2026V04

Product Selection Guide

HydroLync

Executive Summary

HydroLync is dedicated to providing customers with the best solutions in fluid flow control and fluid thermal management engineering consulting for the hydraulics industry. With a global outlook, we strengthen our sourcing network through partnerships with multinational companies, ensuring reliable supply and delivery of high-quality products. We also work closely with the largest domestic forwarding company to further enhance our global sourcing capabilities. We firmly believe that HydroLync can build a more robust company through the combined efforts of our exceptional talent and partner companies, and we prioritize innovation, diversity, and sustainability to ensure engineering excellence. To assist our customers in selecting the right products, we have created the HydroLync product selection guide. We are committed to growing and developing with our customers, and always strive to exceed their expectations.

Engineering Excellence!

Contents

About Us

HydroLync traces its roots back to Korea High Pressure Cylinder Co., Ltd., which produced the first high-pressure cylinders in Korea in 1976. After going through Hyundai Hydraulics Precision and Hyundai Olaer, HydroLync was established as a new company. In 2012, Parker Hannifin completed the acquisition of Olaer, and HydroLync was reborn under a new name in 2018. Building on the advanced technology inherited from Olaer during the Hyundai Olaer era, HydroLync continues to strive for excellent product supply and technological innovation, with key players who helped establish Olaer in the Korean market at the core of the company. HydroLync is committed to maintaining its efforts towards "Engineering Excellence!" and recognizes the technical excellence of its employees, striving to showcase their capabilities and expertise on the global stage.

About Executives

Over the past years, HydroLync has experienced rapid growth thanks to the executives who possess over 25 years of accumulated experience and expertise in their respective fields. Their experience in localizing accumulators and air oil coolers, which were previously imported, has become a valuable asset and competitive advantage. With these executives, HydroLync will continue to grow, innovate, and lead the market.

Global Sourcing

HydroLync supplies high-quality products through a global sourcing network.

Research & Development

Research and development is one of HydroLync's critical tasks for the future industry, and we spare no time or investment in R&D to secure the core technologies of the future.

Rocket Delivery

HydroLync's competitive advantage includes timely delivery. Quick delivery for standard products is made possible through teamwork and an efficient management system.

Executives

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Accumulators

Bladder Accumulators

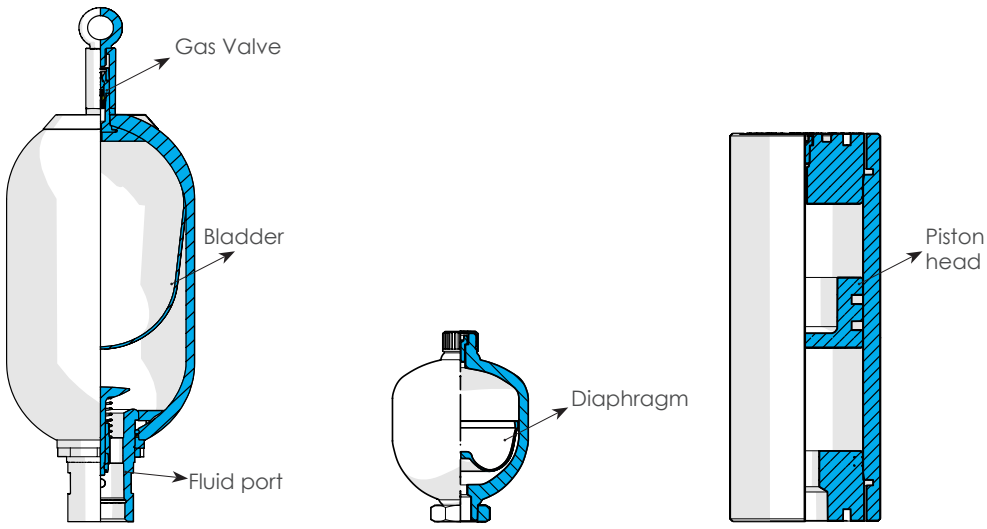
Diaphragm Accumulators

Piston Accumulators

What is an Accumulator?

Accumulators, also known as hydraulic accumulators, are devices that store energy to absorb pressure surges or shock pressures to protect hydraulic equipment or to supply momentary hydraulic pressure to the hydraulic device without the operation of the hydraulic pump. Depending on the configuration purpose of the hydraulic system, accumulators are an essential device that is widely used. Typically, accumulators are classified into bladder-type accumulators, diaphragm-type accumulators, and piston-type accumulators based on their design.

Types and structures of accumulators



Bladder accumulator　　Diaphragm accumulator　　Piston accumulator

An accumulator is typically made up of a separation element between the compressible gas part and the operating fluid. In a bladder accumulator, a flexible and elastic rubber bladder performs the separation function, and the material of the bladder is also determined by the type of operating fluid. Similarly, in a diaphragm accumulator, a flexible and elastic rubber diaphragm performs the separation function, and the material is also determined by the type of operating fluid. A piston accumulator is a product that moves freely inside the shell, and the piston performs the separation function. The material used for sealing the piston is important, and the material of the sealing is selected according to the type of use.

Bladder accumulators are widely used in general industrial hydraulic systems, and diaphragm bladders are used in small-capacity hydraulic systems, especially in mobile systems. Piston accumulators have no capacity limitations and are mainly applied to systems that require high discharge rates and high-speed operation.

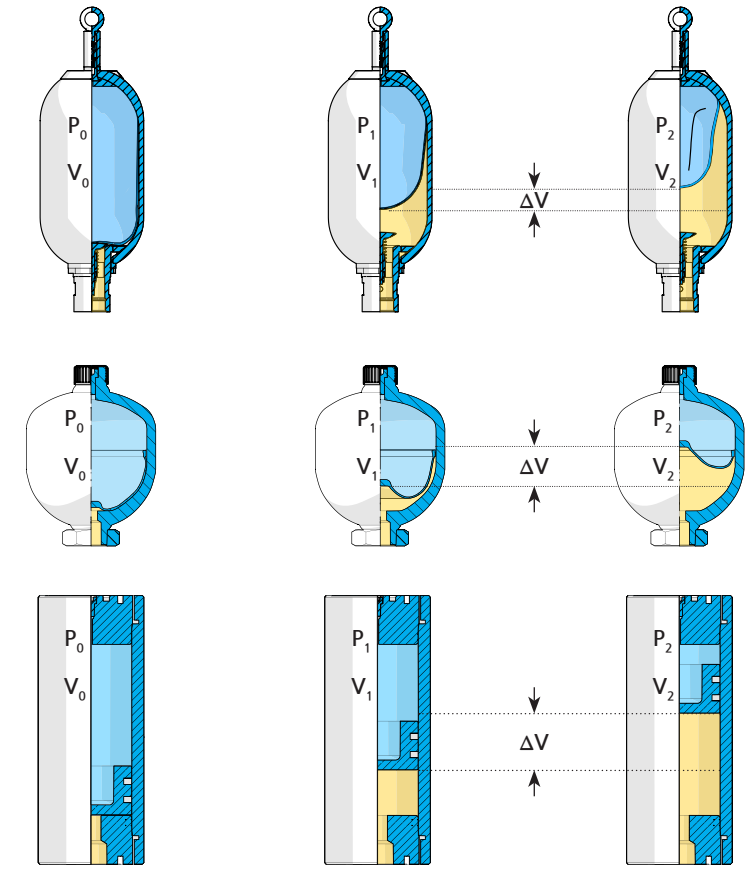
Operating principle of accumulator

As we've already seen in the definition and structure of accumulators, they can absorb, store, and release pressure between the compressible gas charge and the operating fluid pressure. Let's take a closer look at the basic operating principles of bladder, diaphragm, and piston accumulators. Prior to applying accumulators to a hydraulic system, they must be charged with nitrogen to meet the specified pre-charge condition. Although bladder, diaphragm, and piston accumulators all require pre-charging, the pre-charge conditions for each type are different as follows:

Bladder-type: $P_2/4 \leq P_0 \leq k \times P_1$　　* k: energy storage 80~90%

Diaphragm-type: $P_2/4 \leq P_0 \leq k \times P_1$　　absorbing pressure fluctuations 60~65%

Piston-type: $P_2/10 \leq P_0 \leq k \times P_1$　　absorbing shock 60~65%



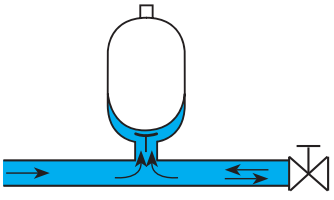
Pre-charge state **Min. Operating state** **Max. Operating state**

P_0	N_2 Pre-charge pressure
P_1	Minimum operating pressure
P_2	Maximum operating pressure
V_0	Pre-charge N_2 capacity
V_1	N_2 capacity at minimum operating pressure
V_2	N_2 capacity at maximum operating pressure
ΔV	V_1-V_2 Amount of stored or operating fluid

Applications

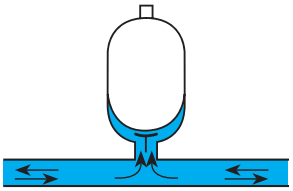
1. Shock Dampening

When valves are quickly opened and closed, hydraulic shock waves can occur in the hydraulic system. Such shocks can cause noise, damage to system components, and early failure of hoses, fittings, and other components. Using a compressor in such situations can remove shocks from the hydraulic system and protect the hydraulic system safely.



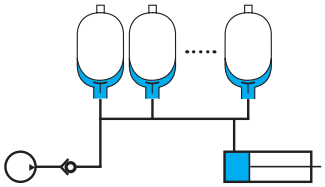
2. Pulsation Dampening

An accumulator can alleviate the shock and pulsation caused by the pump, protect the hydraulic system from static and vibration, and can also be used to eliminate noise.



3. Energy Storage

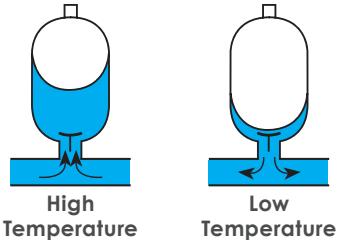
An accumulator stores some of the fluid discharged from the hydraulic pump, and when the actuator requires a flow rate that exceeds the intermittent pump discharge capacity, the fluid can be immediately discharged. Using this principle, the size of the pump in the hydraulic system can be reduced, and heat exchangers or electrical capacity applied to the system can be reduced, resulting in energy savings of more than 20%.



4. Volume Compensation

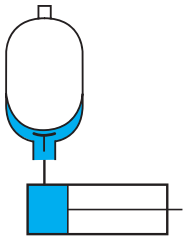
Temperature Compensation

In a closed hydraulic system, the volume of the fluid contracts as the system temperature decreases and expands as it increases. If this expansion of fluid volume is large enough, it can damage the system components. In such cases, using an accumulator can absorb the volume of fluid expansion and protect the system.



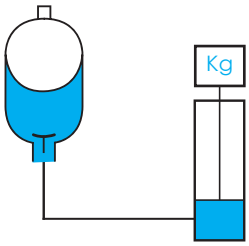
Leakage Compensation

An accumulator can also be used to replenish lost fluid due to leakage, low temperature, and other changes in fluid volume in a hydraulic system. This allows for the maintenance of a consistent system pressure.



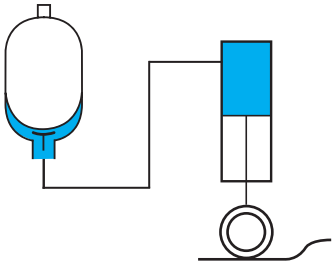
5. Counter Balance

As the weight increases, the accumulator absorbs the additional load, causing the gas volume to compress and balance out with the weight of the heavy item.



6. Shock Absorption

When a car runs over bumps or gaps, an accumulator absorbs the shocks that are passed from the wheel to the vehicle body.



Fluid and Material Compatibility

The compatibility of the fluid and the bladder material in an accumulator has a significant impact on the product's performance. The following information can serve as a reference for selecting the appropriate material based on the type of fluid.

Compatibility rating	Classification
1	Excellent
2	Good
3	Not good
4	Bad

Compound	Mineral oil	Unleaded gasoline	Glycol mixed water	Phosphate ester
N28	2	3	2	4
N33	1	3	2	4
N40	1	2	2	4
NH1	1	2	2	4
ECO	1	2	2	4
EP1	4	4	1	1
IIR	4	4	1	2
FKM	1	1	1	4

HBA Series

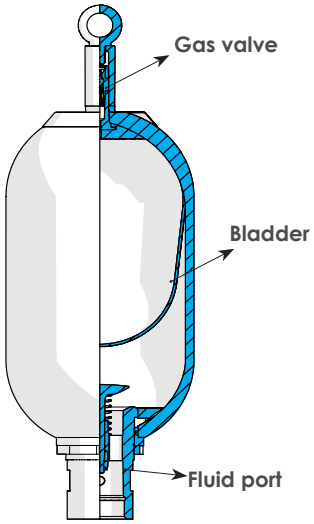
Bladder Accumulators

Features

Permanent Gauge

- Applied world-renowned bladder
- Applied patent registered HydroLync's gas valve
- 'Ready-to-use' design for permanent gauge
- Applied eyebolt cap with improved ease of handle

Quick Overview



HydroLync HBA - HydroLync bladder type accumulator - is designed for high-pressure hydraulic systems. Using nitrogen as the compression medium, HBA provides an efficient and stable solution for storing energy or absorbing pulsations in piping lines. The HBA series consists of a fluid section and a bladder separation element made of special rubber material.

The fluid section works by applying pressure to the bladder of the accumulator connected to the hydraulic circuit as the pressure in the hydraulic circuit increases. The nitrogen-charged bladder contracts, and when the pressure in the circuit decreases, the contracted nitrogen expands and discharges the stored energy through the fluid into the circuit. This principle helps to absorb the energy generated in the circuit and to protect the safety of the components, enabling stable operation of the circuit.

The HBA series comes with a fluid port and a gas valve as standard, and SAE fluid port and flow control options are also available.

HydroLync goes through a strict quality testing process to ensure stable quality and performance of the bladder, and provides products that are suitable for customer's operating conditions.

The table below shows the types of bladder compounds that are determined based on the customer's hydraulic system environment.

Compound	Name	Features
N28	Low ACN content nitrile	Low temperature
N33	Medium ACN content nitrile	Standard material
N40	High ACN content nitrile	Gasoline (excluding leaded) and high temperature
NH1	HNBR	Superior performance to NBR at extreme high and low temperatures.
ECO	Hydrin	Standard Hydrin
EP1	EPDM	Phosphate ester media
IIR	Butyl	Standard Butyl
FKM	VITON ®	Dupont de Nemours standard Fluorocarbon

The gas valve and permanent gauge developed through HydroLync's research effectively address the chronic problem of nitrogen gas leakage. In addition, their compatibility with the permanent gauge maximizes user convenience.

Ordering Code

Example: HB A [ ] 10 - 330 - TF - STS - B05 - GL

1 2 3 4 5 6 7, 8 9

1	Type Code
Code	**Types**
A	Bottom repairable type (Standard)
AS	Stainless type (Contact sales team)
TA	Top repairable type (Contact sales team)
HFA	High flow type (Contact sales team)

2	Material for bladder	
Code	**Material**	**Temp. Range**
	NBR - Nitrile (standard)	-20~90 °C
ECO	Hydrin	-32~115 °C
N28	Nitrile for low temp.	-28~80 °C
N40	Nitrile for high temp.	-5~105 °C
NH1	For extreme conditions	-45~130 °C
EP1	EPDM	-40~120 °C
IIR	Butyl	-15~120 °C
FKM	VITON	-10~140 °C

3	Volume
Code	**Volume**
1	1 Liter / 0.25 Gallon
2.5	2.5 Liter / 0.7 Gallon
4	4 Liter / 1 Gallon
6	6 Liter / 1.5 Gallon
10	10 Liter / 2.5 Gallon
20	20 Liter / 5 Gallon
24.5	24.5 Liter / 6.5 Gallon
32	32 Liter / 10 Gallon
42	42 Liter / 11 Gallon
50	50 Liter /14 Gallon
57	57 Liter / 15 Gallon
80	80 Liter / 21 Gallon
125	125 Liter / 33 Gallon
160	160 Liter /42 Gallon

4	Pressure
Code	**Pressure**
350	1L ~ 6L 350 bar (Standard)
330	10L ~ 57L 330 bar (Standard)
315	80L ~ 160L 315 bar (Standard)

5	Shell coating
Code	**Coating**
	Standard for mineral oil
TF	Teflon for water
Other	Contact sales team for special coating

6	Material for Shell and Fluid Port
Code	**Material**
	34CrMo4(Shell); Carbon Steel (Standard)
STS	Stainless Steel 304
Other	Contact sales team

*** The stainless steel shell is determined according to the customer's request.**

7	Bushing			
Volume	**Code**	**Line Connection**		**Port Connection**
1~6L	**B02**	PT	3/4"	G1 1/4"
	B03		1"	G1 1/4"
	B14		1/2"	G1 1/4"
	B08	PF(G)	3/4"	G1 1/4"
	B09		1"	G1 1/4"
10~57L	**B04**	PT	1/2"	G2"
	B05		3/4"	G2"
	B06		1"	G2"
	B07		1 1/4"	G2"
	B15		1 1/2"	G2"
	B10	PF(G)	1/2"	G2"
	B11		3/4"	G2"
	B12		1"	G2"
	B13		1 1/4"	G2"
	B19		1 1/2"	G2"

8	Flange			
Vol.	**Type**	**Code**	**Inner. Dia.**	**Port**
1~6L	110x110	**R4**	29	G1 1/4"
10~57L	110x110	**R10**	35	G2"
	3000psi	**S34**	34	G2"
	3000psi	**S35**	43	G2"
	6000psi	**S64**	34	G2"
	6000psi	**S65**	43	G2"

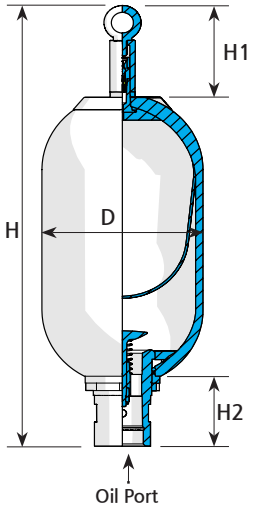
*** Material: Carbon steel(Standard), STS 316**

9	Certification
Code	
	No certificate (Standard)
	ASME, ABS, CE, KR GL NK, DNV, BV, LR
	Contact sales team

Notice:

The required pre-charge pressure for gas filling must be specified separately when placing an order.

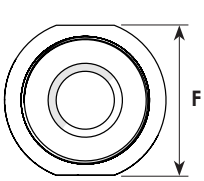
Dimensions

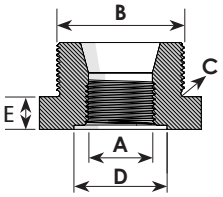


Volume (L)	Pressure (bar)	STEM	øD	Oil Port	H (±12.5)	H1 (±2)	H2 (±3)	Weight	Max. Flow rate (L/sec)
1	350	External: Ø7/8"-14UNF 1A Internal: Ø1/2"-20UNF 2B	114	G1 1/4	345.5	78	65.5	5	7.95
2.5	350		114	G1 1/4	554.5	78	65.5	10	7.95
4	350		168	G1 1/4	430.7	78	65.5	14	7.95
6	350		168	G1 1/4	563.0	78	65.5	20	7.95
10	330		219	G2	644.7	135	102.2	39	18
20	330		219	G2	947.7	135	102.2	58	18
24.5	330		219	G2	1,084.7	135	102.2	74	18
32	330		219	G2	1,472.7	135	102.2	92	18
42	330		219	G2	1,612.7	135	102.2	114	18
50	330		219	G2	1,987.7	135	102.2	124	18
57	330		219	G2	2,067.7	135	102.2	150	18

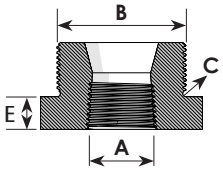
*** Please contact the sales manager or distributor for the 80, 125, and 160-liter models.**

Bushing

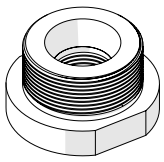


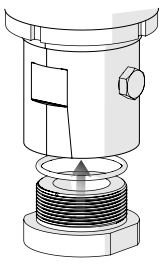


PF



PT

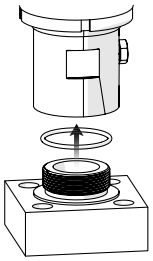


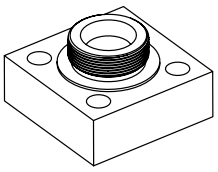


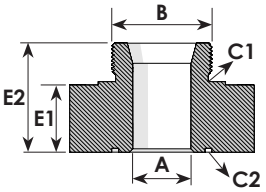
Volume	Code		A	B	C	D	E	F
1~6L	B02	PT	3/4"	G1 1/4"	Ø36.2x3.0	-	15	46
	B03		1"	G1 1/4"	Ø36.2x3.0	-	15	46
	B14		1/2"	G1 1/4"	Ø36.2x3.0	-	15	46
	B08	PF(G)	3/4"	G1 1/4"	Ø36.2x3.0	35	15	46
	B09		1"	G1 1/4"	Ø36.2x3.0	44	28	46
10~57L	B04	PT	1/2"	G2"	G55	-	15	70
	B05		3/4"	G2"	G55	-	15	70
	B06		1"	G2"	G55	-	15	70
	B07		1 1/4"	G2"	G55	-	15	70
	B15		1 1/2"	G2"	G55	-	15	70
	B10	PF(G)	1/2"	G2"	G55	28	15	70
	B11		3/4"	G2"	G55	34	15	70
	B12		1"	G2"	G55	42	15	70
	B13		1 1/4"	G2"	G55	47	15	70
	B19		1 1/2"	G2"	G55	51	15	70

*** A 1L fluid port only uses a 3/4" plug.**

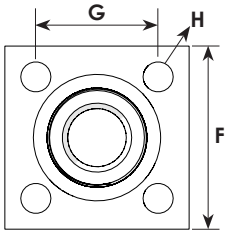
Flange







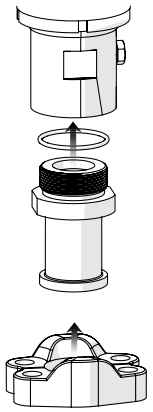
Standard

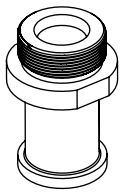


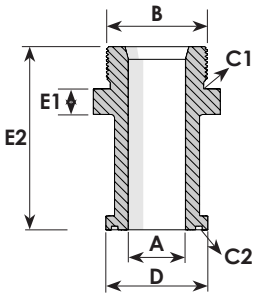
Standard

Volume	Type	Code	A	B	C1	C2	D	E1	E2	F	G	H
1~6L	110x110	R4	29	G1 1/4"	G55	G55	-	40	64	110	73	Ø18
10~57L	110x110	R10	35	G2"	G55	G55	-	40	64	110	73	Ø18

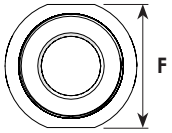
*** For other options, please inquire with the sales manager or distribution company.**







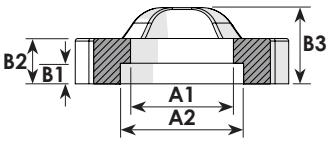
SAE

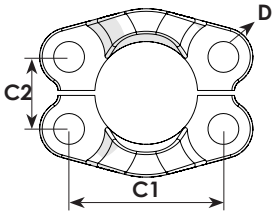


SAE

Volume	Type	Code	A	B	C1	C2	D	E1	E2	F	G	H
10~57L	3000psi	S34	34	G2"	G55	G55	60.3	15	104	70	-	-
	3000psi	S35	43	G2"	G55	P55	71.4	15	105.5	70	-	-
	6000psi	S64	34	G2"	G55	G55	63.5	15	108.5	70	-	-
	6000psi	S65	43	G2"	G55	P55	79.4	15	108.5	70	-	-

*** For other options, please inquire with the sales manager or distribution company.**





Type			A1	A2	B1	B2	B3	C1	C2	D
3000psi	40A	1 1/2"	50.8	61.1	7.5	16	25	69.85	35.72	Ø11.8
3000psi	50A	2"	62.75	72.25	9	16	26	77.77	42.88	Ø13.3
6000psi	40A	1 1/2"	51.6	64.3	12.1	30	43	79.38	36.52	Ø17
6000psi	50A	2"	67.6	80.2	12.1	37	52	96.82	44.46	Ø21

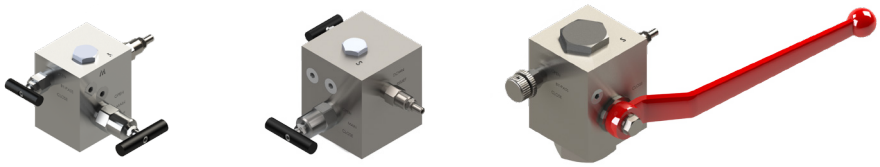
*** For other options, please inquire with the sales manager or distribution company.**

Part name


Protection Cap
Gas Valve
Stem Nut
Name Plate
Shell
Bladder
Anti-extrusion Ring
O-Ring
Backup Ring
Fluid Port
Spacer
Lock nut

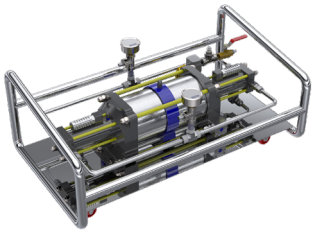
Accessories

Safety blocks



Installation parts

N_2 charging booster



N_2 charging kit

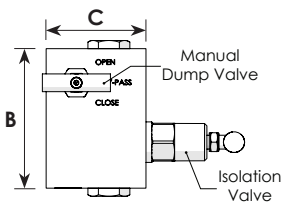
Bladder kit

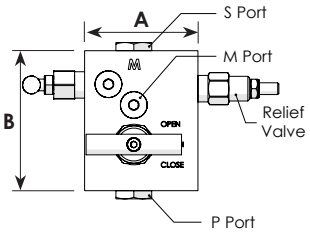
Features

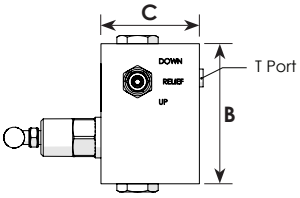
Gas Charging Kit

- **Accessories are essential products for maintenance.**
- **All accessories incorporate HydroLync's technology and know-how.**
- **Ease of use will be increased by using accessories.**

Safety and Shut-off block

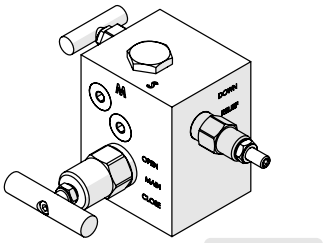






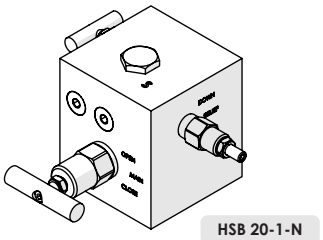
Model	S Port Accumulator	P Port Process	T Port Tank	M Port Gauge	A	B	C
HSB 12-1-N	G 1/2"	G 1/2"	G 1/4"	G 1/4"	76	94	66
HSB 20-1-N	G 3/4"	G 3/4"	G 1/4"	G 1/4"	89	100	89
HSB 32-1-N	G1 1/4"	G1 1/4"	G 1/4"	G 1/4"	88	115	88

Specification

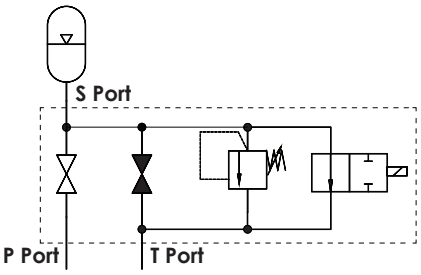


HSB 12-1-N

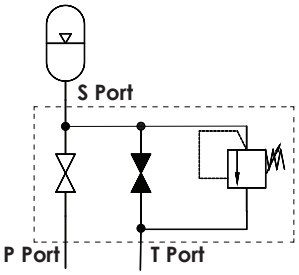
- **Max. Working pressure:** 350 bar
- **Material:** Carbon Steel
- **Seal:** NBR (standard), VITON (option)
- **Working range:** Solenoid -10 ~ 60 °C / Manual -10 ~ 80 °C
  DC 24V / AC 110, 220V
- **Connection:** G threads (BSP) to BS2779 1986
- **Others:** Pressure relief valve for protection
  Manual tank dump valve (standard)
  Solenoid tank dump valve (option)



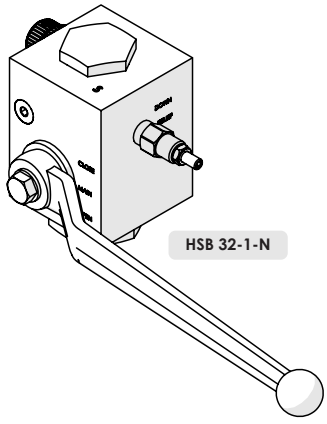
HSB 20-1-N



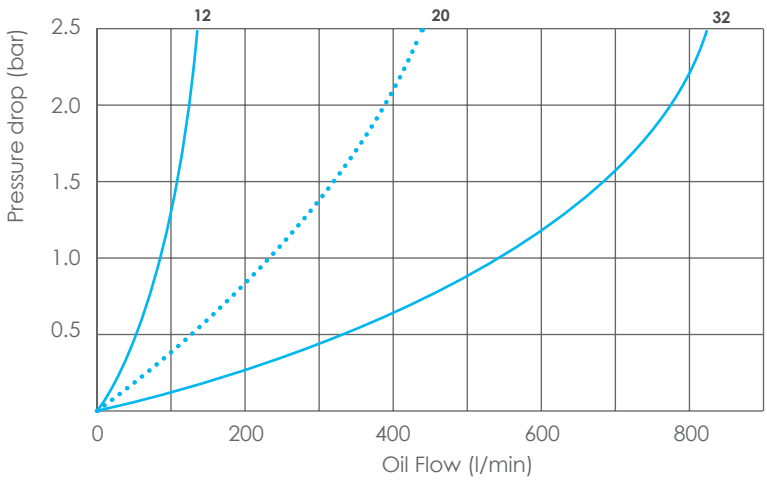
Manual and electric operation



Manual operation



HSB 32-1-N



Ordering code

Example : HSB - 20 - 1 - N - 24

1 2 3 4

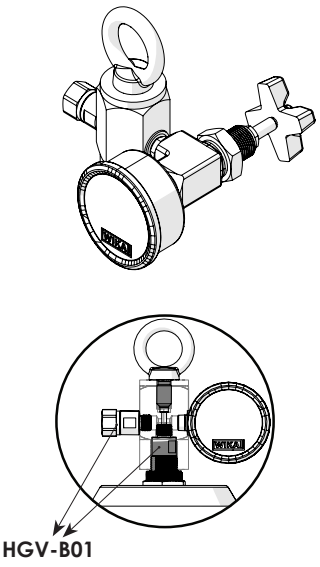
1	Size	
Code	**Size**	**P, S Port**
12	12mm	1/2"
20	20mm	3/4"
32	32mm	1 1/4"

2	Tank Valve
Code	**Type**
1	Manual
2	Manual & Electrical

3	Seal Material
Code	**Material**
N	Nitrile
V	FKM(VITON)

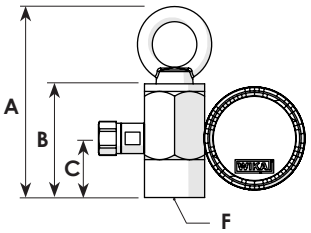
4	Solenoid Power
Code	**Power**
	None (Standard)
24	DC 24V
110	AC 110V
220	AC 220V

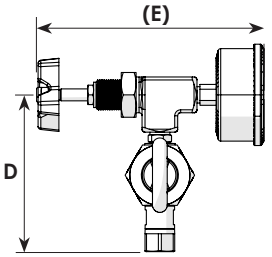
Permanent Gauge APG-L01



- **Material:** Carbon Steel - Zinc plated
- **Feature:** The "Ready-to-use" design of the APG with the HGV-B01 gas valve allows for immediate use without the inconvenience of nitrogen gas release, gas valve removal, or adapter use.

The patented product, Patent number: 10-210742.





Type	A	B	C	D	E	F
B	136	85	39	105	153	7/8" 14UNF 1A
T	151	100	57	105	153	7/8" 14UNF 1A
M	128	77	37	120	153	M50 x 1.5

Ordering code

Example: APG - 250 - D - B

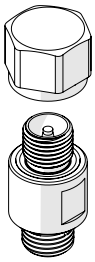
1 2 3

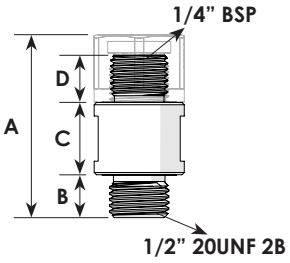
1	Max. Working pressure
Code	**Pressure**
250	250 bar (Standard)
25	25 bar
60	60 bar
100	100 bar
400	400 bar

2	Gauge type
Code	**Type**
D	D type (Standard)
A	A type

3	Connection
Code	**Thread**
1	7/8" 14UNF 1A
2	7/8" 14UNF 1A
3	M50 x 1.5

Gas valve HGV-B01





- **Material:** Stainless Steel / SUS303
- **Features:** 1) Applied leak-Free Sealing Technology
  2) Improved Compatibility

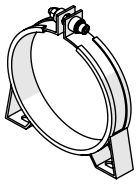
The patented product. Patent number: 10-210742.

A	B	C	D
40.5	9.5	16	10.5

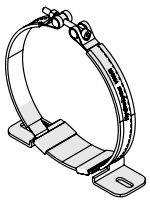
Ordering code

HGV-B01

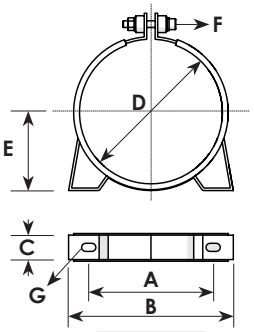
Clamp band ACB



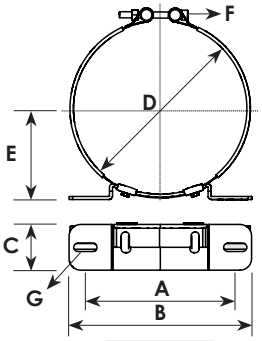
Type A



Type B



Type A



Type B

Volume	Type	A	B	C	D	E	F	G
1~2.5L	B	109	136	30	114	66	M8x55	10x17
4~6L	A	148	191	30	168	93	M8x55	10x17
10~57L	B	193	235	60	223	117	M8x80	11x30

- **Material:** Carbon Steel (Zinc plated) / Stainless Steel

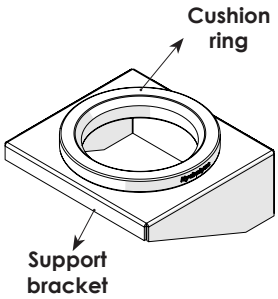
Ordering code

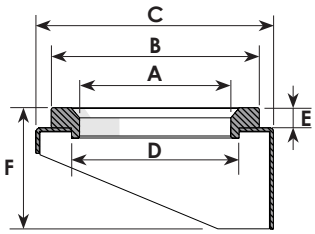
Example: ACB - [A] - [114]

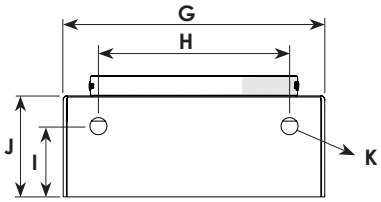
1 2

	1 Specification		
	Code	Inner size	Applicable model
2	B	114 mm	1~2.5L
	A	168 mm	4~6L
	B	223 mm	10~57L

Support Bracket ASB







Volume	A	B	C	D	E	F	G	H	I	J	K
1~2.5L	70	92	138	79	7	69	175	100	30	60	Ø13
4~6L	108	136	175	128	15	95	210	160	55	80	Ø17
10~57L	150	206	235	166	20	120	260	190	70	100	Ø17

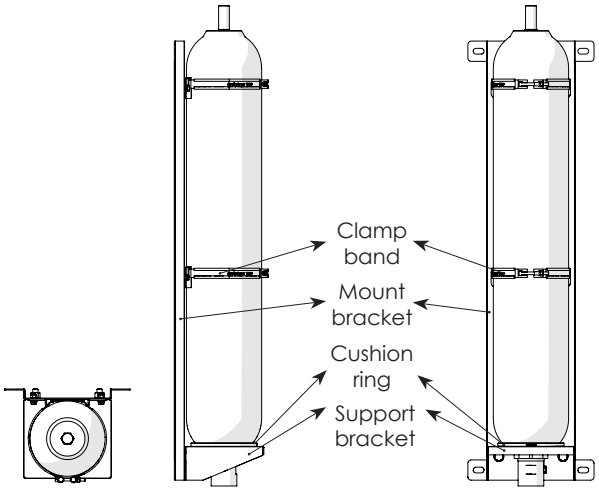
- **Material:** Carbon Steel (Zinc plated)

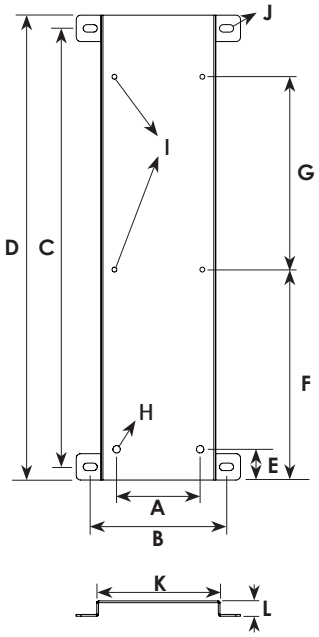
Ordering code

Example: ASB - [A]
1

1 Type	
Code	**Applicable models**
A	1~2.5L
B	4~6L
C	10~57L

Mount bracket AMB



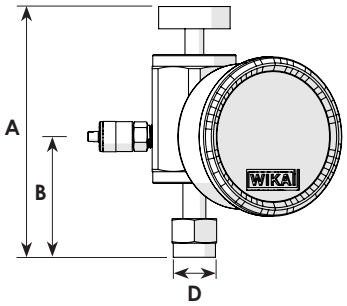


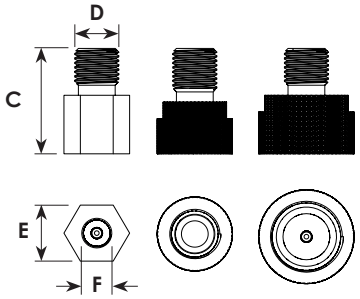
Volume	A	B	C	D	E	F	G	H	I	J	K	L
1L	110	260	190	250	30	170	-	Ø13	Ø10	Ø14	210	30
2.5	110	260	390	450	30	270	-	Ø13	Ø10	Ø14	210	30
4L	148	260	260	320	40	230	-	Ø17	Ø10	Ø14	210	50
6L	148	260	390	450	40	300	-	Ø17	Ø10	Ø14	210	50
10L	200	310	340	400	70	300	-	Ø17	Ø10	17x32	260	30
20/24.5L	200	310	640	700	70	550	-	Ø17	Ø10	17x32	260	30
32/42L	200	310	1090	1150	70	440	500	Ø17	Ø10	17x32	260	30
50/57L	200	310	1440	1500	70	740	560	Ø17	Ø10	17x32	260	30

- **Material:** Carbon Steel (Zinc plated)

N_2 charging kit HCB

- **Material:** Carbon Steel - Zinc plated
- **Features:** 1) Charging hose: Length 2.8m, Maximum operating pressure 210 bar
  2) It offers high compatibility and can support products from other brands





A	B	C	D	E	F
				18.5	5/16"-32UNF
107	51.5	31.5	G 1/4"	22.5	5/8"-18UNF
				28.5	7/8"-14UNF

Ordering code

Examples: HCB [250] - [D] - [5] - [1] - [1]

1 2 3 4 5

1	Pressure gauge
250	250 bar (Standard)
10	10 bar
25	25 bar
60	60 bar
100	100 bar
400	400 bar

2	Gauge type
D	D Type (Standard)
A	A Type

3	Gas valve adopters
	None (Standard)
1	5/16-32UNF
2	5/8-18UNF
3	7/8-14UNF
4	Full Set

4	Charging hose
1	M16 - W22-7/16" 20 UNF 210 bar, 2.8m
2	M16 - W22-7/16" 20 UNF 400 bar, 2.8m
3	3/8" - W22-7/16" 20 UNF 210 bar, 2.8m
4	For customization, please consult with our sales team.

5	Case
1	Hard case (Standard)
2	For customization, please consult with our sales team.

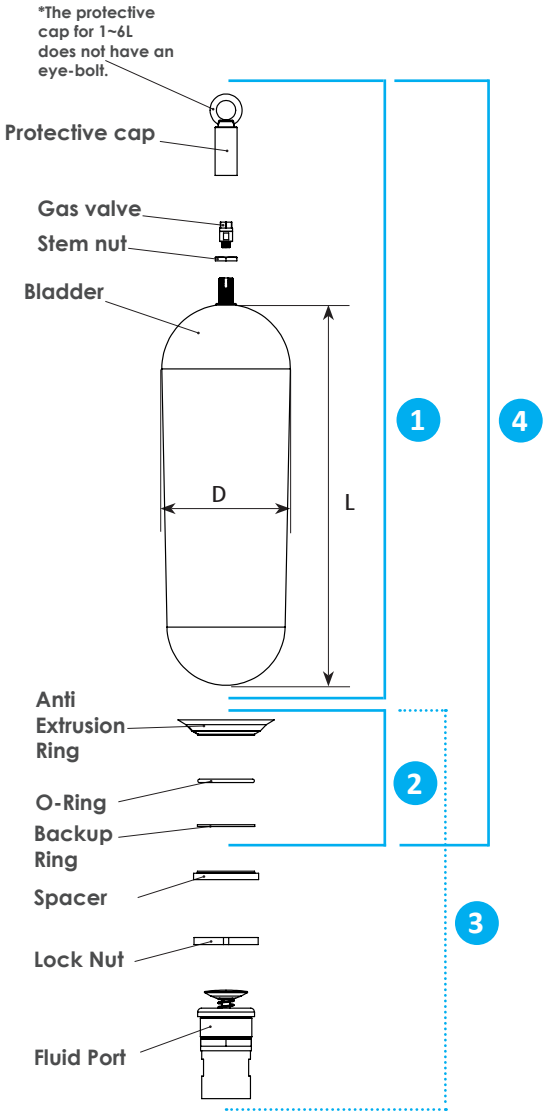
Spare Parts SP

HBA Spare Parts are categorized into four components as follows. Maintenance of HBA products must be conducted by qualified professionals. The parts are divided into 1) Bladder Assembly, 2) Sealing Kit, 3) Fluid Port Assembly, and 4) Bladder Kit. Additionally, individual part supplies are also possible according to the customer's specific requirements.

Ordering code

Example: SP - 4 - ECO - 10

1 2 3



1	Spare Parts
1	Bladder assembly
2	Seal kit
3	Fluid port assembly
4	Bladder kit

2	Bladder Material	
Code	**Material**	**Temp. Range**
	NBR - Nitrile (Standard)	-20~90 °C
ECO	Hydrin (Contact sales team)	-32~115 °C
N28	Nitrile for low temp. (Contact sales team)	-28~80 °C
N40	Nitrile for high temp. (Contact sales team)	-5~105 °C
NH1	For extreme conditions (Contact sales team)	-45~130 °C
EP1	EPDM (Contact sales team)	-40~120 °C
IIR	Butyl (Contact sales team)	-15~120 °C
FKM	VITON (Contact sales team)	-10~140 °C

3	Volume	Dimension (mm)	
Code	**Volume**	**L**	**D**
1	1 Liter / 0.25 Gallon	149	100
2.5	2.5 Liter / 0.7 Gallon	331	100
4	4 Liter / 1 Gallon	208	150
6	6 Liter / 1.5 Gallon	326	150
10	10 Liter / 2.5 Gallon	286	200
20	20 Liter / 5 Gallon	408	200
24.5	24.5 Liter / 6.5 Gallon	590	200
32	32 Liter / 10 Gallon	732	200
42	42 Liter / 11 Gallon	1,114	200
50	50 Liter /14 Gallon	1,611	200
57	57 Liter / 15 Gallon	1,733	200

O Ring • **Material:** NBR

Model	NOK AS568 Series
1~6L	AS568-227B CO 0354-B0 ø3.53 x 53.57 (inner diameter)
10~57L	AS568-338B CO 0440-B0 ø5.33 x 78.74 (inner diameter)

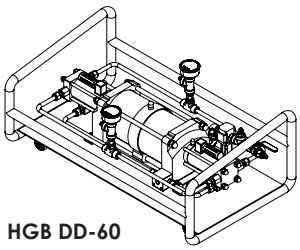
Backup Ring • **Material:** Plastic

Model	
1~6L	2 (Thickness) x 54.9 (inner diameter)
10~57L	2.8 (Thickness) x 80 (inner diameter)

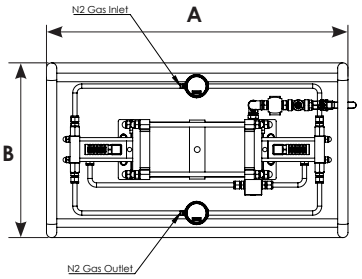
Gas Booster

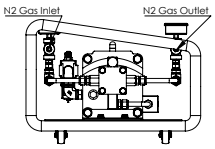
HGB

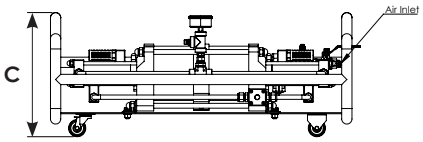
The HGB gas booster provides competitive pricing and excellent performance by focusing solely on its core function of nitrogen filling. It is a compressed air driven type, making it easy to use and highly mobile.



HGB DD-60

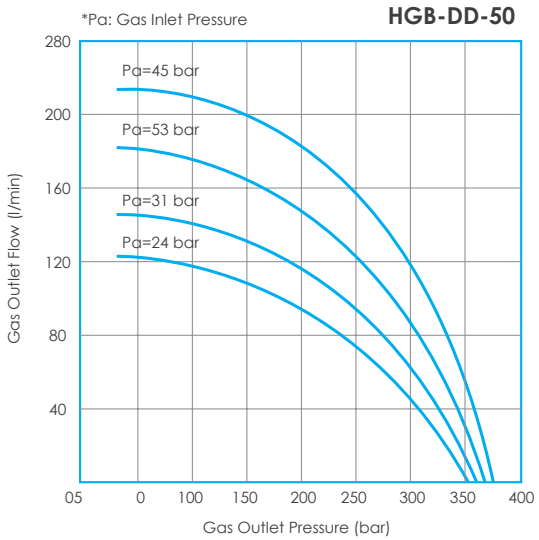


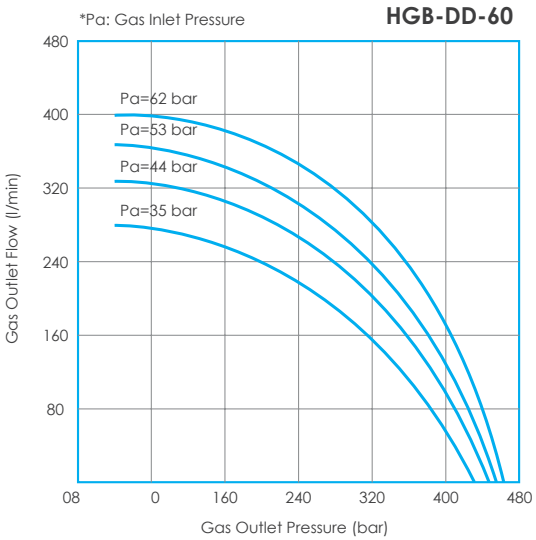




Model	Booster type	A	B	C	Compression Ratio	Max. Pressure	Suction Pressure	Discharge Amount	Weight
						bar	bar	nL/min	Kg
HGB DD-50	Double stage & Double driven	750	510	362	1:50	300	21	1,130	25
HGB DD-50-R		750	510	600	1:50	300	21	1,130	30
HGB DD-60		880	510	362	1:60	360	28	2,050	29
HGB DD-60-R		880	510	600	1:60	360	28	2,050	35

* R : Automatic filling method (equipped with regulators on the air inlet and N2 gas outlet sides)
** The filling discharge rate refers to the discharge rate under no load, which may vary depending on the operating pressure and environmental conditions.





Ordering code

Example: HGB DD - 60 - R
1 2

1	Pressure ratio
50	1:50
60	1:60

2	Type
	Manual (Standard)
R	Automatic

HDA Series

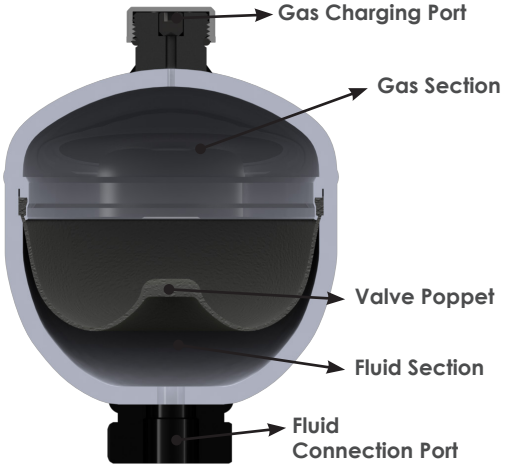
Diaphragm Accumulators

Features

- Capacities from 0.075 to 3.8 Liters
- Low cost, Non-repairable design
- Operating pressures to 250 bar
- Durable metric gas valve

Quick Overview

The HydroLync Diaphragm Accumulator (HDA) stores fluid pressure energy or absorbs pulsations in the system line to maintain hydraulic system stability. The diaphragm accumulator is composed of an upper gas section with a diaphragm and a fluid section with a lower gas portion. The fluid section is connected to the hydraulic circuit to intake fluid as the pressure increases and the gas is compressed. When the pressure decreases, the compressed gas expands and discharges the stored fluid into the circuit.



At the bottom of the diaphragm, there is a button or valve poppet. When the accumulator is completely emptied, the valve poppet blocks the hydraulic discharge port to prevent damage to the diaphragm.

Material

The shell material is typically made of carbon steel, but stainless steel (SUS 316L) can also be used upon customer request. The diaphragm material is as follows:

Compound	Temp. Range	Fluid
NBR	-15 °C to + 80 °C	Mineral oil
ECO (HYDRIN)	-40 °C to +125 °C	Mineral oil
IIR (BUTYL)	-30 °C to + 90 °C	Brake fluid
FKM (VITON)	-45 °C to +150 °C	Chlorination Hydrocarbon

Application case

- Presses, agricultural, and construction machines equipped with hydraulic drives.
- Hydraulic break system
- Hydraulic power drive
- Hydraulic suspension

Ordering code

Example: HD A [ ] 0.75 - 210 - R

1 2 3 4 5

1	Shell material
Code	**Material**
A	Carbon Steel (Standard)
AS	Stainless Steel 304

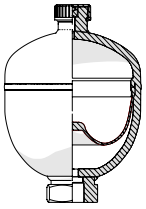
2	Bladder material	
Code	**Material**	**Temp. Range**
	NBR - Nitrile (standard)	-15~80 °C
ECO	Hydrin (Contact sales team)	-40~125 °C
IIR	Butyl (Contact sales team)	-30~90 °C
FKM	VITON (Contact sales team)	-45~150 °C

3	Volume
Code	**Volume**
0.075	0.08 Liter / 0.02 Gallon
0.16	0.16 Liter / 0.04 Gallon
0.32	0.32 Liter / 0.08 Gallon
0.5	0.5 Liter / 0.13 Gallon
0.7	0.7 Liter / 0.18 Gallon
0.75	0.75 Liter / 0.2 Gallon
1.0	1.0 Liter / 0.26 Gallon
1.4	1.4 Liter / 0.37 Gallon
2.0	2.0 Liter / 0.53 Gallon
2.8	2.8 Liter /0.74 Gallon
3.8	3.8 Liter / 1 Gallon

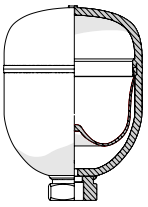
4	Pressure
Code	**Max. Working pressure**
100	100 bar
210	**210 bar (Standard)**
250	250 bar
330	330 bar

*** The standard specification is 210 bar, and other specifications require separate inquiries.**

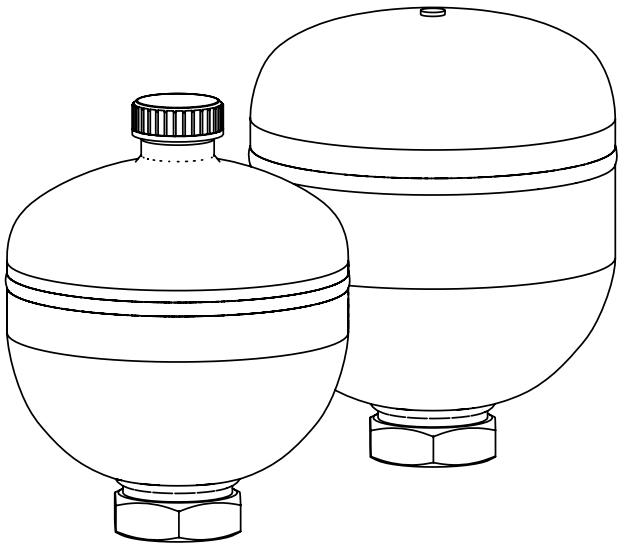
5	Type
Code	**Welding type**
R	Rechargeable (Standard)
S	Sealed



R type
(Rechargeable)

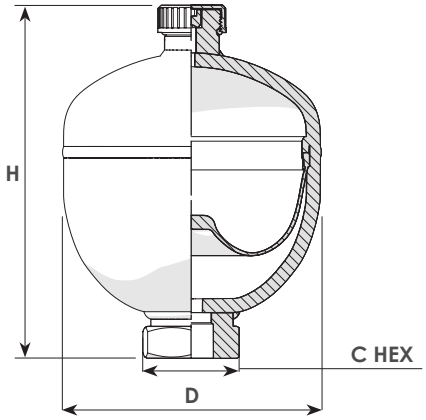


S type
(Sealed)



HDA R type

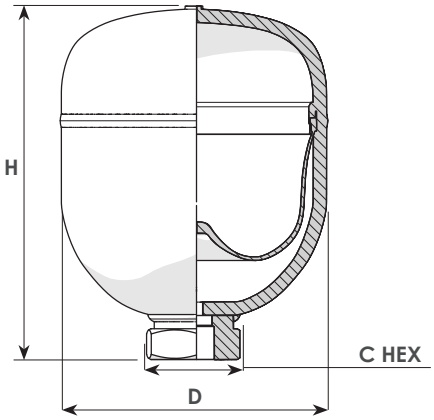
Rechargeable



Volume (L)	Pressure (bar)	Compression Ratio	Air Port	Oil Port	H	D	C Hex	Weight
0.075	210/330	8:1	M28x1.5	G1/2HEX	110	64	22	0.7
0.16	210/330	8:1	M28x1.5	G1/2HEX	120	74	32	1
0.32	210/330	8:1	M28x1.5	G1/2HEX	140	93	32	1.6
0.5	210/330	8:1	M28x1.5	G1/2HEX	152	105	32	1.7
0.75	100/210/330	8:1	M28x1.5	G1/2HEX	168	120	41	2.6
1.0	100/210/330	6:1	M28x1.5	G1/2HEX	178	136	41	4
1.4	100/210/330	6:1	M28x1.5	G1/2HEX	200	150	41	5.5
2.0	100/210/330	6:1	M28x1.5	G3/4HEX	219	166	41	6.6
2.8	250/330	4:1	M28x1.5	G3/4HEX	266	178	41	11
3.8	100/210/330	4:1	M28x1.5	G3/4HEX	317	178	41	15.3

*** The stainless steel shell is determined according to the customer's request.**

HDA S Type
Sealed

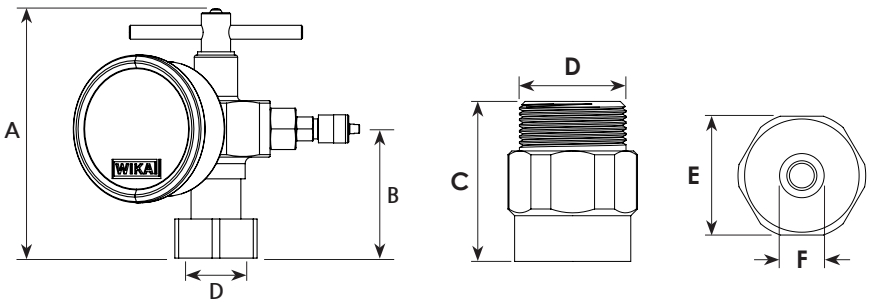


Volume (L)	Pressure (bar)	Compression Ratio	Oil Port	H	D	C Hex	Weight (Kg)
0.075	100/210/330	8:1	PF1/4(M)	123	64	22	0.7
0.16	100/210/330	8:1	G1/2(F)-14	120	74	32	0.9
0.32	100/210/330	8:1	G1/2(F)-14	138	93	30	1.6
0.5	100/210/330	8:1	M18x1.5	155	105	30	1.7
0.7	100/210/330	8:1	G1/2(F)	145	106	32	2.0
0.75	100/210/330	8:1	M18x1.5(M)	160	120	30	2.6
1.0	100/210/330	6:1	M22x1.5(F)	159	136	41	3.9
1.4	100/210/330	6:1	G1/2(F)-14	182	150	41	5.5
2.0	100/210/330	6:1	G3/4(F)-14	200	166	41	6.6
2.8	100/210/330	4:1	G3/4(F)-14	301	175	41	10.0
3.5	100/210/330	4:1	G3/4(F)-14	340	175	41	11.3

*** The stainless steel shell is determined according to the customer's request.**

N_2 charging kit HCD

- **Material:** Carbon Steel - Zinc plated
- **Features:** 1) Charging hose: Length 2.8m, Maximum operating pressure 210 bar
  2) It offers high compatibility and can support products from other brands



A	B	C	D	E	F
		42			5/16"-32UNF
		42			G 1/4"
113	59.5	42	M28 x 1.5	32	5/8"-18UNF
		39			7/8"-14UNF (Short)
		44			7/8"-14UNF (Long)

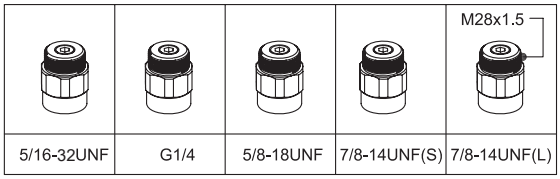
Ordering code

Example: HCD [250] - [D] - [5] - [1] - [1] - [1]
1 2 3 4 5 6

1	Pressure gauge
250	250 bar (Standard)
10	10 bar
25	25 bar
60	60 bar
100	100 bar

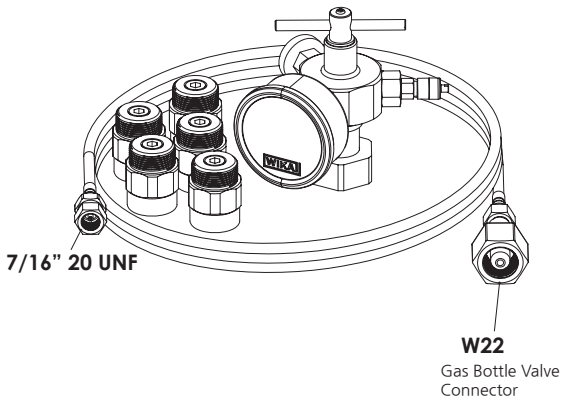
2	Gauge type
D	D Type (Standard)
A	A Type

3	Gas valve adopters
	None (Standard)
1	5/16-32UNF
2	G 1/4
3	5/8-18UNF
4	7/8-14UNF (short)
5	7/8-14UNF (Long)
6	Full Set



4	Charging hose
1	M16 - W22-7/16" 20 UNF 210 bar, 2.8m
2	M16 - W22-7/16" 20 UNF 400 bar, 2.8m
3	For customization, please consult with our sales team.

5	Case
1	Hard case (Standard)
2	For customization, please consult with our sales team.



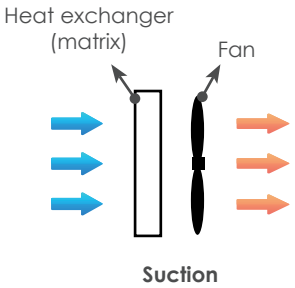
Air Oil Coolers

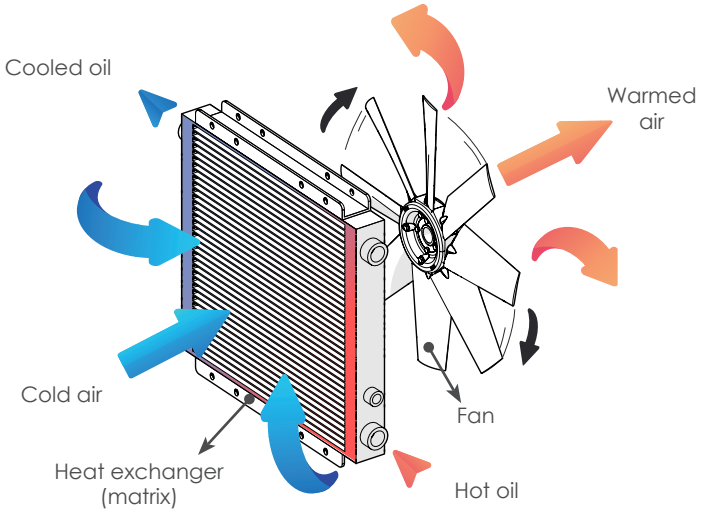
HLA2 Series - AC Motor Driven
HLD Series - DC Motor Driven
HLH2 Series - Hydraulic Motor Driven
HLO3 Series - Offline Circulation Pump Driven
HLAX Series - Axial Motor Driven

What is an air oil cooler?

In a hydraulic system, managing the temperature of the working fluid is an important maintenance point that can affect system performance. If the temperature is too low, the viscosity increases, which can lead to damage to the hydraulic device due to increased friction. On the other hand, if the oil temperature rises above 60 °C, thermal degradation occurs, and viscosity changes as well. As a result, cylinder speed decreases, the life of the oil is shortened, and it can also affect the sealing, leading to leakage. In other words, if the temperature of the oil is not managed properly, the hydraulic system's performance can be degraded, and maintenance costs can increase.

An air-cooled cooler is a device that cools high-temperature oil to maintain proper viscosity in a hydraulic system. An air oil cooler consists of heat exchanger plates (matrix) through which high-temperature oil passes, and a fan that blows air over the matrix to cool them. Depending on the direction of the airflow over the matrix, they can be classified as suction or blow types, with the suction type generally having better cooling efficiency.





Suction-type cooling

Driving method

Depending on the method of driving the fan, the types of air oil coolers are determined, and typically include AC motors, DC motors, hydraulic motors, offline circulation pumps, and axial motor methods.

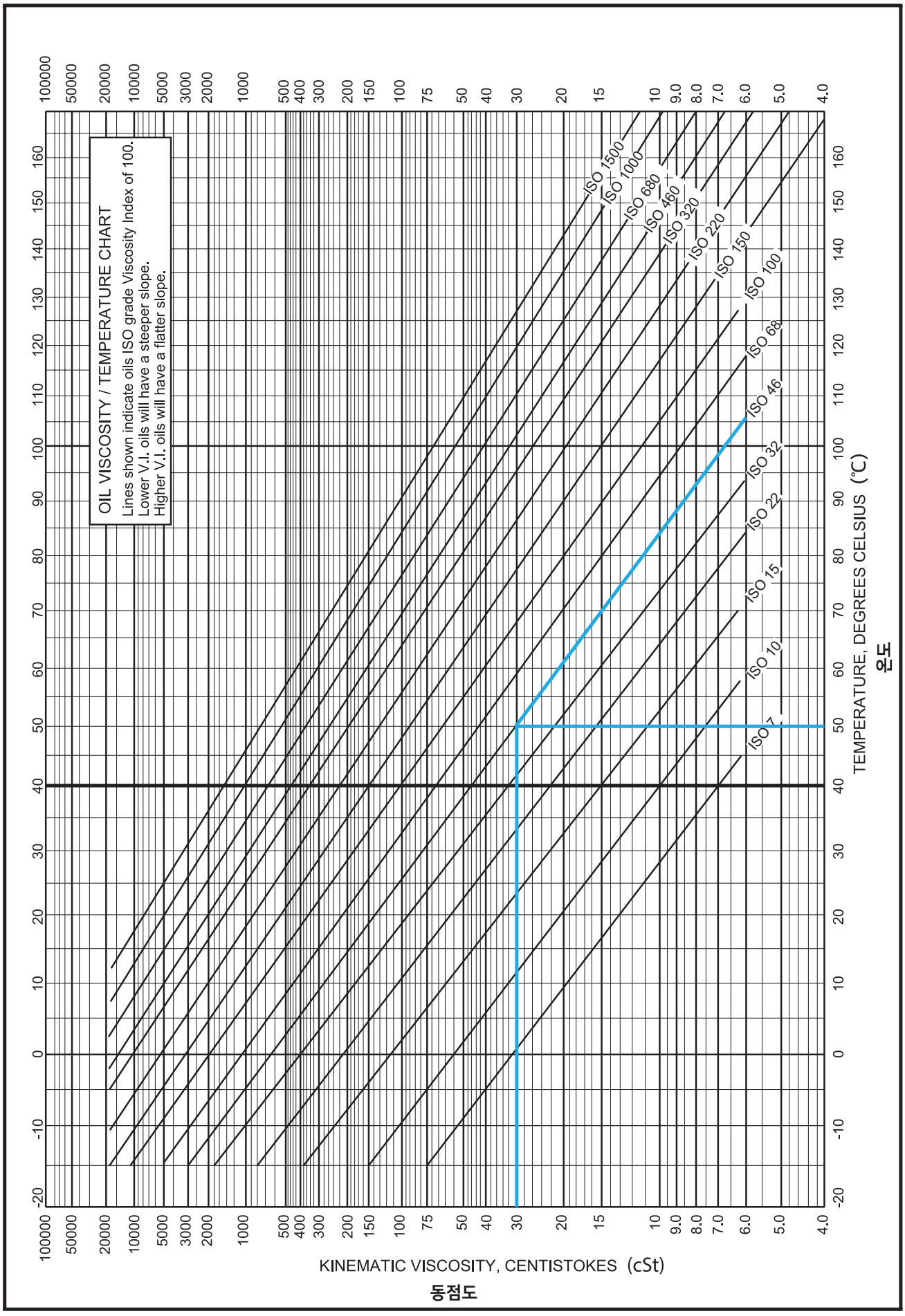
HLA2 Series
AC motor driven

HLD Series
DC motor driven

HLH2 Series
Hydraulic motor driven

HLO3 Series
Offline circulation pump driven

HLAX Series
Axial motor driven


OIL VISCOSITY / TEMPERATURE CHART
Lines shown indicate oils ISO grade Viscosity Index of 100.
Lower V.I. oils will have a steeper slope.
Higher V.I. oils will have a flatter slope.
ISO 1500
ISO 1000
ISO 680
ISO 460
ISO 320
ISO 220
ISO 150
ISO 100
ISO 68
ISO 46
ISO 32
ISO 22
ISO 15
ISO 10
ISO 7
KINEMATIC VISCOSITY, CENTISTOKES (cSt)
동점도
TEMPERATURE, DEGREES CELSIUS (°C)
온도

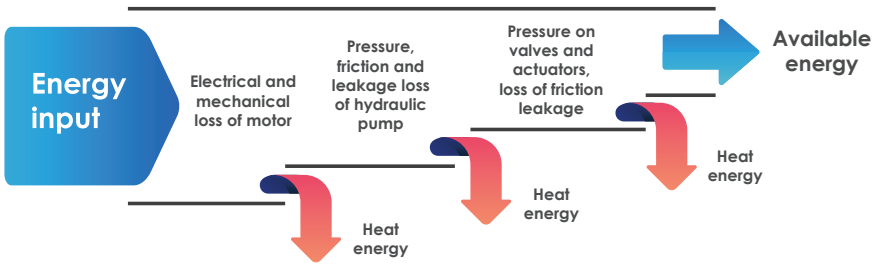
Management of oil viscosity

If the oil temperature is constant, the viscosity also remains constant, ensuring consistent valve response and cylinder speed. Please refer to the Kinematic Viscosity chart on the left page for the recommended kinematic viscosity and temperature control that should be maintained depending on the type of operating fluid used in the hydraulic system.

ISO Viscosity Grade (ISO VG)	Kinematic Viscosity @40 ℃ (cTs)		
	Minimum	Maximum	Mid-point
22	19.8	24.2	22.0
32	28.8	35.2	32.0
46	41.4	50.6	46.0
68	61.2	74.8	68.0
100	90.0	110	100
150	135	165	150
220	198	242	220
320	288	352	320
460	414	506	460
680	612	748	680

Purpose of use of cooler

In all hydraulic systems, there are various forms of energy loss, such as pressure, friction, and leakage to varying degrees. Energy is lost due to pressure drop in the lines caused by friction and flow bias, pressure drop in accessories such as valves, filters, and coolers, high throttling in pressure regulation systems, and leakage losses at sealing points. All of these losses are converted into heat that is absorbed by the oil and the housing.



The purpose of using a cooler is to maintain the heat generated by the energy loss at a constant level, thereby increasing the efficiency of the system and reducing maintenance costs. The heat generated by the loss of energy can damage the pump, hose, sealing, and bearings installed in the hydraulic system, shortening their lifespan. As mentioned earlier, the decrease in viscosity makes it difficult to control the valve and cylinder precisely, and the overall efficiency of the system decreases, resulting in a significant increase in maintenance costs.

Selection of Cooler

The selection of a cooler is to achieve the goal by using a cooler with a cooling capacity equal to or greater than the heat energy converted from the input energy, as shown in the figure above. Therefore, to select a cooler, it is necessary to first accurately understand the heat load factors generated in the system. Machinery and hydraulic systems are used to generate and transmit power, but mechanical efficiency, friction, pressure, and other power losses generate heat. If this heat energy is defined as P_H the formula for calculating it can be expressed as follows:

When the specific heat unit is (kJ/kg°C)

$$P_H = (T_2 - T_1) \times SG \times SH \times Q / 60 \ [kW]$$

When the specific heat unit is (Kcal/kg°C)

$$P_H = (T_2 - T_1) \times SG \times SH \times Q / 60 \ [Kcal/h]$$

$$P_H = \frac{(T_2 - T_1) \times SG \times SH \times Q / 60}{860} \ [kW]$$

P_H	System heat dissipation (kW)
T_1	Oil temperature before system operation (°C)
T_2	Oil temperature after system operation (°C)
Q	Flow rate of oil(l/min)
SG	Specific gravity of the oil (kg/l)
SH	Specific heat of oil

To maintain a certain temperature in the system, the cooling heat exchange amount P_C of the cooler must be equal to or greater than the heat generated by the system P_H under the maximum temperature conditions of the flow rate flowing into the cooler and the surrounding environment. The cooling heat exchange amount of the cooler is defined by the calculation formula of the inlet and outlet temperatures of the cooler, the ambient air temperature, the flow rate, and the fluid properties, as shown below.

When the specific heat unit is (kJ/kg°C)

$$P_C = (T_{in} - T_{out}) \times SG \times SH \times Q_C / 60 \ [kW]$$

When the specific heat unit is (Kcal/kg°C)

$$P_C = (T_{in} - T_{out}) \times SG \times SH \times Q_C / 60 \ [Kcal/h]$$

$$P_C = \frac{(T_{in} - T_{out}) \times SG \times SH \times Q_C / 60}{860} \ [kW]$$

P_H	Cooler heat dissipation (kW)
T_{in}	Cooler inlet oil temperature (°C)
T_{out}	Cooler outlet oil temperature (°C)
Q	Flow rate of oil(l/min)
SG	Specific gravity of the oil (kg/l)
SH	Specific heat of oil

ETD(Entrance Temperature Difference) refers to the difference between the cooler's maximum ambient temperature and the oil temperature at the cooler inlet. In other words, it is expressed as follows:

$$ETD = T_{inmax} - T_{ambientmax}$$

T_{inmax}	Cooler inlet max. oil temperature (°C)
$T_{ambientmax}$	Cooler max. ambient temperature (°C)

For example, if the oil temperature at the cooler inlet is 60°C and the maximum ambient temperature is 20°C, the ETD is 40°C. By dividing the cooling heat exchange amount PC defined above by the ETD, we define the cooling capacity (kW/°C). In this product selection guide, the cooling capacity is used as a unit to allow users to select the product.

$$\text{Cooling Capacity} = P_C / ETD \ (kW/°C)$$

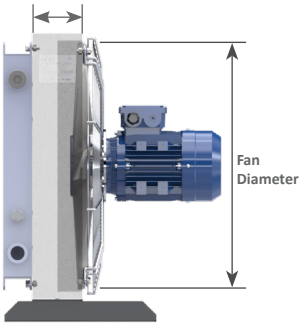
HydroLync Design Theory

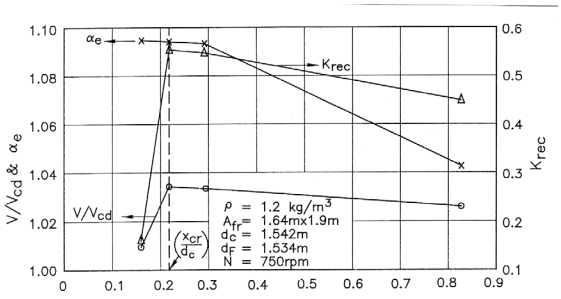
HydroLync's product design is based on thoroughly proven scientific research and incorporates design concepts derived from that research. We strive to continuously create stable and optimized products by using CFD (Computational Fluid Dynamics) simulations to review both production efficiency and durability.

Fan Positioning

The main components of an air oil cooler are the heat exchanger, fan, and the driving mechanism that drives the fan. When designing the product, the shape and angle of the fan blade, as well as the distance between the heat exchanger and the fan, are important factors for maximizing the cooler's performance.

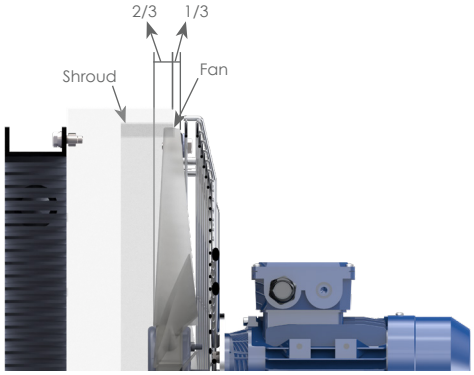
Distance between matrix and fan

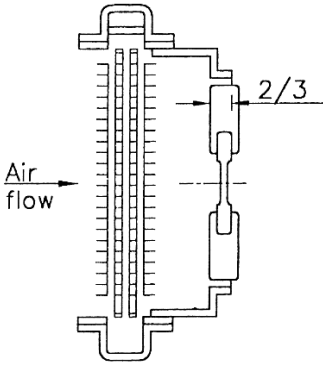




The performance of heat exchange on the position of the fan

The performance graph shows how heat exchange performance varies depending on the position of the fan. HydroLync's air oil cooler is positioned according to these calculations to optimize performance.

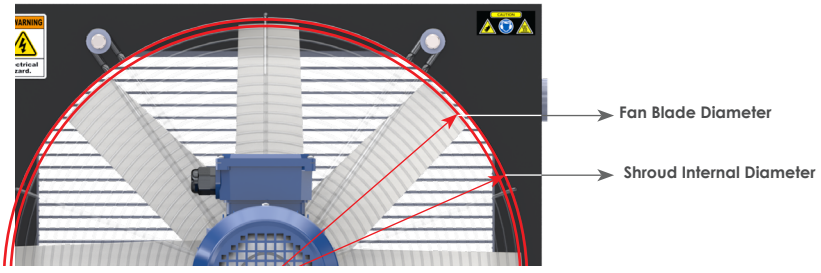




Tip Clearance

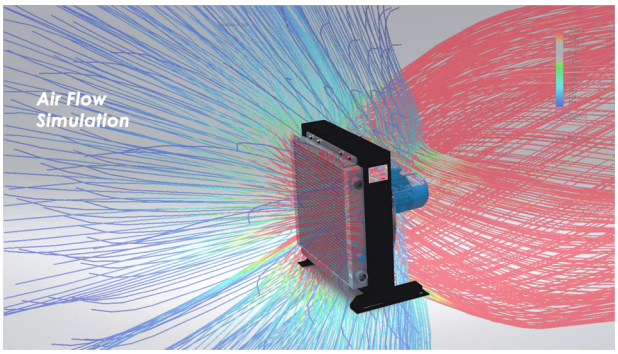
The distance between the surrounding surface and the blade tip of the fan called "tip clearance" around the fan called Shroud has a significant impact on the performance of the cooler. The design of the hydroLync applies the API (American Petroleum Institute) Standard 661, which states that the maximum airflow is achieved when the tip clearance is 0.5-1% of the fan blade diameter, and the theory that the fan blade should be located 1/3 outside of the shroud for optimal performance, as stated in the Military Vehicle Power Plant Cooling Handbook: AMCP 706-361 used by the US military.

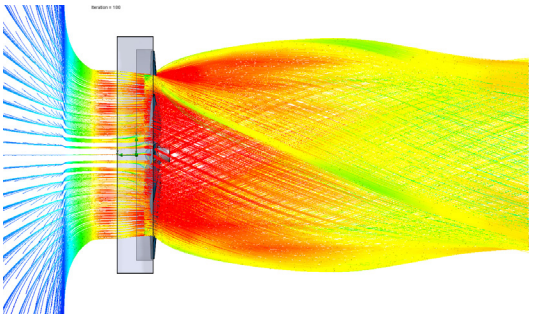
Tip Clearance = Shroud Internal Diameter - Fan Blade Diameter



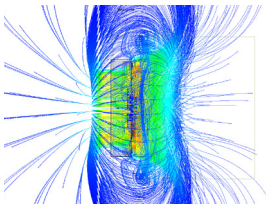
Simulation Analysis

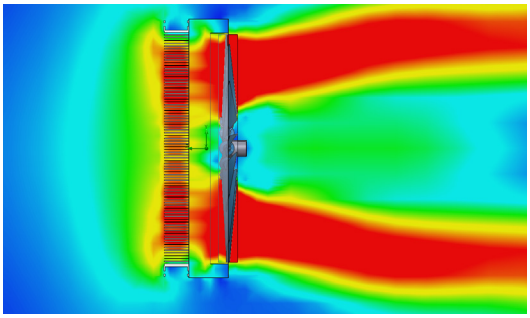
The use of CFD (Computation Fluid Dynamics) analysis has significantly reduced development costs by predicting the state of products under various conditions before applying them to mass production, and has greatly improved the productivity of developing new products. In an air oil cooler, the fan generates airflow, which passes through the oil flowing over the matrix, extracting heat and cooling it down. Therefore, the airflow is determined by the position of the fan, the shape of the blades, and their angles, which are directly linked to the performance of the cooler. During the product development phase, CFD simulation can be used to determine if the ideal performance is possible before creating a prototype. Any necessary improvements can be made immediately and reflected in the development process, allowing for a very rapid development process.



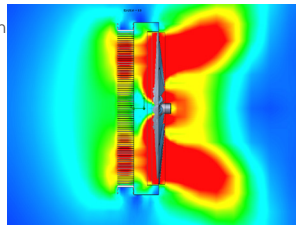


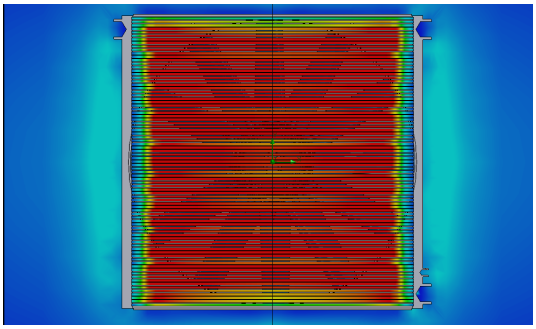
The ideal airflow shape formed by the rotation of the fan blades should be streamlined, as shown on the left side of the image. The shape shown below is the result of incorrect positioning of the fan and blade settings, resulting in significant turbulence in the airflow, which leads to increased power consumption and decreased cooling performance.



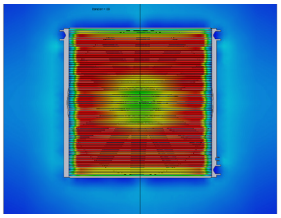


A fast airflow helps to quickly dissipate heat from the matrix, resulting in improved cooling performance. By setting the fan in an ideal position, the airflow can be formed as quickly as possible over the entire surface of the matrix. On the other hand, incorrect settings result in uneven airflow over the matrix, leading to decreased cooling performance.



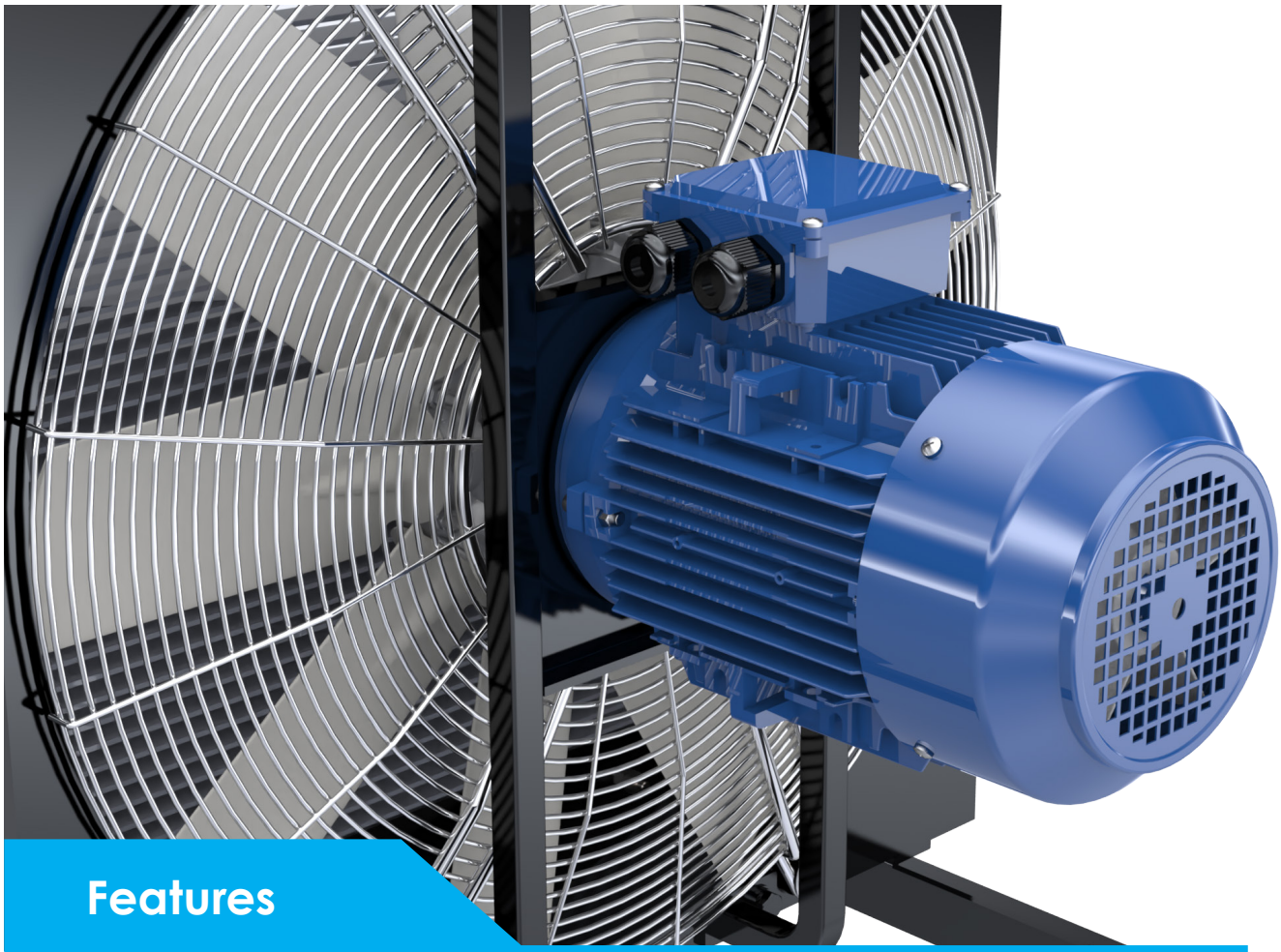


When the fan is not ideally positioned, a dead zone can occur where little or no airflow is formed over some areas of the matrix. The ideal state is to minimize the dead zone over the entire surface, as shown on the left side of the image. However, if the fan position is incorrectly set, a dead zone can occur as shown below, leading to decreased cooling performance of the cooler.

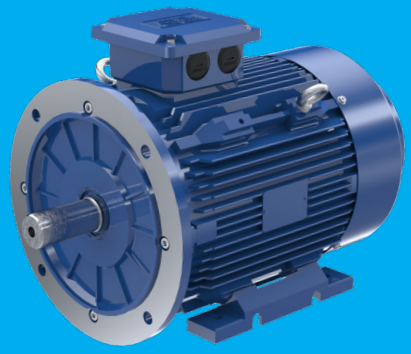


HLA2 Series

AC Motor Driven



Features



- Applied HydroLync design theory based on scientific research
- IE3 certified AC motors
- Compact and slimmer design
- Service-friendly design

Quick Overview

HydroLync's HLA2 Series products offer a wide range of specifications. You can quickly check the cooling performance, heat dissipation, and maximum flow rate of each model with ISO VG 46 oil at ETD 40°C.

No.	Model-Motor Poles_Cooling Performance(KW/℃) (Heat Dissipation KW, Kcal/h) / Max. Flow rate(LPM)
1	HLA2 015-2 _ 0.048KW/℃ (1.92KW, 1,651Kcal/h) / Max.40LPM
2	HLA2 03-2 _ 0.085KW/℃ (3.4KW, 2,924Kcal/h) / Max.100LPM
3	HLA2 04-2 _ 0.12KW/℃ (4.8KW, 4,128Kcal/h) / Max.100LPM
4	HLA2 07-4 _ 0.15KW/℃ (6.0KW, 5,160Kcal/h) / Max.125LPM
5	HLA2 11-4 _ 0.38KW/℃ (15.2KW, 13,072Kcal/h) / Max.150LPM
6	HLA2 16-6 _ 0.44KW/℃ (17.8KW, 15,308Kcal/h) / Max.200LPM
7	HLA2 16-4 _ 0.60KW/℃ (24KW, 20,640Kcal/h) / Max.200LPM
8	HLA2 23-6 _ 0.61KW/℃ (24.2KW, 20,812Kcal/h) / Max.200LPM
9	HLA2 23-4 _ 0.80KW/℃ (32KW, 27,520Kcal/h) / Max.200LPM
10	HLA2 33-6 _ 0.85KW/℃ (34KW, 29,240Kcal/h) / Max.300LPM
11	HLA2 33-4 _ 1.10KW/℃ (44KW, 37,840Kcal/h) / Max.300LPM
12	HLA2 35-6 _ 1.20KW/℃ (48KW, 41,280Kcal/h) / Max.350LPM
13	HLA2 35-4 _ 1.30KW/℃ (52KW, 44,720Kcal/h) / Max.350LPM
14	HLA2 56-6 _ 1.45KW/℃ (58KW, 49,880Kcal/h) / Max.300LPM
15	HLA2 58-6 _ 1.70KW/℃ (68KW, 58,480Kcal/h) / Max.400LPM
16	HLA2 76-6 _ 1.95KW/℃ (78KW, 67,080Kcal/h) / Max.400LPM
17	HLA2 78-6 _ 2.25KW/℃ (90KW, 77,400Kcal/h) / Max.500LPM
18	HLA2 110-6 _ 2.37KW/℃ (94.8KW, 81,528Kcal/h) / Max.500LPM
19	HLA2 112-6 _ 3.30KW/℃ (132KW, 113,520Kcal/h) / Max.500LPM
20	HLA2 113-6 _ 4.20KW/℃ (168KW, 144,480Kcal/h) / Max.500LPM
21	HLA2 200-4 _ 7.30KW/℃ (292KW, 251,120Kcal/h) / Max.1,000LPM

[Remark] Ns=120•f/p
Ns: RPM for AC motor
f: Frequency
p: Pole

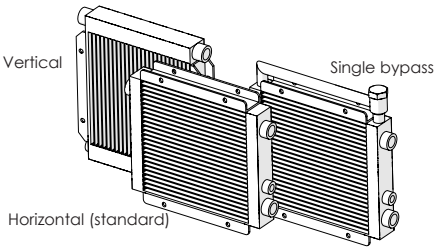
* Based On ETD 40℃ / ISO VG 46 *

Ordering code

Example: HLA2 [ ] [07] - [4] - [220/380V 60Hz] - [W50] - [D] - [ ]

1 2 3 4 5 6 7

1	Matrix types
	Horizontal (Standard)
V	Vertical
SB	Single Bypass



2	Matrix size	
Code	**Size**	**Port**
015	176x175x45	G3/8"
02	148x245x45	PT3/8"
03	248x216x63	G1"
04	272x244x63	G1"
07	335x322x63	G1"
11	405x390x63	G1"
16	464x458x63	G1"
23	545x540x63	G1"
33	640x648x63	G1"
35	640x648x83	G1 1/2"
56	802x826x63	G1 1/4"
58	802x826x83	G2"
76	940x1019x63	G1 1/2"
78	940x1019x83	G2"
110	1120x1190x63	G2"
112	1120x1190x83	G2"
113	1120x1190x113	G2"
200	1500x1580x98	SAE 3"

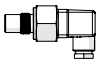
3	Motor Poles	
Poles	**Hertz**	**Max. RPM**
2	50Hz	2,400
	60Hz	3,000
	Applicable	HLA2 015 ~ 04
4	50Hz	1,500
	60Hz	1,720
	Applicable	HLA2 07 ~ 35
6	50Hz	950
	60Hz	1,150
	Applicable	HLA2 16 ~ 200

4	Voltage and hertz	
Phase	**Voltage /hertz**	**Applicable models**
Single	**110V 50/60Hz**	HLA2 015 ~ 04
Single	**220V 50/60Hz**	HLA2 015 ~ 04
Three	**380V 50/60Hz**	HLA2 03 ~ 04
Three	**220/380V 50/60Hz**	HLA2 07 ~ 200
Three	**240/420V 50Hz**	HLA2 07 ~ 200
Three	**280/480V 60Hz**	HLA2 07 ~ 200
Three	**440V 60Hz**	HLA2 03 ~ 200
Three	**460V 60Hz**	HLA2 015 ~ 04

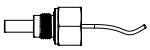
5	Thermal switch	
Code	**Temperature**	**Working range**
	None	
W/D	**30**	ON 35±5℃ / OFF 25±5℃
W/D	**40**	ON 45±5℃ / OFF 35±5℃
W/D	**50**	ON 55±5℃ / OFF 45±5℃
W/D	**60**	ON 65±5℃ / OFF55±5℃
W/D	**70**	ON 75±5℃ / OFF 65±5℃
DTM	**Sensor**	-55°C to +125°C

***W: Wire type**

***D: DIN plug type**

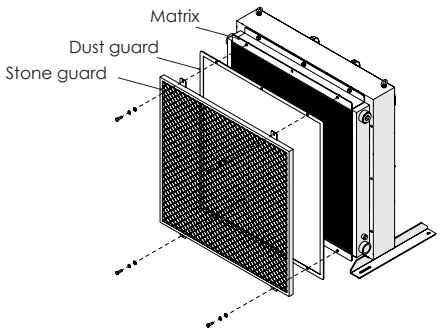


***DTM: Digital Thermometer**



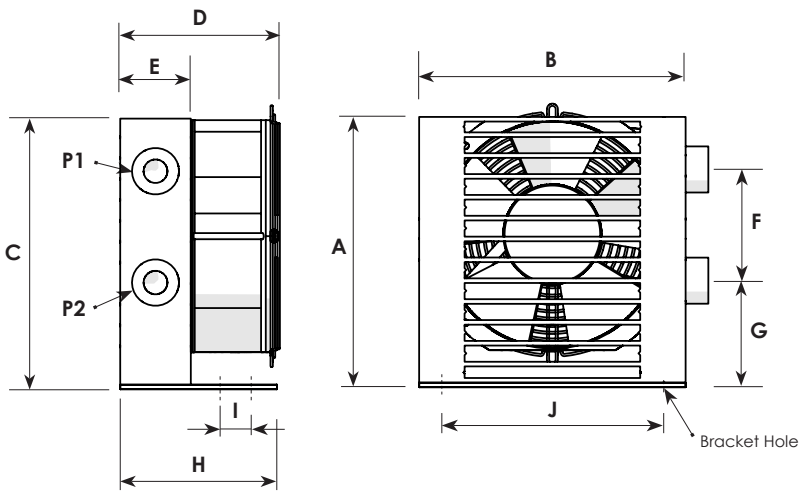
***Note:** This can only be used with products equipped with iAMC.

6	Matrix protection accessories
	None (standard)
D	Dust Guard
S	Stone Guard
A	Dust Guard + Stone Guard

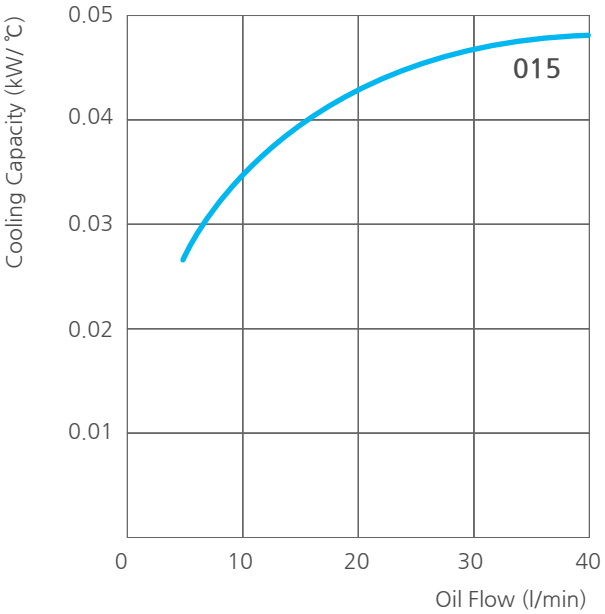


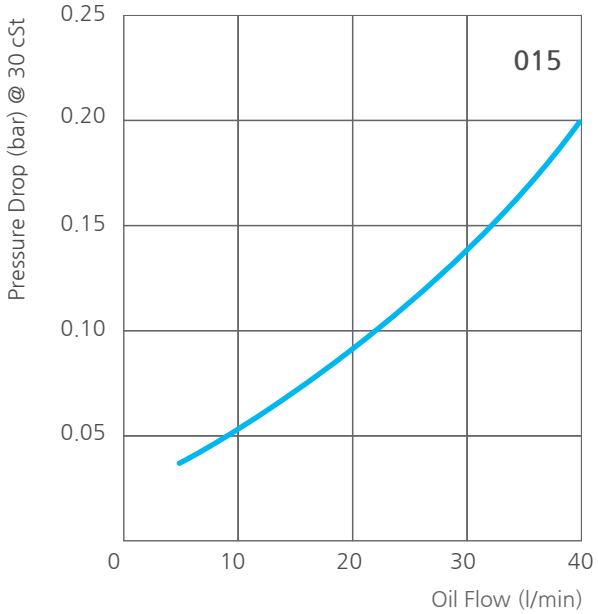
7	Production type
	Standard
C	Customization

HLA2 015-2 Single phase



AC MOTOR	HLA2 Model	A	B	C	D	E	F	G	H	I	J	K	P1, 2	Bracket Hole
Single Phase	**015**	175	176	175	100	45	72	69	100	30	138	-	PT3/8"	4xø6





Flow rate: Max. 40 l/min (< ΔP=1.2 bar)

Working Pressure: Max. 14 bar

Insulation grade: B (130 ℃ 266 ℉)

Noise: < 50dB(A)

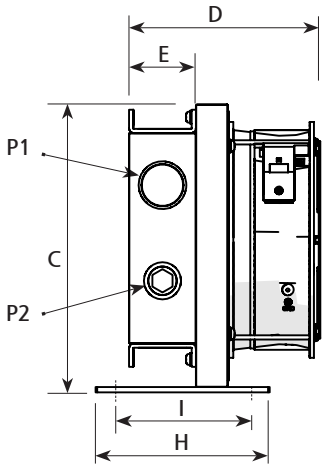
AC motor : Single phase 110V @50/60Hz 38/35W
Single phase 220V @50/60Hz 32/31W

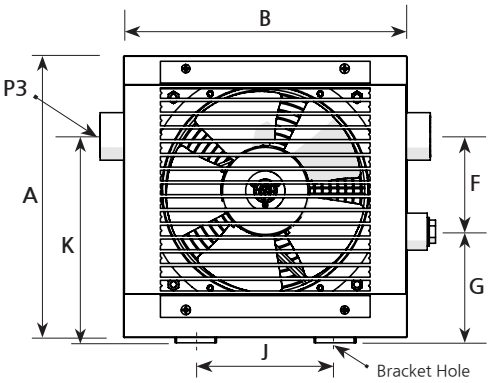
Weight: 2.6 Kg

The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

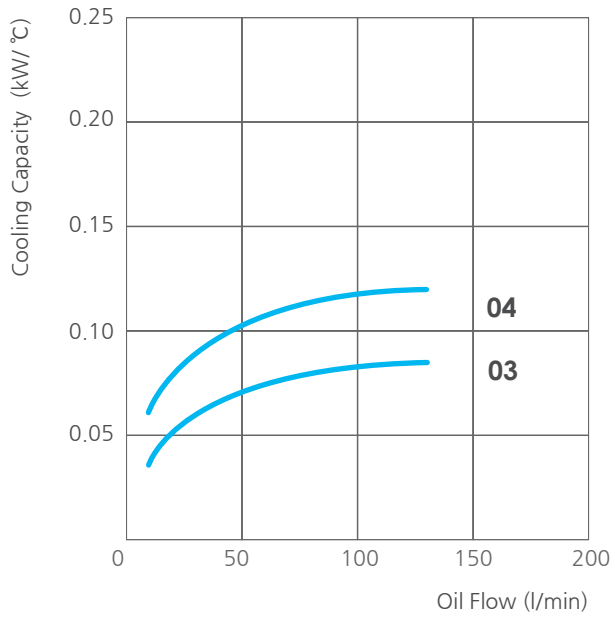
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

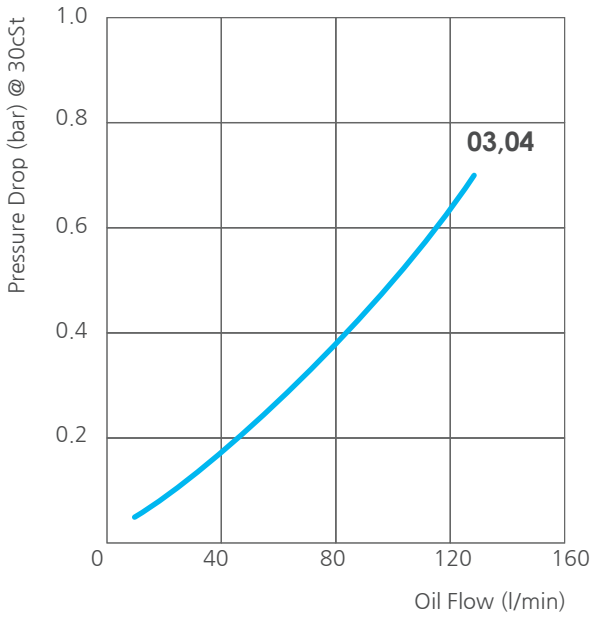
HLA2 03, 04 Single and Three phase





AC Motor	HLA2 Model	A	B	C	D	E	F	G	H	I	J	K	P1, 3	P2	Bracket Hole
Single Phase	**03-2**	253	259	258	160	63	89.5	71	164	133	134	160.5	G1"	G1/2"	4x(ø10x19)
Three Phase	**03-2**	253	259	258	180	63	89.5	71	164	133	134	160.5	G1"	G1/2"	4x(ø10x19)
Single Phase	**04-2**	266	273	271	160	63	90	105	164	133	134	195	G1"	G1/2"	4x(ø10x19)
Three Phase	**04-2**	266	273	271	180	63	90	105	164	133	134	195	G1"	G1/2"	4x(ø10x19)





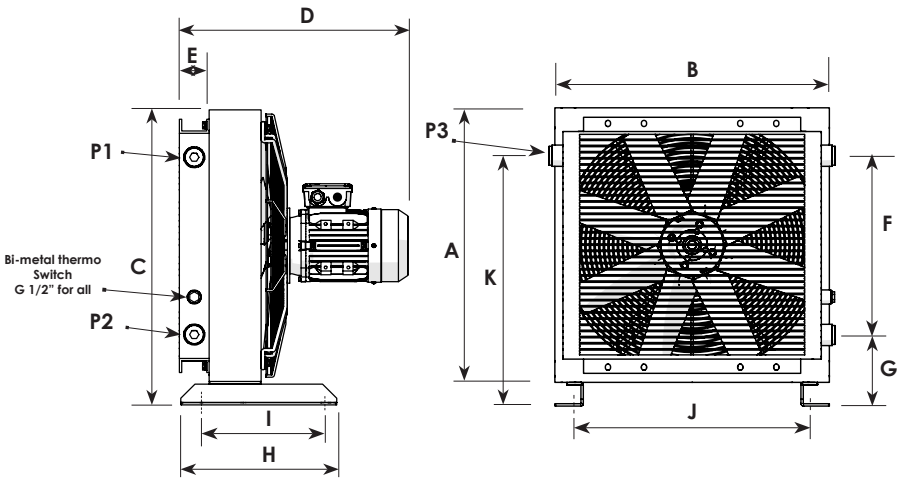
Flow rate: Max. 130 l/min (< ΔP=1.0 bar)
Working pressure: Max. 14 bar
Insulation grade: B (130 ℃ 266 ℉)
Noise: < 63 dB(A)

AC motor : Single 110V @50/60Hz 40/48W
Single 220V @50/60Hz 40/53W
Three 380V @50/60Hz 49/64W
Three 440V @50/60Hz 49/64W
Weight: 03-2 5.7 Kg / 04-2 6.3 Kg

The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

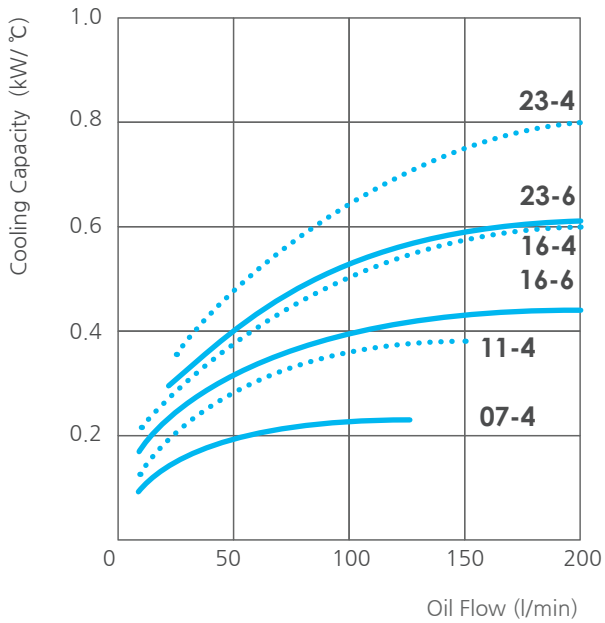
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

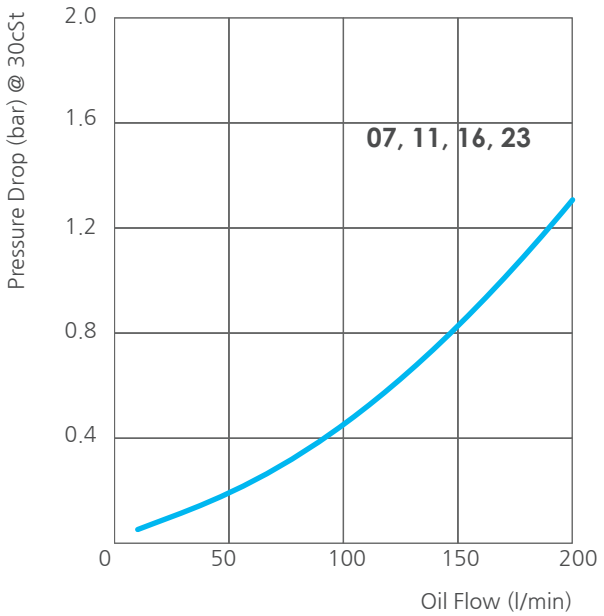
HLA2 07~23 Three phase



HLA2 Model	A	B	C	D	E	F	G	H	I	J	K	P1,2,3	Slot Hole	Weight Kg	Noise (dB)
07-4	365	365	407.5	397.5	63	160	145	270	(145)	297	305	G1"	ø10x90 ø10x19	19	65
11-4	440	440	480	412.7	63	228	146	280	(170)	390	374	G1"	ø10x90 ø10x19	23	67
16-4	496	496	536	422.5	63	296	142.5	305	(195)	436	483.5	G1"	ø10x90 ø10x19	29	70
16-6	496	496	536	421.1	63	296	142.5	305	(195)	436	483.5	G1"	ø10x90 ø10x19	28	60
23-4	579	579	629	473.5	63	378	150	330	(220)	520	528	G1"	ø10x90 ø10x19	39	76
23-6	579	579	629	436.1	63	378	150	330	(220)	520	528	G1"	ø10x90 ø10x19	34	64

* Noise level in 1m distance

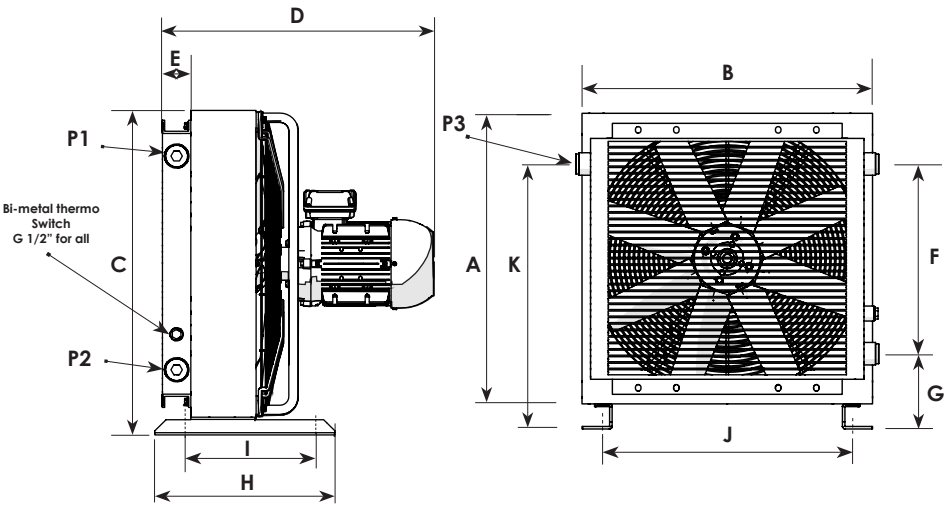




The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

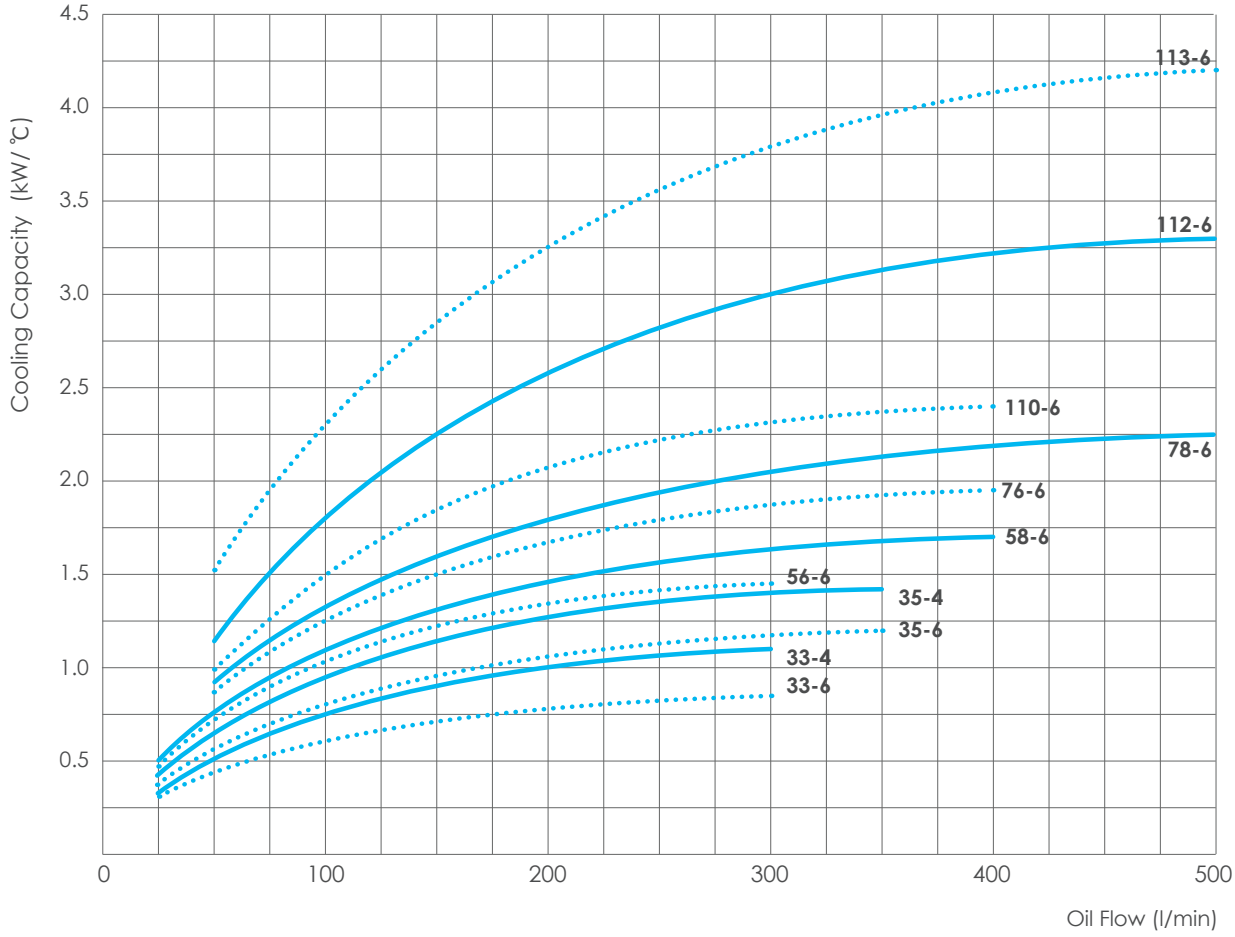
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

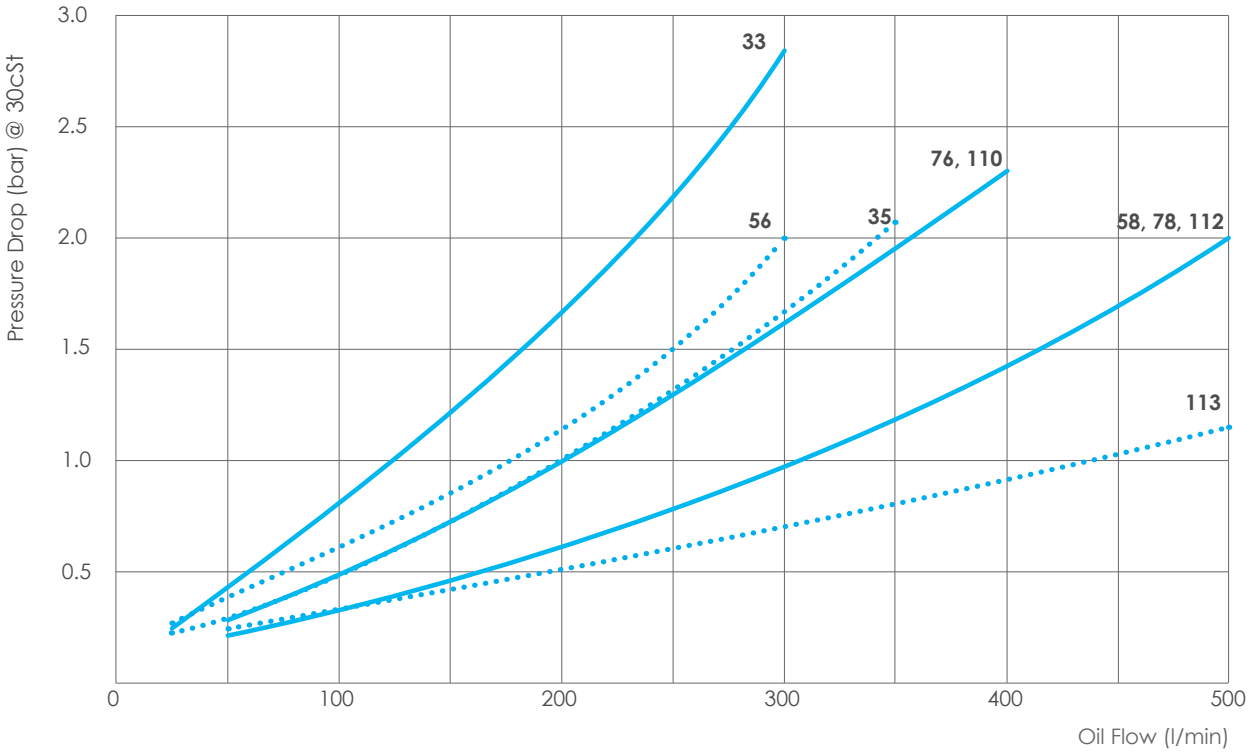
HLA2 33~200 Three phase



HLA2 Model	A	B	C	D	E	F	G	H	I	J	K	P1,2,3	Slot Hole	Weight Kg	Noise (dB)
33-4	692	692	742	602	63	482	157	400	(270)	620	639	G1 1/4"	ø12x92 ø12x21	64	84
33-6	692	692	742	539	63	482	157	400	(270)	620	639	G1 1/4"	ø12x92 ø12x21	49	74
35-4	692	692	742	622	83	482	157	400	(270)	620	639	G1 1/2"	ø12x92 ø12x21	70	85
35-6	692	692	742	559	83	482	157	400	(270)	620	639	G1 1/2"	ø12x92 ø12x21	55	76
56-6	868	868	928	619	63	664	163	430	(320)	796	827	G1 1/4"	ø12x92 ø12x21	73	81
58-6	868	868	928	639	83	664	163	430	(320)	796	827	G2"	ø12x92 ø12x21	89	82
76-6	1022	1022	1092	642	63	821	176	455	(325)	972	997	G1 1/2"	ø14x94 ø14x23	126	86
78-6	1022	1022	1092	662	83	821	176	455	(325)	972	997	G2"	ø14x94 ø14x23	135	87
110-6	1205	1185	1285	738	63	985	192	665	(550)	1115	1177	G2"	ø14x94 ø14x23	205	90
112-6	1205	1185	1285	758	83	985	192	665	(550)	1115	1177	G2"	ø14x94 ø14x23	224	91
113-6	1205	1185	1285	788	113	985	192	665	(550)	1115	1177	G2"	ø14x94 ø14x23	250	92
200-4	1610	1510	1690	939	100	1285	169	820	(680)	1440	1574	G2"	ø18x118 ø18x27	385	92

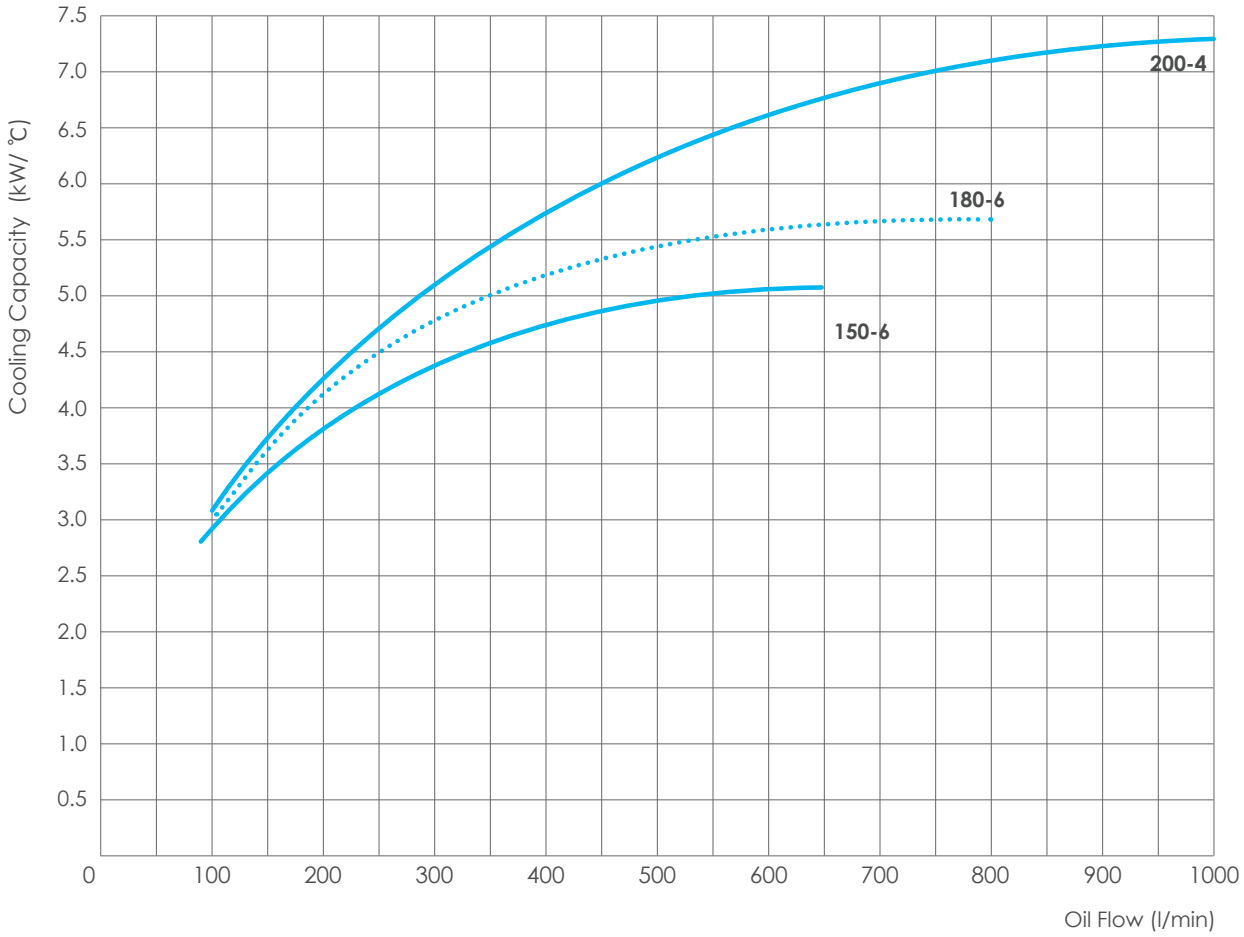
* Noise level in 1m distance

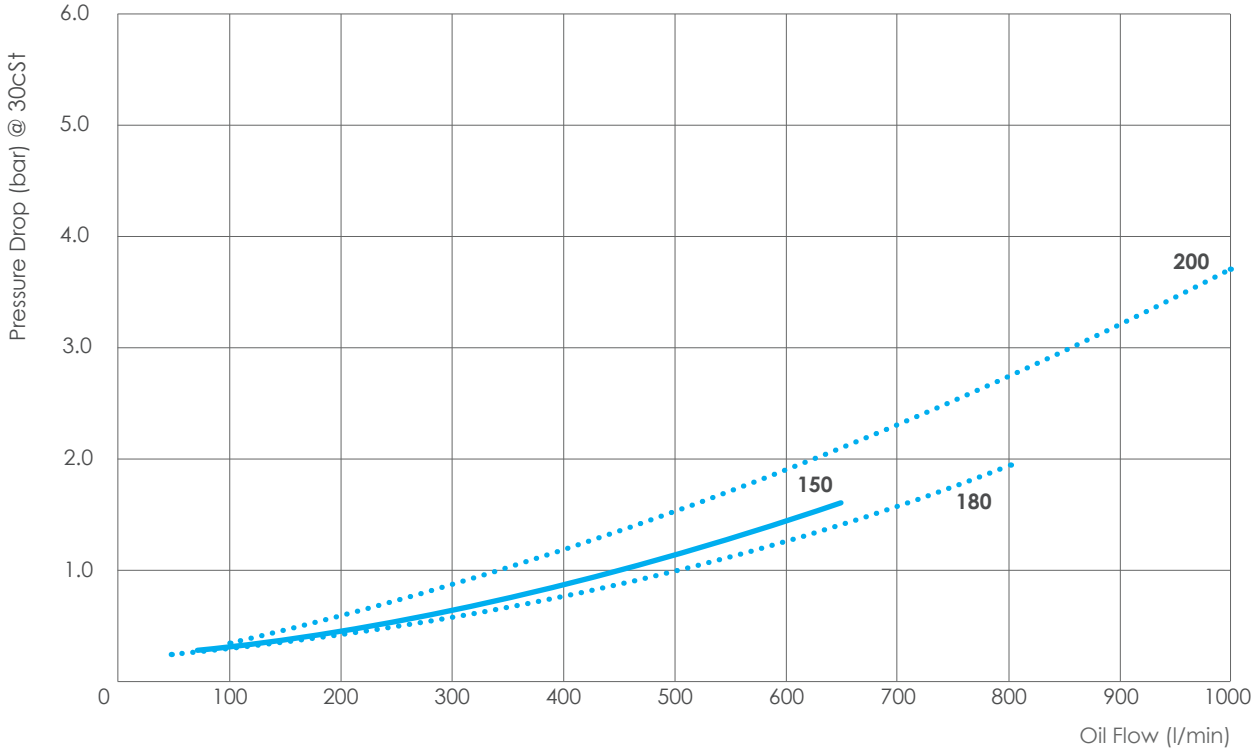




The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)





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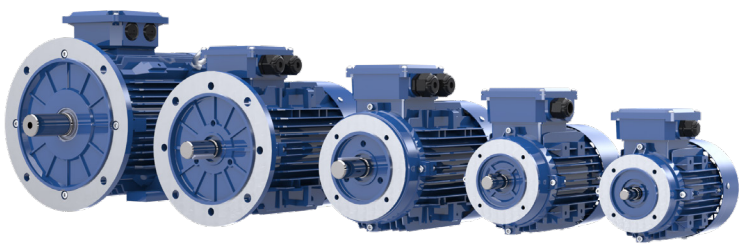
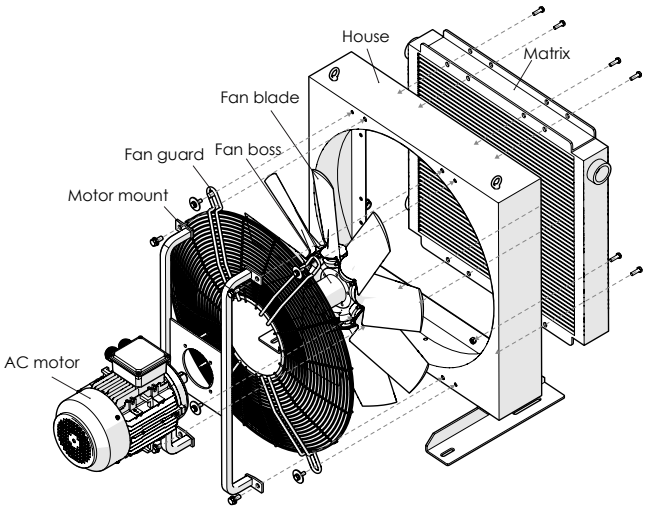
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

AC motor specifications

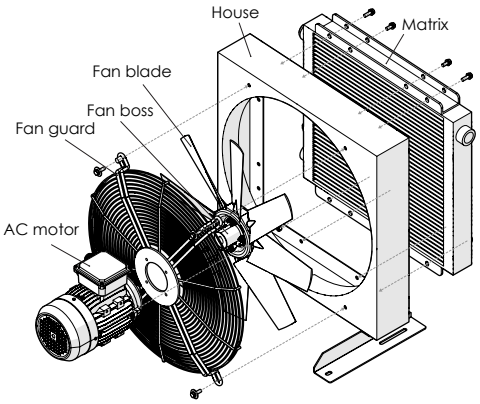
HLA2 Model	Poles	Phase	Frame	Freq. (Hz)	Volt	Power (KW)	RPM	Weight (Kg)
07	4	3	71S	60	220/380	0.25	1670	5.0
07	4	3	71S	60	440	0.25	1670	5.0
07	4	3	71S	50	240/420	0.25	1395	5.0
11	4	3	71S	60	220/380	0.25	1670	5.0
11	4	3	71S	60	440	0.25	1670	5.0
11	4	3	71S	50	240/420	0.25	1395	5.0
16	4	3	71S	60	220/380	0.37	1670	6.4
16	4	3	71S	60	440	0.37	1670	6.4
16	4	3	71S	50	240/420	0.37	1395	6.4
16	6	3	71S	60	220/380	0.18	1070	5.5
16	6	3	71S	60	440	0.18	1070	5.5
16	6	3	71S	50	240/420	0.18	893	5.5
23	4	3	80	60	220/380	0.75	1700	11.6
23	4	3	80	60	440	0.75	1730	11.6
23	4	3	80	50	240/420	0.75	1430	11.6
23	6	3	71S	60	220/380	0.18	1070	5.5
23	6	3	71S	60	440	0.18	1070	5.5
23	6	3	71S	50	240/420	0.18	893	5.5
33, 35	4	3	100L	60	220/380	2.20	1800	30.5
33, 35	4	3	100L	60	440	2.20	1800	30.5
33, 35	4	3	100L	50	240/420	2.20	1500	30.5
33, 35	6	3	80	60	220/380	0.55	1104	9.6
33, 35	6	3	80	60	440	0.55	1104	9.6
33, 35	6	3	80	50	240/420	0.55	920	9.6
56, 58	4	3	112M	60	220/380	3.70	1730	35
56, 58	4	3	112M	60	440	3.70	1750	35
56, 58	4	3	112M	50	240/420	3.70	1460	35
56, 58	6	3	100L	60	220/380	1.50	1200	28.5
56, 58	6	3	100L	60	440	1.50	1200	28.5
56, 58	6	3	100L	50	230/400	1.50	1000	28.5
76, 78	6	3	112M	60	220/380	2.20	1200	35
76, 78	6	3	112M	60	440	2.20	1200	35
76, 78	6	3	112M	50	240/420	2.20	1000	35
110, 112, 113, 180	6	3	132M	60	220/380	5.50	1200	72
110, 112, 113, 180	6	3	132M	60	440	5.50	1200	72
110, 112, 113, 180	6	3	132M	50	240/420	5.50	1000	72
200	6	3	160L	60	220/380	11	1800	140
200	6	3	160L	60	440	11	1800	140
200	6	3	160L	50	240/420	11	1500	140



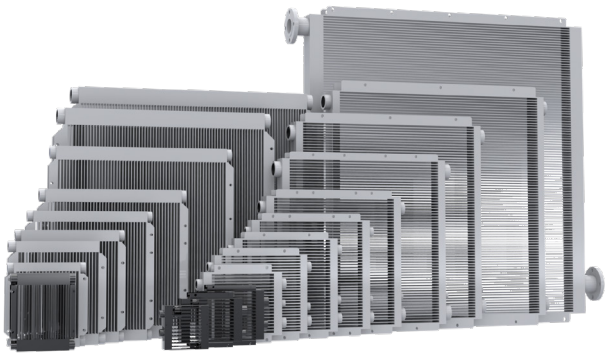
Specifications



Model 33~113



Model 07~23



Aluminum matrix

Hydrolync provides various aluminum matrices, and customers can choose between horizontal and vertical types to meet their requirements.

- Material: 3003/4004/5052
- Test pressure: 21 bar
- Test standard: ISO/DIS 10771-1
- Max. Working pressure: 14 bar
- Max. Working temperature: 120 ℃
- Paint: Epoxy / Polyester powder coatings - coating thickness 60 μm
- Paint color:
  Applied model:015~04 RAL 9005 / black
  Applied model:07~200 RAL 9006 / silver

Fan

- Fan blade material:
  Glass Reinforced Poly-amide (**PAG**)
  Working temperature: -40 ~ 120 ℃
- Fan boss material: Aluminum

House

- Material: steel
- Paint: powder coating
- Color: black, white (option)

Three phase AC motor

- IE3 certified motor (standard)
- Color: RAL 5010
- Insulation grade: F
- Ingress protection rating: IP55

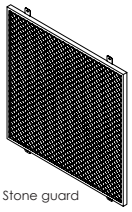
Fan guard

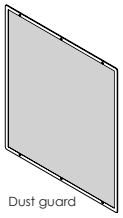
- Material: steel
- Surface treatment: zinc plating

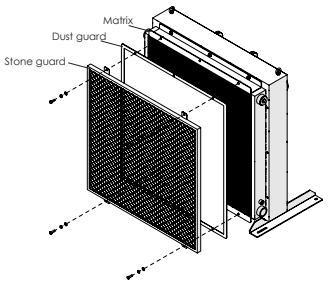
Accessories

Matrix protection

Coolers installed in harsh environments with dust, oil, and other contaminants can cause damage to the surface of the heat exchange fins by rocks bouncing off or decrease the heat exchange performance by accumulating oil and dust on the fins. In such cases, if the surface is damaged or covered in oil, it is necessary to replace the heat exchange fins as cleaning them is impossible. To minimize such losses, Stone Guards or Dust Guards can be installed on the heat exchange fins to protect them and reduce maintenance costs. It is important to note that regular cleaning of the Dust Guard is necessary to maintain its performance, and failure to do so may result in decreased ventilation and overload to the motor.







Attention

- To maintain the best cooling performance of the cooler, you should clean the dust guard twice a week.
- The cleaning cycle for the stone guard is about once every three months.
- If environmental pollution conditions are poor, reduce the cleaning cycle.

Thermal Switch

The temperature switch allows the cooler to control its operation and stop according to the temperature of the oil flowing through the heat exchanger.

Material: Thermostat Cell _ Bi-metal / Cell Housing _ Aluminum

Life span ≥ 100,000 times

Max. Current @ 24VAC 7.5A (Resistance load)

Type of contact : Normally open

Temperature difference ΔT : 10℃

Ingress protection rating : IP68 (Wire type), IP65(Din Plug type)

Connection : G 1/2

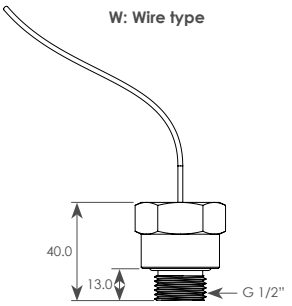
Wire length : 350mm

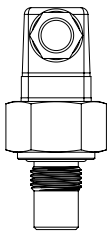
W: Wire type

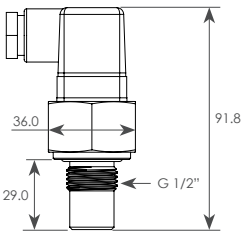
D: DIN plug type

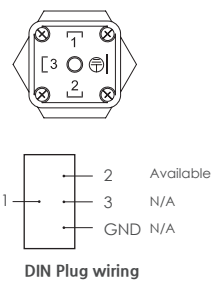
Type	Temperature	Working range
W/D	30	ON 35±5℃ / OFF 25±5℃
W/D	40	ON 45±5℃ / OFF 35±5℃
W/D	50	ON 55±5℃ / OFF 45±5℃
W/D	60	ON 65±5℃ / OFF 55±5℃
W/D	70	ON 75±5℃ / OFF 65±5℃

Selection of the thermal switch









DIN Plug wiring

Introduction of the new iAMC product

"Maximizing energy efficiency!"

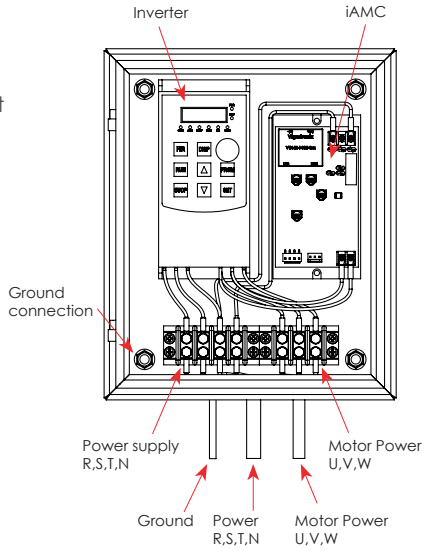
iAMC (Intelligent AC Motor Controller) for energy conservation

The iAMC is a controller developed to maximize the energy efficiency of HydroLync's HLA2 product. It operates based on the Laws of Affinity (Law 1c: Energy is proportional to the cube of shaft rotation speed), which provides the principle for saving energy by controlling the motor's speed. Reducing the motor speed by 20% results in approximately 50% energy consumption reduction, while reducing the motor speed by 60% leads to around 90% energy consumption reduction. Therefore, reducing the motor speed is the most direct and straightforward way to save energy in most motion control applications. The iAMC contributes to energy conservation and cost reduction by controlling the motor's speed, allowing for increased energy efficiency and operational savings.

The industry with the highest energy consumption must increase energy efficiency to meet international standards by 2030 due to Net-Zero Carbon Emissions policies. HydroLync has completed the development of an intelligent control device that can meet these requirements and is currently preparing for mass production.

The iAMC is applied to models 33.35 and above, which have relatively high power consumption, aiming to achieve up to 60% energy savings through continuous research and development efforts.

The iAMC supports software with RS485 communication, allowing monitoring and configuration of operational conditions. This enables users to conveniently manage and control coolers.



RS485 Module

iAMC Software

iAMC applied HLA2 113-6-iAMC

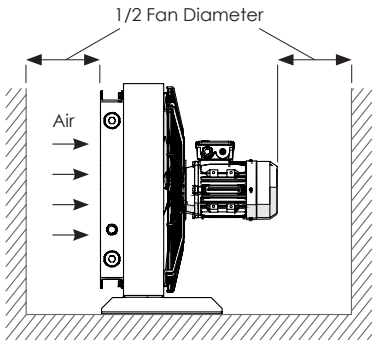
Installation and Maintenance

*Please refer to the product manual for more detailed information.

Installation

The cooler has a very sturdy structure and can be mounted on both the face and foot. When installing it on the front of a duct or ventilation shaft, use the 4 to 8 mounting holes in the U-channel of the matrix. Place the cooler so that the airflow is not restricted. The distance to the nearest wall should be at least half the diameter of the fan.

HLA2 Model	1/2 Fan Diameter
07	162.5
11	200
16	228
23	269
33, 35	325
56, 58	412
76, 78	450
110, 112, 113	530
200	625

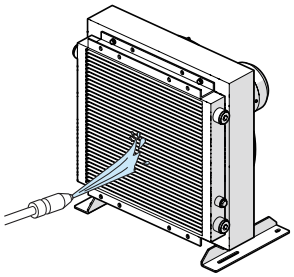


Cleaning the inside of the matrix

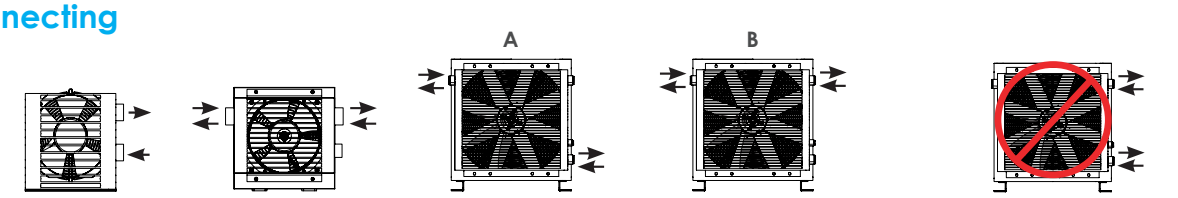
To clean the inside of the matrix, connect the cooler to a closed circuit and circulate perchloroethylene. After cleaning, flush the matrix with oil before reconnecting it to the hydraulic system.

Cleaning the outside of the matrix

The easiest way to clean the fins is to use compressed air or wash them with water. Grease removers and high-pressure cleaning systems can also be used to remove foreign matter. When using a high-pressure cleaning system, make sure that the water stream is parallel to the fins and at least 3cm away from them. Be careful not to damage the fins with a strong water stream.



Connecting



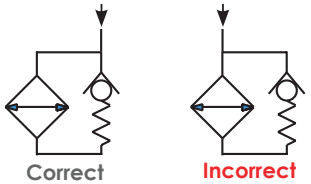
Model: 015 | Model: 03, 04 | Model: 07-200 | Model: 07-200 | Incorrect connecting (No heat exchange)

Attention

- Connect the pipes to the heat exchanger as shown in the diagram. Avoid incorrect connections that do not result in effective heat exchange.
- The air-oil cooler matrix is designed with a maximum operating pressure of 14 bar. If the cooler is installed in the return line, appropriate protective measures must be taken to prevent damage to the heat exchanger from pressure surges. Otherwise, an offline circulation pump-type cooling system (refer to HLO3 Series) may be necessary.
- Connecting the matrix with hoses is recommended. The appropriate size and type of hose will depend on the system pressure, flow rate, fluid, and temperature.

Applying Bypass

When a surge pressure occurs in the hydraulic system circuit, install a line check valve as shown in the right figure to protect the durability of the cooler matrix.



Calculation Examples

Example 1: **If you know the heat dissipation**

Heat dissipation	=	65 kW	
Max. Oil temperature	=	70°C	
Max. Ambient temperature	=	30°C	
Oil flow rate	=	250 L/min.	
Cooling capacity	=	$Q /(T_{oil} - T_{amb})$	= 65 /(70-30)
	=	**1.63** kW/°C	

Example 2: **If you don't know the heat dissipation**

*Typically, the heat dissipation for oil is 25-30% of the engine or motor power (for diesel engines or electric motors).

Engine/Motor	=	30 kW	
Heat dissipation	=	0.3 x 30 kW	= 9.0 kW
Max. Oil temperature	=	60°C	
Max. Ambient temperature	=	30°C	
Oil flow rate	=	35 L/min.	
Cooling capacity	=	$Q/(T_{oil} - T_{amb})$	= 9.0/(60-30)
	=	**0.30** kW/°C	

Example 3: **If you don't know the heat dissipation and engine/motor power**

Oil tank volume	=	220 L
Max. Oil temperature	=	60°C
Max. Ambient temperature	=	30°C
Oil flow rate	=	75 L/min.

*If the system operates without a cooling device, the oil temperature will increase by 25°C within 30 minutes.

$\Delta T = 25°C$, $\Delta t = 30$ min. = 1800 sec.

$Q = (V_{vol} \times \rho_{oil} \times c_p \times \Delta T)/\Delta t$	=	(220 x 0.85 x 2.1 x 25)/1800
	=	5.45 kW
Cooling Capacity	=	5.45/(60-30)
	=	**0.18** kW/°C

Symbols

Q = heat dissipation [kW]

ρ_{oil} = oil density [0.85 kg/L]

c_p = specific heat capacity [2.1 kJ/kg°C)]

T_{oil} = max. oil temperature [°C]

T_{amb} = ambient temperature [°C]

V_{vol} = oil volume in the system [L]

Values

1 kcal/sec. = 4.187 kW

1 hp = 0.7358 kW

1 BTU /sec. = 1.053 kW

1 cfm = 4.72×10^{-4} m^3/sec.

Selection table

Company		**Date**	
Address		**Email**	
Tel/Fax			
Person in charge		**Mobile**	

The following information is necessary for accurate product selection.		
Heat dissipation		kW / HP
Flow rate		L/min
Fluid type	ISO VG	ex) ISO VG 46
Desired cooling temperature		°C
Max. Allowable pressure drop		bar
Ambient temperature		°C
AC motor	☐ 110V ☐ 220V ☐ 220/380V-60Hz ☐ 440-60Hz ☐ 230/400-50Hz	
Installation space	Height: x Width: x Depth:	
Installation height		m
Max. Pressure applied to the cooler		bar

HLD Series

DC Motor Driven

Features

- Applied 3rd generation DMC
- Applied PTO on/off control function
- Intelligent DC motor controller for energy saving
- iDMC configuration and monitoring software

Quick Overview

Hydraulic mobile oil cooler, HLD Series from HydroLync, provides a wide range of specifications. You can quickly check the cooling performance, heat dissipation, and maximum flow rate of each model in ISO VG 46 oil based on ETD 40℃.

No.	Model-DC Power_Cooling Performance(KW/℃) (Heat Dissipation KW, Kcal/h) / Max. Flow rate(LPM)
1	HLD 015-12V / 24V _ 0.048KW/℃ (1.92KW, 1,651Kcal/h) / Max.40LPM
2	HLD 03-12V / 24V _ 0.080KW/℃ (3.20KW, 2,752Kcal/h) / Max.100LPM
3	HLD 04-12V / 24V _ 0.125KW/℃ (5.00KW, 4,300Kcal/h) / Max.100LPM
4	HLD 07-12V / 24V _ 0.19KW/℃ (7.60KW, 6,536Kcal/h) / Max.125LPM
5	HLD 11-12V / 24V _ 0.31KW/℃ (12.40KW, 10,664Kcal/h) / Max.150LPM
6	HLD 16-12V / 24V _ 0.39KW/℃ (15.60KW, 13,416Kcal/h) / Max.200LPM
7	HLD 23-12V / 24V _ 0.60KW/℃ (24.00KW, 20,640Kcal/h) / Max.200LPM
8	HLD 33-12V / 24V _ 0.72KW/℃ (28.80KW, 24,768Kcal/h) / Max.300LPM
9	HLD 35-12V / 24V _ 0.81KW/℃ (32.40KW, 27,864Kcal/h) / Max.350LPM

[Remark] RPM for 12V, 24V
DC Motor = 3,060RPM

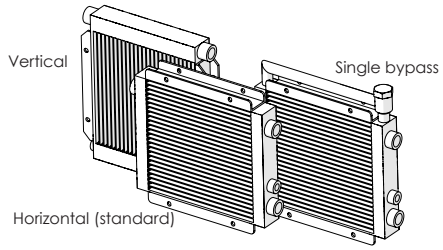
* Based On ETD 40℃ / ISO VG 46 *

Ordering code

Example: HLD [ ] [07] - [24V] - [W50] - [DMC] - [BC] - [ ] - [ ]

1 2 3 4 5 6 7 8

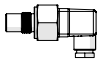
1	Matrix types
	Horizontal (Standard)
V	Vertical
SB	Single Bypass

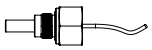


2	Matrix size	
Code	**Size**	**Port**
015	176x175x45	G3/8
02	148x245x45	PT3/8
03	248x216x63	G1
04	272x244x63	G1
07	335x322x63	G1
11	405x390x63	G1
16	464x458x63	G1
23	545x540x63	G1
33	640x648x63	G1
35	640x648x83	G1 1/2

3	DC Voltage	
12V	12V	DC Power
24V	24V	DC Power

4	Thermal switch	
Code	**Temperature**	**Working range**
	None	
W/D	**30**	ON 35±5℃ / OFF 25±5℃
W/D	**40**	ON 45±5℃ / OFF 35±5℃
W/D	**50**	ON 55±5℃ / OFF 45±5℃
W/D	**60**	ON 65±5℃ / OFF55±5℃
W/D	**70**	ON 75±5℃ / OFF 65±5℃
DTM	**Sensor**	-55°C to +125°C

***W: Wire type**  ***D: DIN plug type** 

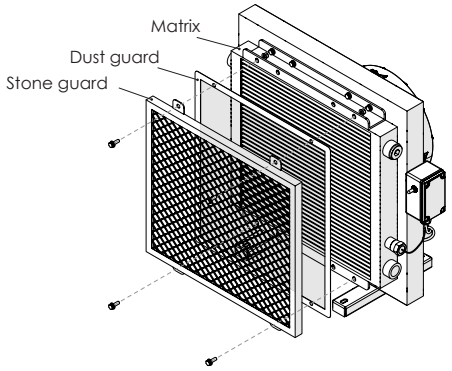
***DTM: Digital Thermometer** 

***Note:** This can only be used with products equipped with iDMC.

5	DC Motor Controller (DMC)
	None (standard)
DMC	DC Motor Controller
iDMC	Intelligent DC Motor Controller

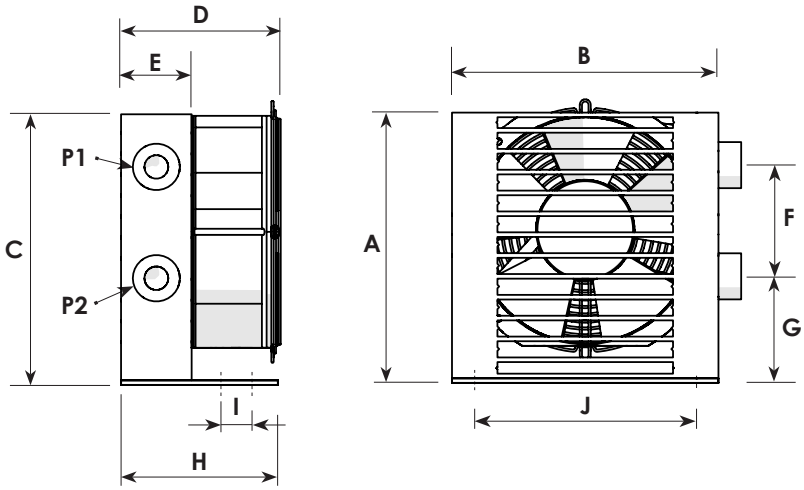
6	Battery power cable
	None (standard)
BC	Battery power cable - 8m

7	Matrix protection accessories
	None (standard)
D	Dust Guard
S	Stone Guard
A	Dust Guard + Stone Guard

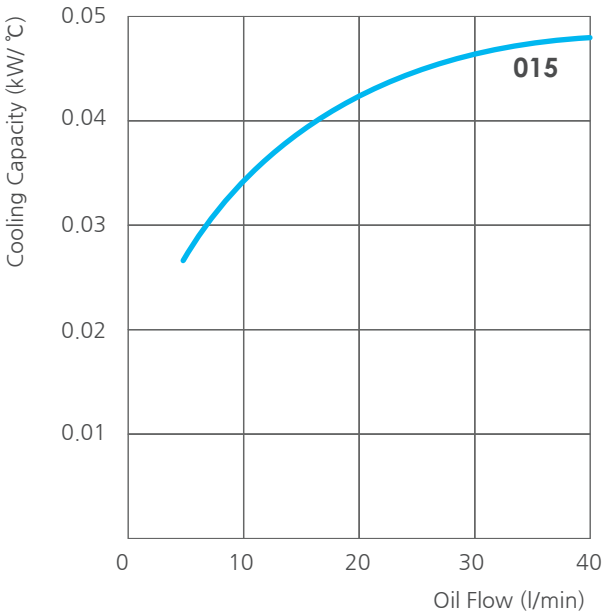


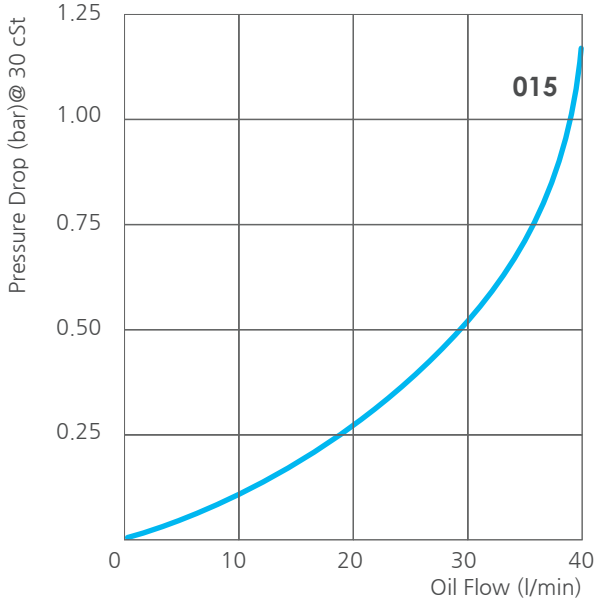
8	Production type
	Standard
C	Customization

HLD 015



HLD Model	A	B	C	D	E	F	G	H	I	J	K	P1, 2	Bracket Hole
HLD 015	175	176	175	104.3	45	72	69	100	30	138	-	PT3/8"	4xø6



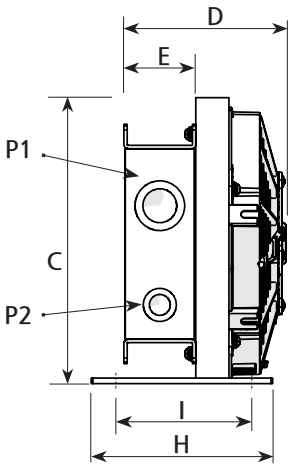


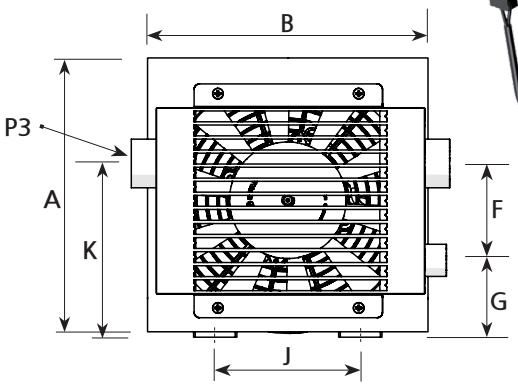
Flow rate:	10 ~ 40 l/min (< ΔP=1.2 bar)	**DC motor:**	12V / 1.1A @3,200 rpm
Test pressure:	21 bar		24V / 0.6A @3,200 rpm
Max. Working pressure:	Max. 14 bar	**Ambient Temp. of Motor / Operating:**	-10 ℃ ~ +80 ℃
Ingress protection rating:	IP 44	**Ambient Temp. of DC / Storage:**	-10 ℃ ~ +70 ℃
Noise:	< 52dB(A) 1m	**Net Weight:**	2.6 Kg

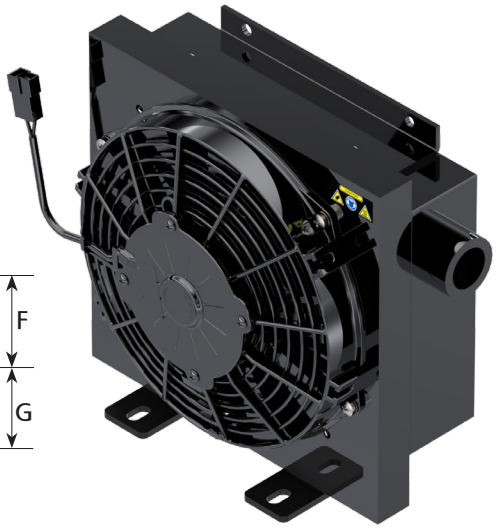
The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

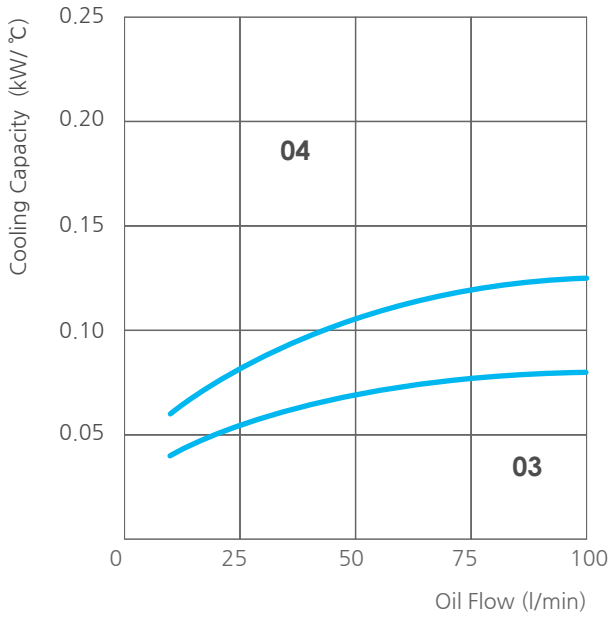
HLD 03, 04

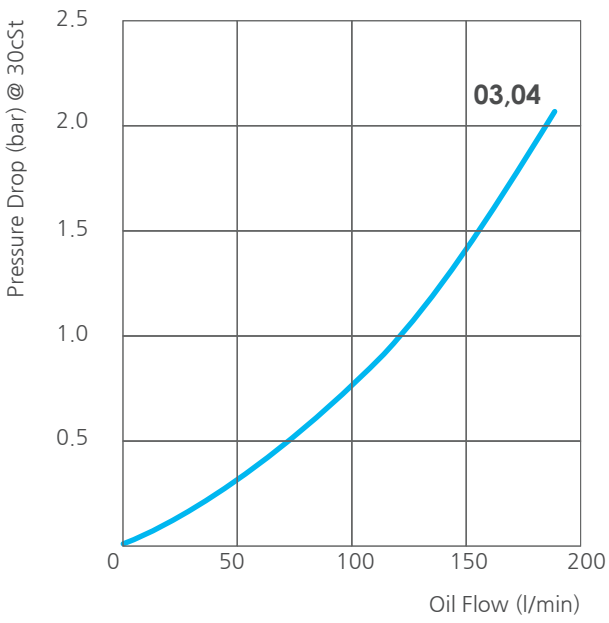






HLD Model	A	B	C	D	E	F	G	H	I	J	K	P1, 3	P2	Bracket Hole
HLD 03	253	259	258	160.2	63	89.5	71	164	133	134	160.5	G1"	G1/2"	4x(ø10x19)
HLD 04	266	273	271	160.2	63	90	105	164	133	134	195	G1"	G1/2"	4x(ø10x19)



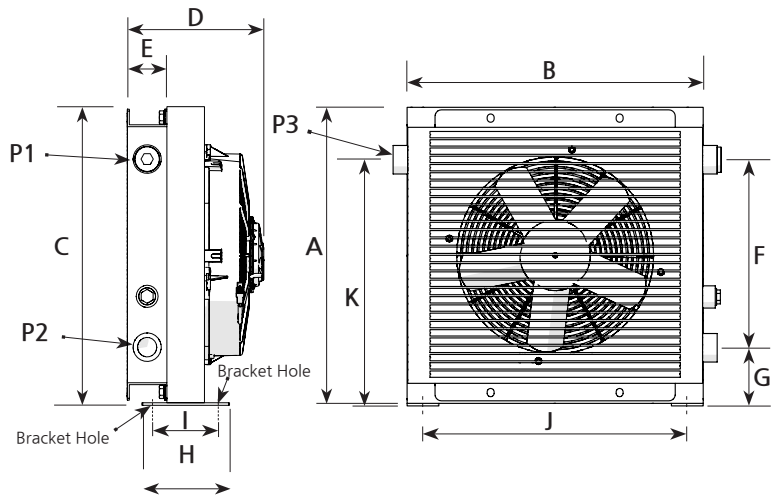


Oil flow rate:	Max. 100 l/min	**DC Motor :**	12V / 8A @3,350 rpm
Working Pressure:	Max. 14 bar		24V / 4A @3,350 rpm
Insulation Class:	H (180 °C 356 °F)	**Net Weight:**	03 5 Kg
Ingress Protection:	IP 68		04 6 Kg
Noise Level:	< 68 dB(A)		

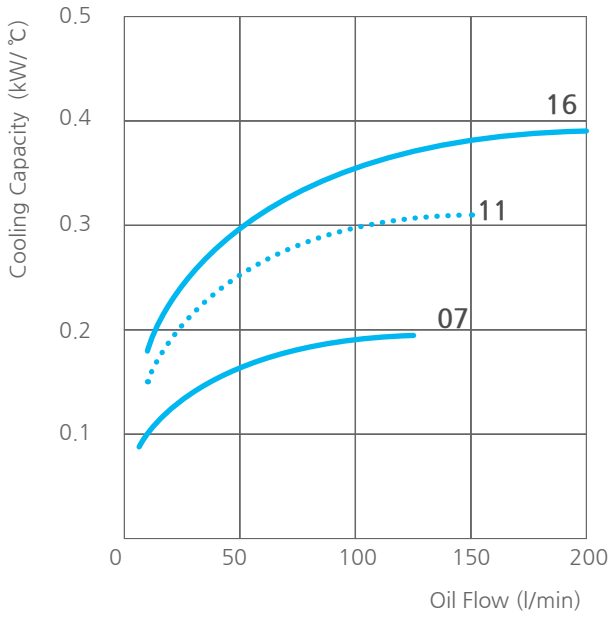
The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60°C (T_{inlet}) and an ambient air temperature of +20°C ($T_{ambientmax}$) provide a temperature difference (ETD) of +40°C. To obtain the total cooling capacity, multiply the cooling performance (kW/°C) by ETD (°C) as follows:

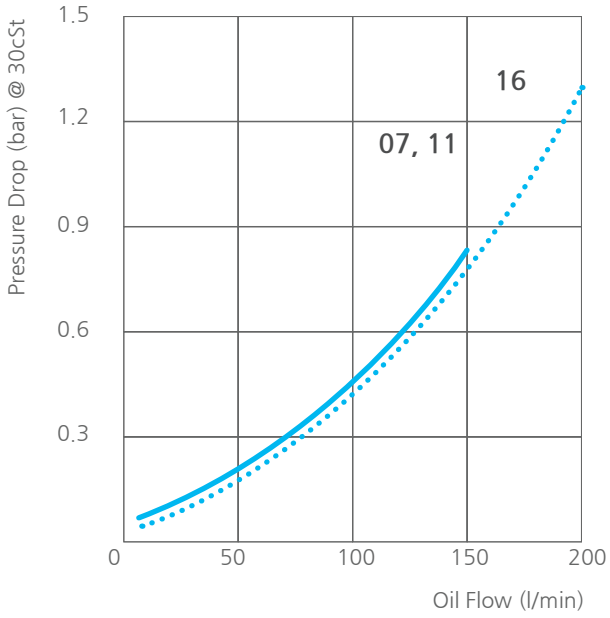
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/°C) x ETD (°C) = Cooling capacity (kW)

HLD 07 ~ 16



HLD Model	A	B	C	D	E	F	G	H	I	J	K	P1, 3	P2	Bracket Hole
HLD 07	340	340	335	198	63	160	94	120	90	300	254	G1"	G1"	11 x 22
HLD 11	398	410	402	218	63	228	89	140	100	360	317	G1"	G1"	11 x 22
HLD 16	466	466	470	218	63	296	92	140	100	416	388	G1"	G1"	11 x 22





Flow rate: 07 - Max. 130 l/min
11 - Max. 150 l/min
16 - Max. 200 l/min

Max. Working Pressure: Max. 14 bar

Insulation Class: H (180 ℃ 356 ℉)

Ingress Protection: IP 68

Noise Level: < 74 dB(A)

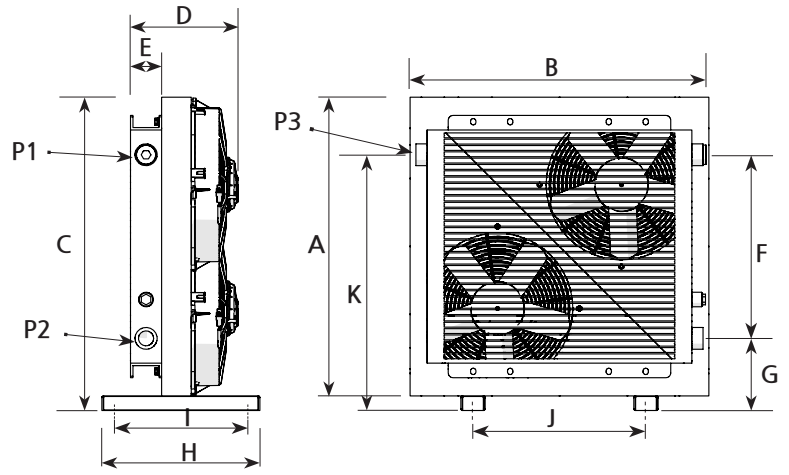
DC Motor : 12V / 20A @3,060 rpm
24V / 10A @3,060 rpm

Net Weight: 07 (9 Kg), 11(12 Kg), 16(15 Kg)

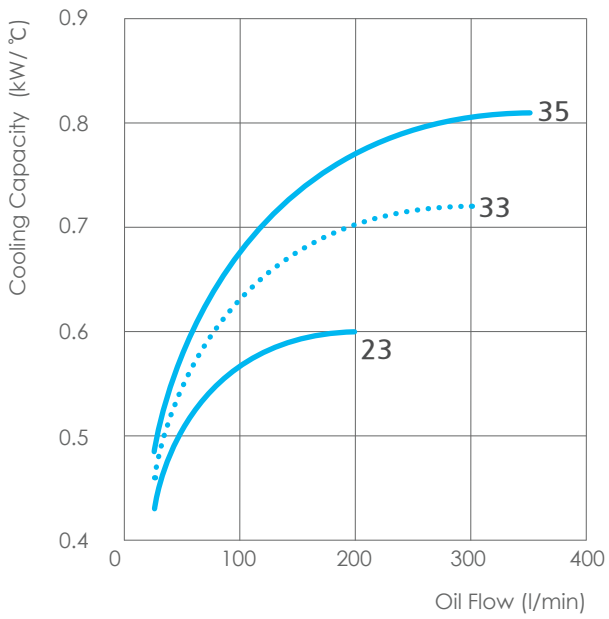
The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

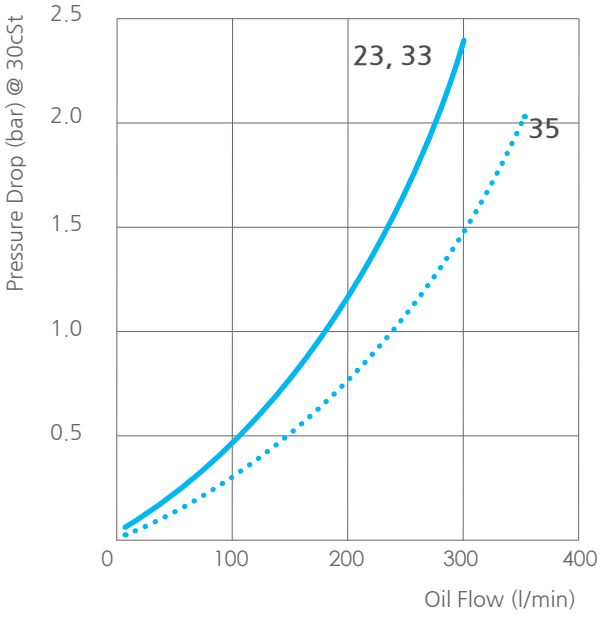
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

HLD 23 ~ 35



HLD Model	A	B	C	D	E	F	G	H	I	J	K	P1, 3	P2	Bracket Hole
HLD 23	615	615	645	218	63	378	149	320	280	356	527	G1"	G1"	12 x 22
HLD 33	690	680	720	218	63	482	136	320	280	356	618	G1 1/4"	G1 1/4"	12 x 22
HLD 35	690	680	720	238	83	482	136	320	280	356	618	G1 1/2"	G1 1/2"	12 x 22





Flow rate: 23 - Max. 200 l/min
33 - Max. 300 l/min
35 - Max. 350 l/min

Ma. Working pressure: Max. 14 bar

Insulation class: H (180 ℃ 356 ℉)

Ingress Protection: IP 68

Noise Level: < 77 dB(A)

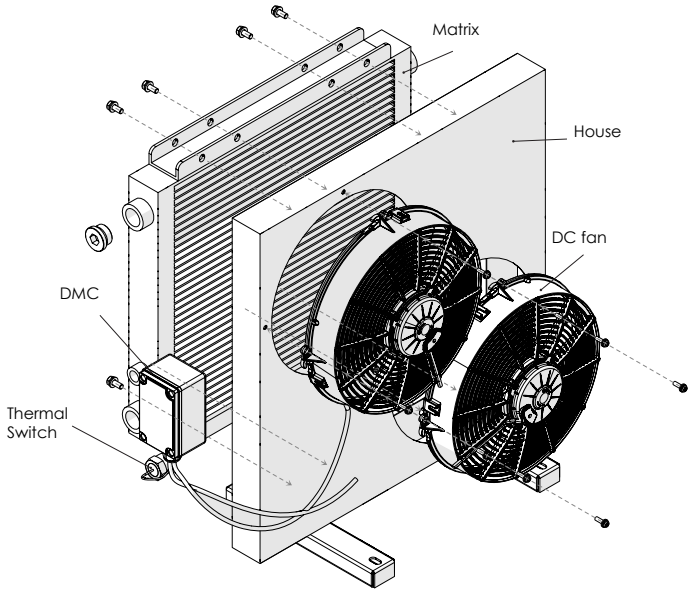
DC Motor : 12V / 2x20A @3,060 rpm
24V / 2x10A @3,060 rpm

Net Weight: 23(25 Kg), 33(30 Kg), 35(34 Kg)

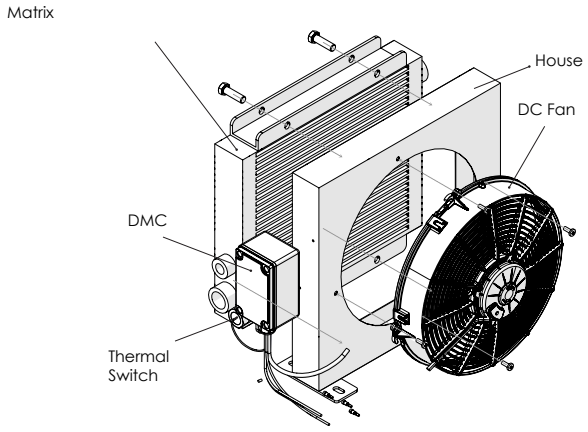
The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

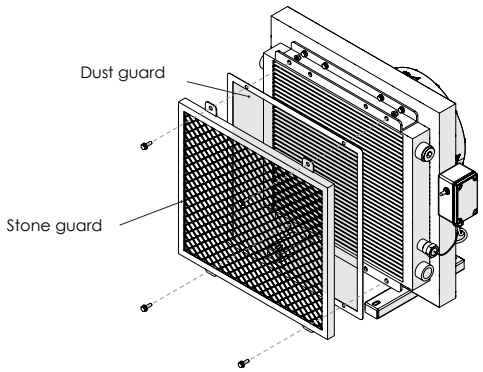
Specifications



Model 23~35



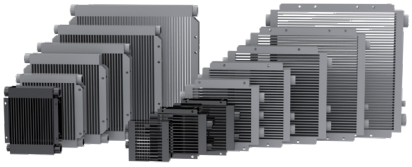
Model 03~16



Aluminum Matrix

Hydrolync provides various aluminum matrices, and customers can choose between horizontal and vertical types to meet their requirements.

- Material: 3003/4004/5052
- Test pressure: 21 bar
- Test standard: ISO/DIS 10771-1
- Max. Working pressure: 14 bar
- Max. Working temperature: 120 ℃
- Paint: Epoxy / Polyester powder coatings - coating thickness 60 μm
- Paint color:
  Applied model:015~04 RAL 9005 / black
  Applied model:07~200 RAL 9006 / silver



DC Fan Motor -12/24V

- All IP68 certified DC motors have waterproof capabilities and are completely sealed to protect against infiltration of solids and liquids.
- Ingress protection rating : IP68
- Max. Fan speed: 3,060 RPM

House

- Material: steel
- Paint: powder coating
- Paint color: black, silver(optional)

Thermal Switch

- Material: Aluminum house
- Finishing: Oxidation treatment
- Ingress protection rating: IP68
- Temperature contact: 40~90 °C ±5 °C

DC Motor Controller

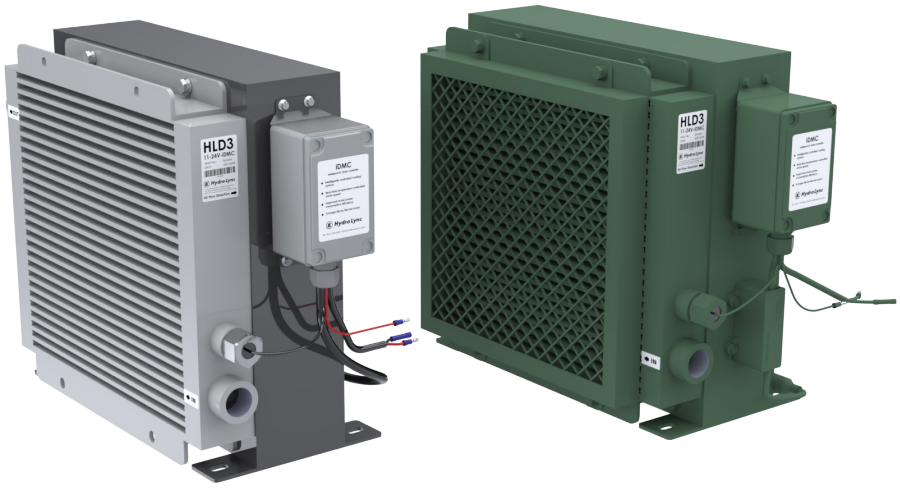
- The third-generation DMC has reinforced protection circuits against standing current and spike voltage to match commercial vehicle electrical systems.
- Controlling the operation of a cooler with a PTO signal
- Energy-saving iDMC model with environmental setup software and communication connector (sold separately).

Stone Guard / Dust Guard

- Protect components and systems from harsh environments.
- Extend service life and reduce maintenance costs.

Introduction of the new HLD3 product

"More powerful, longer-lasting!"



- Application of SPAL BLDC fan motor.
- Application of iDMC 3rd generation controller.

The HLD3 product is the next-generation oil cooler from HydroLync, incorporating advanced core technologies. Below are the key features of the HLD3 product:.

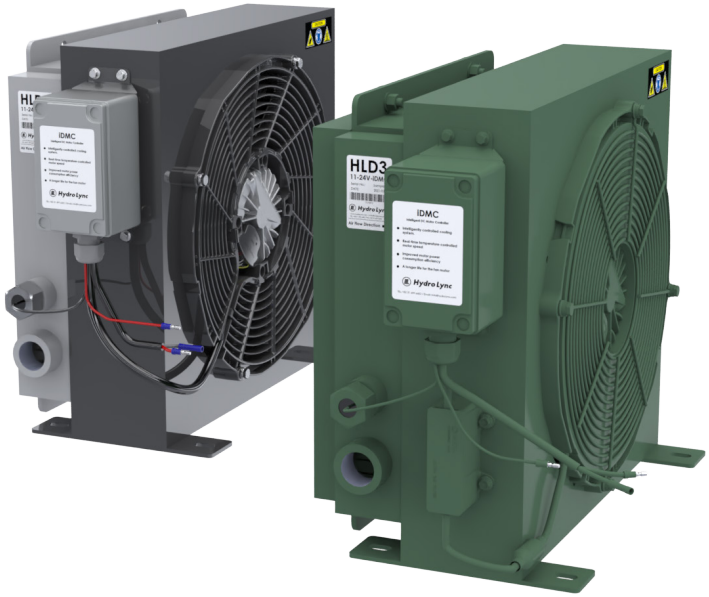
1. The HLD3 product maximizes energy efficiency and extends the operational lifespan by using a Brushless fan motor, instead of the commonly used Brushed fan motor.
2. Additionally, the application of the iDMC 3rd generation controller further optimizes the performance of the oil cooler.
3. Utilizing HydroLync design principles, the cooling performance is further enhanced, ensuring superior efficiency.

Comparison Item	HLD	HLD3
Rated Voltage	DC 24V	DC 24V
Motor Power	250W	300W
Airflow	2,770 m3/h @26V	3,100 m3/h @26V
Max. RPM	3,060	3,650
Motor Lifespan	Approx. 10,000 hours	Minimum 40,000 hours
Control Method	ON/OFF Control	PWM/Voltage Control/ON-OFF Control
Cooling Power (at 40°C ETD)	Max. 0.31 kW/ °C	Max. 0.33 kW/ °C

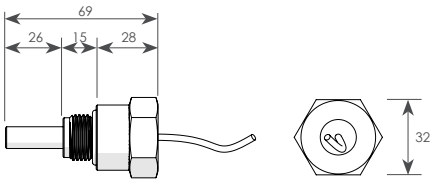
Product Specifications Comparison Table

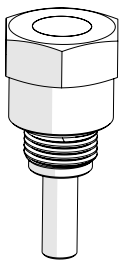
Introduction of the new HLD3 product

"Evolution continues!"



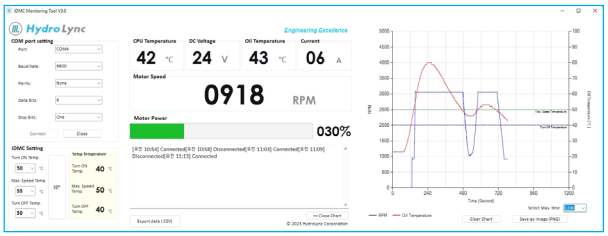
The HLD3 product has been completely redesigned from scratch to achieve more precise control of oil viscosity. Temperature sensors used in the HLD3 product are DALLAS's digital temperature sensors, providing a precision of ±0.5°C. Additionally, the sensor housing has been newly designed to minimize the time lag between the actual oil temperature changes and the temperature sensor.





Items	Specification
Working range	-55°C ~ +125°C
Accuracy	±0.5°C
Speed	750ms (Convert 12 bit temperature to digital word)
Standby power	0 (Zero standby power required)
Port size	G 1/2"

RS485 Connector



Monitoring Software

The HLD3 product comes with monitoring software, enabling users to configure the cooler's operating conditions and analyze its performance through RS485 communication. It allows users to set operating parameters, monitor the operational status, and output relevant data for analysis.

Accessories

DC Motor Controller (DMC)

Patented product. Patent number: 10-2039595

3rd G. DMC

- Circuit design optimized for electric systems in cargo vehicles
- Energy-saving controller for the era of electric and hydrogen vehicles
- PTO signal control

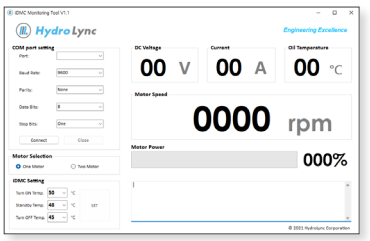
DMC (DC Motor Controller) is a controller that controls the DC oil cooler of a mobile hydraulic system. HydroLync supplies the 3rd generation DMC that enhances stability from PTO signal control and surge voltage in the length measuring system through continuous development. In addition, to prepare for the era of electric and hydrogen vehicles in special vehicles, HydroLync has developed iDMC, which can save up to 60% energy using PID control technology.

iDMC is an intelligent controller that detects the trend of changes in oil temperature and controls the speed of the fan motor to increase energy efficiency, thereby also extending the life of the fan motor. In addition, it is equipped with a program that allows users to set and monitor the operating temperature, standby temperature, and stop temperature of the cooler according to their usage environment.

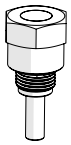
Patented product. Patent number: 10-2458187

iDMC

RS485 Connector



Monitoring Software



DTM (Digital Thermometer)

Thermal Switch

The thermal switch controls the operation and stop of the cooler according to the temperature of the oil flowing through the matrix.

Material: Thermostat Cell _ Bi-metal / Cell Housing _ Aluminum

Lifespan ≥ 100,000 times, **Max. Rating** @ 24VAC 7.5A (Resistance load)

Type of Contact : Normally Open **Temp. Differential ΔT** : 10℃

Ingress protection rating : IP68 (Wire type), IP65(Din Plug type),

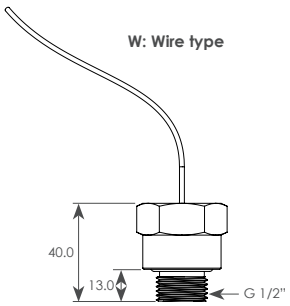
Connection Thread : G 1/2, **Cable Length** : 350mm

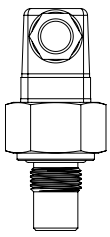
W: Wire type

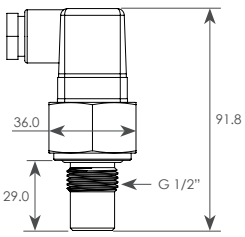
D: DIN plug type

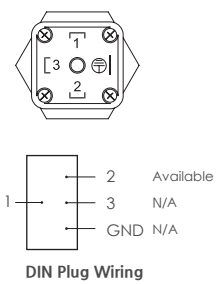
Type	Temperature	Working range
W/D	30	ON 35±5℃ / OFF 25±5℃
W/D	40	ON 45±5℃ / OFF 35±5℃
W/D	50	ON 55±5℃ / OFF 45±5℃
W/D	60	ON 65±5℃ / OFF 55±5℃
W/D	70	ON 75±5℃ / OFF 65±5℃

Selection of the thermal switch





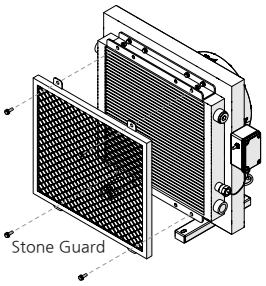


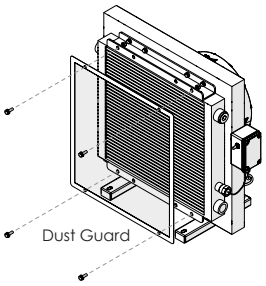


DIN Plug Wiring

Protection of the matrix

Coolers installed in harsh environments with dust, oil, and other contaminants may cause damage to the surface of the matrix or decrease heat exchange performance due to oil and dust sticking to the fins. In this case, if the surface is damaged or oil and dust cannot be cleaned from the fins, the matrix must be replaced. To reduce such losses, Stone Guard or Dust Guard can be installed on the matrix to protect it and reduce maintenance costs. It is important to note that when installing a Dust Guard, regular cleaning is necessary to maintain performance, as failure to do so may reduce the airflow and cause the motor to overload.





Attention

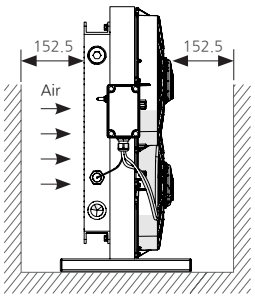
- To maintain the cooler's optimal cooling performance, the Dust Guard should be cleaned twice a week.
- The cleaning cycle for Stone Guard is approximately once every three months.
- If the environmental pollution conditions are severe, reduce the cleaning cycle.

Installation and Maintenance

***Please refer to the product manual for more detailed information.**

Installation

The cooler has a very sturdy structure and can be mounted on both the face and foot. When installing it on the front of a duct or ventilation shaft, use the 4 to 8 mounting holes in the U-channel of the matrix. Place the cooler so that the airflow is not restricted. The distance to the nearest wall should be at least half the diameter of the fan.

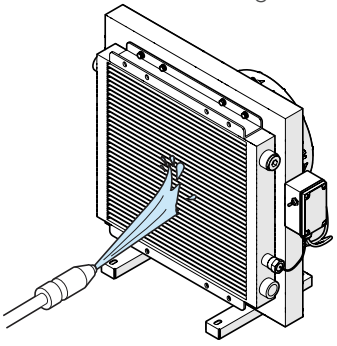


HLD Models	1/2 Fan Diameter
07 ~ 33.35	152.5 mm

Cleaning matrix

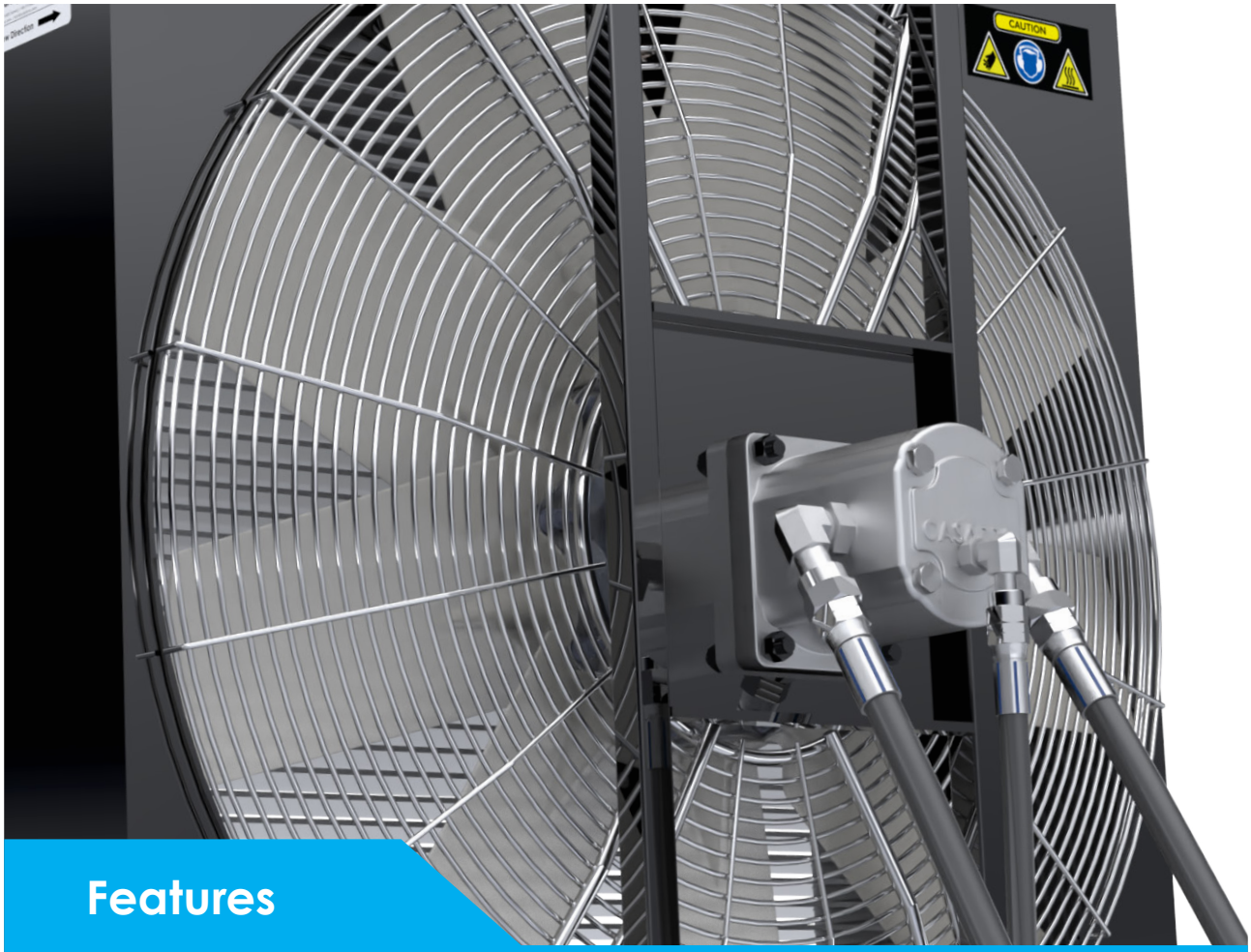
It is recommended to keep the matrix clean to prevent degradation of cooling performance.

1. To clean the inside of the matrix, connect the cooler to a closed circuit and circulate perchloroethylene. After cleaning, clean the inside of the radiator with oil before reconnecting to the hydraulic system.
2. The easiest way to clean the fins is to use compressed air or wash them with water. You can also remove debris using a degreaser or high-pressure cleaning system. When using a high-pressure cleaning system, make sure the water stream is aimed parallel to the fins from a distance of at least 3cm away from the fins. Strong water streams can damage the fins.

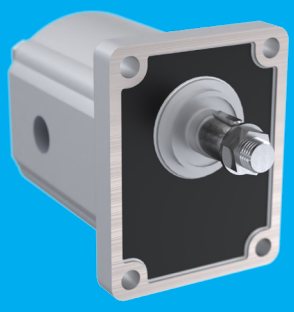


HLH2 Series

Hydraulic Motor Driven



Features



- Applied CASAPPA POLARIS hydraulic motor
- Low level of noise emission
- Integrated outboard bearings for heavy duty application

Quick Overview

Hydraulic motor oil cooler, HLH2 Series from HydroLync, provides a wide range of specifications. You can quickly check the cooling performance, heat dissipation, and maximum flow rate of each model in ISO VG 46 oil based on ETD 40℃.

No.	Model_Cooling Performance(KW/℃) (Heat Dissipation KW, Kcal/h) / Max. Flow rate(LPM)
1	HLH2 07 (Max 3,000RPM) _ 0.25KW/℃ (10KW, 8,600Kcal/h) / Max.125LPM
2	HLH2 11 (Max 3,000Rpm) _ 0.445KW/℃ (17.8KW, 15,308Kcal/h) / Max.150LPM
3	HLH2 16 (Max 3,000RPM) _ 0.625KW/℃ (25KW, 21,500Kcal/h) / Max.200LPM
4	HLH2 23 (Max 1,500RPM) _ 0.70KW/℃ (28KW, 24,080Kcal/h) / Max.200LPM
5	HLH2 33 (Max 1,500RPM) _ 1.10KW/℃ (44KW, 37,840Kcal/h) / Max.300LPM
6	HLH2 35 (Max 1,500RPM) _ 1.3KW/℃ (52KW, 44,720Kcal/h) / Max.300LPM
7	HLH2 56 (Max 1,000RPM) _ 1.5KW/℃ (60KW, 51,600Kcal/h) / Max.300LPM
8	HLH2 58 (Max 1,000RPM) _ 1.7KW/℃ (68KW, 58,480Kcal/h) / Max.300LPM
9	HLH2 76 (Max 1,000RPM) _ 1.95KW/℃ (78KW, 67,080Kcal/h) / Max.400LPM
10	HLH2 78 (Max 1,000RPM) _ 2.25KW/℃ (90KW, 77,400Kcal/h) / Max.500LPM
11	HLH2 110 (Max 1,000RPM) _ 2.35KW/℃ (94KW, 80,840Kcal/h) / Max.400LPM
12	HLH2 112 (Max 1,000RPM) _ 3.3KW/℃ (132KW, 113,520Kcal/h) / Max.500LPM
13	HLH2 113 (Max 1,000RPM) _ 4.27KW/℃ (170.8KW, 146,888Kcal/h) / Max.500LPM

[Remark] RPM for Hydraulic Motor = (q • 1000) / v
q : Inlet Oil Flow for Hydraulic Motor (Lit/min)
v : Hydraulic Motor Volume (cm3/rev)

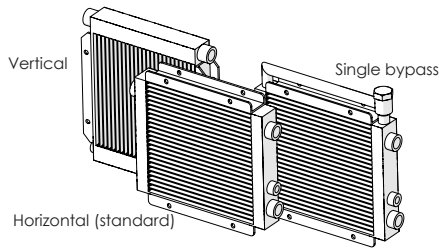
* Based On ETD 40℃ / ISO VG 46 *

Ordering code

Example: HLH2 [ ] [35] - [19cc] - [W50] - [S] - [ ]

1 2 3 4 5 6

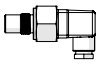
1	Matrix types
	Horizontal (Standard)
V	Vertical
SB	Single Bypass



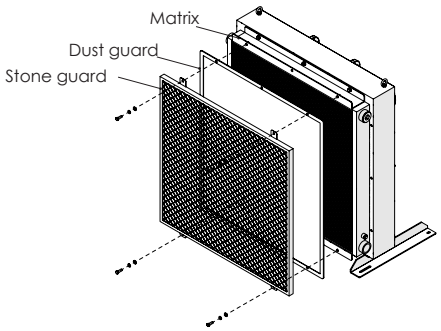
2	Matrix size	
Code	**Size**	**Port**
07	335x322x63	G1"
11	405x390x63	G1"
16	464x458x63	G1"
23	545x540x63	G1"
33	640x648x63	G1"
35	640x648x83	G1 1/2"
56	802x826x63	G1 1/4"
58	802x826x83	G2"
76	940x1019x63	G1 1/2"
78	940x1019x83	G2"
110	1120x1190x63	G2"
112	1120x1190x83	G2"
113	1120x1190x113	G2"

3	Discharge of the pump	
11cc	11.23	cm^3/rev
14cc	14.53	cm^3/rev
19cc	19.09	cm^3/rev

4	Thermal switch	
Code	**Temperature**	**Working range**
	None	
W/D	**30**	ON 35±5℃ / OFF 25±5℃
W/D	**40**	ON 45±5℃ / OFF 35±5℃
W/D	**50**	ON 55±5℃ / OFF 45±5℃
W/D	**60**	ON 65±5℃ / OFF55±5℃
W/D	**70**	ON 75±5℃ / OFF 65±5℃

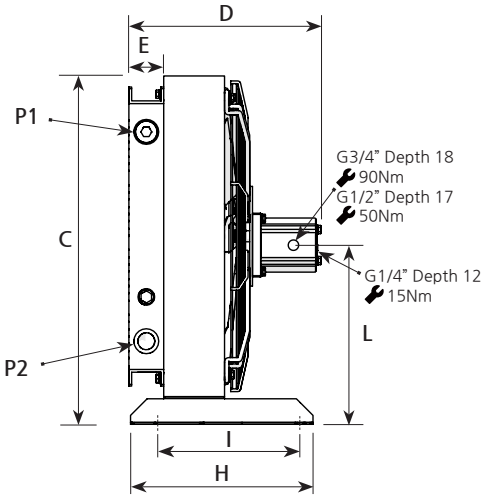
***W: Wire type**  ***D: DIN plug type** 

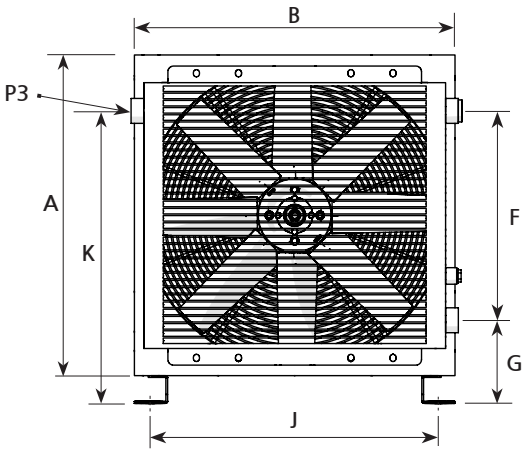
5	Matrix protection accessories
	None (standard)
D	Dust Guard
S	Stone Guard
A	Dust Guard + Stone Guard



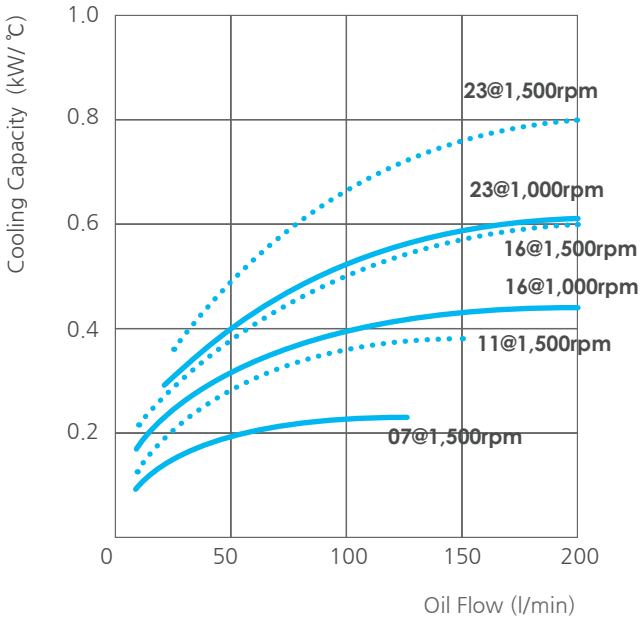
6	Production type
	Standard
C	Customization

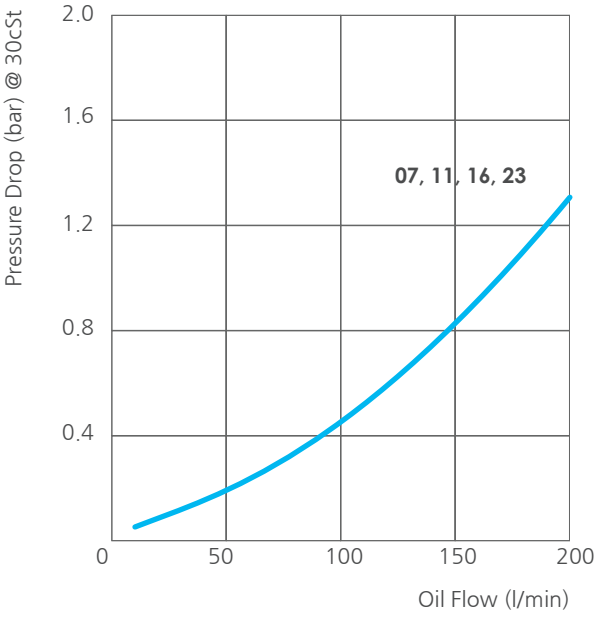
HLH2 07 ~ 113

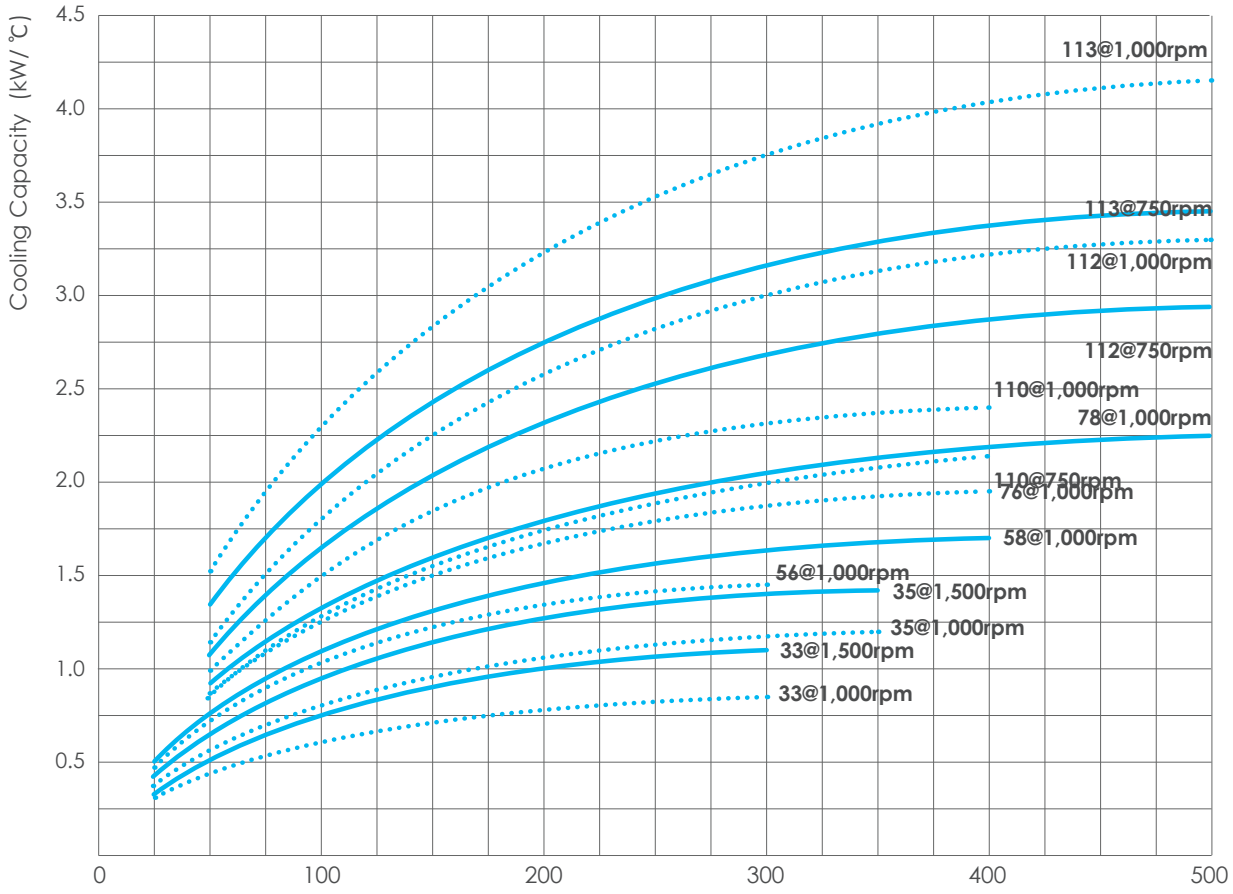




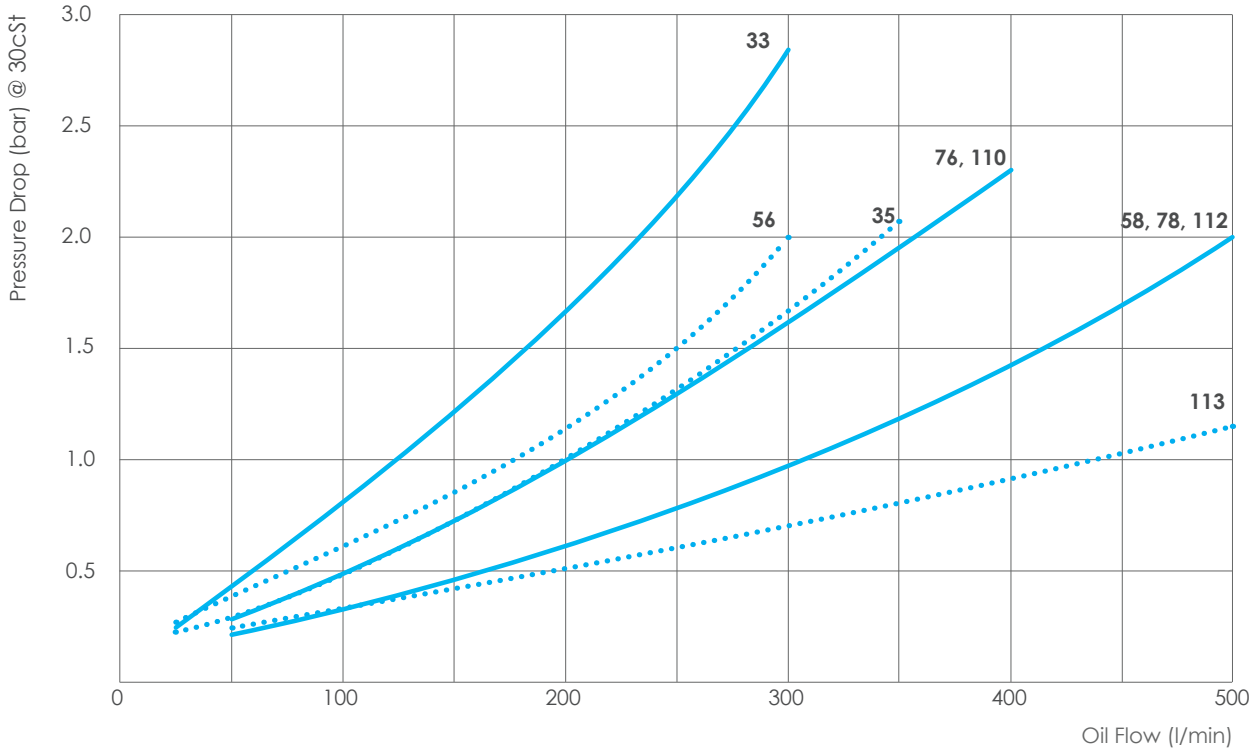
HLH2 Model	A	B	C	D	E	F	G	H	I	J	K	L	P1,2,3	Slot Hole	Weight kg	Noise Level (dB) 1m	Max. Speed (RPM)
07	365	365	408	(317)	63	160	145	270	(145)	297	305	209	G1"	ø10x90 ø10x19	12	79 @3,000 rpm	3,500
11	440	440	480	(332)	63	228	146	280	(170)	390	374	244	G1"	ø10x90 ø10x19	17	82 @3,000 rpm	3,500
16	496	496	536	(342)	63	296	143	305	(195)	436	484	272	G1"	ø10x90 ø10x19	20	86 @3,000 rpm	3,500
23	579	579	629	(354)	63	378	150	330	(220)	520	528	323	G1"	ø10x90 ø10x19	32	76 @1,500 rpm	2,840
33	692	692	742	(414)	63	482	157	400	(270)	620	639	380	G1 1/4"	ø12x92 ø12x21	42	85 @1,500 rpm	2,350
35	692	692	742	(434)	83	482	157	400	(270)	620	639	380	G1 1/2"	ø12x92 ø12x21	58	86 @1,500 rpm	2,350
56	868	868	928	(434)	63	664	163	430	(320)	796	827	478	G1 1/4"	ø12x92 ø12x21	73	82 @1,000 rpm	1,850
58	868	868	928	(454)	83	664	163	430	(320)	796	827	478	G2"	ø12x92 ø12x21	80	83 @1,000 rpm	1,850
76	1022	1022	1092	(440)	63	821	176	455	(325)	972	997	565	G1 1/2"	ø14x94 ø14x23	110	87 @1,000 rpm	1,690
78	1022	1022	1092	(460)	83	821	176	455	(325)	972	997	565	G2"	ø14x94 ø14x23	119	88 @1,000 rpm	1,690
110	1205	1185	1285	(460)	63	985	192	665	(550)	1115	1177	666	G2"	ø14x94 ø14x23	125	91 @1,000 rpm	1,440
112	1205	1185	1285	(480)	83	985	192	665	(550)	1115	1177	666	G2"	ø14x94 ø14x23	133	92 @1,000 rpm	1,440
113	1205	1185	1285	(510)	113	985	192	665	(550)	1115	1177	666	G2"	ø14x94 ø14x23	192	93 @1,000 rpm	1,440







For each model, please use the ProSizer program from HydroLync to obtain the performance curves that are not indicated for @750 rpm, @1000 rpm, @1500 rpm, and @3000 rpm.



The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

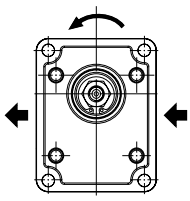
ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

Technical Specifications

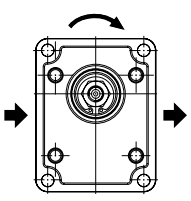
Features

Construction	External gear type motor		
Mounting	European		
Line connections	Gerotor and flange		
Direction of rotation	Clockwise		
Max back pressure for single rotation motors and reversible internal drain motors	p_1 max 5 bar (Max. Continuous pressure)		
	p_2 max 8 bar (Max. Intermittent pressure)		
	p_3 max 15 bar (Max. Peak pressure)		
Max drain line pressure on reversible rotation motors	5 bar		
Fluid temperature range	-25 ~ 100 °C (NBR) / -25 ~125 °C (VITON)		
Fluid	Mineral oil based hydraulic fluids to ISO/DIN. *For other fluids, please consult our sales department		
Viscosity range	From 12 to 100 mm²/s (cSt) recommended		
	Up to 750 mm²/s (cSt) permitted		
Filtering requirement			
Working pressure (bar)	Δp<140	140< Δp<210	Δp>210
Contamination class NAS 1638	10	9	8
Contamination class ISO 4406:1999	21/19/16	20/18/15	19/17/14
Achieved with filter $\beta_{10}(c) \geq 75$ according to ISO 16889	-	10 µm	10 µm
Achieved with filter $\beta_{25}(c) \geq 200$ according to ISO 16889	25 µm	-	-

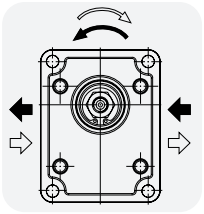
Definition of rotational direction facing the drive shaft



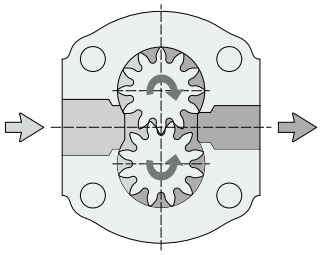
Anti-clock rotation

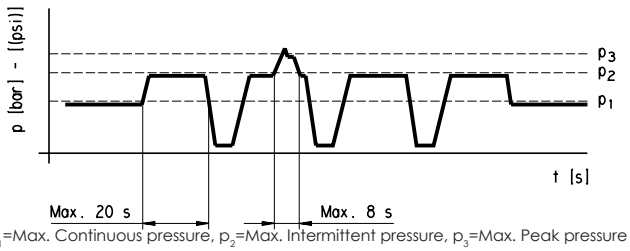


Clockwise rotation



Reversible rotation
(Standard)



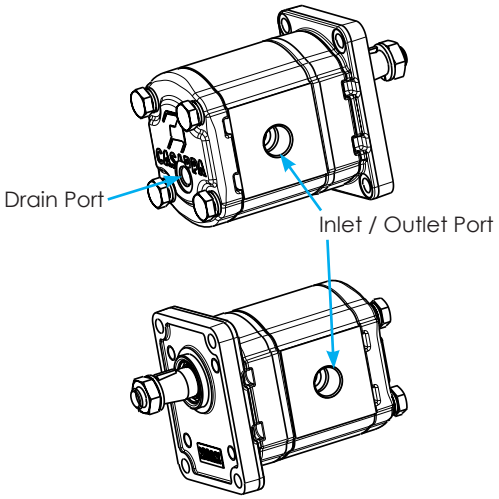


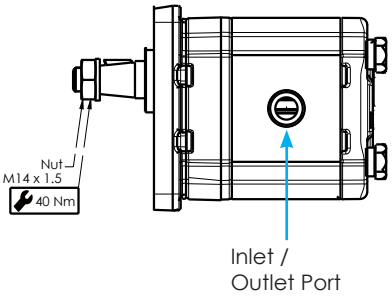
p_1=Max. Continuous pressure, p_2=Max. Intermittent pressure, p_3=Max. Peak pressure

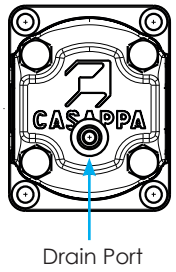
Motor Type	Displacement	Max. Pressure			Max. Speed	Min. Speed
		p_1	p_2	p_3		
	cm³/rev	bar			rpm	
A	11.23	250	280	300	3500	600
B	14.53	250	280	300	3500	500
C	19.09	200	220	240	3000	500

p_1=Max. Continuous pressure, p_2=Max. Intermittent pressure, p_3=Max. Peak pressure

The values in the table refer to unidirectional motors. Reversible motors max pressures are 15% lower than those shown in table. For different working conditions, please consult our sales department.







Motor Type	Displacement	Drain Port Size		Inlet & Outlet Port Size	
	cm^3/rev	BSP	Nm	BSP	Nm
A	11.23	G 1/4	15	G 1/2	50
B	14.53	G 1/4	15	G 1/2	50
C	19.09	G 1/4	15	G 3/4	90

***Please refer to the tightening strength of each part when connecting pipes.**

Instructions

Installation

The direction of rotation of single-rotation motors must match circuit connections. Check that the coupling flange correctly aligns the transmission shaft and the motor shaft. Flexible couplings should be used (never rigid fittings which will not generate an axial or radial load on the motor shaft.)

Tank

Tank capacity must be sufficient for the system's operating conditions (~ 3 times the amount of oil in circulation) to avoid overheating of the fluid. A heat exchanger should be installed if necessary. The intake and return lines in the tank must be spaced apart (by inserting a vertical divider) to prevent the return-line oil from being taken up again immediately.

Lines

The lines must have a major diameter which is at least as large as the diameter of pump or motor ports, and must be perfectly sealed. To reduce loss of power, the lines should be as short as possible, reducing the sources of hydraulic resistance (elbow, throttling, gate valves, etc.) to a minimum. A length of flexible tubing is recommended to reduce the transmission of vibrations.
All return lines must end below the minimum oil level, to prevent foaming. Before connecting the lines, remove any plugs and make sure that the lines are perfectly clean.

Filters

We recommend filtering the entire system flow. Filters on suction and return line must be fitted in according to the contamination class as indicated on page 68.

Hydraulic Fluid

Use hydraulic fluid conforming to ISO/DIN standards. Avoid using mixtures of different oils which could result in decomposition and reduction of the oil's lubricating power.

Starting Up

Check that all circuit connections are tight and that the entire system is completely clean. Insert the oil in the tank, using a filter. Bleed the circuit to assist in filling. Set the pressure relief valves to the lowest possible setting. Turn on the system for a few moments at minimum speed, then bleed the circuit again and check the level of oil in the tank. In the difference between pump or motor temperature and fluid temperature exceeds 50°F (10 °C), rapidly switch the system on and off to heat it up gradually. Then gradually increase the pressure and speed of rotation until the pre-set operating levels as specified in the catalogue are attained.

Periodical Checks - Maintenance

Keep the outside surface clean especially in the area of the drive shaft seal. In fact, abrasive powder can accelerate wear on the seal and cause leakage. Replace filters regularly to keep the fluid clean. The oil level must be checked and oil replaced periodically depending on the system's operating conditions.

Using in cold weather - Cold start

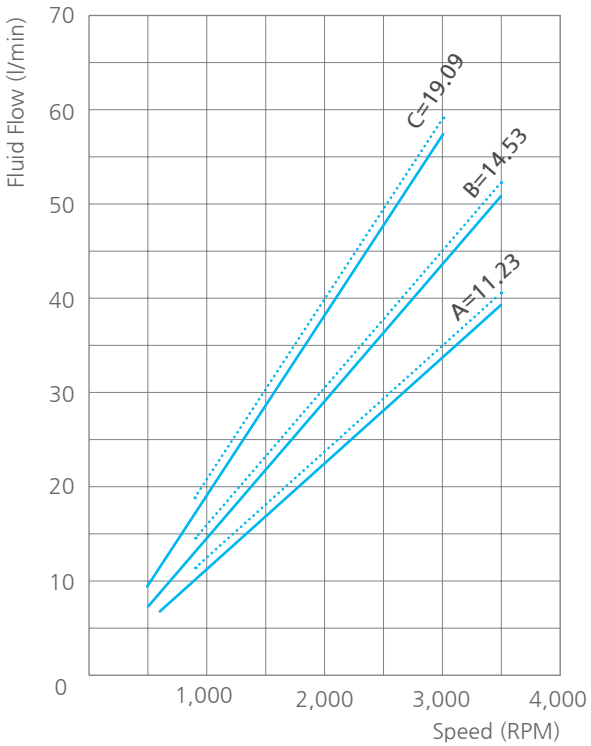
When using in cold weather, "cold start" means using it in a non-loaded state for a short period of time. The following restrictions should be applied when doing a cold start..

Min. Inlet pressure	0.5 bar (7 psi)
Outlet pressure (pump) / Inlet pressure (motor)	≤ 50 bar (725 psi)
Max. Drain pressure (Maximum back pressure when using a single rotation motor)	+50% higher than standard
Rotational speed	≤ 1500rpm
The lowest temperature	-40 ˚C (-40 ˚F)
Max. Viscosity	2000 mm²/s(cSt)[9100SSU]

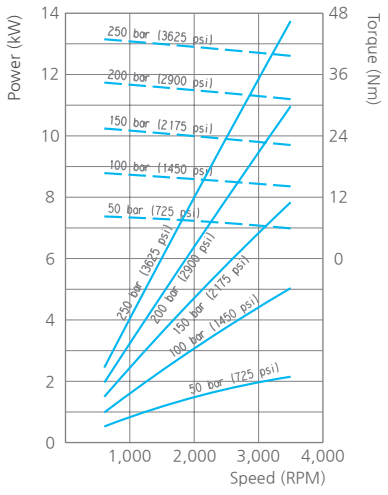
If the ambient temperature is below -20°C (-4°F), the system speed and pressure should be limited until the hydraulic oil temperature exceeds -20°C (-4°F).

Hydraulic Motor Performance

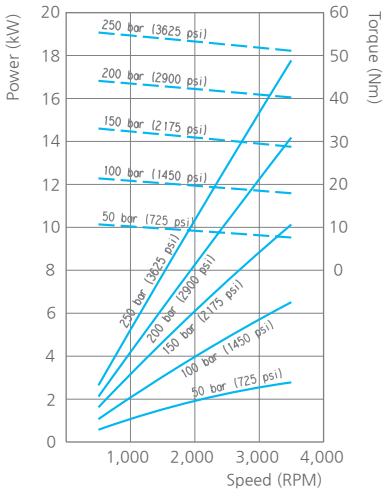
Each performance curve was obtained using oil VG46 (210 SSU) at 40°C (104°F) and 50°C (122°F).



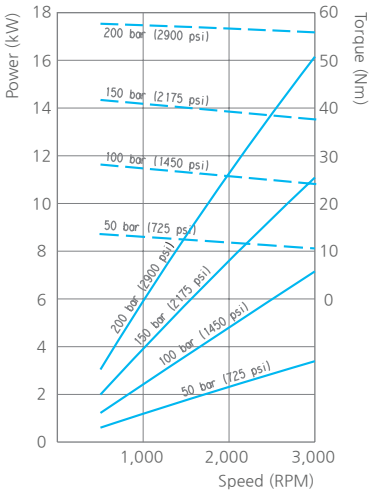
Type	Pressure
A	20 bar 250 bar
B	20 bar 250 bar
C	20 bar 200 bar



Type A=11.23

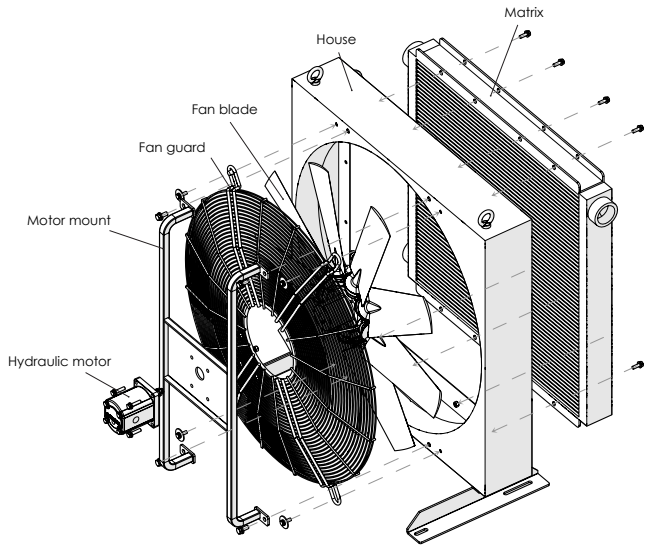


Type B=14.53

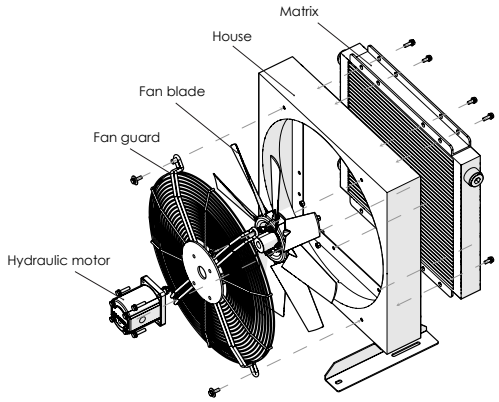


Type C=11.23

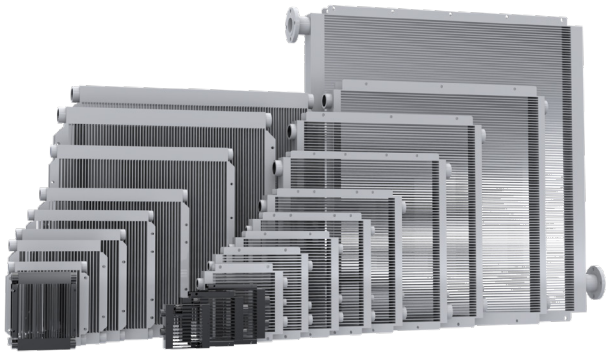
Specifications



Model 33~113



Model 07~23



Aluminum matrix

Hydrolync provides various aluminum matrices, and customers can choose between horizontal and vertical types to meet their requirements.

- Material: 3003/4004/5052
- Test pressure: 21 bar
- Test standard: ISO/DIS 10771-1
- Max. Working pressure: 14 bar
- Max. Working temperature: 120 ℃
- Paint: Epoxy / Polyester powder coatings - coating thickness 60 μm
- Paint color:
  Applied model:07~113 RAL 9006 / silver

Fan

- Fan blade material:
  Glass Reinforced Poly-amide (**PAG**)
  Working temperature: -40 ~ 120 ℃
- Fan boss material: Aluminum

House

- Material: steel
- Paint: powder coating
- Color: black, white (option)

Hydraulic motor

- CASAPPA POLARIS Series
- High-strength aluminum alloy body
- Max. Working pressure 300 bar (4,350 psi)
- Max. Speed: 3,000~3,500 rpm

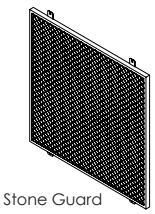
Fan guard

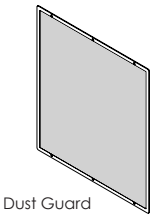
- Material: steel
- Surface treatment: zinc plating

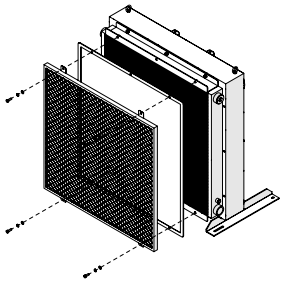
Accessories

Protection of the matrix

Coolers installed in harsh environments with dust, oil, and other contaminants may cause damage to the surface of the matrix or decrease heat exchange performance due to oil and dust sticking to the fins. In this case, if the surface is damaged or oil and dust cannot be cleaned from the fins, the matrix must be replaced. To reduce such losses, Stone Guard or Dust Guard can be installed on the matrix to protect it and reduce maintenance costs. It is important to note that when installing a Dust Guard, regular cleaning is necessary to maintain performance, as failure to do so may reduce the airflow and cause the motor to overload.


Stone Guard


Dust Guard



Attention

- To maintain the cooler's optimal cooling performance, the Dust Guard should be cleaned twice a week.
- The cleaning cycle for Stone Guard is approximately once every three months.
- If the environmental pollution conditions are severe, reduce the cleaning cycle.

Thermal Switch

The thermal switch controls the operation and stop of the cooler according to the temperature of the oil flowing through the matrix.

Material: Thermostat Cell _ Bi-metal / Cell Housing _ Aluminum

Lifespan ≥ 100,000 times, **Max. Rating** @ 24VAC 7.5A (Resistance load)

Type of Contact : Normally Open **Temp. Differential ΔT** : 10℃

Ingress protection rating : IP68 (Wire type), IP65(Din Plug type),

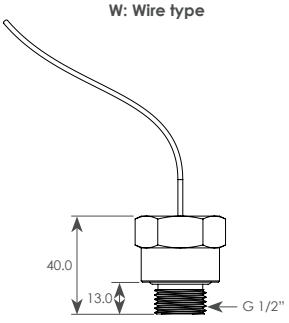
Connection Thread : G 1/2, **Cable Length** : 350mm

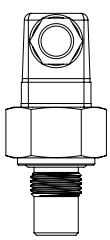

W: Wire type

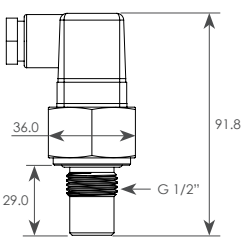

D: DIN plug type

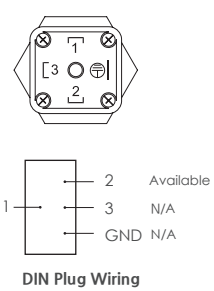
Type	Temperature	Working range
W/D	30	ON 35±5℃ / OFF 25±5℃
W/D	40	ON 45±5℃ / OFF 35±5℃
W/D	50	ON 55±5℃ / OFF 45±5℃
W/D	60	ON 65±5℃ / OFF 55±5℃
W/D	70	ON 75±5℃ / OFF 65±5℃

Selection of the thermal switch









DIN Plug Wiring

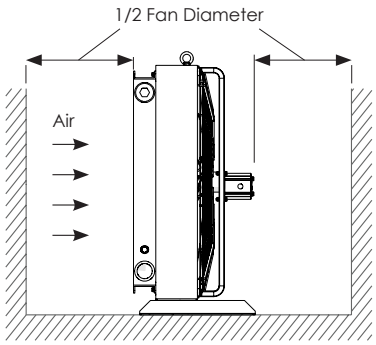
Installation and Maintenance

*Please refer to the product manual for more detailed information.

Installation

The cooler has a very sturdy structure and can be mounted on both the face and foot. When installing it on the front of a duct or ventilation shaft, use the 4 to 8 mounting holes in the U-channel of the matrix. Place the cooler so that the airflow is not restricted. The distance to the nearest wall should be at least half the diameter of the fan.

HLH2 Model	1/2 Fan Diameter
07	162.5
11	200
16	228
23	269
33, 35	325
56, 58	412
76, 78	450
110, 112, 113	530

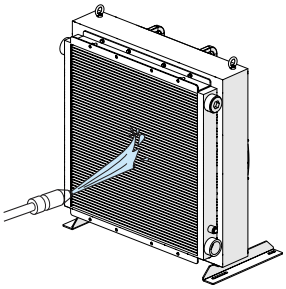


Cleaning the inside of the matrix

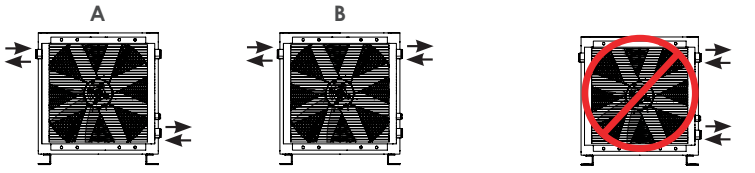
To clean the inside of the matrix, connect the cooler to a closed circuit and circulate perchloro-ethylene. After cleaning, flush the matrix with oil before reconnecting it to the hydraulic system.

Cleaning the outside of the matrix

The easiest way to clean the fins is to use compressed air or wash them with water. Grease removers and high-pressure cleaning systems can also be used to remove foreign matter. When using a high-pressure cleaning system, make sure that the water stream is parallel to the fins and at least 3cm away from them. Be careful not to damage the fins with a strong water stream.



Connecting



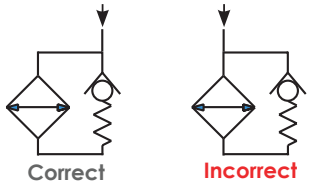
Model: 07-200 Model: 07-200 Incorrect connecting (No heat exchange)

Attention

- Connect the pipes to the heat exchanger as shown in the diagram. Avoid incorrect connections that do not result in effective heat exchange.
- The air-oil cooler matrix is designed with a maximum operating pressure of 14 bar. If the cooler is installed in the return line, appropriate protective measures must be taken to prevent damage to the heat exchanger from pressure surges. Otherwise, an offline circulation pump-type cooling system (refer to HLO3 Series) may be necessary.
- Connecting the matrix with hoses is recommended. The appropriate size and type of hose will depend on the system pressure, flow rate, fluid, and temperature.

Applying Bypass

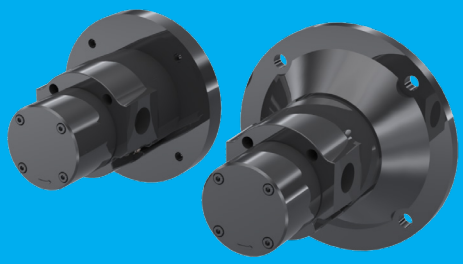
When a surge pressure occurs in the hydraulic system circuit, install a line check valve as shown in the right figure to protect the durability of the cooler matrix.



HLO3 Series

Offline
Circulation Pump

Features



- Applied Gerotor pump
- Smooth, low pulsation flow and compact design
- Low noise and vibration
- Performs well at low speeds (good suction capability)

Quick Overview

Hydraulic offline circulation pump oil cooler, HLO3 Series from HydroLync, provides a wide range of specifications. You can quickly check the cooling performance, heat dissipation, and maximum flow rate of each model in ISO VG 46 oil based on ETD 40℃.

No.	Model-Poles(discharge)_Cooling Performance(KW/℃) (Heat Dissipation KW, Kcal/h) / Max. Flow rate(LPM)@1,710rpm/60Hz
1	HLO3 07-4 (13.8cm3/rev. Pump) _ 0.09KW/℃ (3.6KW, 3,096Kcal/h) / Approx. 24LPM
2	HLO3 07-4 (27.5cm3/rev. Pump) _ 0.17KW/℃ (6.8W, 5,848Kcal/h) / Approx. 47LPM
3	HLO3 07-4 (41.0cm3/rev. Pump) _ 0.21KW/℃ (8.4KW, 7,224Kcal/h) / Approx. 70LPM
4	HLO3 07-4 (55.0cm3/rev. Pump) _ 0.23KW/℃ (9.2KW, 7,912Kcal/h) / Approx. 94LPM
5	HLO3 11-4 (13.8cm3/rev. Pump) _ 0.13KW/℃ (5.2KW, 4,472Kcal/h) / Approx. 24LPM
6	HLO3 11-4 (27.5cm3/rev. Pump) _ 0.25KW/℃ (10.0KW, 8,600Kcal/h) / Approx. 47LPM
7	HLO3 11-4 (41.0cm3/rev. Pump) _ 0.32KW/℃(12.8KW, 11,008Kcal/h) / Approx. 70LPM
8	HLO3 11-4 (55.0cm3/rev. Pump) _ 0.35KW/℃(14.0KW, 12,040Kcal/h) / Approx. 94LPM
9	HLO3 16-4 (13.8cm3/rev. Pump) _ 0.19KW/℃ (7.6KW, 6,536Kcal/h) / Approx. 24LPM
10	HLO3 16-4 (27.5cm3/rev. Pump) _ 0.36KW/℃ (14.4KW, 12,384Kcal/h) / Approx. 47LPM
11	HLO3 16-4 (41.0cm3/rev. Pump) _ 0.45KW/℃ (18.0KW, 15,480Kcal/h) / Approx. 70LPM
12	HLO3 16-4 (55.0cm3/rev. Pump) _ 0.50KW/℃ (20.0KW, 17,200Kcal/h) / Approx. 94LPM
13	HLO3 23-4 (13.8cm3/rev. Pump) _ 0.23KW/℃ (9.2KW, 7,912Kcal/h) / Approx. 24LPM
14	HLO3 23-4 (27.5cm3/rev. Pump) _ 0.45KW/℃ (18.0KW, 15,480Kcal/h) / Approx. 47LPM
15	HLO3 23-4 (41.0cm3/rev. Pump) _ 0.58KW/℃(23.2KW, 19,952Kcal/h) / Approx. 70LPM
16	HLO3 23-4 (55.0cm3/rev. Pump) _ 0.65KW/℃ (26.0KW, 22,360Kcal/h) / Approx. 94LPM
17	HLO3 33-4 (13.8cm3/rev. Pump) _ 0.25KW/℃ (10.0KW, 8,600Kcal/h) / Approx. 24LPM
18	HLO3 33-4 (27.5cm3/rev. Pump) _ 0.49KW/℃ (19.6KW, 16,856Kcal/h) / Approx. 47LPM
19	HLO3 33-4 (41.0cm3/rev. Pump) _ 0.63KW/℃ (25.2KW, 21,672Kcal/h) / Approx. 70LPM
20	HLO3 33-4 (55.0cm3/rev. Pump) _ 0.72KW/℃ (28.8KW, 24,768Kcal/h) / Approx. 95LPM
21	HLO3 35-4 (13.8cm3/rev. Pump) _ 0.27KW/℃ (10.8KW, 9,288Kcal/h) / Approx. 24LPM
22	HLO3 35-4 (27.5cm3/rev. Pump) _ 0.52KW/℃ (20.8KW, 17,888Kcal/h) / Approx. 47LPM
23	HLO3 35-4 (41.0cm3/rev. Pump) _ 0.68KW/℃ (27.2KW, 23,392Kcal/h) / Approx. 70LPM
24	HLO3 35-4 (55.0cm3/rev. Pump) _ 0.77KW/℃ (30.8KW, 26,488Kcal/h) / Approx. 94LPM

[Remark] Output Flow Rate for Circulation Pump (Lit/min) = (v • Ns) / 1000
v : Hydraulic Motor Volume (cm3/rev)
Ns : RPM for AC Motor

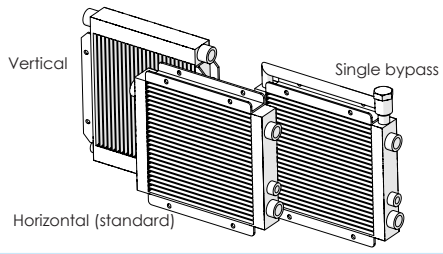
* Based On ETD 40℃ / ISO VG 46 *

Ordering code

Example: HLO3 [ ] [07] - [4] - [220/380V, 60hz] - [D] - [ ]

1 2 3 4 5 6

1	Matrix types
	Horizontal (Standard)
V	Vertical
SB	Single Bypass

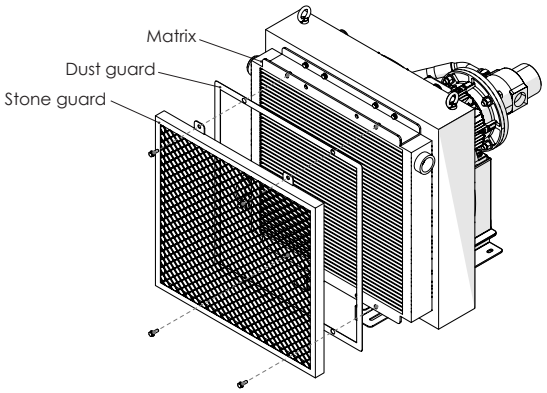


2	Matrix size	
Code	**Size**	**Port**
07	335x322x63	G1"
11	405x390x63	G1"
16	464x458x63	G1"
23	545x540x63	G1"
33	640x648x63	G1"
35	640x648x83	G1 1/2"

3	Motor poles	
Poles	**Hertz**	**Max. Speed (RPM)**
4	50Hz	1,500
	60Hz	1,720
	Applicable	HLO3 07 ~ 35

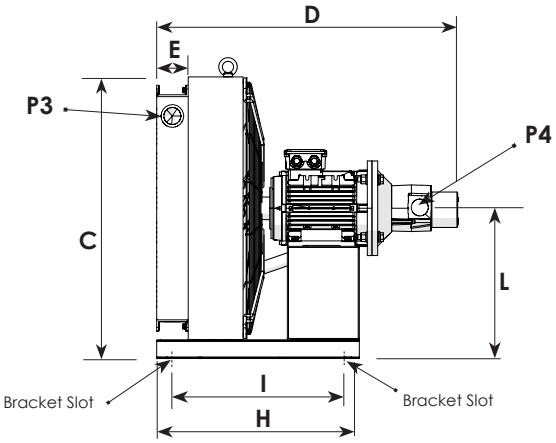
4	Power supply	
Phase	**Power supply**	**Applicable model**
Three	**220/380V 50/60Hz**	HLO3 07 ~ 35
Three	**240/420V 50Hz**	HLO3 07 ~ 35
Three	**280/480V 60Hz**	HLO3 07 ~ 35
Three	**440V 60Hz**	HLO3 07 ~ 35

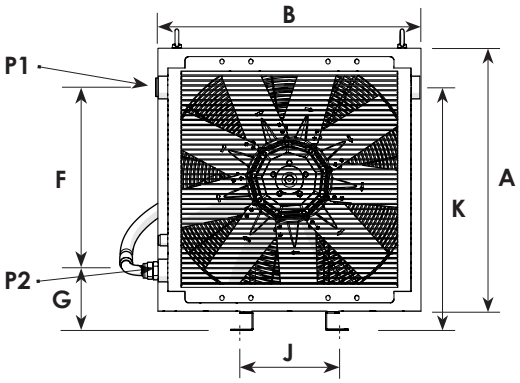
5	Matrix protection accessories
	None (standard)
D	Dust Guard
S	Stone Guard
A	Dust Guard + Stone Guard



6	Production type
	Standard
C	Customization

HLO3 07 ~ 35





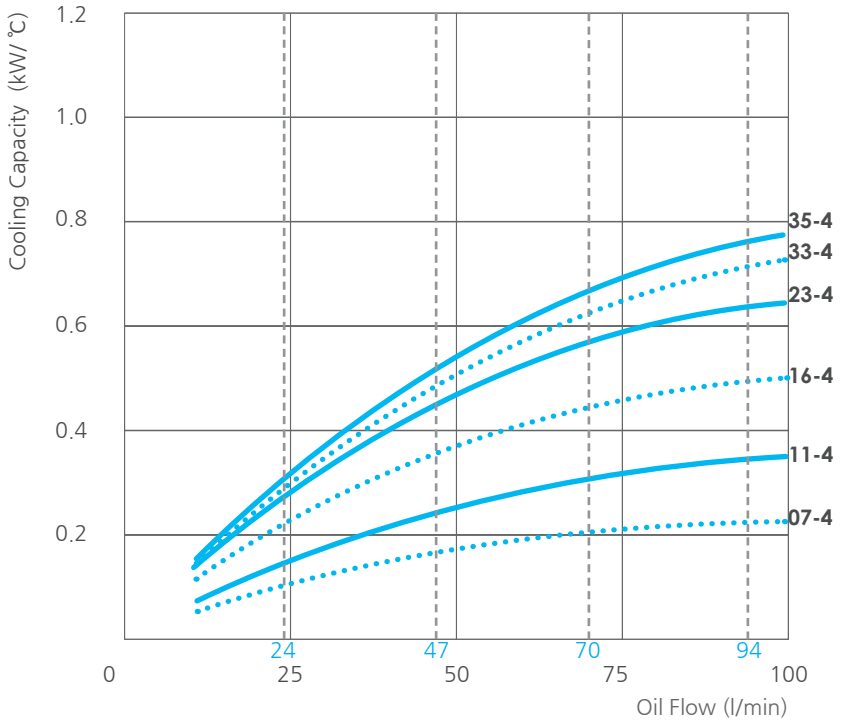
HLO3 Model	A	B	C	D	E	F	G	H	I	J	K	L	P1,2,3	Slot Hole	Weight (kg)	Noise Level (dB) 1m
07	365	365	405	(582)	63	160	143	385	(295)	230	303	225	G1"	ø10x90 ø10x19	33.5	65
11	440	440	480	(600)	63	228	146	400	(310)	230	374	262	G1"	ø10x90 ø10x19	38.5	70
16	496	496	536	(610)	63	296	143	410	(310)	230	439	290	G1"	ø10x90 ø10x19	42.5	74
23	579	579	619	(676)	63	378	140	455	(355)	260	518	332	G1"	ø10x90 ø10x19	59.5	77
33	692	692	742	(735)	63	482	157	534	(434)	260	639	398	G1 1/4"	ø10x90 ø10x19	73.5	85
35	692	692	742	(754)	83	482	157	534	(434)	260	649	398	G1 1/2"	ø10x90 ø10x19	82.5	86

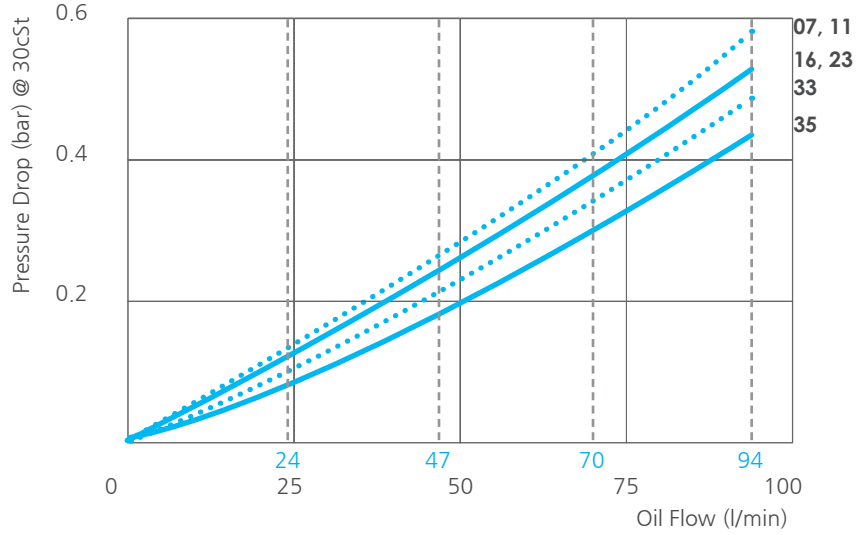
*** The above dimensions are based on 20L pump. As the pump capacity increases, the length of D increases by 12.7mm and the weight increases by 0.5Kg per size increment. Please refer to the approved drawing for detailed specification information.**

Type	Oil Flow (cm^3/rev)	Oil Flow (l/min) @1710 RPM	P4 (Pump Inlet)	Cooling Capacity (kW/ ˚C)	Motor Power (kW)	Motor Frame	Voltage
HLO3 07-4-20L	13.8	24	G 1 1/2"	0.09	2.2	90L	220/380/440V
HLO3 07-4-40L	27.5	47	G 1 1/2"	0.17	2.2	90L	220/380/440V
HLO3 07-4-60L	41.0	70	G 1 1/2"	0.21	2.2	90L	220/380/440V
HLO3 07-4-80L	55.0	94	G 1 1/2"	0.23	2.2	90L	220/380/440V
HLO3 11-4-20L	13.8	24	G 1 1/2"	0.13	2.2	90L	220/380/440V
HLO3 11-4-40L	27.5	47	G 1 1/2"	0.25	2.2	90L	220/380/440V
HLO3 11-4-60L	41.0	70	G 1 1/2"	0.32	2.2	90L	220/380/440V
HLO3 11-4-80L	55.0	94	G 1 1/2"	0.35	2.2	90L	220/380/440V
HLO3 16-4-20L	13.8	24	G 1 1/2"	0.19	2.2	90L	220/380/440V
HLO3 16-4-40L	27.5	47	G 1 1/2"	0.36	2.2	90L	220/380/440V
HLO3 16-4-60L	41.0	70	G 1 1/2"	0.45	2.2	90L	220/380/440V
HLO3 16-4-80L	55.0	94	G 1 1/2"	0.50	2.2	90L	220/380/440V
HLO3 23-4-20L	13.8	24	G 1 1/2"	0.23	4.0	100L	220/380/440V
HLO3 23-4-40L	27.5	47	G 1 1/2"	0.45	4.0	100L	220/380/440V
HLO3 23-4-60L	41.0	70	G 1 1/2"	0.58	4.0	100L	220/380/440V
HLO3 23-4-80L	55.0	94	G 1 1/2"	0.65	4.0	100L	220/380/440V
HLO3 33-4-20L	13.8	24	G 1 1/2"	0.25	4.0	100L	220/380/440V
HLO3 33-4-40L	27.5	47	G 1 1/2"	0.49	4.0	100L	220/380/440V
HLO3 33-4-60L	41.0	70	G 1 1/2"	0.63	4.0	100L	220/380/440V
HLO3 33-4-80L	55.0	94	G 1 1/2"	0.72	4.0	100L	220/380/440V
HLO3 35-4-20L	13.8	24	G 1 1/2"	0.27	4.0	100L	220/380/440V
HLO3 35-4-40L	27.5	47	G 1 1/2"	0.52	4.0	100L	220/380/440V
HLO3 35-4-60L	41.0	70	G 1 1/2"	0.68	4.0	100L	220/380/440V
HLO3 35-4-80L	55.0	94	G 1 1/2"	0.77	4.0	100L	220/380/440V

[Remark] Output Flow Rate for Circulation Pump (Lit/min) = (v • Ns) / 1000
v : Hydraulic Motor Volume (cm3/rev)
Ns : RPM for AC Motor

* Based On ETD 40℃ / ISO VG 46 *

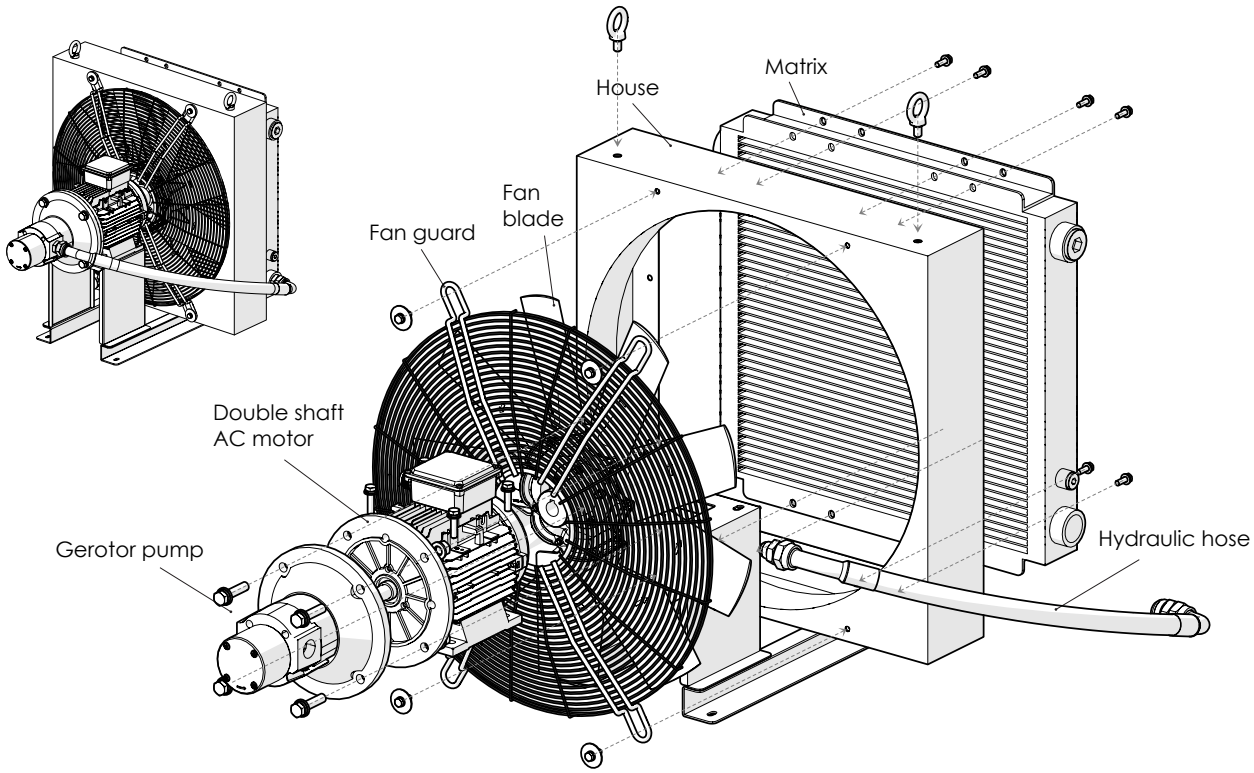


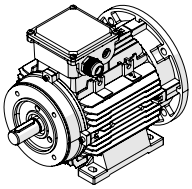


The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

Specifications

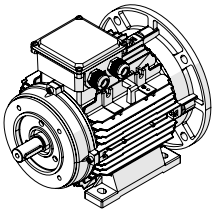


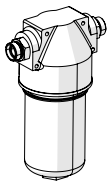


Aluminum matrix

Hydrolync provides various aluminum matrices, and customers can choose between horizontal and vertical types to meet their requirements.

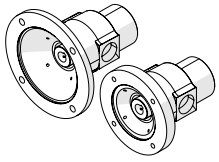
- Material: 3003/4004/5052
- Test pressure: 21 bar
- Test standard: ISO/DIS 10771-1
- Max. Working pressure: 14 bar
- Max. Working temperature: 120 ℃
- Paint: Epoxy / Polyester powder coatings - coating thickness 60 μm
- Paint color: RAL 9006 / silver





Fan

- Fan blade material:
  Glass Reinforced Poly-amide (**PAG**)
  Working temperature: -40 ~ 120 ℃
- Fan boss material: Aluminum



House

- Material: steel
- Paint: powder coating
- Color: black, white (option)

Three phase AC motor

- IE3 certified motor (standard)
- Color: RAL 5010
- Insulation grade: F
- Ingress protection rating: IP55

Fan guard

- Material: steel
- Surface treatment: zinc plating

Filtration

- The acceptable fluid contamination NAS grade is Class 8 per 1638 or 17/14 per ISO DIS 4406
- Recommended filtration β 25 ≥ 75

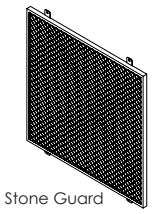
Circulation pump

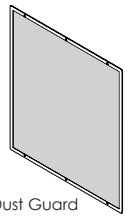
- Gerotor pump
- Flow rate : 24 ~ 94L / min (@ 1,710 RPM)
- Viscosity : 10 ~ 15,000 cSt
- Outlet pressure : 0 ~ 15 bar
- Inlet pressure : Min. -0.5 ~ 1.5 bar

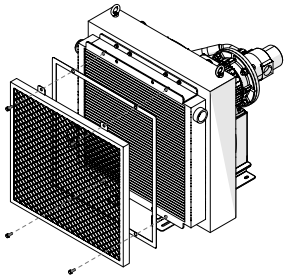
Accessories

Protection of the matrix

Coolers installed in harsh environments with dust, oil, and other contaminants may cause damage to the surface of the matrix or decrease heat exchange performance due to oil and dust sticking to the fins. In this case, if the surface is damaged or oil and dust cannot be cleaned from the fins, the matrix must be replaced. To reduce such losses, Stone Guard or Dust Guard can be installed on the matrix to protect it and reduce maintenance costs. It is important to note that when installing a Dust Guard, regular cleaning is necessary to maintain performance, as failure to do so may reduce the airflow and cause the motor to overload.


Stone Guard


Dust Guard



Attention

- To maintain the cooler's optimal cooling performance, the Dust Guard should be cleaned twice a week.
- The cleaning cycle for Stone Guard is approximately once every three months.
- If the environmental pollution conditions are severe, reduce the cleaning cycle.

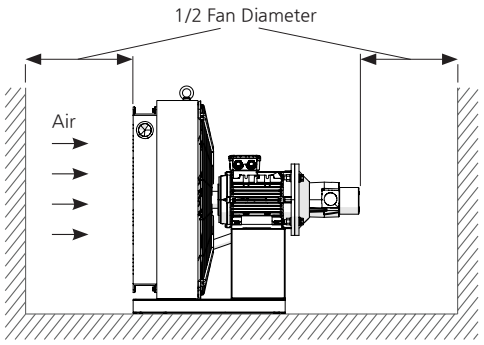
Installation and Maintenance

***Please refer to the product manual for more detailed information.**

Installation

The cooler has a very sturdy structure and can be mounted on both the face and foot. When installing it on the front of a duct or ventilation shaft, use the 4 to 8 mounting holes in the U-channel of the matrix. Place the cooler so that the airflow is not restricted. The distance to the nearest wall should be at least half the diameter of the fan.

HLO3 Model	1/2 Fan Diameter
07	162.5
11	200
16	228
23	269
33, 35	325

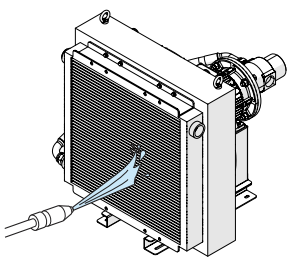


Cleaning the inside of the matrix

To clean the inside of the matrix, connect the cooler to a closed circuit and circulate perchloroethylene. After cleaning, flush the matrix with oil before reconnecting it to the hydraulic system.

Cleaning the outside of the matrix

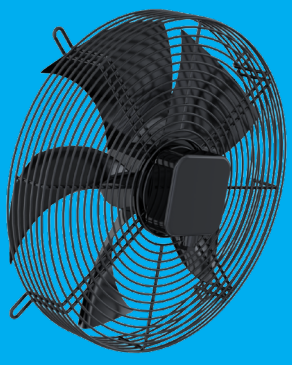
The easiest way to clean the fins is to use compressed air or wash them with water. Grease removers and high-pressure cleaning systems can also be used to remove foreign matter. When using a high-pressure cleaning system, make sure that the water stream is parallel to the fins and at least 3cm away from them. Be careful not to damage the fins with a strong water stream.



HLAX Series

Axial Motor Driven

Features



- Compact and cost-effective
- Optimum efficiency levels and noise development with aerodynamic design of the fan blades

Quick Overview

Hydraulic oil cooler, HLAX Series from HydroLync, provides a wide range of specifications. You can quickly check the cooling performance, heat dissipation, and maximum flow rate of each model in ISO VG 46 oil based on ETD 40℃.

No.	Model-Poles_Cooling Performance(KW/℃) (Heat Dissipation KW, Kcal/h) / Max. Flow rate(LPM)
1	HLAX 07-2(220/380V, 50/60Hz) _ 0.19KW/℃ (7.6KW, 6,536Kcal/h) / Max.125LPM
2	HLAX 11-2(220/380V, 50/60Hz) _ 0.38KW/℃ (15.2KW, 13,0724Kcal/h) / Max.150LPM
3	HLAX 16-4(220/380V, 50/60Hz)_ 0.495KW/℃ (19.8KW, 17,028Kcal/h) / Max.200LPM
4	HLAX 23-4(220/380V, 50/60Hz) _ 0.70KW/℃ (28KW, 24,080Kcal/h) / Max.200LPM
5	HLAX 33-4(220/380V, 50/60Hz) _ 0.90KW/℃ (36KW, 30,960Kcal/h) / Max.300LPM
6	HLAX 35-4(220/380V, 50/60Hz) _ 1.20KW/℃ (48KW, 41,280Kcal/h) / Max.350LPM
7	HLAX 56-6(380V, 50/60Hz)_ 1.35KW/ ℃ (54KW, 46,440Kcal/h) / Max.300LPM
8	HLAX 58-6(380V, 50/60Hz) _ 1.6KW/℃ (64KW, 55,040Kcal/h) / Max.400LPM
9	HLAX 76-6(380V, 50/60Hz) _ 1.75KW/℃ (70KW, 60,200Kcal/h) / Max.400LPM
10	HLAX 78-6(380V, 50/60Hz) _ 2.05KW/℃ (82KW, 70,520Kcal/h) / Max.500LPM

[Remark] Ns=120•f/p
Ns: RPM for AC motor
f: Frequency
p: Pole

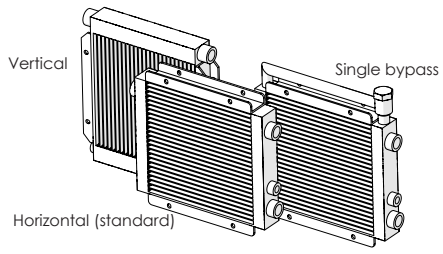
* Based On ETD 40℃ / ISO VG 46 *

Ordering code

Example: HLAX [ ] [07] - [2] - [220/380V 60Hz] - [W50] - [D] - [ ]

1 2 3 4 5 6 7

1	Matrix types
	Horizontal (Standard)
V	Vertical
SB	Single Bypass



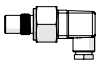
2	Matrix size	
Code	Size	Port
07	335x322x63	G1
11	405x390x63	G1
16	464x458x63	G1
23	545x540x63	G1
33	640x648x63	G1
35	640x648x83	G1 1/2
56	802x826x63	G1 1/4
58	802x826x83	G2
76	940x1019x63	G1 1/2
78	940x1019x83	G2

3	Motor specifications		
Poles	Model	Hertz	Max. Speed (RPM)
2	HLAX 07	50Hz	2,400
		60Hz	2,820
	HLAX 11	50Hz	2,340
		60Hz	2,760
4	HLAX 16	50Hz	1,420
		60Hz	1,670
	HLAX 23	50Hz	1,380
		60Hz	1,620
	HLAX 33, 35	50Hz	1,370
		60Hz	1,610
6	HLAX 56, 58	50Hz	900
		60Hz	1,060
	HLAX 76, 78	50Hz	920
		60Hz	1,080

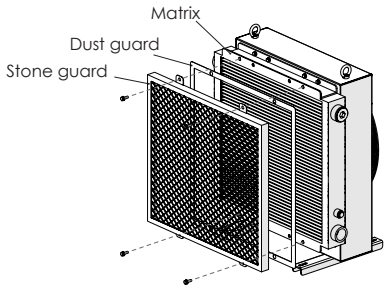
4	Power Supply	
Phase	Power supply	Applicable models
Single	**220V 50/60Hz**	HLAX 07~11
Three	**220/380V 50/60Hz**	HLAX 07~35
Three	**380V 50/60Hz**	HLAX 56~78

5	Thermal switch	
Code	Temperature	Working range
	None	
W/D	30	ON 35±5℃ / OFF 25±5℃
W/D	40	ON 45±5℃ / OFF 35±5℃
W/D	50	ON 55±5℃ / OFF 45±5℃
W/D	60	ON 65±5℃ / OFF55±5℃
W/D	70	ON 75±5℃ / OFF 65±5℃

*W: Wire type 

*D: DIN plug type 

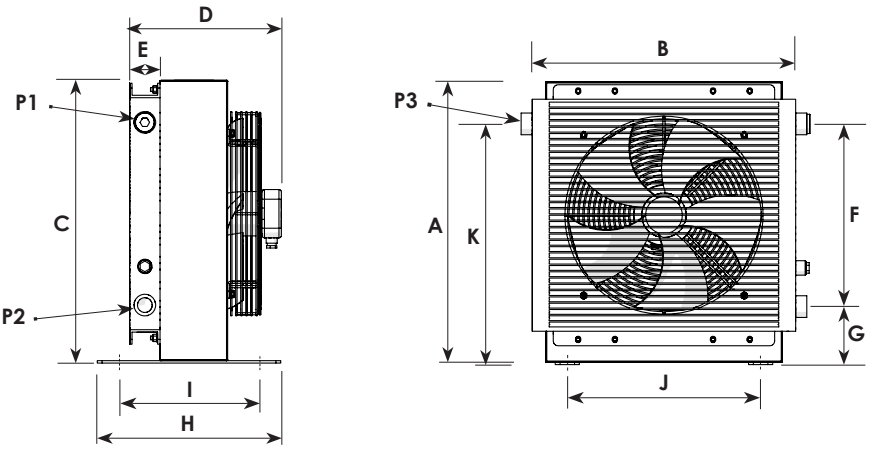
6	Matrix protection accessories
	None (standard)
D	Dust Guard
S	Stone Guard
A	Dust Guard + Stone Guard



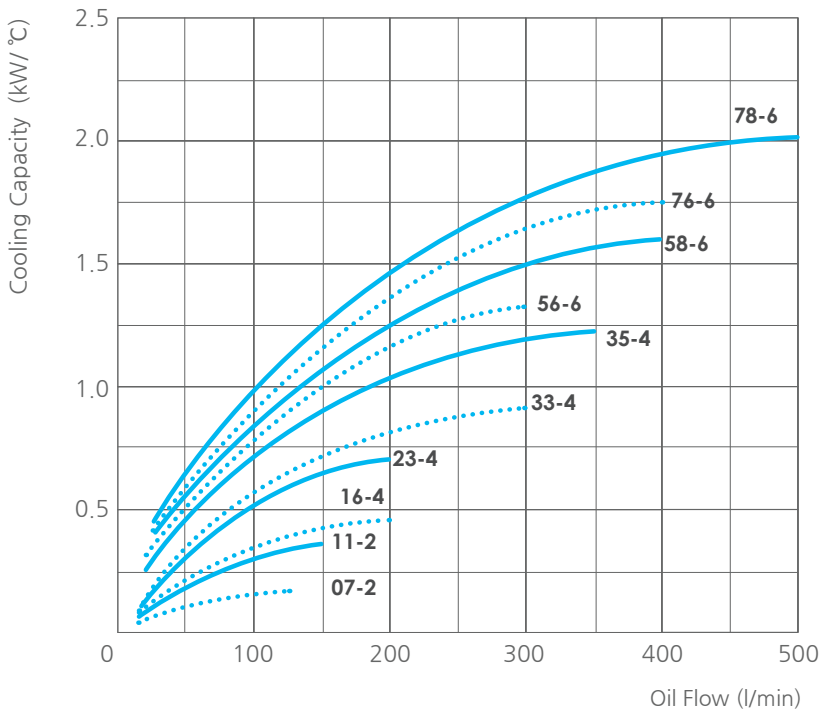
7	Production type
	Standard
C	Customization

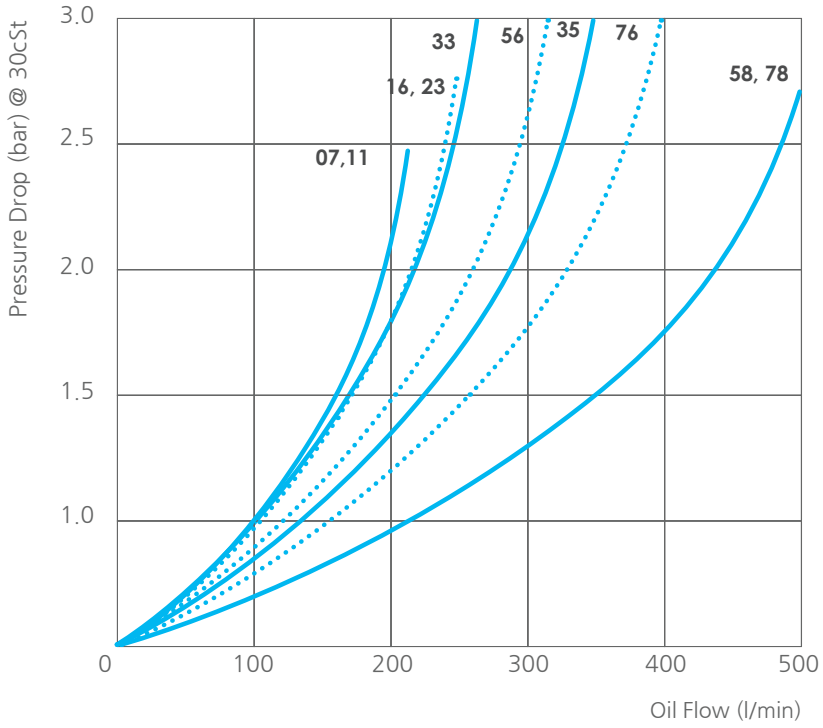
Air Oil Coolers

HLAX 07 ~ 78



HLAX Model	A	B	C	D	E	F	G	H	I	J	K	P1,2,3	Slot Hole	Weight Kg	Noise Level (dB) 1m
07-2	355	335	360	(199)	63	160	114	250	(190)	255	274	G1"	ø10x30	11.7	60
11-2	424	405	429	(278)	63	228	116	290	(230)	255	344	G1"	ø10x30	17.5	60
16-4	496	464	501	(299)	63	296	118	370	(310)	286	414	G1"	ø10x30	28.2	65
23-4	580	545	585	(314)	63	378	120	380	(320)	400	498	G1"	ø10x40	34.7	68
33-4	710	640	740	(334)	63	482	167	400	(340)	440	649	G1 1/4"	ø10x40	49.2	73
35-4	740	640	740	(354)	83	482	167	400	(340)	440	649	G1 1/2"	ø10x40	56.0	73
56-6	900	802	935	(427)	63	664	181	500	(440)	570	845	G1 1/4"	ø13x43	97.4	73
58-6	900	802	935	(447)	83	664	181	500	(440)	570	845	G2"	ø13x43	108.4	73
76-6	1100	940	1135	(442)	63	821	213	540	(480)	750	1034	G1 1/2"	ø13x43	101.1	75
78-6	1100	940	1135	(462)	83	821	213	540	(480)	750	1034	G2"	ø13x43	137.3	75

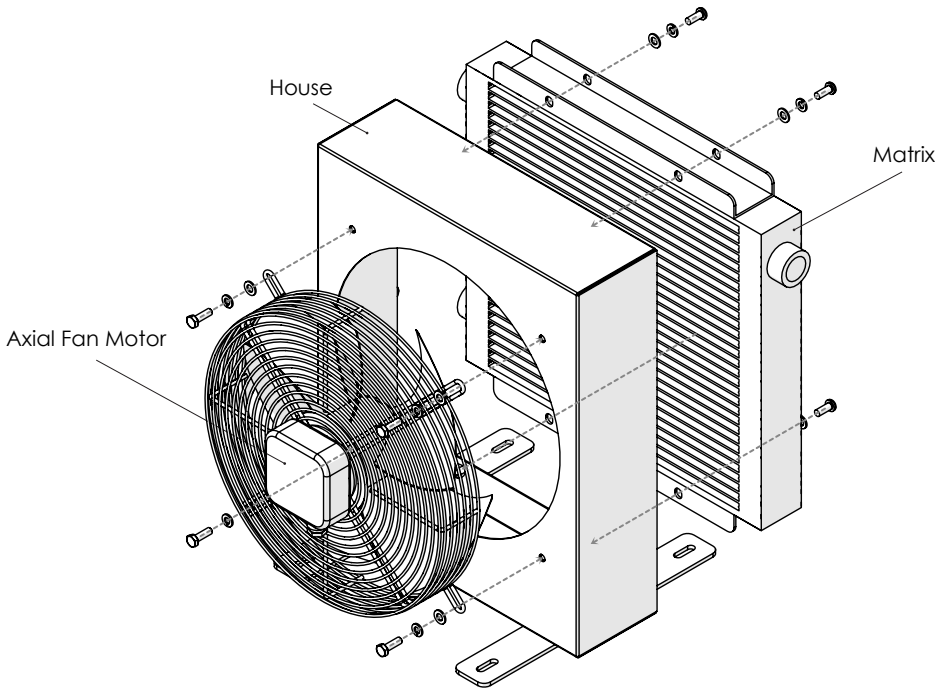




The cooling capacity curve is based on the oil temperature and the ambient air temperature entering the cooler. An oil temperature of +60℃ (T_{inlet}) and an ambient air temperature of +20℃ ($T_{ambientmax}$) provide a temperature difference (ETD) of +40℃. To obtain the total cooling capacity, multiply the cooling performance (kW/℃) by ETD (℃) as follows:

ETD = T_{inlet} - $T_{ambientmax}$ Cooling performance (kW/℃) x ETD (℃) = Cooling capacity (kW)

Specifications



Aluminum matrix

Hydrolync provides various aluminum matrices, and customers can choose between horizontal and vertical types to meet their requirements.

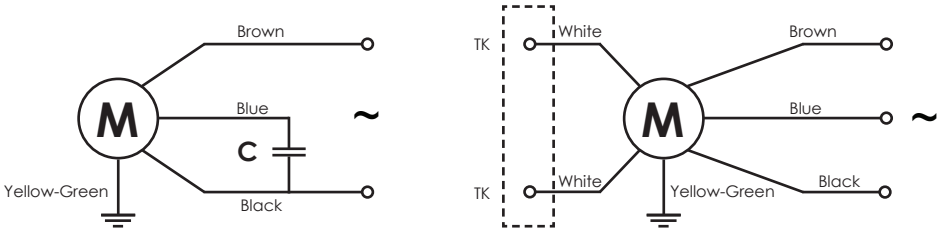
- Material: 3003/4004/5052
- Test pressure: 21 bar
- Test standard: ISO/DIS 10771-1
- Max. Working pressure: 14 bar
- Max. Working temperature: 120 ℃
- Paint: Epoxy / Polyester powder coatings - coating thickness 60 μm
- Paint color: AL 9006 / silver

Fan

- Working mode: S1 (Suction)
- Insulation grade: B, F
- Ingress protection rating: IP54
- Working temperature range: -30~60 ℃
- Certifications : CCC, CE, UL
- Energy Efficiency Labelling: ErP2015
- Power supply: 220/380V, 50/60Hz

House

- Material: steel
- Paint: powder coating
- Color: black, white (option)



Single phase

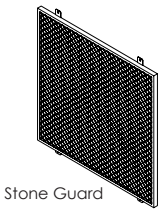
Three phase

Motor wiring

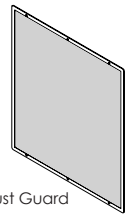
Accessories

Protection of the matrix

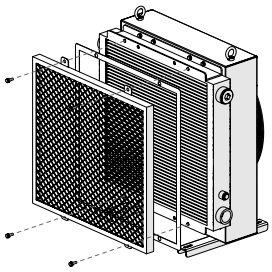
Coolers installed in harsh environments with dust, oil, and other contaminants may cause damage to the surface of the matrix or decrease heat exchange performance due to oil and dust sticking to the fins. In this case, if the surface is damaged or oil and dust cannot be cleaned from the fins, the matrix must be replaced. To reduce such losses, Stone Guard or Dust Guard can be installed on the matrix to protect it and reduce maintenance costs. It is important to note that when installing a Dust Guard, regular cleaning is necessary to maintain performance, as failure to do so may reduce the airflow and cause the motor to overload.



Stone Guard



Dust Guard



Attention

- To maintain the cooler's optimal cooling performance, the Dust Guard should be cleaned twice a week.
- The cleaning cycle for Stone Guard is approximately once every three months.
- If the environmental pollution conditions are severe, reduce the cleaning cycle.

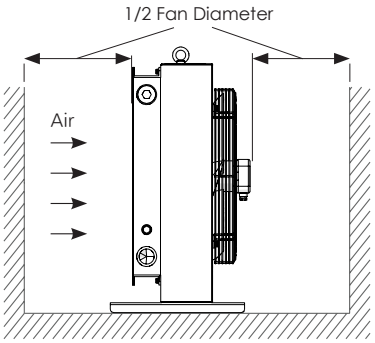
Installation and Maintenance

***Please refer to the product manual for more detailed information.**

Installation

The cooler has a very sturdy structure and can be mounted on both the face and foot. When installing it on the front of a duct or ventilation shaft, use the 4 to 8 mounting holes in the U-channel of the matrix. Place the cooler so that the airflow is not restricted. The distance to the nearest wall should be at least half the diameter of the fan.

HLAX Model	1/2 Fan Diameter
07	125
11	150
16	175
23	200
33, 35	250
56,58	352
76,78	392

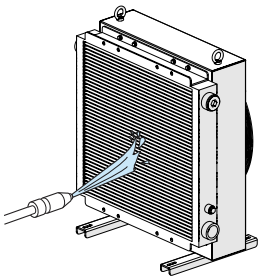


Cleaning the inside of the matrix

To clean the inside of the matrix, connect the cooler to a closed circuit and circulate perchloroethylene. After cleaning, flush the matrix with oil before reconnecting it to the hydraulic system.

Cleaning the outside of the matrix

The easiest way to clean the fins is to use compressed air or wash them with water. Grease removers and high-pressure cleaning systems can also be used to remove foreign matter. When using a high-pressure cleaning system, make sure that the water stream is parallel to the fins and at least 3cm away from them. Be careful not to damage the fins with a strong water stream.



Water Oil Coolers

HPC/HGPC Series - Plate Coolers

HSC Series - Shell &Tube Coolers

HLDA Series - Chiller

What is a water-cooled cooler?

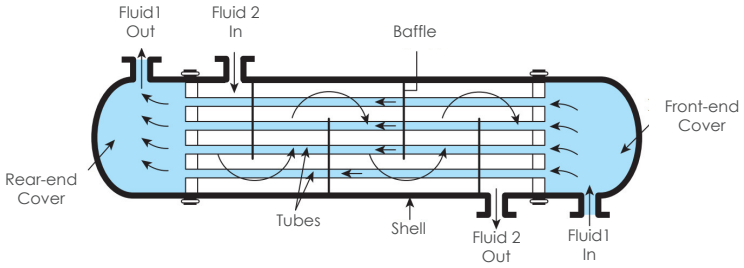
Just as the purpose of air-cooled coolers, the purpose of a water-cooled cooler is to optimize the heat management of oil and maintain the performance and lifespan of hydraulic systems. However, unlike air-cooled coolers, water-cooled coolers use water as a cooling medium, and in places where water resources are abundant, water-cooled coolers are widely used.

Water-cooled coolers can be classified according to their structure, and are generally divided into 1) tubular coolers, 2) plate coolers, and 3) chillers.

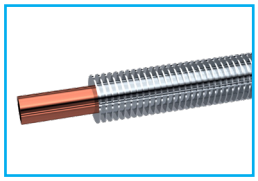
Tubular cooler

Tubular coolers are divided into double pipe, shell and tube, and coiled tube types, and Hydrolync supplies shell and tube products.

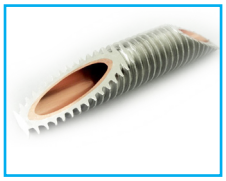
In the process industry, shell and tube heat exchangers are used much more frequently than other types. More than 90% of tubular coolers used in the industry are of the shell and tube type. Shell and tube heat exchangers used in various industries have the most well-established standards for design and manufacturing using various materials, and are therefore produced in the widest range of sizes and types. Our products include the **HSC Series**.



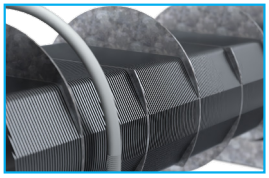
General structure of shell and tube



Copper-Aluminum Finned Tube



Cross section



Copper-Aluminum Plate Tube

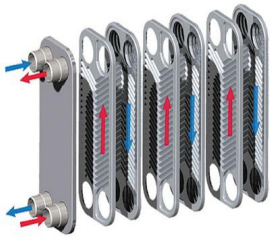
Our **HSC Series** shell and tube product uses an extrusion fin-tube type and Aluminum pate tube ype, which minimizes the thermal resistance coefficient between the copper tube and aluminum fin to maximize heat performance. The finned and plate tube generates turbulence in the fluid flow, allowing efficient transfer of heat from the fluid to the tube, thus maximizing heat exchange performance.

Plate coolers

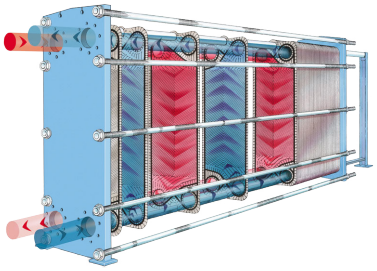
Plate-type coolers offer several important advantages but are less commonly used than shell-and-tube heat exchangers. Plate-type coolers can be classified into three types:

1. Brazed plate coolers, gasketed plate coolers: used in liquid-liquid heat exchange applications at low and medium pressures and are an alternative to shell-and-tube coolers.
2. Spiral plate coolers: used for fluids containing sludge or viscous impurities and are an alternative to shell-and-tube coolers in locations where little maintenance is required.
3. Panel coil coolers: made by forming a double pipe or coil of liquid combined with fins using angled plates.

Our Brazed Plate Cooler and Gasketed Plate Cooler are the main types of plate heat exchangers. The biggest advantage of a plate heat exchanger is its high heat transfer performance compared to its compact size. This is because the fluid flowing along the angled shape of the plate generates high turbulence, leading to high heat transfer performance. Depending on the method of joining plates with different angled shapes, plate heat exchangers can be divided into two types: brazed plate heat exchangers, where welding material is melted in a high-temperature chamber to join the plates, and gasketed plate heat exchangers, where a gasket is inserted between the plates and compressed by front and back covers. Our company's Brazed Plate Cooler is the **HPC Series**, and the Gasketed Plate Cooler is the **HGPC Series**.



Brazed Plate Cooler

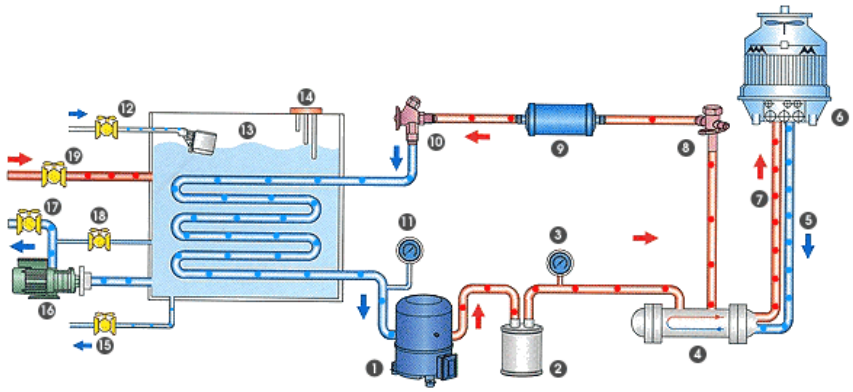


Gasketed Plate Cooler

Chiller

A chiller is a mechanical refrigeration device that cools water, air, or other liquids, using a compressor, evaporator, condenser, refrigerant, and other components. The core technology of a chiller typically lies in its control system, which manages and optimizes the performance of the chiller, including temperature control, flow control, and pressure control.

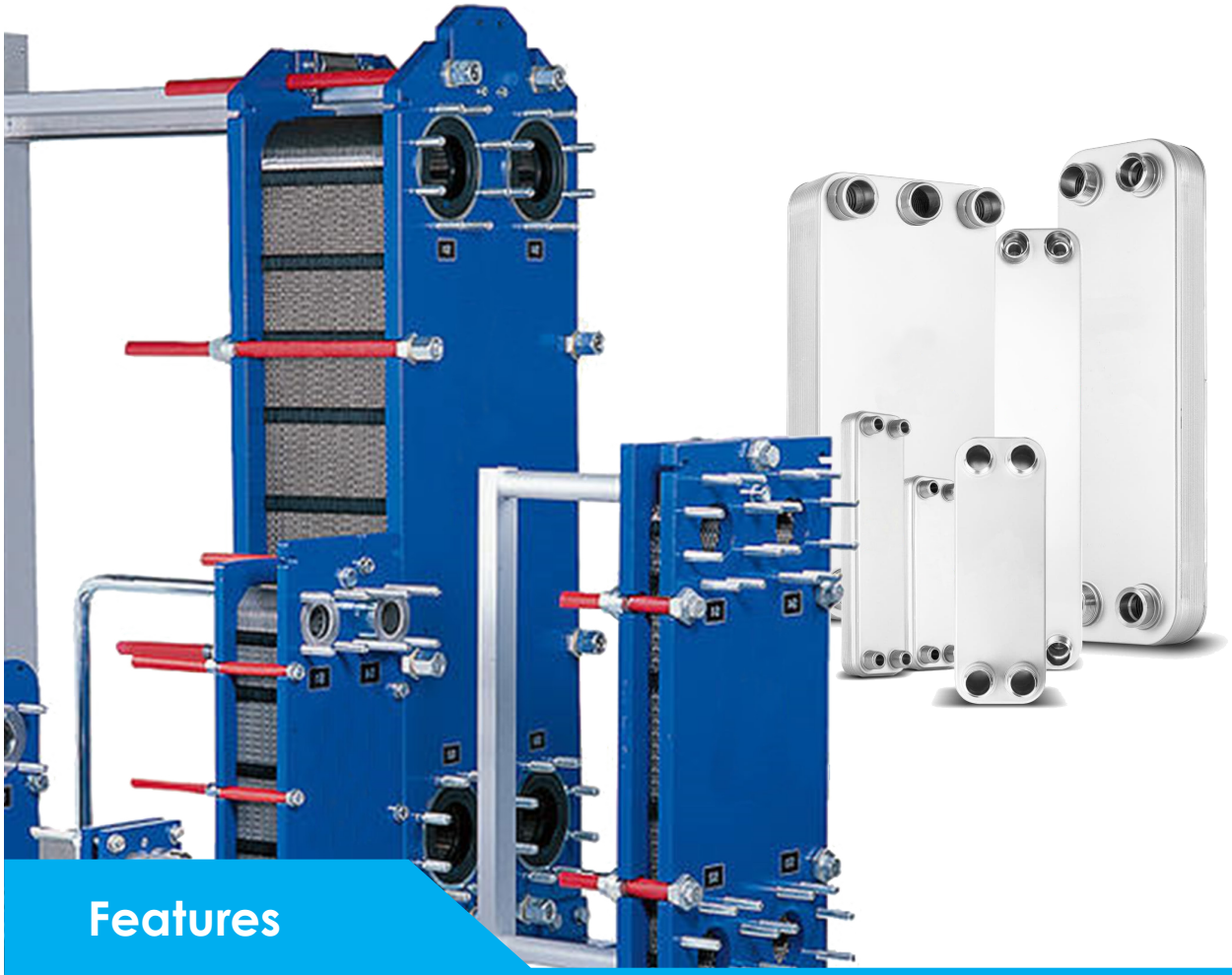
Many modern chillers are equipped with advanced energy-saving technologies, such as variable speed drives and high-efficiency compressors, to reduce energy consumption and operating costs. They are also designed to withstand harsh industrial environments with durable structures, corrosion-resistant materials, and stable performance and lifespan. Therefore, despite being more expensive than other heat exchangers, there is an increasing demand for chillers that guarantee robust structure, corrosion-resistant materials, and stable performance and lifespan. Our chiller products include the **HLDA series**.



❶ Compressor	❻ Cooling Tower	⓫ Low-Pressure Gauge	⓰ Circulation Pump
❷ Oil Separator	❼ Cooling Water Return	⓬ City Water Supply	⓱ Cooled Water Supply
❸ High-Pressure Gauge	❽ Shut Off Valve	⓭ Evaporator & Tank	⓲ Cooled Water Return
❹ Condenser (Shell & Tube)	❾ Filter Dryer	⓮ Level Sensor	⓳ By-Pass Valve
❺ Cooling Water Supply	❿ Expansion Valve	⓯ Drain Valve	

HPC/HGPC Series

Plate Coolers



Features

- Compact, easy installation and cost-effective
- High thermal transfer efficiency
- Proven and reliable quality
- Reduce life cycle cost

Quick Overview

HydroLync provides two types of plate heat exchangers. HPC uses a brazing method, while HGPC is a gasket type.

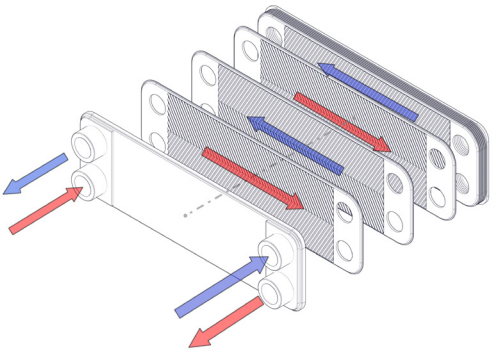
HPC is one of the products with excellent heat transfer performance. It consists of a corrugated channel plate package between the front and back cover plate packages. The cover plate package is composed of a sealing plate, a blind ring, and a cover plate. The connection is mounted on the cover plate and can be custom-made according to user requests for specific markets and applications designed for high-pressure hydraulic systems.

HGPC is a multi-purpose gasket plate heat exchanger. The heat transfer area of the gasket plate heat exchanger is composed of a series of corrugated plates assembled between the frame and pressure plate to maintain pressure. The gasket plays a sealing role between the plates. Fluid typically flows through the heat exchanger in a counter-current manner. This provides the most efficient heat transfer performance and allows for a very close temperature approach, i.e., the temperature difference between the outlet cooled fluid and the inlet cooling fluid.

HPC Materials

Parts	Standard Materials
Cover Plates	Stainless steel - 304
Connections	Stainless steel - 304
Plates	Stainless steel - 304 / 306L
Brazing filler	Copper

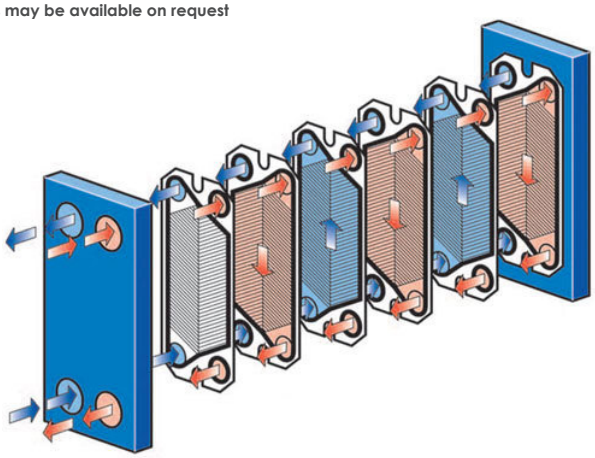
***Other materials may be available on request**



HGPC Materials

Parts	Standard Materials
Field gaskets	NBR, EPDM. FKM, etc.
Heat transfer plates	Stainless steel - 304 / 316L
Flange connections	Stainless steel - 304 / 316, Alloy 254, Titanium
Frame and pressure plate	Carbon steel, epoxy painted

***Other materials may be available on request**



HPC Ordering code

Example: HPC [K] - [205] - [60] - [M]
1 2 3 4

1	Series
K	K Series
BL	BL Series

2	Plate size		
Series	**Model**	**Size**	**L**
K	**030**	80 x 194 x L	9 + 2.20xN
	070	124 x 304 x L	10 + 2.38xN
	105	124 x 504 x L	11 + 2.38xN
	205	246 x 528 x L	14 + 2.40xN
BL	**30**	111 x 310 x L	13 + 2.30xN
	120	246 x 528 x L	13 + 2.38xN

***Note:** The actual thickness and weight may differ from the theoretical calculation result by up to ±3%.

3	Number of plates					
Number	**K Series**				**BL Series**	
	030	**070**	**105**	**205**	**30**	**120**
10	●					
20	●	●	●	●	●	●
30	●	●	●	●	●	●
40	●	●	●	●	●	●
50	●	●	●	●	●	●
60		●	●	●	●	●
70		●	●	●	●	●
80				●		●
100				●		●

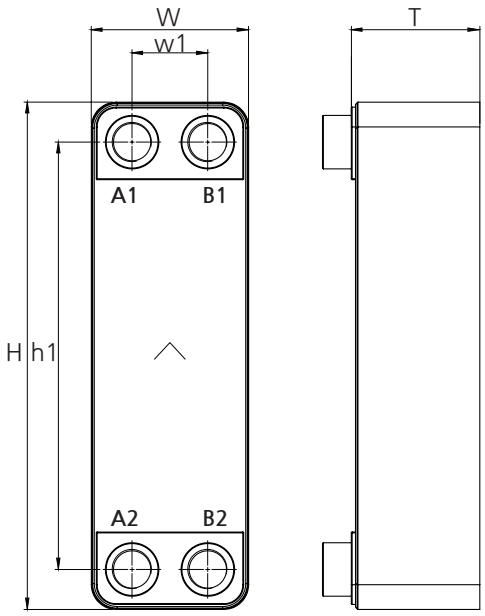
4	Port
Type	
M	PT Male only (Standard)
F	PF Female only

*** Please consult with the sales department for other types of port.**

Port sizes by model

Series	Model	Port size	
		Oil	**Water**
K	**030**	3/4"	3/4"
	070	1"	1"
	105	1"	1"
	205	1 1/2"	1 1/2"
BL	**30**	1"	1"
	120	1 1/2"	1 1/2"

HPC Specifications



Brazing materials	Copper	Copper *Extra Strength	Nickel
		A1, A2 / B1, B2	
Max. Working pressure (bar)	30/30	45/30	10/10
Reinforced max. Pressure (bar)	43/43	65/43	15/15
Max. Working temperature (˚C)		200 ˚C	

Dimensions

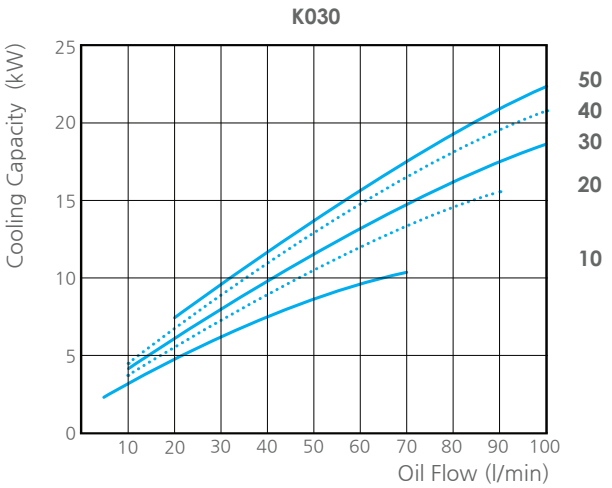
Model	W	w1	H	h1	T	Weight
	mm	mm	mm	mm	mm	Kg
K030	80	40	194	154	9+2.20n	0.50+0.047n
K070	124	70	304	250	10+2.38n	1.38+0.134n
K105	124	64	504	444	11+2.38n	3.23+0.230n
K205	246	174	528	456	14+2.40n	7.30+0.480n
BL30	124	70	304	250	13+2.3n	1.30+0.130n
BL120	246	174	528	456	13+2.36n	7.70+0.414n

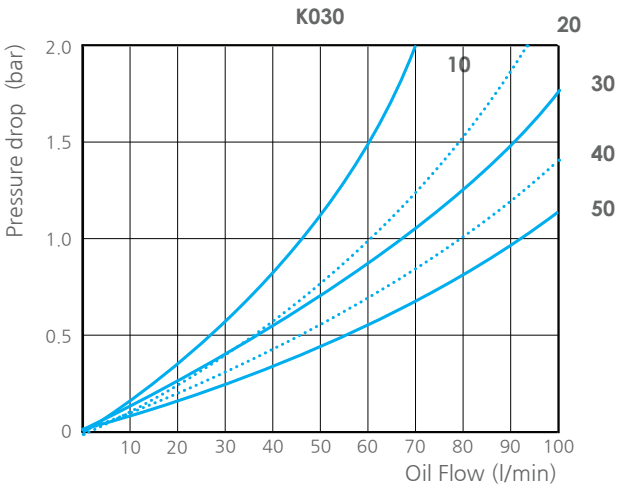
***Note:** The actual thickness and weight may differ from the theoretical calculation result by up to ±3%.

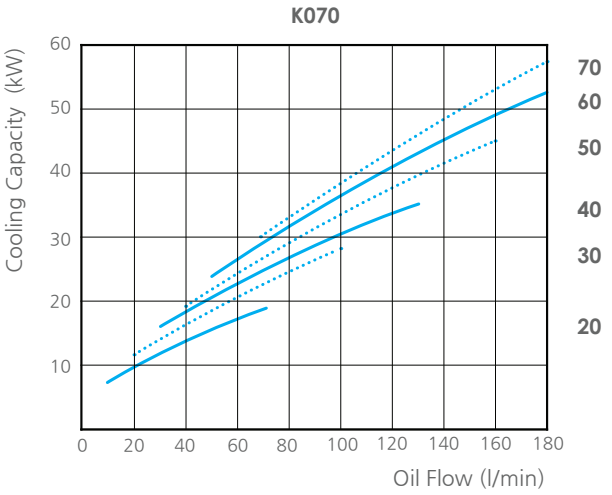
Connections

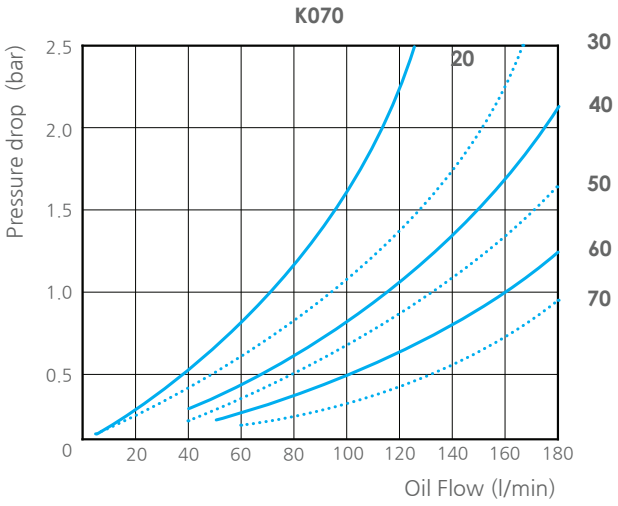
Model	Inlet/Outlet Ports				Remark
	A1	A2	B1	B2	
K030	PT 3/4"	PT 3/4"	PT 3/4"	PT 3/4"	PT - Male only PF - Female only
K070	PT 1"	PT 1"	PT 1"	PT 1"	
K105	PT 1"	PT 1"	PT 1"	PT 1"	
K205	PT 1 1/2"	PT 1 1/2"	PT 1 1/2"	PT 1 1/2"	
BL30	PT 1"	PT 1"	PT 1"	PT 1"	
BL120	PT 1 1/2"	PT 1 1/2"	PT 1 1/2"	PT 1 1/2"	

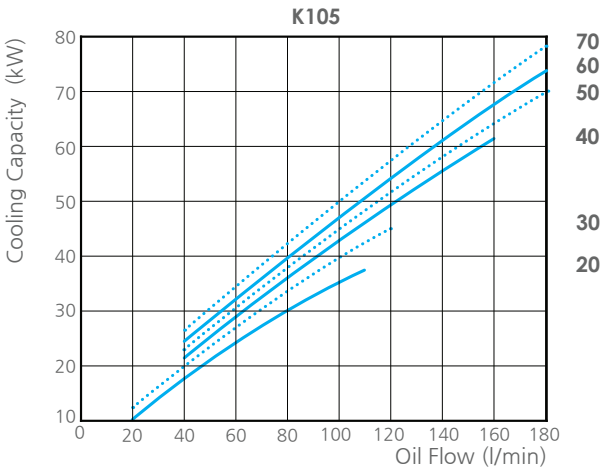
Performance curve

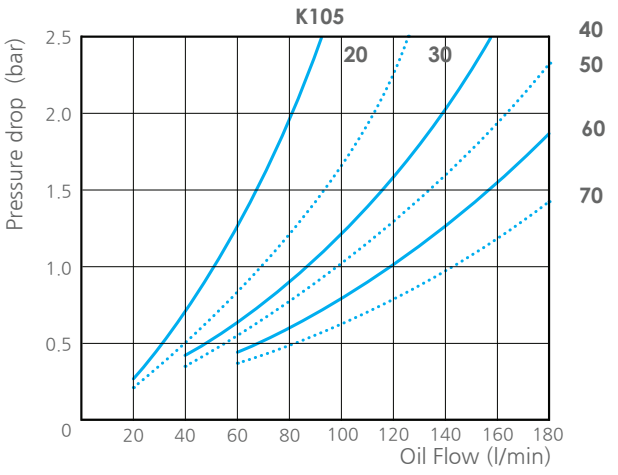






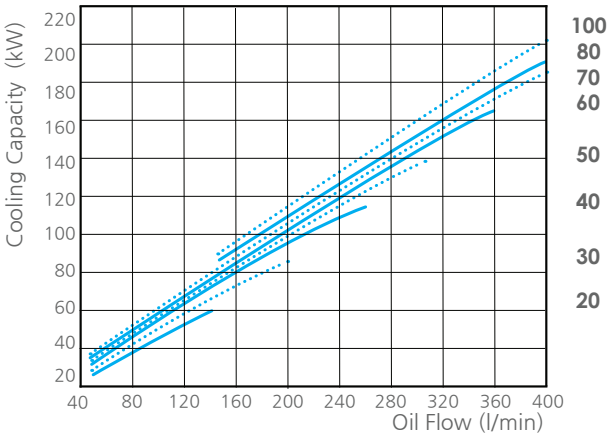




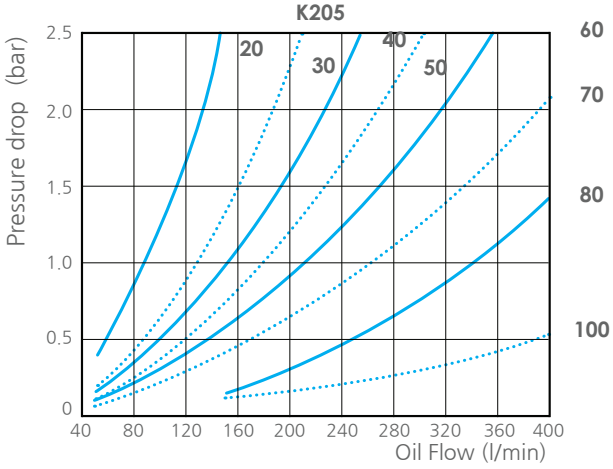


***Performance curve conditions: Fluid: VG68 / Fluid temperature: 60℃, Cooling water temperature: 20℃ / Flow rate ratio: Fluid: Cooling water = 2:1**

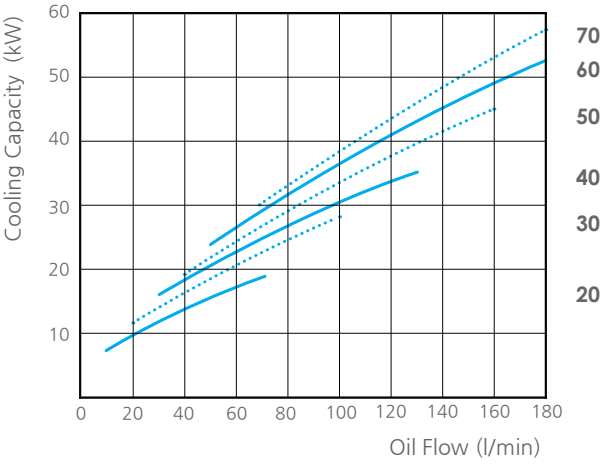
K205



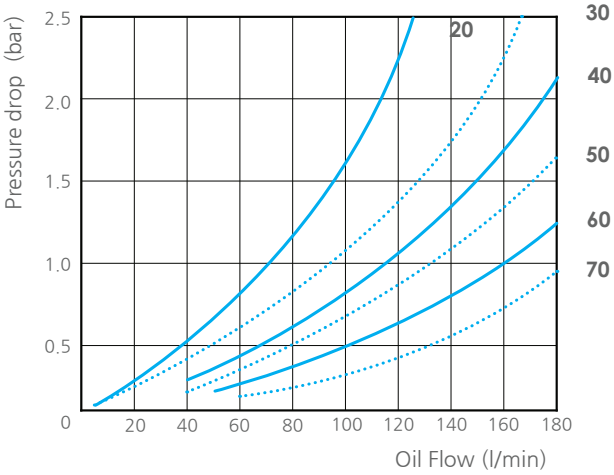
K205



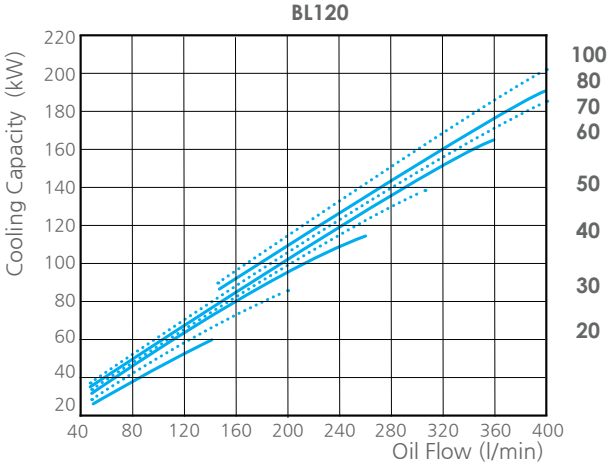
BL30



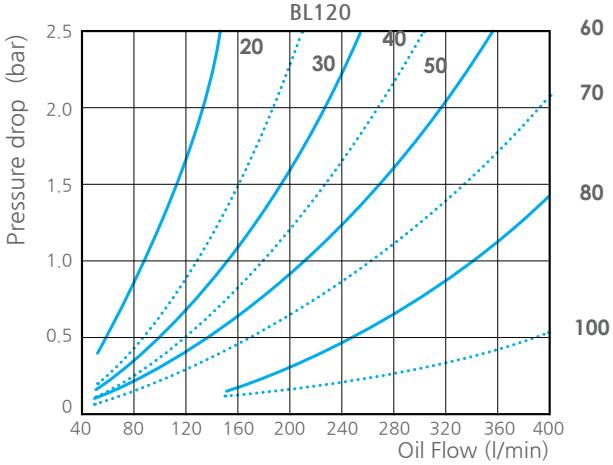
BL30



BL120



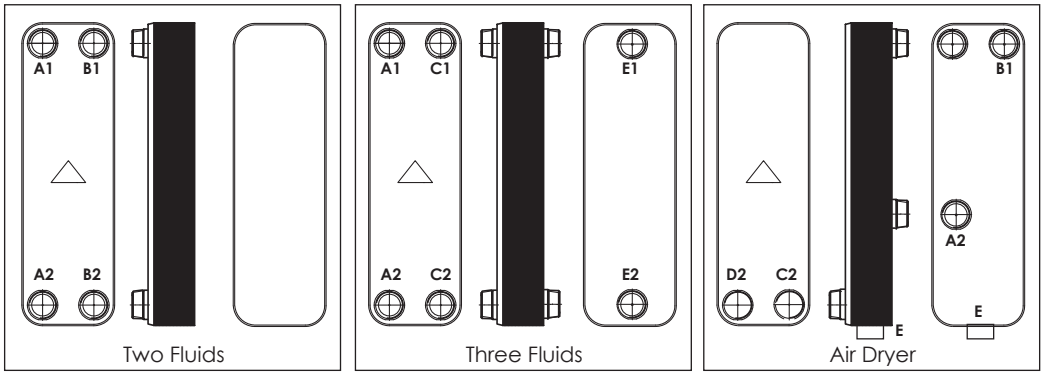
BL120



Performance curve conditions: Fluid: VG68 / Fluid temperature: 60℃, Cooling water temperature: 20℃ / Flow rate ratio: Fluid: Cooling water = 2:1

Installation

1. Fluid connecting directions

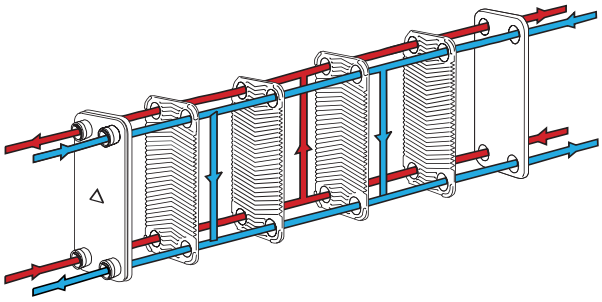


Applications	Type	Fluid 1 (Side1)	Fluid 2 (Side 2)	Fluid 3 (Side 3)
Evaporator (Single Refrigerant)	K, K-S, R ,C	Refrigerant A2->A1	Chiller water B1->B2	
	Z400, Z401, Z600	Refrigerant 1 A2->B1	Chiller water A1->B2	
Evaporator (Dual refrigerant)	K215, K215S	Refrigerant 1 A2->A1	Refrigerant 2 C2->C1	Chiller water E1->E2
	Z415, Z416	Refrigerant 1 A2->C1	Refrigerant 2 C2->A1	Water E1->E2
Condenser	K, K-S	Refrigerant A1->A2	Cooling water B2->B1	
	Z400, Z401, Z600	Refrigerant B1->A2	Cooling water B2->A1	

Applications	Type	Fluid 1 (Side1)	Fluid 2 (Side 2)	Fluid 3 (Side 3)
Heating, Cooling	K, K-S, R ,C, E, F	Cold water (or hot oil) A2->A1	Hot oil (or cold water) B1->B2	
	Z400, Z401, Z600	Cold water (or hot oil) A2->B1	Hot oil (or cold water) A1->B2	
Oil cooler	**K, BL, H, JX**	**Cold water (or hot oil) B1->B2**	**Hot oil (or cold water) A2->A1**	
	Z400, Z401, Z600	Refrigerant 1 A2->B1	Hot oil (or cold water) A1->B2	
Air Dryer (Refrigerant)	A030, A070	Refrigerant A2->B1	Air C2-> Separator ->D2	
	A210	Refrigerant B1->A2	Air D2-> Separator ->C2	

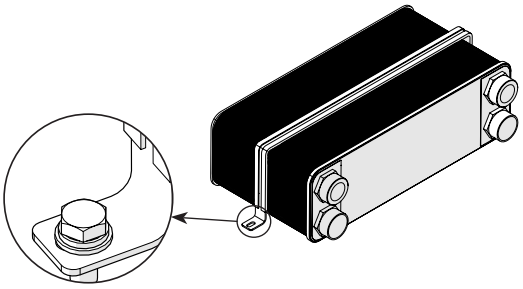
*** The fluid connection direction above is a standard recommendation that achieves the best performance. Please contact the HydroLync sales representative if you want to connect the fluid in a different direction.**

- Always install HPC vertically (especially in refrigerant systems). This is done to maintain the minimum amount of water under the connector.
- To achieve high heat efficiency and high heat transfer rate, HPC must be installed in reverse as shown in the right picture.



2. Mounting

- It is dangerous to expose the device to vibrations, excessive pulsating pressure, or temperature changes. Therefore, it is important to mount the heat exchanger to prevent the transfer of vibrations. If there is such a risk, a vibration absorber should be installed, and for large diameter pipelines, it is recommended to use appropriate converters. In addition, rubber mounting strips should be used as a buffer, that is, a vibration-absorbing material, between the HPC and the mounting clamp..
- The mounting method of HPC is as shown on the right. For small HPCs, it is also possible to mount a flat cooler directly onto the pipe/connectors.
- To prevent damage to the stud bolt due to excessive force, refer to the chart when installing the stud bolt.



Torque Guide for Stud Bolt Fastening

Item	"First time bolting torque(MAX) (kgf-cm)"	"First time loosing torque(MIN) (kgf-cm)"	"Fifth time loosing torque(MIN) (kgf-cm)"
M6	30.6	4.6	3.06
M8	61.2	8.67	6.12
M10	107.1	15.3	10.2
M12	158.1	23.4	16.3

This table is based on ISO 2320:1997(E) Table 8. Excessive torque on the connection of the heat exchanger can cause damage to the stud bolts.

3. Preventing Freezing of HPC

Freezing or icing can damage the HPC and the system. Therefore, the following methods are recommended to minimize freezing of the HPC:

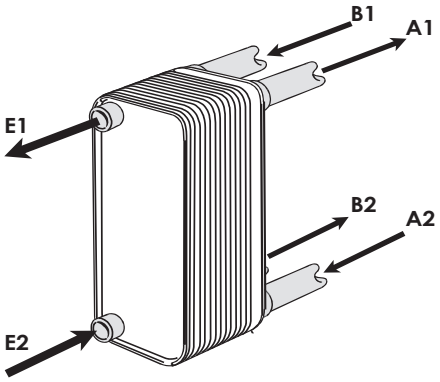
- Use a strainer or filter with <1mm, 16 mesh before the inlet water.
- Use a brine (e.g. glycol) when the evaporation temperature is close to the freezing point.

(1) Water Temperature Sensor
Installing a floating temperature sensor near the water outlet is also a way to prevent the water from freezing. The recommended set temperature for buffering is 4°C.
(2) Flow Switch
Installing a water flow switch in the water circuit can prevent HPC freezing by stopping the flow of

cooling water. Typically, low flow rates can occur due to malfunctioning of the water pump, pipe leakage, pipe blockage due to pipe contamination, or filter contamination.

4. Cleaning

If contamination occurs in a plate heat exchanger, most of the soft foreign substances that block the inside can be removed by backflushing. For example, glycolic acid oxalic acid, which is a weak acid with a concentration of less than 5%, is added to the cleaning tank. For optimal cleaning, the flow rate of the cleaning solution should be at least 1.5 times the normal flow rate, and it should be used in backflush mode as much as possible. After use, the heat exchanger should be carefully rinsed with clean water. Before the final rinse, a 1-2% solution of sodium hydroxide (NaOH) or sodium bicarbonate (NaHCO3) must be used to neutralize all acids. If the acidity is too high, the copper and stainless steel inside the HPC can be etched or corroded.



HGPC Ordering code

Example: HGPC M80 S FP 10 - 50 - 1 - 1 - ☐

1 2 3 4 5 6 7 8

1	Models
M Series	M25
	M65
	M80
	M100

2	Types of heat transfer plate
T	Tiny
S	Small
M	Medium
L	Large

3	Frame types
FP	
B	
CDL	

4	Max working pressure
10	10 bar
16	16 bar
20	20 bar

5	Number of plates
	Number of plates

6	Materials of plate
1	316L
2	304
3	Titanium
4	Others

7	Materials of gasket
1	NBR (STANDARD)
2	EPDM
3	VITON
4	Others

8	Customization label
	Customization label

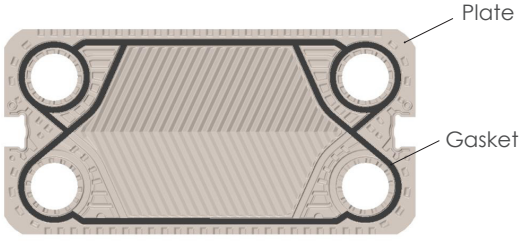
HGPC Part ordering code

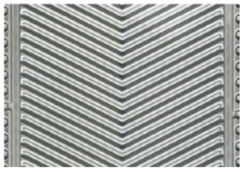
Example: PH M80S FP10-50-1-1-

1 2

1	Part code
PH	Plate H type
PV	Plate V type
GK	Gasket

2	Product Code
	The product code on the name plate

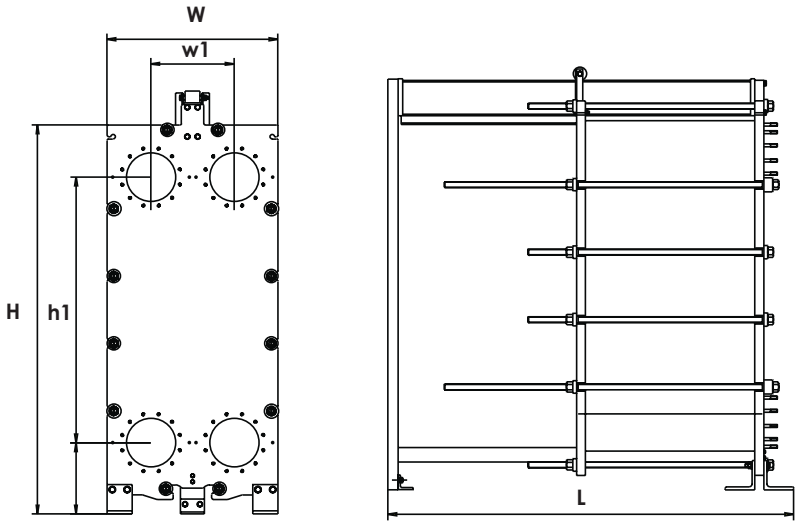




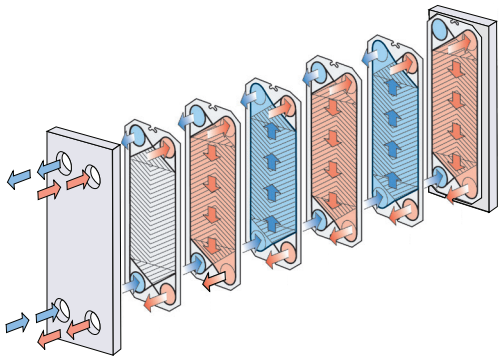
H: High theta

L: Low theta

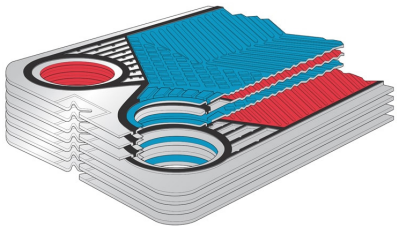
HGPC Specifications



Model	W	w1	H	h1	L	Flange	Max. Pressure	Max. Flowrate
	mm	mm	mm	mm	mm	inch	bar	L/min
M25	198	150	595	381	415-520	JIS 10/16K 25A	10/16	175
M65M	340	150	1052	800	617-922	JIS 10/16K 65A	10/16	1550
M80S	435	238	1117	794	640-960	JIS 10/16/20K 80A	10/16/20	2033
M80M	435	238	1393	1070	640-960	JIS 10/16/20K 80A	10/16/20	2033
M100T	540	262	1130	727	500-810	JIS 10/16/20K 100A	10/16/20	3417
M100M	540	262	1536	1133	500-810	JIS 10/16/20K 100A	10/16/20	3417
M100L	540	262	1942	1539	500-810	JIS 10/16/20K 100A	10/16/20	3417



Flow direction of hot fluid and cold fluid



Efficient Heat Exchange Structure

A gasketed plate heat exchanger (HGPC) is an efficient heat exchange device consisting of a series of thin metal plates with corrugated shapes and gaskets. The high-temperature fluid and low-temperature fluid between the plates are separated by sealing gaskets and flow independently in each channel. The heat transfer coefficient of HGPC is 3-5 times higher than that of shell-and-tube heat exchangers, as the high and low-temperature fluids reach a high level of turbulence when flowing through the plate channels, maximizing the heat exchange performance.

Installation

Attention

Always wear protective and preventive gears before starting any work

Hand protection gear: Use protective gloves when necessary to avoid the risk of cutting and abrasion.

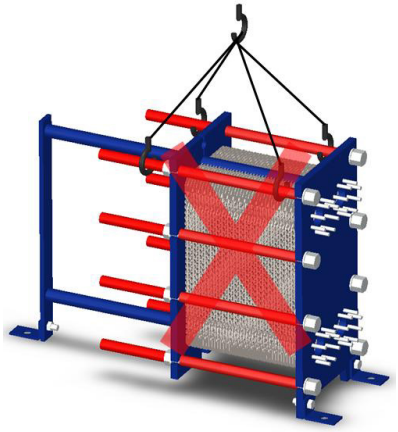
Eye protection gear: Wear safety goggles before performing product installation and maintenance.

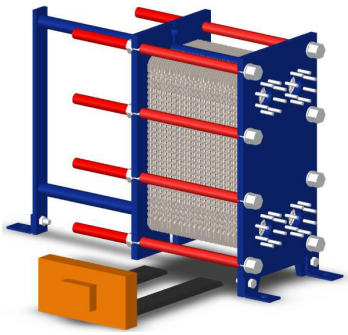
Head protection gear: Wear a safety helmet when working in areas where there is a risk of objects falling from above, hitting fixed objects, or electric hazards above the head.

Foot protection gear: Wear safety shoes to avoid injury from falling objects on your feet when working around heavy equipment or falling objects.

1. Handling

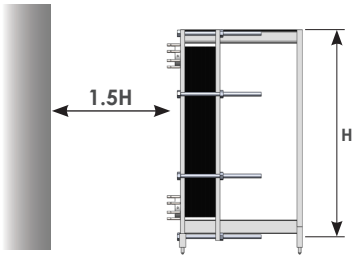
HGPCs are shipped fixed on wooden pallets. If you move the product using some parts of the structure other than the pallet, it may cause damage to the product and affect its heat exchange performance. Please refrain from moving any part of the product using flange pipes, plate fixing bolts, or directly with forklifts. We will not be responsible for any product damage or performance issues caused by inappropriate transportation methods by the user. Before handling, always wear protective and preventive gear.

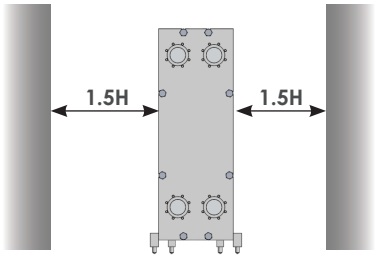




2. Installation

Adequate workspace should be secured for maintenance when installing HGPC. As shown in the diagram below, in order to replace the plate properly, a space 1.5 times the height of the plate must be secured in the front and on both sides.

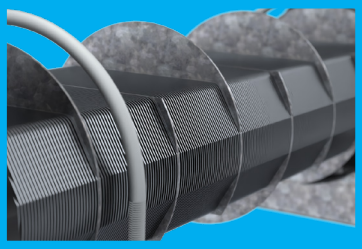




HSC Series

Shell & Tube Coolers

Features



Aluminum Plate

- Optimized design through fluid analysis
- Customizable production tailored to various customer usage environments
- General industrial, marine, and specialized heat exchangers available

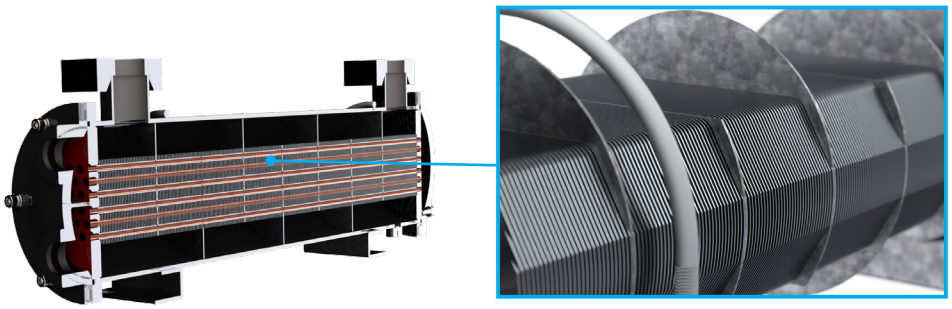
Quick Overview

Shell and tube heat exchangers are the most widely used industrial heat exchangers and are generally capable of delivering stable heat exchange performance in the most severe environmental conditions. The HSC Series provides both standard products applicable to various industrial environments and custom-made models designed for special environments.

HSC Materials

Parts	Materials
Shell	Carbon(34CrMo4)/Stainless steel (SUS304/316L)
Covers	FC20/BRASS/SUS304
Tube sheet	SS400/BRASS/SUS304/SUS316L
Tubes	COPPER-TP2Y2/Cu90-Ni10/ Cu70-Ni30/SUS304/SUS316L
Baffles	SS400/SUS304
Aluminum Fin	1080A

*** Other materials may be changed according to customer request.**



Ordering code

Example: HSC - T - 8 - 850 - S

1 2 3 4

1	Series
T	General Industrial (Hydraulic & Lubrication)
T2	Marine/Seawater
T3	Inter & After Cooler
T4	Condensor

2	Shell size
Code	Diameters
3	Ø89.1 mm
4	Ø114.3 mm
5	Ø139.8 mm
6	Ø165.2 mm
8	Ø219.0 mm
10	Ø273.0 mm

3	Tube length						
Code	Length	Model					
		3	4	5	6	8	10
340	340 mm		●				
370	370 mm	●					
450	450 mm		●	●			
460	460 mm	●					
530	530 mm		●				
550	550 mm	●					
680	680 mm			●	●		
850	850 mm				●	●	
870	870 mm			●			
970	970 mm				●	●	●
1200	1200 mm					●	●
1500	1500 mm						●

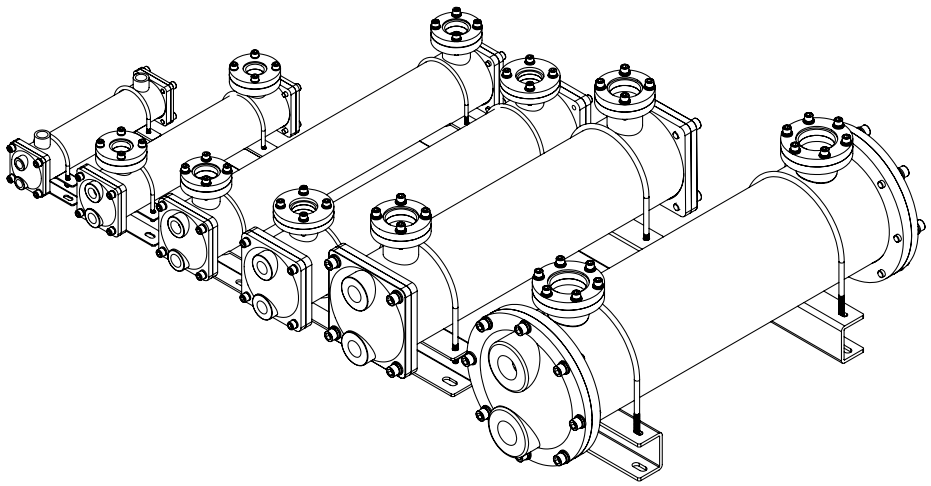
* Customization is available beyond standard specifications.

4	Connection type
Type	
S	Socket
F	Flange

Connection table

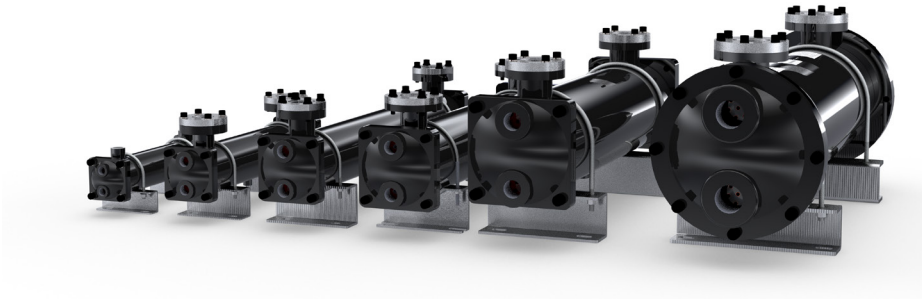
Model	Connection sizes			
	Oil		Water	
	Socket	Flange	Socket	Flange
3	PT 1"	-	PT 1/2"	-
4	PT 1 1/4"	32A	PT 3/4"	-
5	PT 1 1/2"	40A	PT 1"	-
6	PT 2"	50A	PT 1"	-
8	PT 2 1/2"	65A	PT 1 1/4"	-
10	PT 3"	80A	PT 2"	-

* Please consult with the sales department for other types of port.



Specifications

1. Performance



	Shell Side	Cover Side
Max. Working pressure	15 bar	10 bar
Max. Test pressure	22 bar	15 bar
Max. Working temperature	100˚C	100 ˚C
Number of the fluid channels	1 Pass	2 Pass

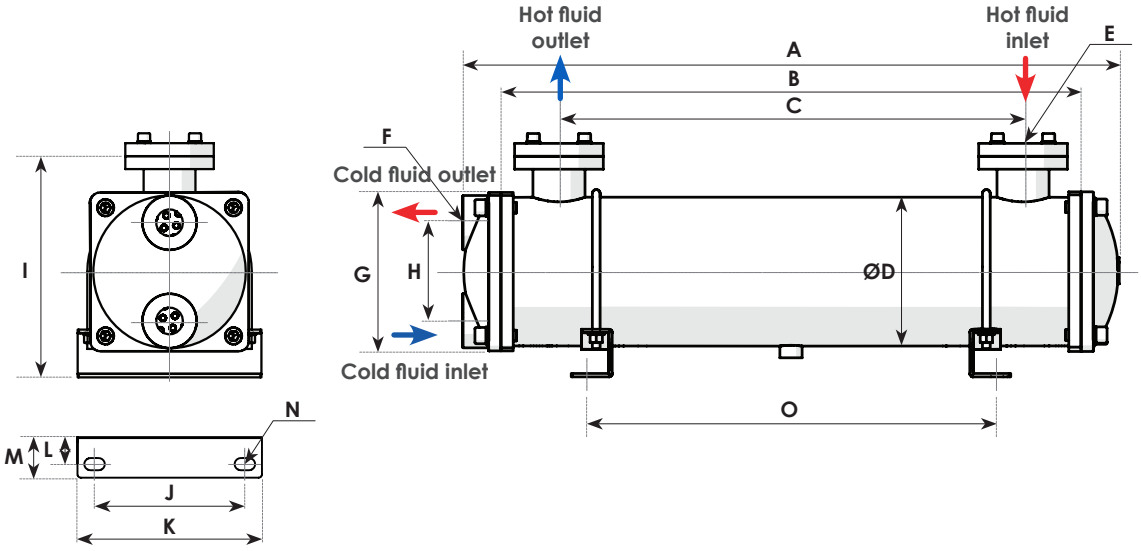
Performance curve conditions: Fluid: VG32 / Fluid temperature: 60℃, Cooling water temperature: 32℃ / Flow rate ratio: Fluid: Cooling water = 2:1

Model	Flowrate (L/min)		Pressure drop(bar)		Heat Transfer		Area	Net Weight
	Oil	Water	Oil	Water	Kcal/hr	Kw	m^2	Kg
HSC-T-3-370-S	110	65	0.86	0.60	11,600	13	0.8	9
HSC-T-3-460-S			0.99	0.70	12,400	14	1.0	10
HSC-T-3-550-S			1.12	0.80	13,300	17	1.2	11
HSC-T-4-340-S	200	118	0.95	1.25	22,200	26	1.2	18
HSC-T-4-450-S (F)			0.97	1.33	25,200	29	1.6	19
HSC-T-4-530-S (F)			1.04	1.40	28,100	33	1.9	20
HSC-T-5-450-S (F)	280	145	1.11	1.44	35,400	41	2.1	26
HSC-T-5-680-S (F)			1.16	1.71	43,600	51	3.3	28
HSC-T-5-870-S (F)			1.21	1.97	51,800	60	4.1	30
HSC-T-6-680-S (F)	320	240	1.29	0.98	53,600	62	5.2	41
HSC-T-6-850-S (F)			1.45	0.99	61,100	71	6.6	46
HSC-T-6-970-S (F)			1.61	1.00	68,600	80	7.5	50
HSC-T-8-850-F (S)	520	350	1.62	1.42	115,000	134	11.4	91
HSC-T-8-970-F (S)			1.97	1.47	131,700	153	13.1	96
HSC-T-8-1200-F (S)			2.23	1.62	147,600	172	16.9	102
HSC-T-10-850-F (S)	760	600	1.19	0.95	179,300	208	21.9	155
HSC-T-10-970-F (S)			1.23	0.99	199,200	232	25.2	176
HSC-T-10-1200-F (S)			2.10	1.12	229,100	267	31.6	215
HSC-T-10-1500-F (S)			2.63	1.28	259,000	301	40.0	266

S: Socket / **F:** Flange

* The specifications above may be subject to change without prior notice for quality improvement purposes.

2. Dimensions



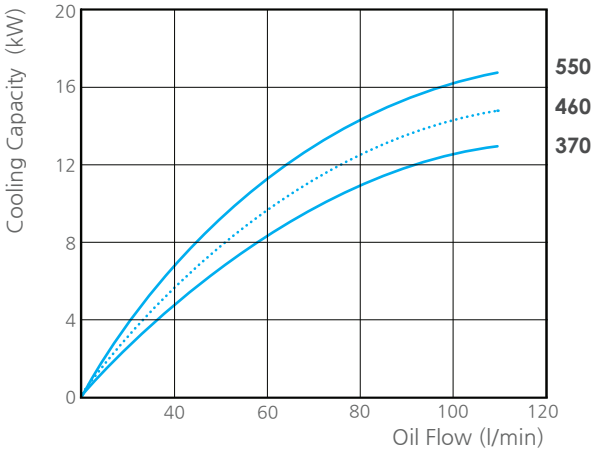
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
HSC-T-3-370-S	422	370	258												465
HSC-T-3-460-S	512	460	348	Ø89.1	PT 1	PT 1/2	100	50	159	100	154	19	32	11x24	545
HSC-T-3-550-S	602	550	438												635
HSC-T-4-340-S	392	340	216												146
HSC-T-4-450-S (F)	502	450	326	Ø114.3	PT 1 1/4 (32A)	PT 3/4	125	66	208 (228)	105	170	28	50	13x25	256
HSC-T-4-530-S (F)	582	530	406												336
HSC-T-5-450-S (F)	520	450	340												274
HSC-T-5-680-S (F)	750	680	570	Ø139.8	PT 1 1/2 (40A)	PT 1	152	88	242 (267)	127	209	27	50	14x25	494
HSC-T-5-870-S (F)	940	870	760												684
HSC-T-6-680-S (F)	766	680	517												429
HSC-T-6-850-S (F)	936	850	690	Ø165.2	PT 2 (50A)	PT 1	180	104	274 (294)	167	210	23	50	15x40	599
HSC-T-6-970-S (F)	1056	970	807												719
HSC-T-8-850-F (S)	962	850	680												580
HSC-T-8-970-F (S)	1082	970	800	Ø219.0	65A (2 1/2)	PT 1 1/4	233	144	396 (354)	200	280	40	70	18x30	724
HSC-T-8-1200-F (S)	1312	1200	1030												954
HSC-T-10-850-F (S)	1004	850	634												502
HSC-T-10-970-F (S)	1124	970	754	Ø273.0	80A (3)	PT 2	360	172	434 (409)	300	360	39	70	18x38	622
HSC-T-10-1200-F (S)	1354	1200	992												852
HSC-T-10-1500-F (S)	1654	1500	1284												1152

S: Socket / **F:** Flange

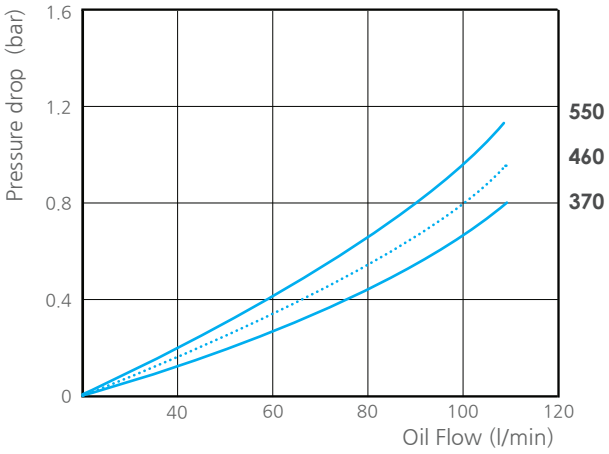
* The specifications above may be subject to change without prior notice for quality improvement purposes.

Performance curves

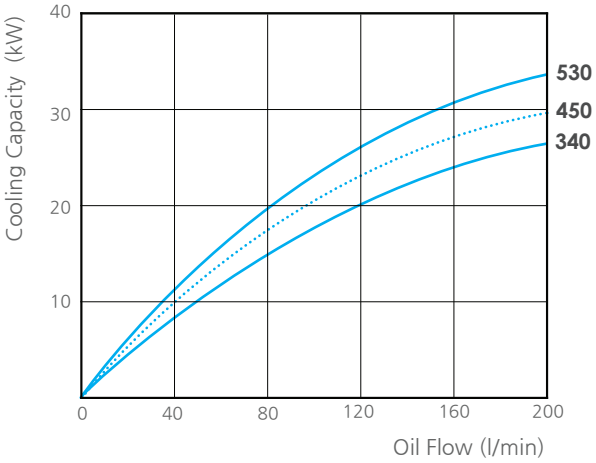
HSC-T-3



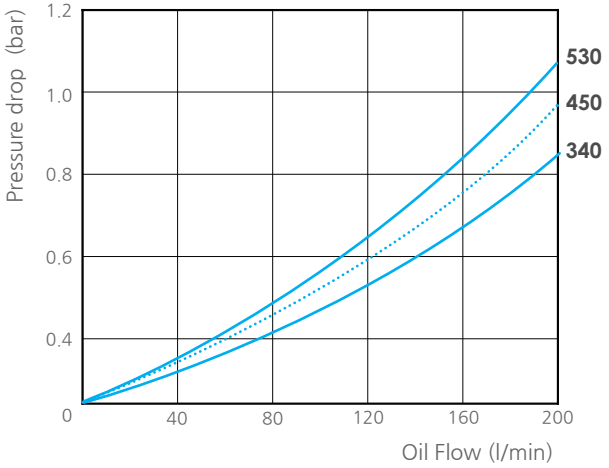
HSC-T-3



HSC-T-4



HSC-T-4



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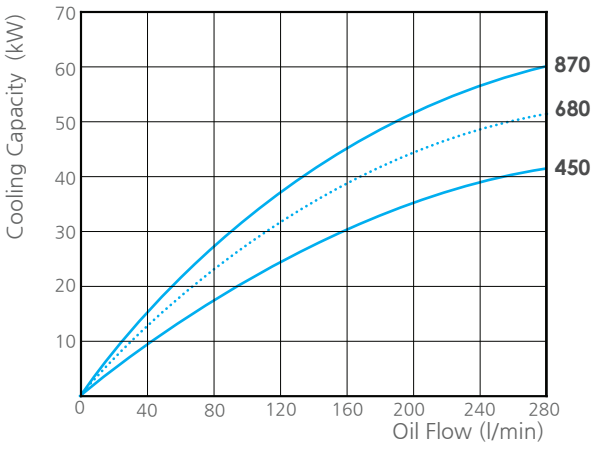
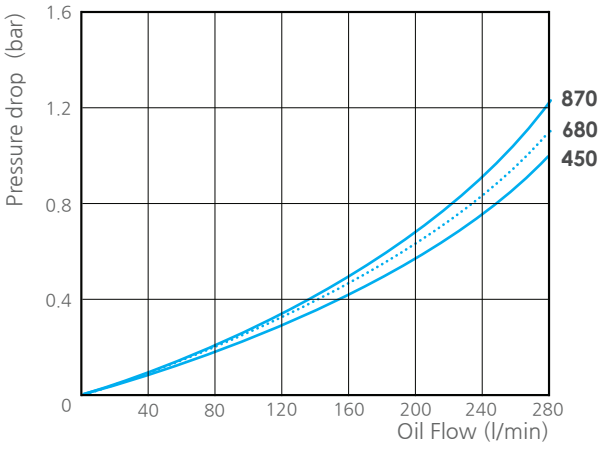
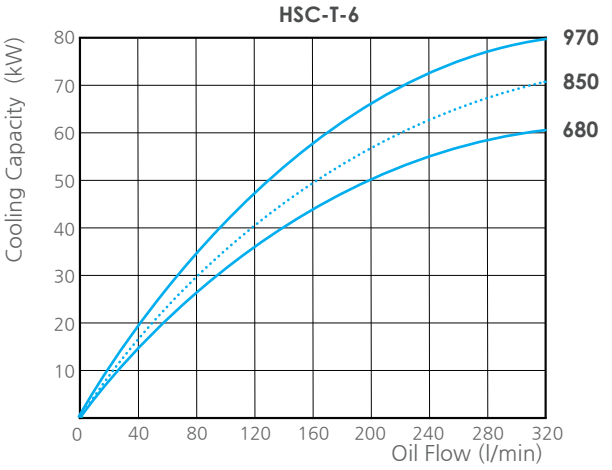
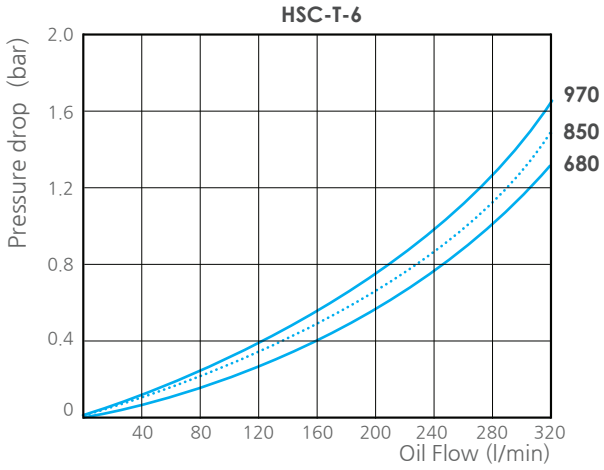


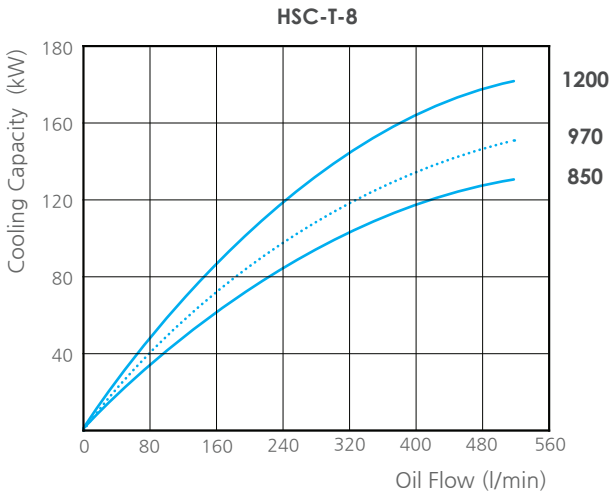
HSC-T-5

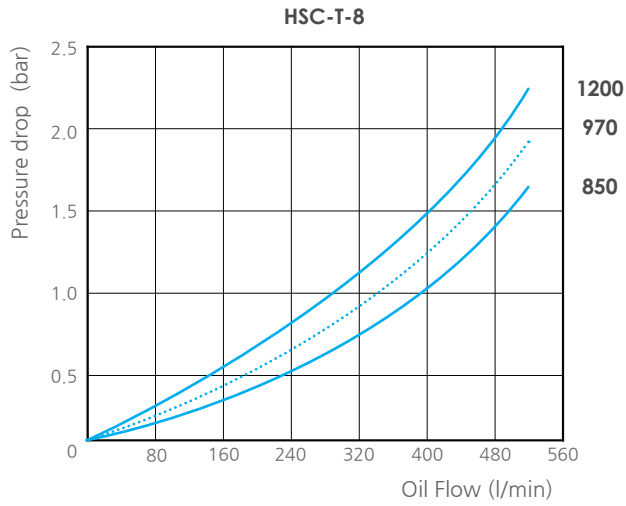


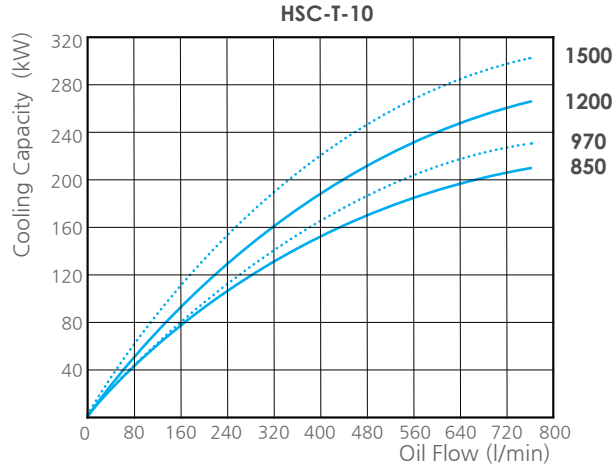
Performance curve conditions: Fluid: VG32 / Fluid temperature: 60℃, Cooling water temperature: 32℃ / Flow rate ratio: Fluid: Cooling water = 2:1

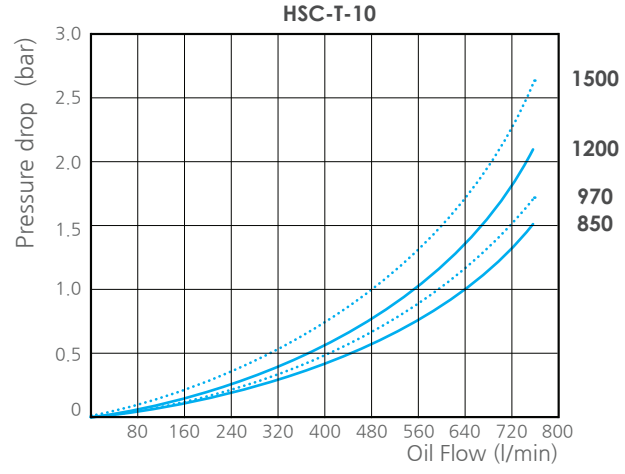










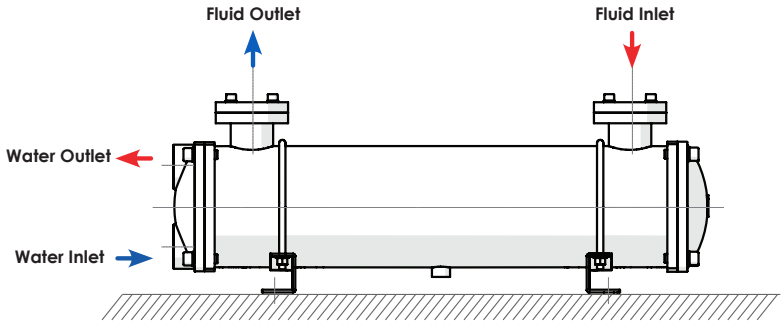


Performance curve conditions: Fluid: VG32 / Fluid temperature: 60℃, Cooling water temperature: 32℃ / Flow rate ratio: Fluid: Cooling water = 2:1

Installation and maintenance

Installation

The internal structure of the HSC product is designed for optimal heat exchange performance when installed horizontally. Please ensure that it is installed parallel to the ground.



Antifreeze and Corrosion Prevention

To prevent internal corrosion when the HSC product is not in use, it is essential to drain the water and ensure it is thoroughly dried. Particularly during winter, freezing can occur, potentially damaging the product. To prevent freezing, it is necessary to add antifreeze to the coolant or implement appropriate insulation measures.

Regular Inspection

The HSC product requires regular inspections to ensure the cooling performance is maintained. Internal inspections should be conducted once every quarter and involve checking for corrosion, leaks, seepage, and foreign substances. Here are the steps for conducting the internal inspection:

1) Disconnect and isolate all circuit lines connected to the HSC product.
2) Remove both the front and back covers of the coolant side.
3) Check the oil side for any foreign substances using a bright light source.
4) Examine the coolant side for corrosion or foreign substances using a bright light source.

Maintenance

When encountering issues during regular inspections, the following actions should be taken:

1. If foreign substances are found on the oil side: Connect the HSC product to a closed circuit and circulate perchloroethylene for cleaning. After cleaning, wash the oil side again to remove any remaining foreign substances.
2. If foreign substances are found on the coolant side: Consider the length of the pipe and remove foreign substances using a cleaning brush. Then, use a high-pressure washer to clean the interior of the pipe.
3. If leaks are detected: Check the sealing condition of the oil-side connection port and drain port. If necessary, replace the O-rings and seals with new ones.
4. If leakage is detected: Coolant-side leakage may be caused by corrosion or cracks in the pipe. If the cause is identified, replace the product with a new one.

Leakage Inspection

Before connecting the product to the hydraulic circuit after maintenance completion, be sure to conduct an inspection.

1. Seal the oil side and inject approximately 20 bars of air.
2. For HSC products, immerse them in a tank with added antifreeze and check for the occurrence of bubbles..
3. Once it is confirmed that everything is in order, proceed to connect the HSC product to the existing circuit for normal usage.

Product Selection Chart

Name		**Date**	
address		**Email**	
Tel/Fax			
Person in charge		**CC.**	

	Fluid	**Water**
Fluid type		
Max. temperature in operation	°C	°C
Inlet temperature	°C	°C
Outlet temperature	°C	°C
Max. flowrate	L/min	L/min
Max. pressure drop	bar	bar
Main Power of Hydraulic System	kW	
Required Cooling Heat Exchange Capacity	kcal/hr	

Installation Environment and Additional Requests	
Environment	☐ Indoor ☐ Outdoor
System type	
HSC Products	☐ T - General ☐ T2 - Marine ☐ T3 - Inter & After Cooler ☐ T4 - Condensor
Piping Connections	☐ Socket ☐ Flange / Size: _____
Shell side material	☐ HSC standard ☐ Stainless ☐ Other:_____
Tube side material	☐ HSC standard ☐ Stainless ☐ Other:_____
Paint	☐ HSC standard ☐ Other:_____
Other requests	

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