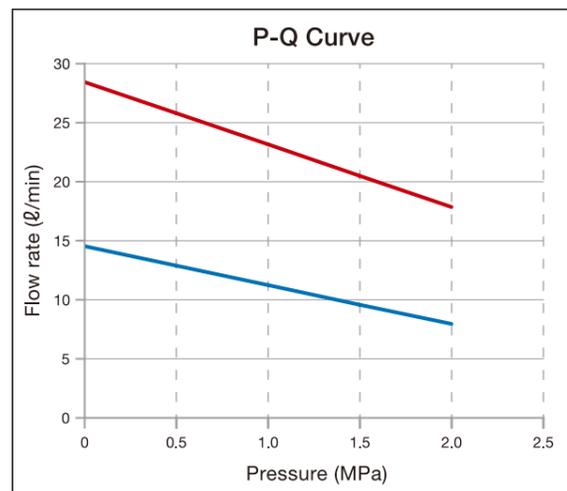
Oil used: ISO VG2 equivalent

CT208
CT216

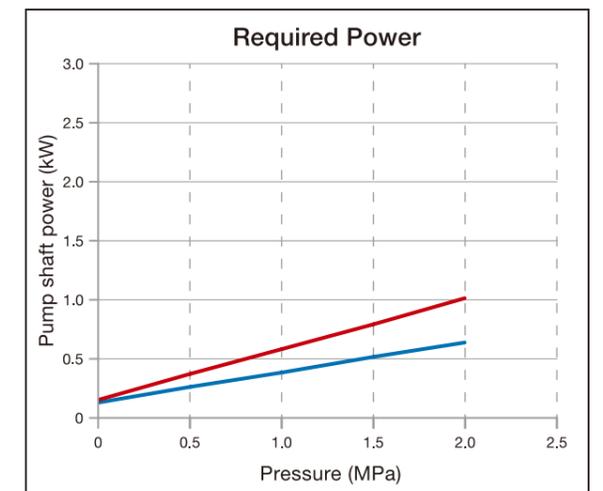
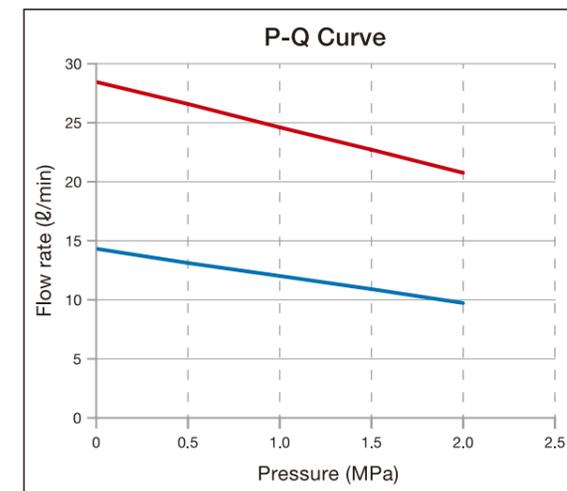
50Hz



60Hz



60Hz



CI

Large flow All-in-one Low-pressure coolant pump



Cyclone filter

The cyclone system sorts out chips from the coolant fluid.



Impeller pump

Centrifugal mechanism generates pressure to supply a large flow coolant. This is a large flow transfer pump

Model Numbering System

TOP-YTH ① ② - ③ C

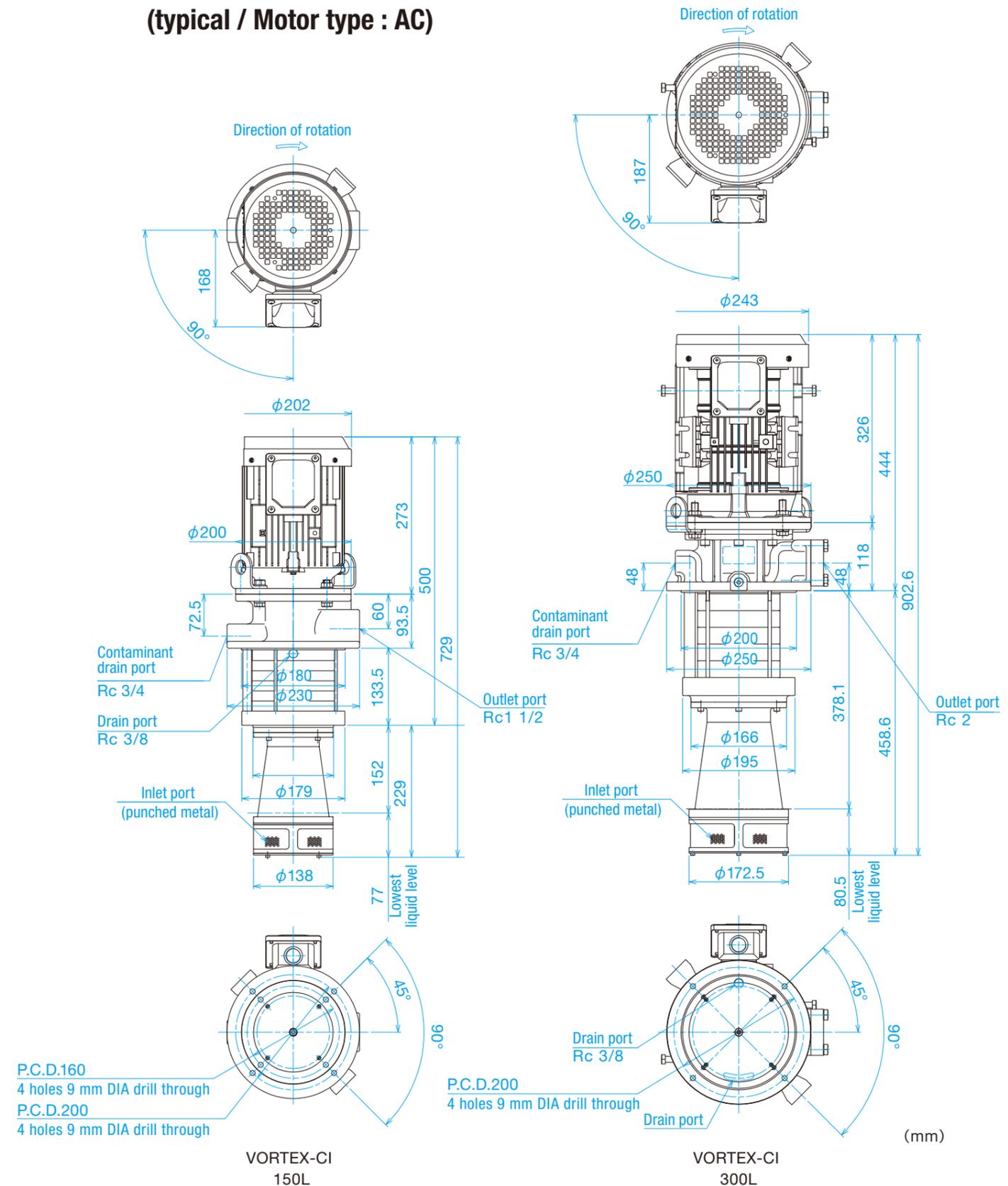
① Motor capacity	1500: 1.5 kW	③ Flow rate*	50 Hz	I155: Impeller pump (5 stages/150ℓ)
	3700: 3.7 kW		60 Hz	I152: Impeller pump (2 stages/150ℓ)
② Motor type	AC: AC 200/200/220/230 V 50/60/60/60 Hz		50 Hz	I305: Impeller pump (5 stages/300ℓ)
	3 phase electric induction motor (IE3) with CE marking		60 Hz	I302: Impeller pump (2 stages/300ℓ)
Filtering method		C: cyclone type		

* I155·I305 are not applicable to 60Hz

Specifications

Model	Item	Motor capacity (kW)	Flow rate (ℓ/min)	Total pump head (m)	Approximate weight (kg)
50Hz	YTH1500AC-I155C	1.5	150	55	43
60Hz	YTH1500AC-I152C			40	
50Hz	YTH3700AC-I305C	3.7	300	55	70
60Hz	YTH3700AC-I302C			40	69

Dimensional Drawing (typical / Motor type : AC)



Drawings in PDF Drawings can be downloaded from the YTH website. <http://coolant-unit.nopgroup.com/en/>

Features of CI

Large flow All-in-one Low-pressure coolant pump

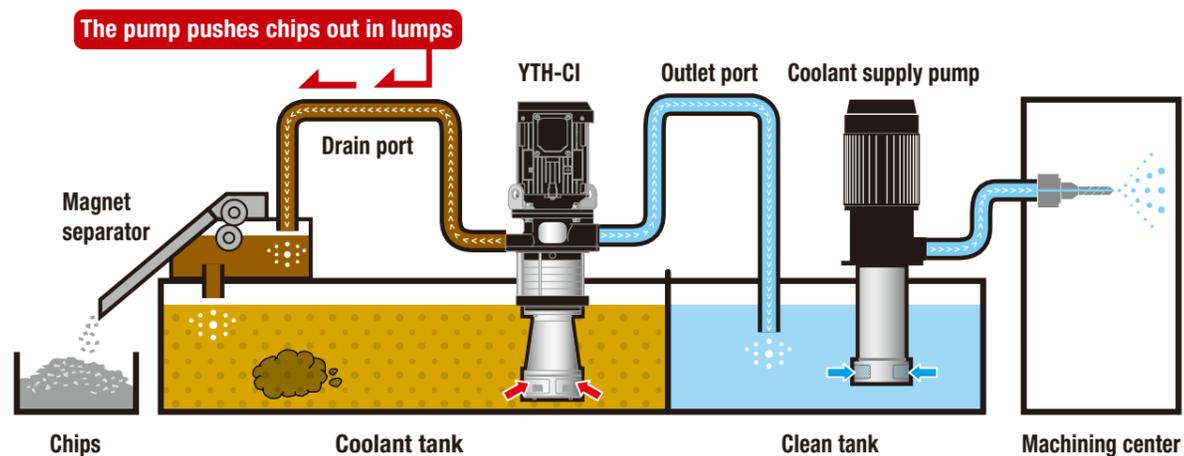
This is a YTH corresponding to large flow and low pressure with cyclone filter. YTH-CI enables operators to be free from troubles and filter maintenance around a coolant tank because of automatic clean-up system by cyclone filter.

- Total pump head: 40~65 m
- Maximum flow rate: CI 15 * C: 150 ℓ /min
CI 30 * C: 300 ℓ /min
- No suction filter is required (continuous operation only)

Applications to various types of coolant tanks

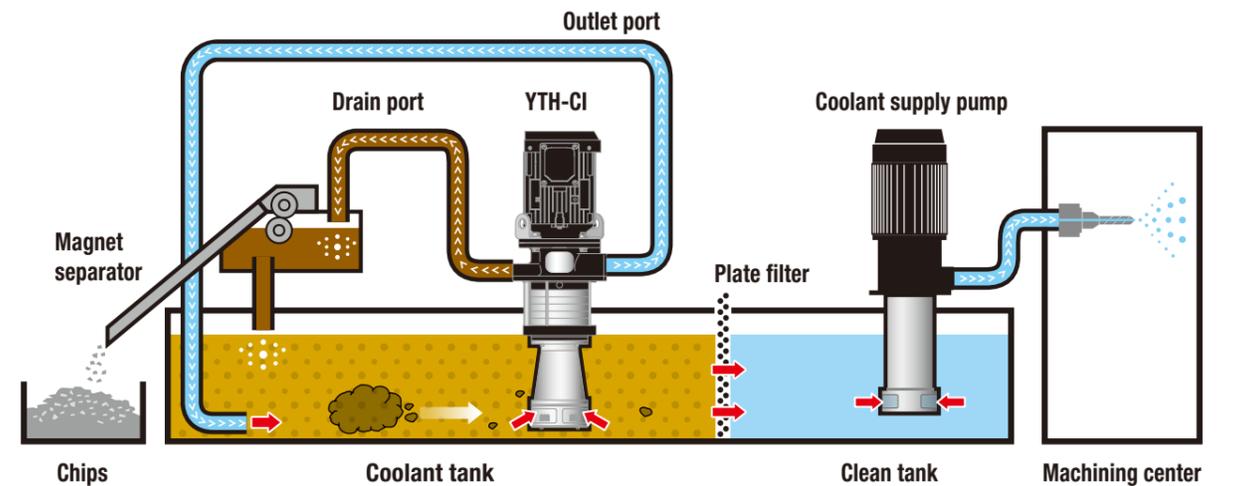
Plan-A Application to coolant tank + isolated clean tank

YTH-CI transfers filtered coolant from a coolant tank to an isolated clean tank. Filtered coolant is supplied to machining centers by High-Medium pressure coolant supply pumps. Chips and contaminants are pushed out from YTH-CI and collected by magnet separator or sedimentation tank.



Plan-B Application to integrated coolant tank and clean tank

YTH-CI can totally clean up a coolant tank by circulation flow. At the same time, YTH-CI also automatically backwash plate strainers between a coolant tank and a clean tank by suction of dirty coolant, which reduces maintenance work for backwash plate dramatically.

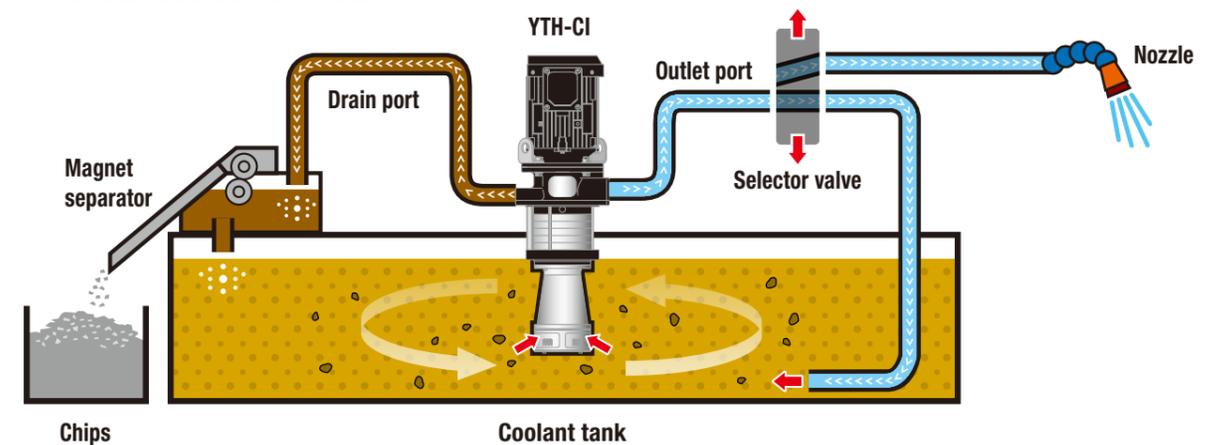


Plan-C Application to single coolant tank (without clean tank)

YTH-CI supplies filtered coolant to nozzles in a machinery tool. When the machinery tool stops metal cutting operation, YTH-CI automatically switches to cleaning of a coolant tank by circulation flow.

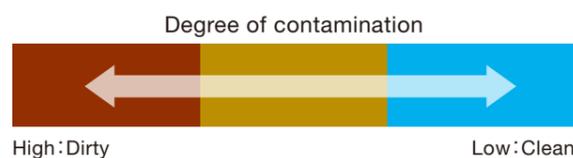
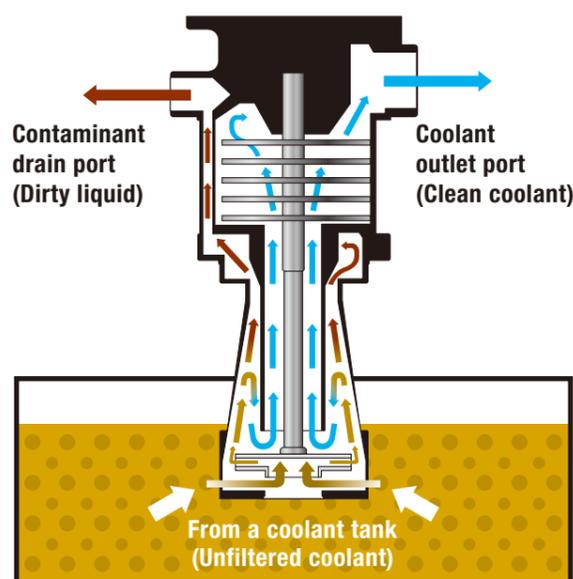
[YTH-CI — the All in one coolant unit]

- Coolant supply: Filtered coolant is supplied to avoid clogging and damages to surface of work piece
- Chips and contaminants collection: Chips and contaminants in a coolant tank is automatically collected to reduce maintenance work dramatically
- Agitation of coolant: Making circulation flow in a coolant tank delays fermentation of coolant, which results in less odor around the coolant tank



Cyclone filter

Unique reversed cyclone system enables to separate clean coolant and contaminants. Contaminants are pushed up through side surface of cyclone filter by centrifugal force and discharged. Clean coolant are collected to center of cyclone filter and boosted up by multiple-stage impellor pump.



Compatible types of chips

Material	Iron	Casting	Aluminum	Copper
Compatibility	Excellent	Excellent	Good	Excellent

※Please contact us for the use of High Silicon Aluminum

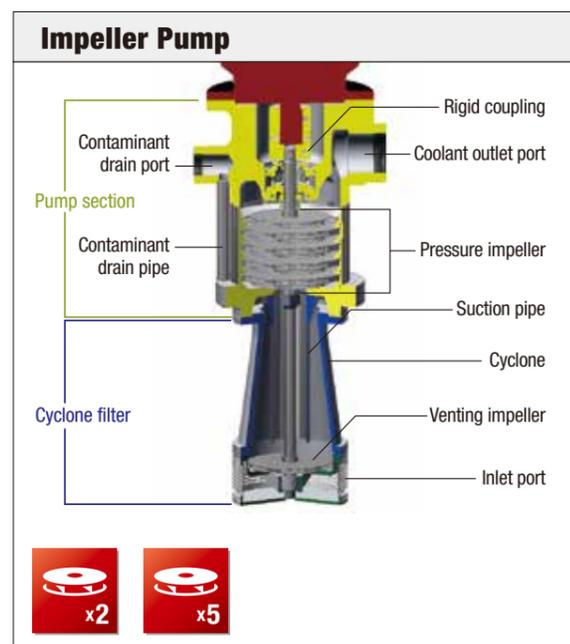
Filtering performance

Suction strainer	3mm (Solids larger than this must be removed in the tank)
Cyclone filter	50μm: 95% (specific gravity 2.7) 100μm: 99% (specific gravity 2.7)

Impeller Pump

Multiple-stage impellers are used for YTH-CI to boost up and supply a large quantity of coolant

- Compatible types of fluid
 - Water-soluble coolant fluid
 - Not for Water-insoluble coolant fluid, lubricant oil or fuel oil
 - Not for clear water, purified water, aqueous solutions and viscous fluids without rust-preventive property, corrosive liquid, solvents, and oils



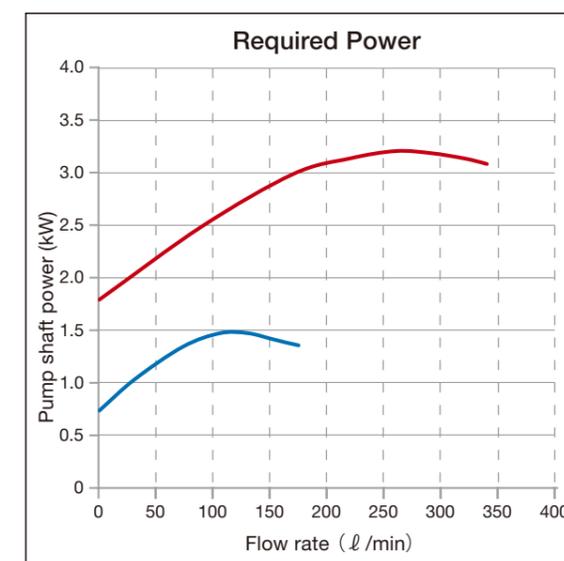
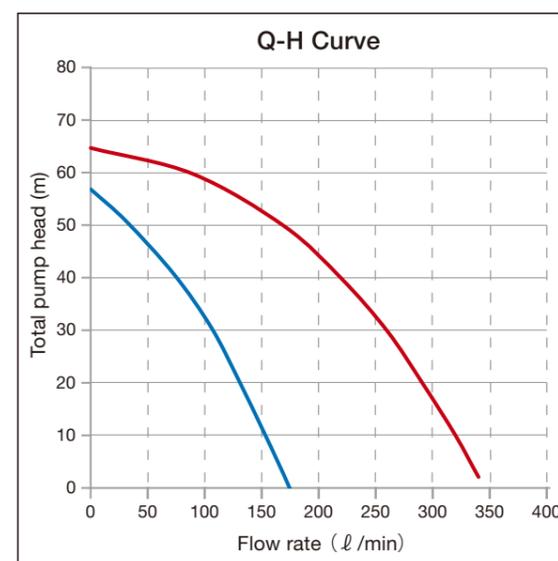
Performance Curves

Water-soluble coolant (general performance)

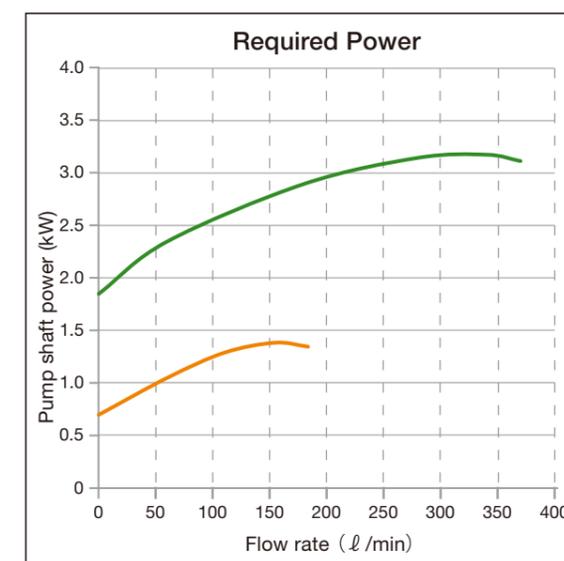
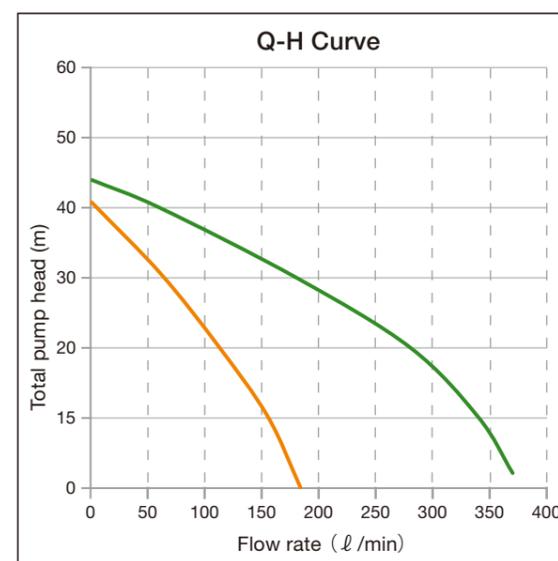
Oil used: JIS K2241, Type A3 solution containing 2% water-soluble cutting fluid

- CI155C
- CI152C
- CI305C
- CI302C

50Hz



60Hz



61%



A Fluid Control System

It Reduces Annual Electric Power Cost by Up to 61%

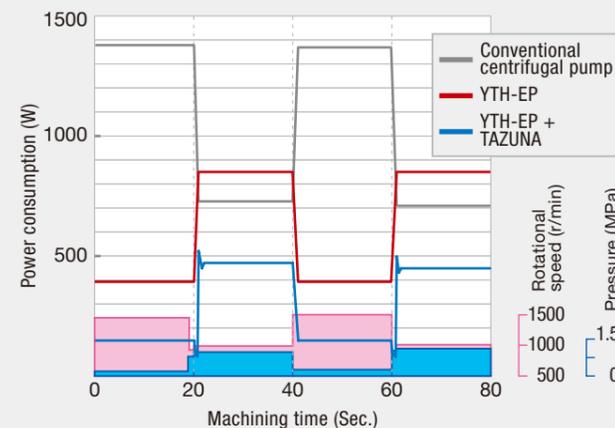
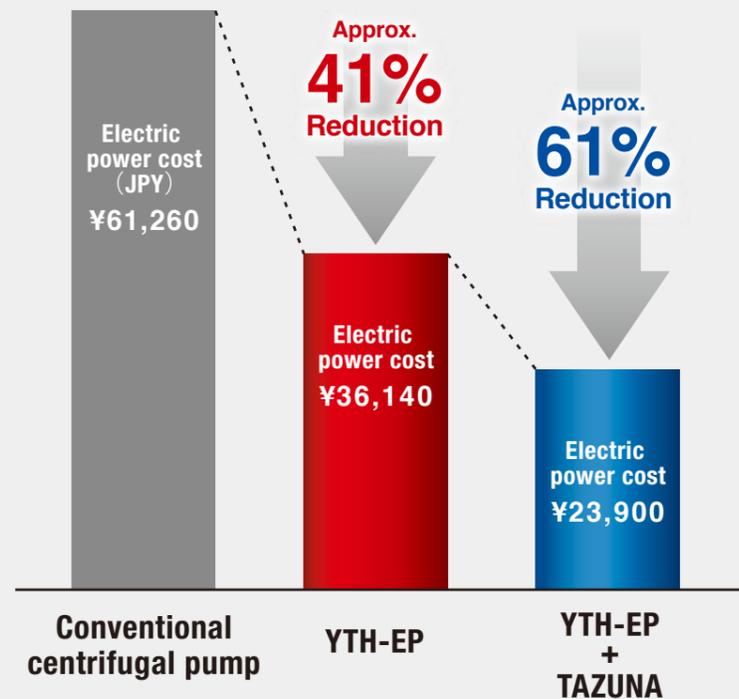
DOWN
YTH + TAZUNA



A Fluid Control System That Reduces Annual Electric Power Cost by Up to 61%

The use of YTH-EP cuts the annual electric power cost by about 41%. Additional savings of about 20% would be achieved, or a total of 61%, through the use of the TAZUNA™ fluid control system. Trimming the production costs is a way to improve your competitiveness. The saving impact will be greater in a plant with a multiple of machining center operating. Reduction in power consumption enables trimming of CO² and is an effective measure against global warming.

Comparison of Annual Electric Power Bills

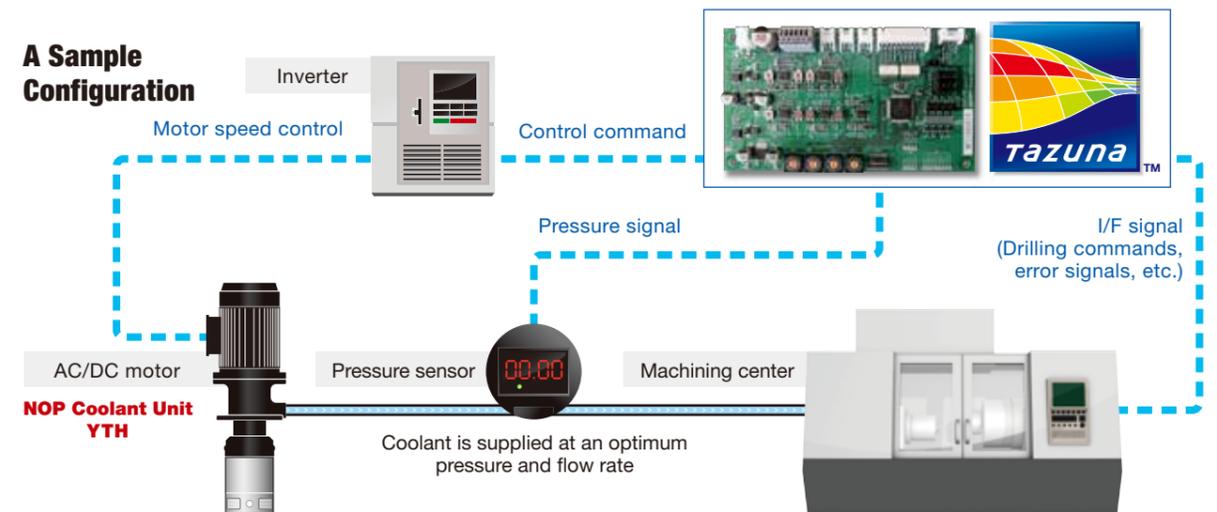


Power Consumption Graph on a Test Operation

- Operating cycle: total 80 seconds cycle
 - Unload (0MPa) 20 sec.
 - Coolant through (1.1 MPa) 20 sec.
 - Unload (0MPa) 20 sec.
 - Coolant through (1.1 MPa) 20 sec.
- The energy-saving effect will vary due to the difference in machining pressures and drill diameters.
- The calculation is based on operation 8 hours/day, 365 days/year, and the electric power billed at ¥20/kWh.

TAZUNA™ Fluid control System (Software)

TAZUNA™ is an automatic fluid control system (software) developed by NOP. The system uses a pressure sensor to identify the drill diameter being used by the machining center. It continuously controls the YTH, adjusting the pressure and flow rate instantaneously according to the drill movement. The absence of unneeded pressure means no extra pressure is wasted through the relief valve. The power consumption is greatly reduced while maintaining machining accuracy.

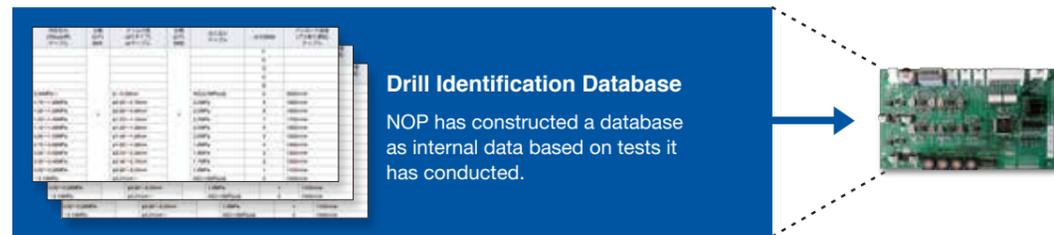


Features of TAZUNA™

- **Additional savings in energy**
TAZUNA adjusts the motor within the YTH pump to an optimum speed for the drill diameter in use to achieve significant energy savings and CO² reduction.
- **Improving machining accuracy**
The system is compatible with any drill diameter. Automatic control of the pressure to an optimum value stabilizes the machining accuracy.
- **No initial settings required**
An automatic drill identification system is pre-installed. The system is ready for use. No initial setting and other cumbersome programming (for different drills) are required on the machining end.
- **Warning function**
Intelligent System alarms user in advance of upcoming Performance deterioration of the pump, so that corrective action can be taken and production-loss can be reduced.
- **Flexibly programmable**
The system may be programmed to suit given specifications, allowing the user to customize the system to accomplish a variety of energy-saving control.
- **Compact and low cost**
The circuit board is a compact and low-cost single card, complete with required interface.

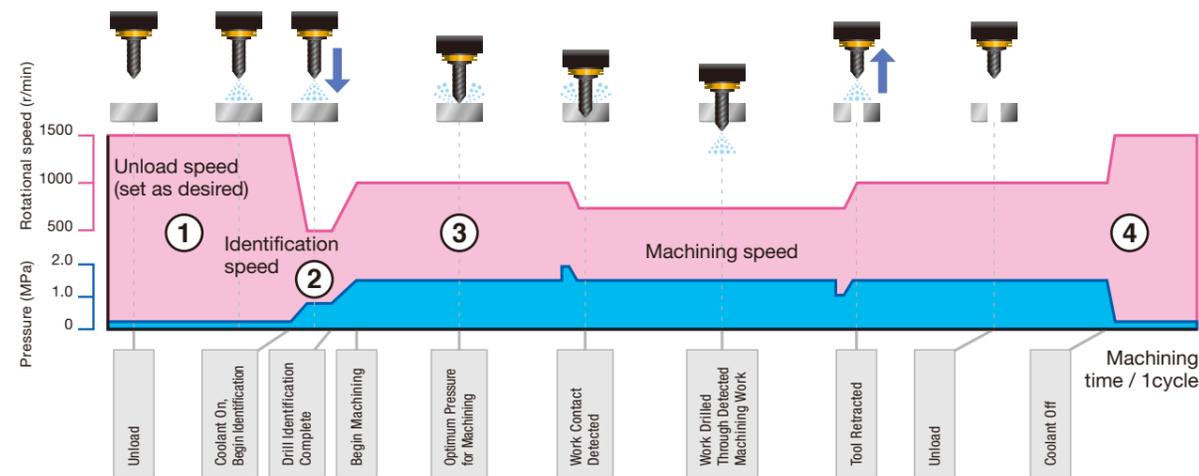
Automatic Drill Identification System

The system senses the pressure to identify the drill hole diameter. It then selects an optimum machining pressure for the hole diameter by reference to its database. The machining pressure may be fine adjusted to suit different work and cutting fluids. The user's own database may also be stored independently.



A Flowchart for the Automatic Drill Identification System

- ① In the unload status (the status other than machining in action), the system runs at the designated speed in the chip removal mode.
- ② Following a coolant on input, the speed changes to the drill-identification speed, and identifies the drill hole diameter.
- ③ The system controls the rotational speed so as to give an optimum machining pressure and flow rate for the drill-hole diameter as identified. (The system continuously controls the rotational speed to give an optimum machining pressure and flow rate during the machining of work.)
- ④ On completion of the drilling, the system returns to the unload status.



A Sample Installation

The system may be customized to suite the user.

Control for a constant pressure and flow rate	The pressure and flow rate are controlled at a constant value regardless of the fluid temperature and deterioration by feeding back the pressure and flow rate signals.
Servo quantitative control	The rotational angle and displacement are sensed for quantitative position control by feeding back the potentiometer signals.
Electro-magnetic proportional control valve	An analog output is linked to an electro-magnetic proportional valve for control of the pressure at an optimum value.

Specifications for the Control Circuit Board

The board is equipped with assorted I/F, enabling control other than the automatic drill identification system.

Item		Specifications	
General specifications	Ambient temperature	-10~40°C (when operating), -20~60°C (in storage)	
	Ambient humidity	10~85% (when operating), 10~90% (in storage) no condensation	
	Installed location	Indoors (free of corrosive gas or dust)	
	Input power	DC 24V±10%	
	Power consumption	10W	
	External dimensions	140mm (5.5") W x 80mm (3.15") D x 20mm (0.8") H	
Input specifications	Digital	Number of input ports	8 ports
		Input signal type	DC voltage-free contact input On sync input: NPN open-collector transistor On source input: PNP open-collector transistor (Sink input/Source input are selectable at a jumper pin.)
		Input operation indicator	An LED (red) is lit when input is on.
	Analog	Number of input ports	2 ports
		Input range	DC 0~10V, DC 4~20mA
		Resolution	16µA (in 1024 steps)
		Input operation indicator	An LED (red) is lit when analog input is on.
	SW	Number of input ports	2-position switching: 8 ports (Rotary DIP switch, 8-poles, on-off)
			16-position switching: 4 ports (DIP switch, 16-position)
Output specifications	Digital	Number of transistor output ports	4 ports (with independent common)
		Maximum load	Maximum load voltage DC 300V, resistive load, maximum 0.15A (per output port)
		Output operation indicator	An LED (red) is lit when output is on.
	Analog	Maximum response time	85µs
		Number of output ports	2 ports
		Output range	DC 4~20mA
CPU specifications	Resolution	16µA (in 1024 steps)	
	Processor	DSPIC33FJ128MC710A	
	Number of bits	16-bit	
	Memory	RAM: 16KB ROM: 128KB	
	Speed	40MIPS*	
Non-volatile memory	Cache	2KB DMA memory	
	EEPROM	8KB	
Operation indicator specifications		On normal operation: RUN LED (green) is lit. On error: FAIL LED (red) is lit.	

* MIPS is an abbreviation for "Million Instructions Per Second", which is one of the indicators of a computer's processor speed.



EP

High pressure

- Turbulence™ filter
- Plunger pump: 7.0MPa, 6.0MPa, 3.5MPa, 3.0MPa
- Compatible with the TAZUNA™ fluid control system (software)



ET·ES

Medium pressure

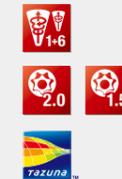
- Turbulence™ filter
- Trochoid™ pump: 2.0MPa, 1.5MPa
- Compatible with the TAZUNA™ fluid control system (software)



CT

Medium pressure Basic Model

- Double-cyclone filter
- Trochoid™ pump: 2.0MPa, 1.5MPa
- Compatible with the TAZUNA™ fluid control system (software)



CI

Low pressure Large flow

- Cyclone filter
- Impeller pump: 40~65m(Total pump head)



Series name	E Series EP (Specification: Turbulence™ filter + Plunger pump)				E Series ET·ES (Specification: Turbulence™ filter + Trochoid™ pump)			
Specifications for pump proper								
Pump model	P008 50Hz / 60Hz	P010 50Hz / 60Hz	P014 50Hz / 60Hz	P016 50Hz / 60Hz	T208 50Hz / 60Hz	T216 50Hz / 60Hz	S208 50Hz / 60Hz	S216 50Hz / 60Hz
Flow rate (ℓ/min)	12.0 / 14.4	15.0 / 18.0	21.0 / 25.2	24.0 / 28.8	12.0 / 14.4	24.0 / 28.8	12.0 / 14.4	24.0 / 28.8
Compatible fluid	Water-soluble coolant fluid				Water-soluble coolant fluid / Water-insoluble coolant fluid			
Maximum allowable viscosity (mm ² /s) (Filtration performance)	15 (20μm)				15 (20μm), 32 (50μm)			
Liquid temperature range (°C)	-5~60							
Rotational speed (r/min)	1500 / 1800							
Maximum pressure (MPa)	7.0 / 7.0	7.0 / 6.0	7.0 / 7.0	3.5/3.0(2.2kW) 7.0/6.0(3.7kW)	2.0 / 2.0	2.0 / 2.0	1.5 / 1.5	2.0 / 2.0
Total pump head (m)	—							
Filter type	Wire screen filter							
Filtration performance	20μm				20μm / 50μm			
Contaminant drain port flow rate (ℓ /min)	30~40 (Pressure 0.02MPa)							
Remarks	Install a plate filter of #18 or finer mesh on the suction end of the tank.							
Painted color of the pump section	Flat black (Approximately Munsell N1.0)							
Approximate weight (kg)	20				16			
Relief valve specifications								
Type	External return type							
Relief pressure setting (MPa)	7.0, 7.0	7.0, 6.0	7.0, 7.0	3.5,3.0(2.2kW) 7.0,6.0(3.7kW)	2.0, 1.5	2.0, 1.5	1.5, 1.5	2.0, 1.5

Motor specifications ※1							
Model No.	2200A3	3700A3	2200A3, 3700A3	750A3	1500A3	750A3	1500A3
Specifications	3-phase, squirrel-cage induction motor, totally enclosed, external fan, flange-mounting configuration						
Output (kW)	2.2	3.7	2.2, 3.7	0.75	1.5	0.75	1.5
Voltage (V)	200/200/220/230	200/200/220/230	200/200/220/230	200/200/220/230	200/200/220/230	200/200/220/230	200/200/220/230
Frequency (Hz)	50/60/60/60	50/60/60/60	50/60/60/60	50/60/60/60	50/60/60/60	50/60/60/60	50/60/60/60
Rotational speed (r/min)	1460/1755/1765/1770	1460/1755/1765/1765	1460/1755/1765/1770 1460/1755/1765/1765	1440/1730/1745/1745	1445/1740/1750/1755	1440/1730/1745/1745	1445/1740/1750/1755
Rating	S1						
Current (A)	10.6/9.40/9.20/9.20	15.6/14.6/13.8/13.6	10.6/9.40/9.20/9.20 15.6/14.6/13.8/13.6	3.80/3.40/3.40/3.40	6.80/6.40/6.00/6.00	3.80/3.40/3.40/3.40	6.80/6.40/6.00/6.00
Number of phases	3						
Number of poles	4P						
Insulation class	F						
Approximate weight (kg)	33	42	33, 42	18	23	18	23
Protection rating	IP55						
Efficiency class	IE3						
Compliance CE	○						

※1 Please contact us if you need more information about motor specifications.

Series name	C Series CT (Specification: Double cyclone filter + Trochoid™ pump)		C Series CI (Specification: Cyclone filter + Impeller pump)			
Specifications for pump proper						
Pump model	T208 50Hz / 60Hz	T216 50Hz / 60Hz	I155	I152	I305	I302
Flow rate (ℓ/min)	12.0 / 14.4	24.0 / 28.8	150 (Maximum)		300 (Maximum)	
Compatible fluid	Water-soluble coolant fluid					
Maximum allowable viscosity (mm ² /s) (Filtration performance)	22		2			
Liquid temperature range (°C)	-5~60					
Rotational speed (r/min)	1500 / 1800		3000	3600	3000	3600
Maximum pressure (MPa)	2.0		—			
Total pump head (m)	—		55	40	65	45
Filter type	Cyclone x 2 stages		Cyclone x 1 stage			
Filtration performance	100μm: 99.9%, 50μm: 95% (Silica sand: specific gravity 2.7)					
Contaminant drain port flow rate (ℓ /min)	30~40 (Pressure 0.02MPa)		20~35 (Pressure 0.02MPa)	25~40 (Pressure 0.02MPa)	45~60 (Pressure 0.02MPa)	50~70 (Pressure 0.02MPa)
Remarks	Install a plate filter of #18 or finer mesh on the suction end of the tank.					
Painted color of the pump section	Flat black (Approximately Munsell N1.0)					
Approximate weight (kg)	16		23	34	33	33
Relief valve specifications						
Type	External return type					
Relief pressure setting (MPa)	2.0, 1.5		—			

Motor specifications ※1				
Model No.	750A3	1500A3	1500AC	3700AC
Specifications	3-phase, squirrel-cage induction motor, totally enclosed, external fan, flange-mounting configuration			
Output (kW)	0.75	1.5	1.5	3.7
Voltage (V)	200/200/220/230	200/200/220/230	200/200/220/230	200/200/220/230
Frequency (Hz)	50/60/60/60	50/60/60/60	50/60/60/60	50/60/60/60
Rotational speed (r/min)	1440/1730/1745/1745	1445/1740/1750/1755	2890/3460/3485/3495	2910/3490/3515/3525
Rating	S1			
Current (A)	3.80/3.40/3.40/3.40	6.80/6.40/6.00/6.00	6.00/5.80/5.40/5.20	13.6/13.2/12.2/11.8
Number of phases	3			
Number of poles	4P		2P	
Insulation class	F			
Approximate weight (kg)	18	23	20	36
Protection rating	IP55			
Efficiency class	IE3			
Compliance CE	○			

※1 Please contact us if you need more information about motor specifications.