



**DRUM & CONTAINER
PUMPS**

DINO

DRUM & CONTAINER PUMPS

OPERATION & SERVICE GUIDE



Read and understand operation and service guide before commissioning.



● GENERAL INFORMATION / UPON RECEIVING



Read and understand operation and service guide before commissioning.

■ GENERAL INFORMATION

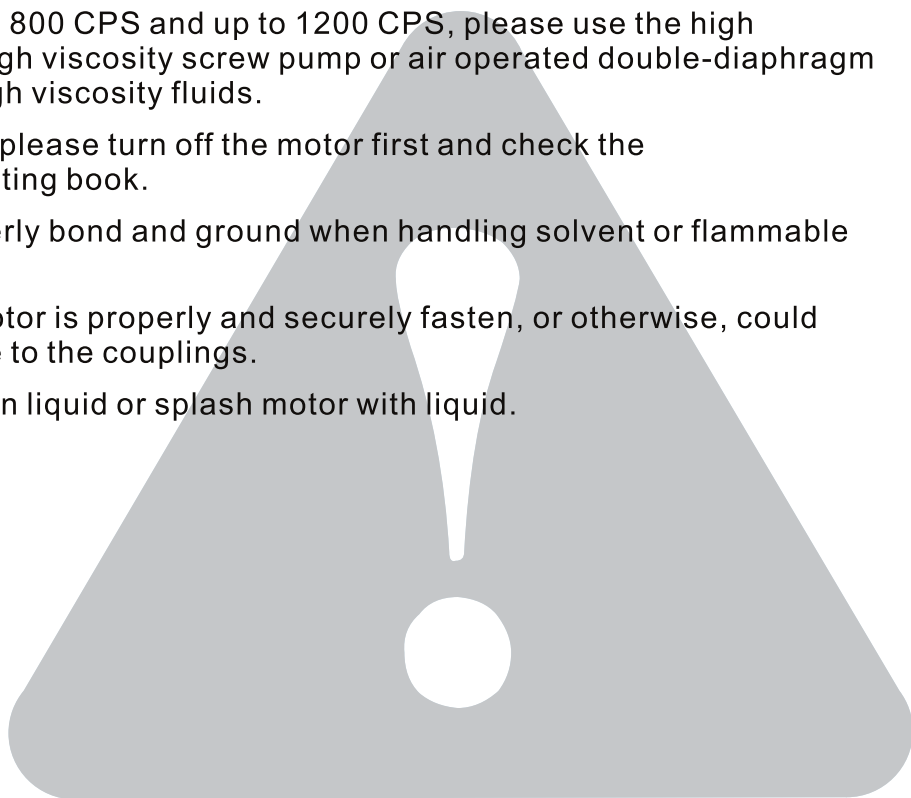
1. Check chemical chart to match the suitable material of the pump to the liquid you wish to pump. When selecting a pump, please take into account of criteria such as capacity, head, temperature, viscosity, liquid, solid size and chemical resistance before ordering.
2. Check power, voltage, fitting conditions, electrical connections and working conditions before commissioning.
3. 1"(25mm) discharge size is standard hose barb. 3/4" (22mm) and 1 1/4"(31.75mm) size are special size.

■ UPON RECEIVING

1. Please check if pump model on the name plate corresponds to your order.
2. Check motor and pump for any damages upon receiving.
3. Make sure motor and pump has been fully installed and all connections and pipes have been connected

● OPERATING INSTRUCTIONS

1. Set the switch “OFF” position before installation of motor and pump.
2. Make sure hand wheel and all connections are securely fastened.
3. Wear on eyes and hearing protection before operating.
4. Make sure air supply line clean.
5. **Do not** store pump in a humid and corrosive environment.
6. **Do not** use combustible gases to drive this motor.
7. Handle motor and pump with care.
8. Make sure the voltage is connected according to correct electrical specification.
9. **Do not** run the air motor at high speeds with no load. This will result in excessive internal heat that cause air motor damage.
10. Install pressure regulator or simple shut-off valve to regulate the air motor's speed and torque, and turn on from low to high until request.
11. Install air filter, regulator for HD-A series air line that closed air motor.
12. The maximum particle size must not exceed 3 mm. Please install strainer for size over 3mm.
13. Turn on the air or power only after pump and pipes are in place.
14. Always start the air from low to high to extend the life time of the pump.
15. Motor is equipped with overload protection switch to allow dry running.
16. **Do not** leave pump unattended during operation.
17. With viscosity fluid up to 800 CPS and up to 1200 CPS, please use the high pressure model . Use high viscosity screw pump or air operated double-diaphragm pump for transferring high viscosity fluids.
18. If strange noise occurs, please turn off the motor first and check the troubleshooting in operating book.
19. For safety, please properly bond and ground when handling solvent or flammable fluids.
20. Make sure pump and motor is properly and securely fasten, or otherwise, could result in serious damage to the couplings.
21. Never submerge motor in liquid or splash motor with liquid.

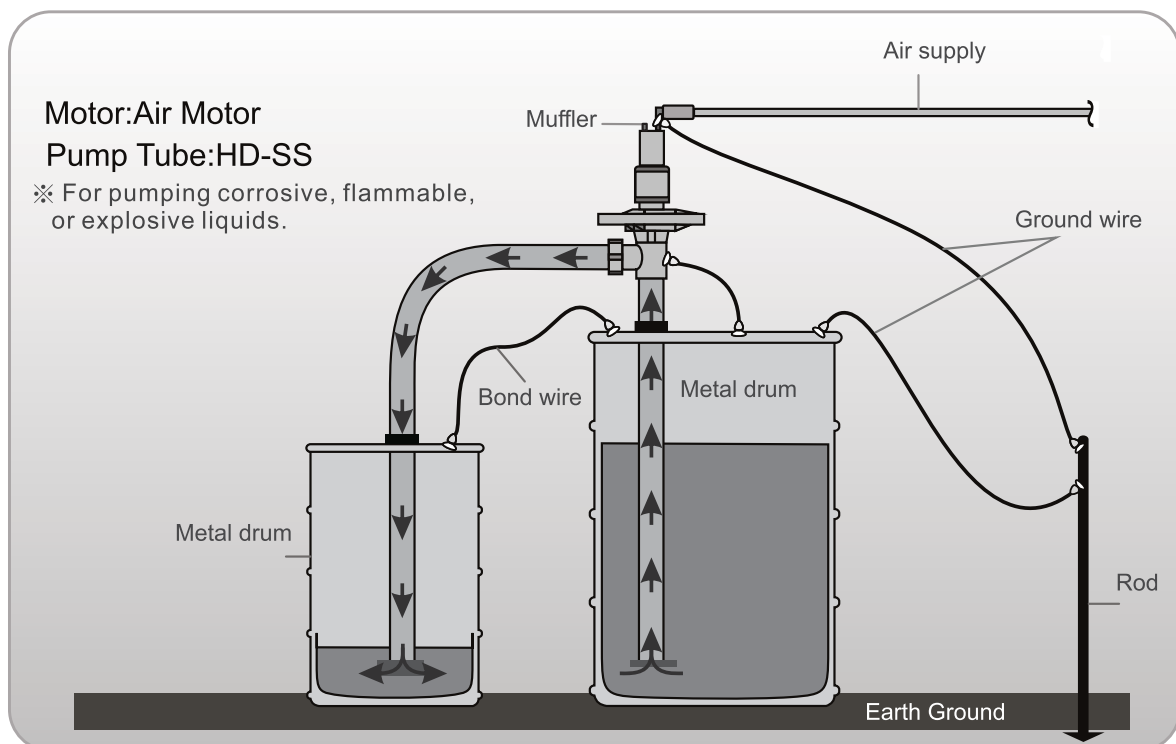
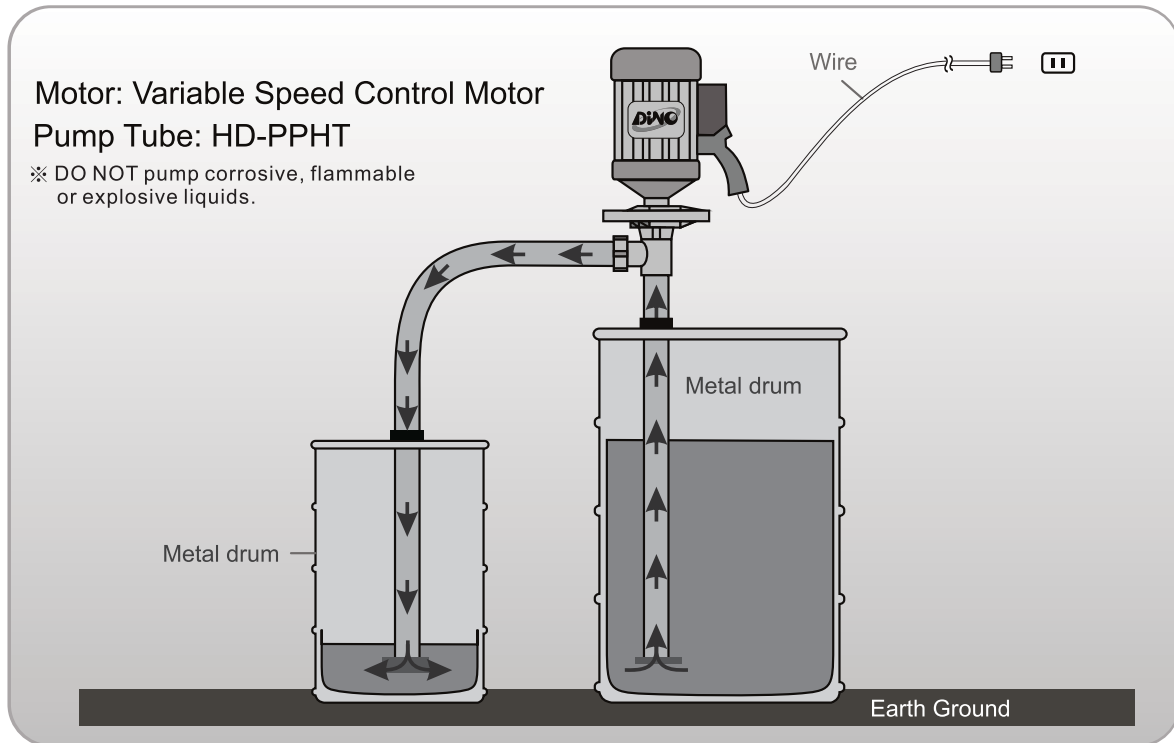




● SUGGESTED INSTALLATION



For safety, please properly bond and ground when handling solvent or flammable fluids as a static electric discharge could result in fire, explosion, injury or death.
Do not start the pump in case of any doubt, and contact with local distributor.



● COMMON APPLICATIONS

■ DINO INDUSTRIES SERVED

Automotive Industry, Chemical Industry, Electronic Industry, Food, Beverages, Waste Water Treatment, Semi-Conductor, Refineries, Pharmaceutical Industry, Agriculture, Cosmetics, Construction Industry, Pulp/Paper Industry, Mining, Ship Industry, Textile Industry, Paint and Coating, Plating, LCD Industry....

■ APPLICATIONS

Container Type	Model	Length
5GAL Bottles	HD-material 700	700mm (27")
55GAL Drums (200L)	HD-material 1000	1000mm (39")
Barrels & Tanks	HD-material 1200	1200mm (47")
IBC'S	HD-material 1500	1500mm (60")
Large Storage Vessels	HD-material 1800	1800mm (72")

■ COMMON APPLICATIONS

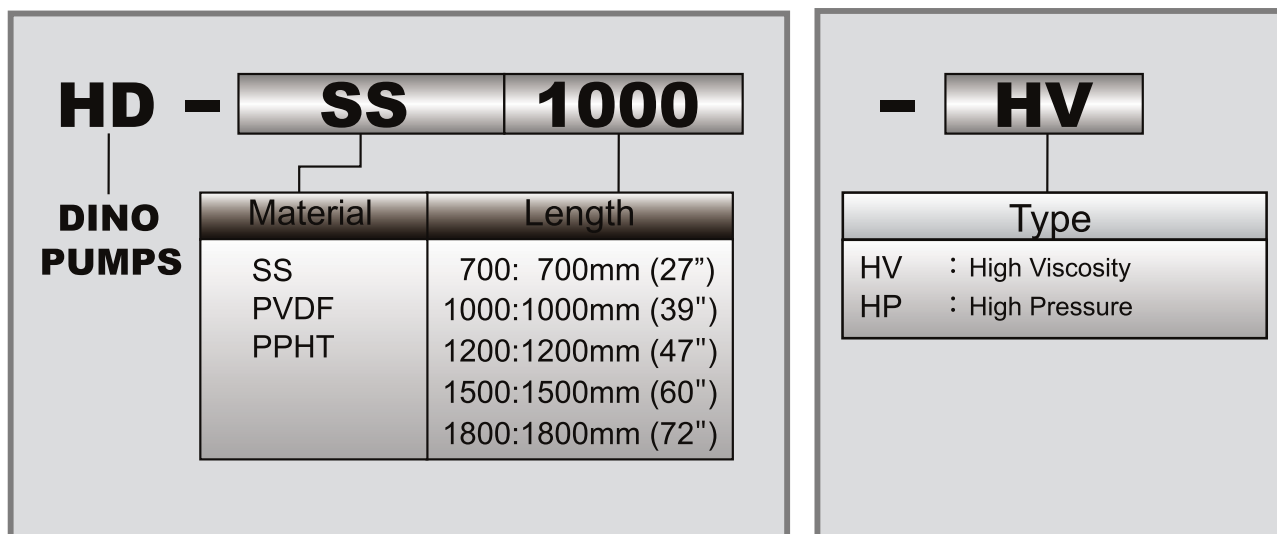
Material	Max. Temp	Common Applications
PPHT (Polypropylene)	80°C/175°F	• Acetic Acid • Sulfuric Acid • Hydrochloric - 20% • Nitric Acid - 20% • Alkalies • Ferric Chloride
PVDF	100°C/212°F	• Concentrated Nitric Acid • Sulfuric Acid-66 Baume • Sodium Hypochlorite • Propionic Acid • Stearic Acid • Hydrofluoric Acid
SS	100°C/212°F	• Alcohol • Gasoline • Aqueous Ammonia • Isopropyl Ether • Solvents • Petroleum Products



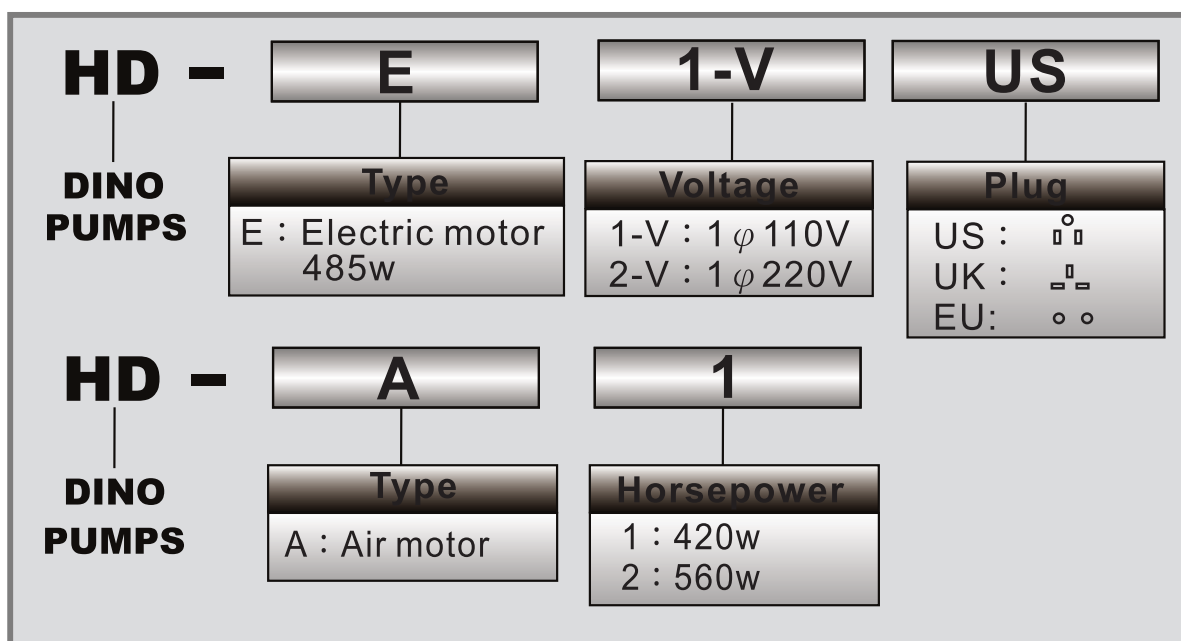
For safety, please properly bond and ground when handling solvent or flammable fluids.

● MODEL NUMBER KEY

Example: HD-SS1000 (high volume/ material: SS316)
 HD-SS1000-HP (high pressure/material: SS316)
 HD-SS1000-HV (high viscosity/material: SS316)



■ MOTOR MODEL NUMBER KEY



Contact your nearest representative or agent in case of any doubt.

● **POLYPROPYLENE SERIES**

● **HD - PPHT PUMP Series**

Model	Length	Material	Shaft	Impeller
HD-PPHT700	700mm(27")	Polypropylene	Hastelloy	High Volume
HD-PPHT1000	1000mm(39")			
HD-PPHT1200	1200mm(47")			
HD-PPHT1500	1500mm(60")			
HD-PPHT1800	1800mm(72")			
HD-PPHT700-HP	700mm(27")	Polypropylene	Hastelloy	High Pressure
HD-PPHT1000-HP	1000mm(39")			
HD-PPHT1200-HP	1200mm(47")			
HD-PPHT1500-HP	1500mm(60")			
HD-PPHT1800-HP	1800mm(72")			

◎Max. Temp.:175°F/80°C

◎Max. Viscosity:1,000cps (HD-E)

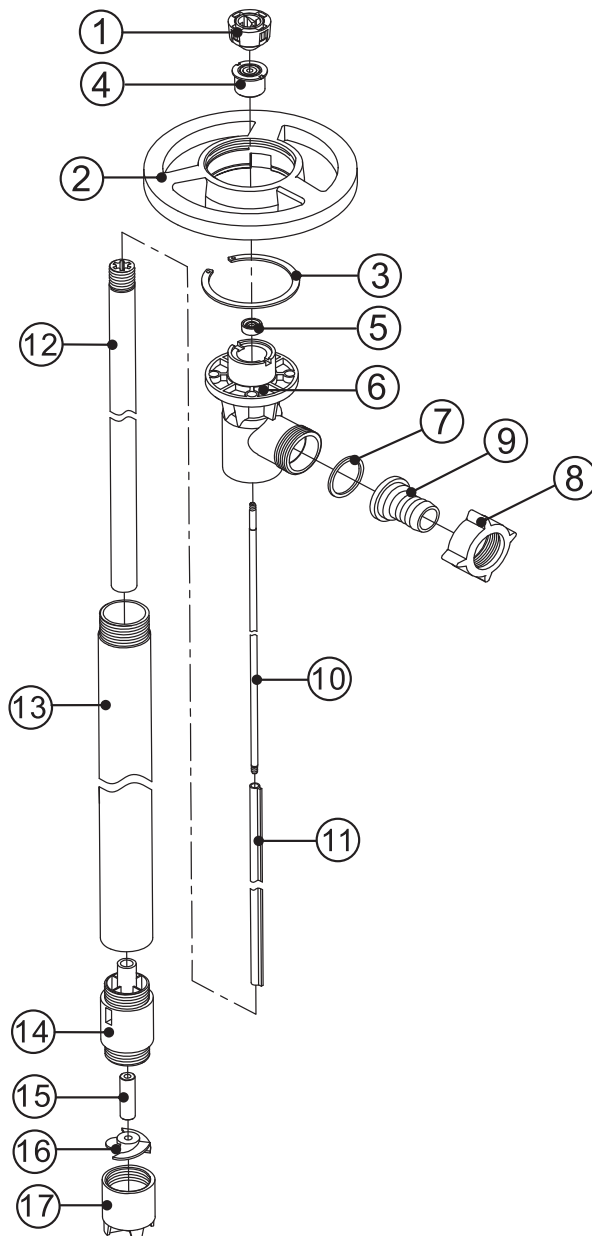
◎Discharge Options:3/4" (22mm) hose barb

700cps (HD-A1)

1" (25mm) hose barb

1,200cps (HD-A2)

1 1/4" (31mm) hose barb



ITEM NO	DESCRIPTION	PART NUMBER
1	Pump coupling	610-804
2	Hand wheel	618-842
3	Snap ring	615-808
4	Bearing unit assembled	610-838
5	V-seal (Viton)	640-800
6	Discharge housing (PP)	660-828
7	O-Ring (PTFE)	621-895
8	Wing nut (PP)	661-806
9	Hose barb (PP)	3/4" (22 mm) 660-851 1" (25 mm) 660-882 1 1/4" (31.75 mm) 660-883
10	Shaft (Hastelloy)	700mm (27") 615-843 1000mm (39") 615-844 1200mm (47") 615-845 1500mm (60") 615-846 1800mm (72") 615-847
11	Guide sleeve (PTFE)	700mm(27") 615-814 1000mm(39") 615-815 1200mm(47") 615-816 1500mm (60") 615-817 1800mm(72") 615-818
12	Inner tube (PP)	700mm (27") 666-800 1000mm (39") 666-801 1200mm (47") 666-802 1500mm (60") 666-815 1800mm (72") 666-816
13	Outer tube (PP)	700mm (27") 666-804 1000mm (39") 666-803 1200mm (47") 666-805 1500mm (60") 666-817 1800mm (72") 666-818
14	Pump housing (PP)	665-824
15	Shaft bushing (Rulon)	616-806-R
16	Impeller (PVDF)	646-808
	High pressure impeller (PVDF)	646-808HH
17	Pump foot (PP)	666-809

* Carbon shaft bushing is available for request.

● 316 STAINLESS STEEL SERIES

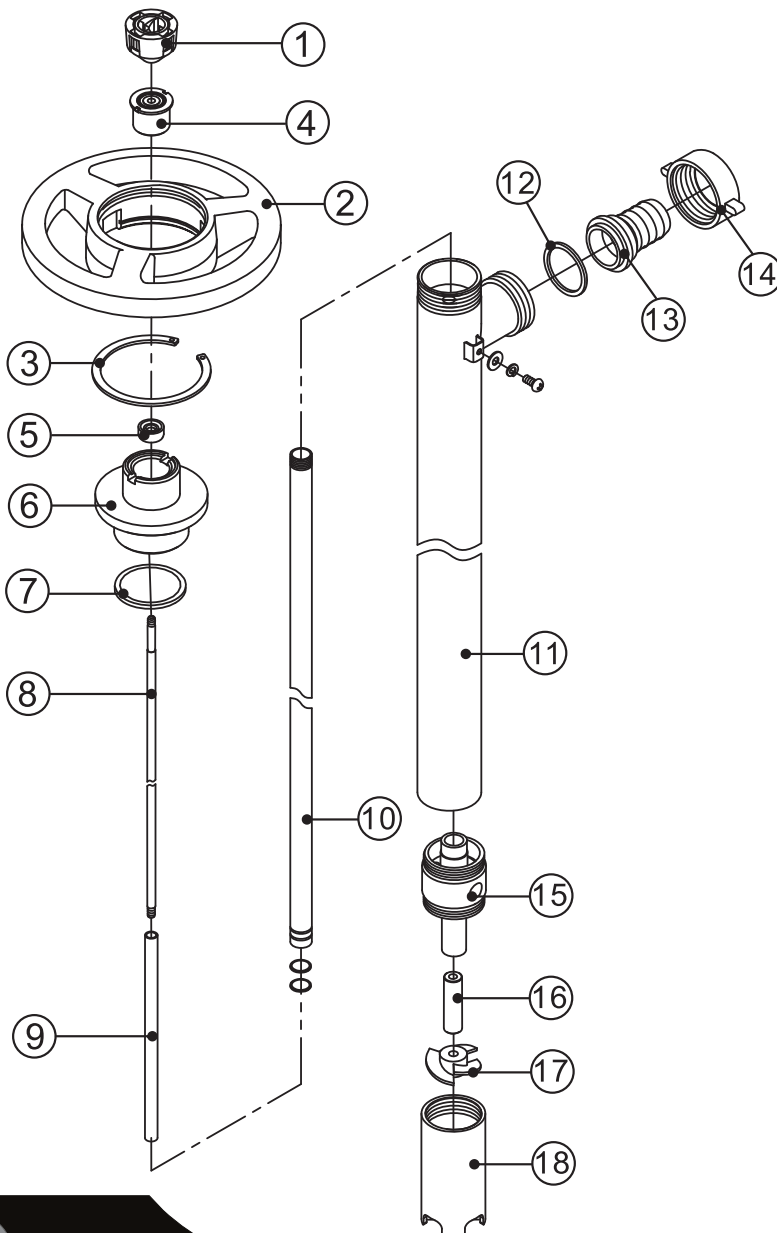
● HD - SS PUMP Series

Model	Length	Material	Shaft	Impeller
HD-SS700	700mm(27")	SUS 316	Stainless 316	High Volume
HD-SS1000	1000mm(39")			
HD-SS1200	1200mm(47")			
HD-SS1500	1500mm(60")			
HD-SS1800	1800mm(72")			
HD-SS700-HP	700mm(27")	SUS 316	Stainless 316	High Pressure
HD-SS1000-HP	1000mm(39")			
HD-SS1200-HP	1200mm(47")			
HD-SS1500-HP	1500mm(60")			
HD-SS1800-HP	1800mm(72")			

◎Max. Temp.:212°F/100°C

◎Discharge Options:3/4" (22mm) hose barb
1" (25mm) hose barb
1 1/4" (31mm) hose barb

◎Max. Viscosity:1,000cps (HD-E)
700cps (HD-A1)
1,200cps (HD-A2)



ITEM NO.	DESCRIPTION	PART NUMBER
1	Pump coupling	610-804
2	Hand wheel	618-842
3	Snap ring	615-808
4	Bearing unit assembled	610-838
5	V-Seal (Viton)	640-800
6	Connection flange (SUS316)	620-800
7	Gasket (PTFE)	620-801
8	Shaft 700mm (27") (SUS316)	620-827
	1000mm (39")	620-828
	1200mm (47")	620-829
	1500mm (60")	627-809
	1800mm (72")	627-810
9	Guide sleeve (PTFE)	
	700mm (27")	620-831
	1000mm (39")	627-815
	1200mm (47")	820-832
	1500mm (60")	827-811
	1800mm (72")	627-812
10	Inner tube (SUS316)	
	700mm (27")	627-803
	1000mm (39")	627-805
	1200mm (47")	627-807
	1500mm (60")	627-816
	1800mm (72")	627-817
11	Outer tube (SUS316)	
	700mm (27")	627-800
	1000mm (39")	627-801
	1200mm (47")	627-802
	1500mm (60")	627-813
	1800mm (72")	827-814
12	O-ring (PTFE)	621-895
13	Hose barb, (SUS316)	
	3/4" (19.05mm)	621-897
	1" (25 mm)	621-896
	1 1/4" (31.75mm)	621-898
14	Wing nut (SUS316)	620-868
15	Pump housing (SUS316)	627-804
16	Shaft bushing (Rulon)	616-806-R
17	Impeller (PVDF)	627-806
	High pressure impeller (PVDF)	627-806HH
18	Pump foot (SUS316)	627-808

* Carbon shaft bushing is available for request.

● **PVDF SERIES**

● **HD - PVDF PUMP Series**

Model	Length	Material	Shaft	Impeller
HD-PVDF700	700mm(27")	PVDF	Hastelloy	High Volume
HD-PVDF1000	1000mm(39")			
HD-PVDF1200	1200mm(47")			
HD-PVDF1500	1500mm(60")			
	1800mm(72")	PVDF	Hastelloy	High Pressure
HD-PVDF700-HP	700mm(27")			
HD-PVDF1000-HP	1000mm(39")			
HD-PVDF1200-HP	1200mm(47")			
HD-PVDF1500-HP	1500mm(60")			
HD-PVDF1800-HP	1800mm(72")			

◎Max. Temp.: 212°F/100°C

◎Max. Viscosity : 1,000cps (HD-E)

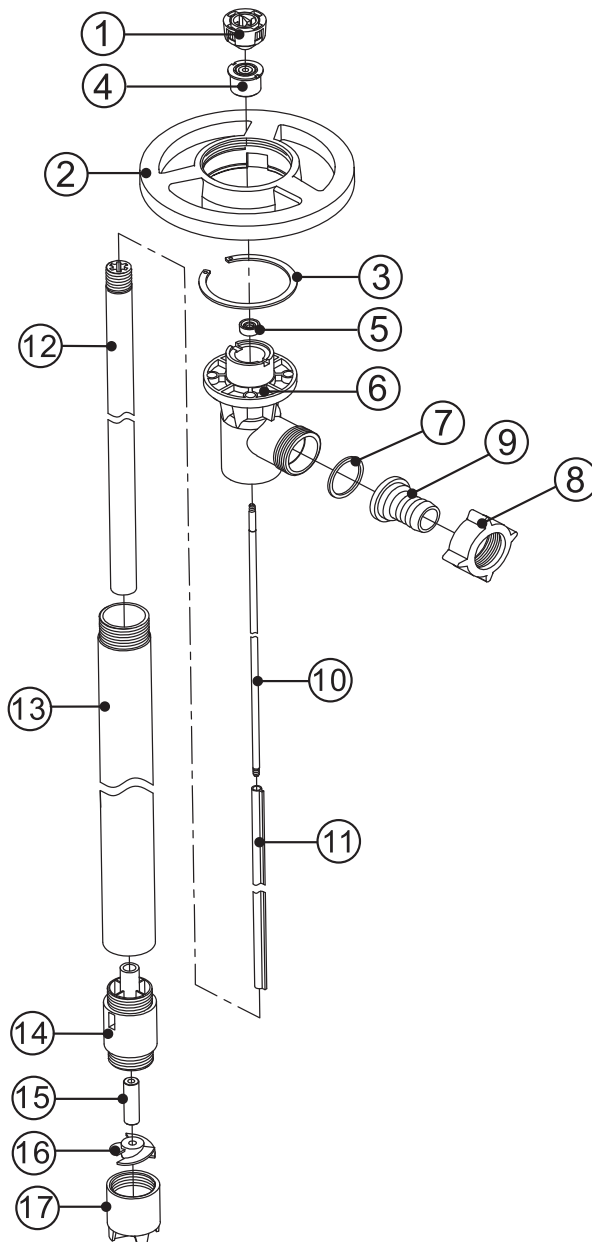
◎Discharge Options: 3/4" (22mm) hose barb

700cps (HD-A1)

1" (25mm) hose barb

1,200cps (HD-A2)

1 1/4" (31.75mm) hose barb



ITEM NO	DESCRIPTION	PART NUMBER
1	Pump coupling	610-804
2	Hand wheel	618-842
3	Snap ring	615-808
4	Bearing unit assembled	610-838
5	V-seal (Viton)	640-800
6	Discharge housing (PVDF)	640-728
7	O-RING (PTFE)	621-895
8	Wing nut (PVDF)	641-706
9	Hose barb, 3/4" (22mm), PTFE	640-752
	1" (25 mm), PVDF	640-882
	1 1/4" (31.75mm), PTFE	640-753
10	Shaft(Hastelloy) 700mm (27")	615-843
	1000mm (39")	615-844
	1200mm (47")	615-845
	1500mm (60")	615-846
	1800mm (72")	615-847
11	Guide sleeve (PTFE) 700mm(27")	615-814
	1000mm(39")	615-815
	1200mm(47")	615-816
	1500mm (60")	615-817
	1800mm(72")	615-818
12	Inner tube (PVDF) 700mm (27")	646-800
	1000mm (39")	646-801
	1200mm (47")	646-802
	1500mm (60")	646-811
	1800mm (72")	646-812
13	Outer tube (PVDF) 700mm (27")	646-804
	1000mm (39")	646-803
	1200mm (47")	646-805
	1500mm (60")	646-813
	1800mm (72")	646-814
14	Pump housing (PVDF)	646-807
15	Shaft bushing (Rulon)	616-806-R
16	Impeller (PVDF)	646-808
	High pressure impeller (PVDF)	646-808HH
17	Pump foot (PVDF)	646-809

* Carbon shaft bushing is available for request.

● HIGH VISCOSITY SCREW SERIES

● HD-HV High Viscosity Screw Pump Series

Model	Length	Material	Mech. Seal	Stator	Rotor
HD-SS1000 -HV	1000mm(39")	SUS 316	SIC	PTFE	SUS316

◎Max. Temp.:248°F/120°C

◎Max. Pressure:10bar

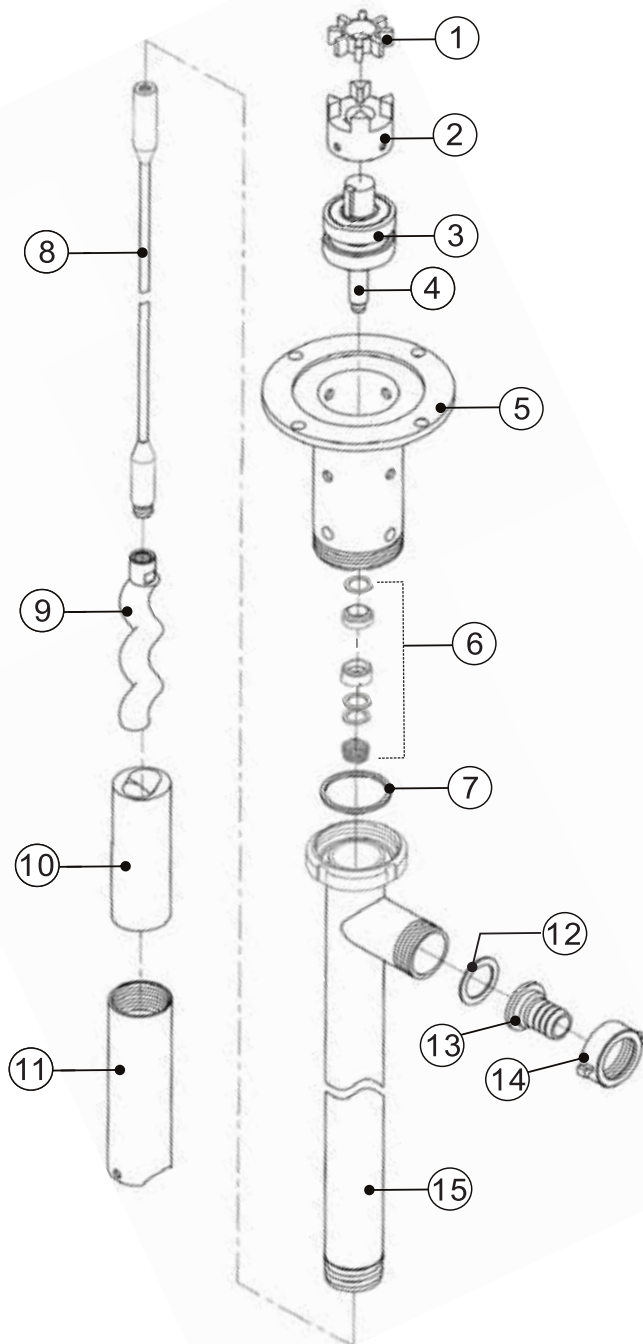
◎Discharge Options : 1.08" (27.5mm) hose barb
1.3" (33mm) hose barb

◎Max. Viscosity:10,000cps (HD-A4)

(with Max. air 20,000cps (HD-A6)

pressure) 40,000cps (HD-A8)

100,000cps(HD-A16)



ITEM NO.	DESCRIPTION	PART NUMBER
1	Coupling Insert	607-845
2	Motor/ Pump Coupling	607-840
3	Bearing (2 required)	607-855
4	Bearing Shaft	607-850
5	Bearing Housing (SUS316)	607-854
6	Mechanical Seal, SIC	607-803
7	Gasket (PTFE)	607-838
8	Shaft (SUS316) 1000mm(39")	607-805
9	Rotor (SUS316)	607-809
10	Stator (PTFE)	607-820
11	Stator tube (SUS316)	607-875
12	O-Ring PTFE	607-830
13	Hose Barb (SUS316) 1.08"(27.5mm)	607-828
	1.3"(33mm)	607-829
14	Wing Nut (SUS 316)	607-827
15	Outer Tube (SUS 316) 1000mm(39")	607-871

● ELECTRIC MOTOR

● HD - E Variable Speed Control Motor Series

Model	Power
HD-E1-V	110 V / 1 ϕ / 50-60Hz / 485w
HD-E2-V	220 V / 1 ϕ / 50-60Hz / 485w

⊙Max. Viscosity:1,000cps

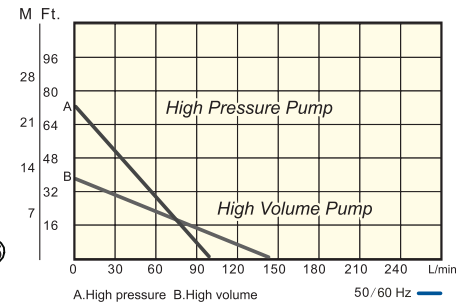
⊙Max. RPM:20,000rpm (no-load)

⊙Weight : 4.2 kgs (after package)

⊙USA/EURO/UK plug are available.

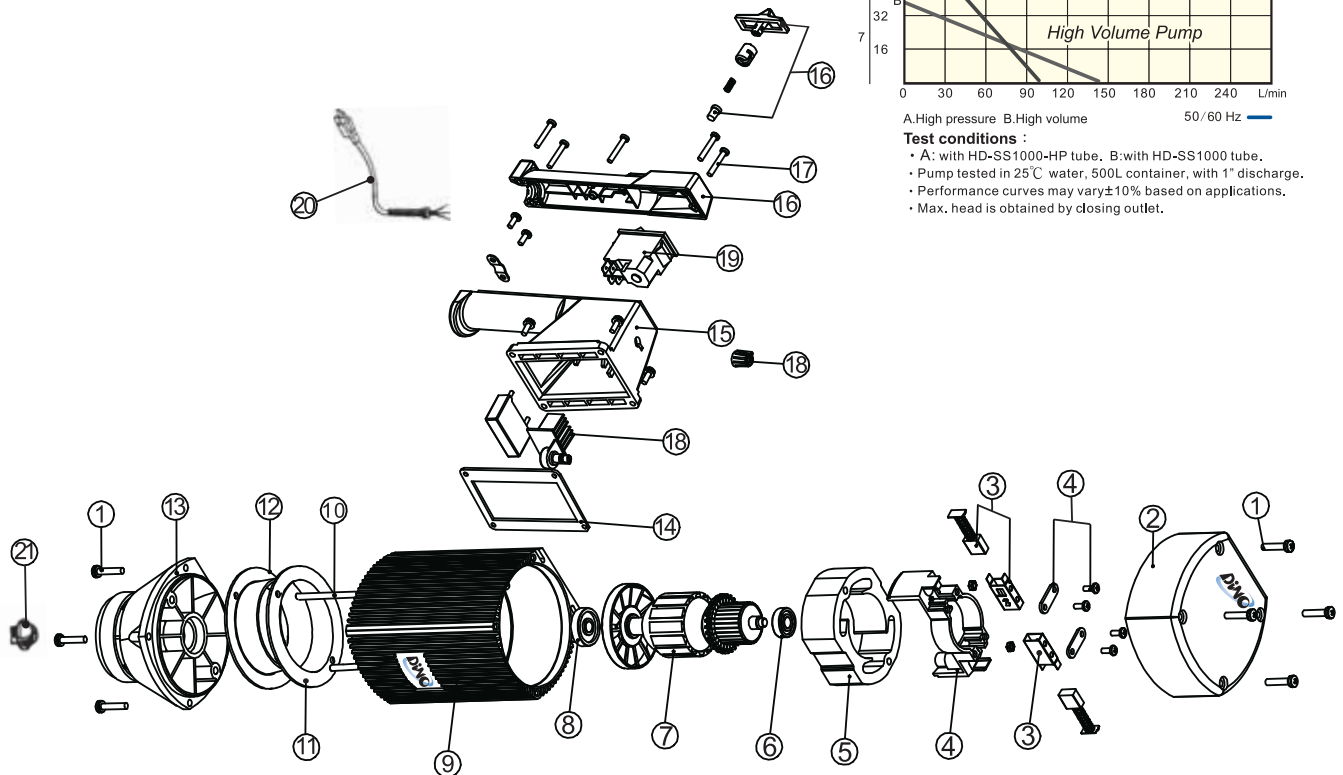
⚠ Do not pump flammable or explosive fluids.

⚠ If the supply cord is damaged, it must be replaced by a special cord or assembly available from the manufacturer or its service agent.



Test conditions :

- A: with HD-SS1000-HP tube. B: with HD-SS1000 tube.
- Pump tested in 25°C water, 500L container, with 1" discharge.
- Performance curves may vary $\pm 10\%$ based on applications.
- Max. head is obtained by closing outlet.



ITEM NO	DESCRIPTION	PART NUMBER	ITEM NO	DESCRIPTION	PART NUMBER
1	Screw for plastic housing (8 required)	681-830	13	Lower housing	681-800
2	Motor cover	680-800	14	Gasket, switch housing	681-867
3	Carbon brush 110V/220V	685-809	15	Switch housing	680-801
4	Brush holder	685-808	16	Switch cover with pull rod	680-802
5	Stator 110V	685-803	17	Screw (5 required)	682-820
	220V	687-802	18	Variable speed controller includes knob	
6	Ball bearing (609-2RU)	683-831		110V	680-804
7	Armature 110V	685-802		220V	680-805
	220V	687-801	19	Overload switch 110/ 220V	687-804
8	Ball bearing (6000-2RUP)	681-826	20	Power wire relief & plug (USA plug)	683-860
9	Motor housing, plastic	685-810		(Euro plug)	683-860-EU
10	Rod connector	685-806		(UK plug)	683-860-UK
11	Gasket	685-804	21	Motor coupling	683-833
12	Guide disc	685-804-1			

● AIR MOTOR SERIES

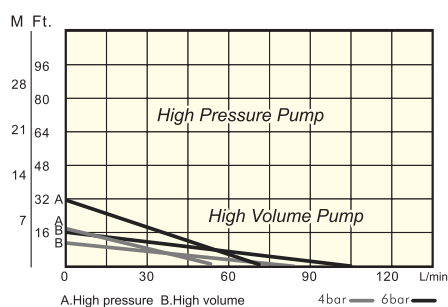
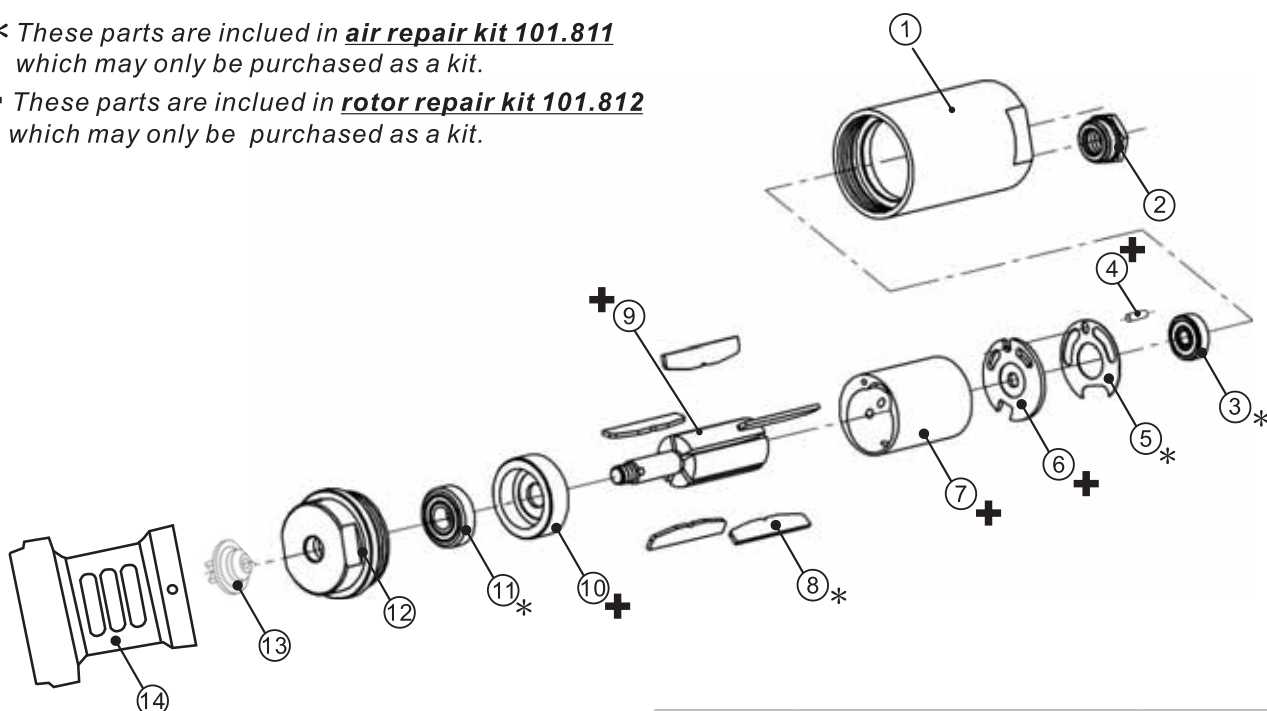
● HD-A1 Oil Free Air Motor

Casing : Aluminum (Chromium)	Max. Viscosity : 700cps
Max. Inlet air pressure : 87psi (6bar)	RPM : 15,000 (5 bar air pressure)
Air consumption : 0.55Nm ³ /min@6kg/cm ²	RPM : 16,000 (6 bar air pressure)
Joint (air) : 1/4"	Horsepower : 420w (0.56HP)
Accessory : muffler 、 air regulator	Weight : 1kg (after package)

⚠ Please install the air filter for reduce moisture from the compressed air supply.

* These parts are included in **air repair kit 101.811**
which may only be purchased as a kit.

+ These parts are included in **rotor repair kit 101.812**
which may only be purchased as a kit.



Test conditions :

- A: with HD-SS1000-HP tube. B: with HD-SS1000 tube.
- Pump tested in 25°C water, 500L container, with 1" discharge.
- Performance curves may vary ±10% based on applications.
- Max. head is obtained by closing outlet.

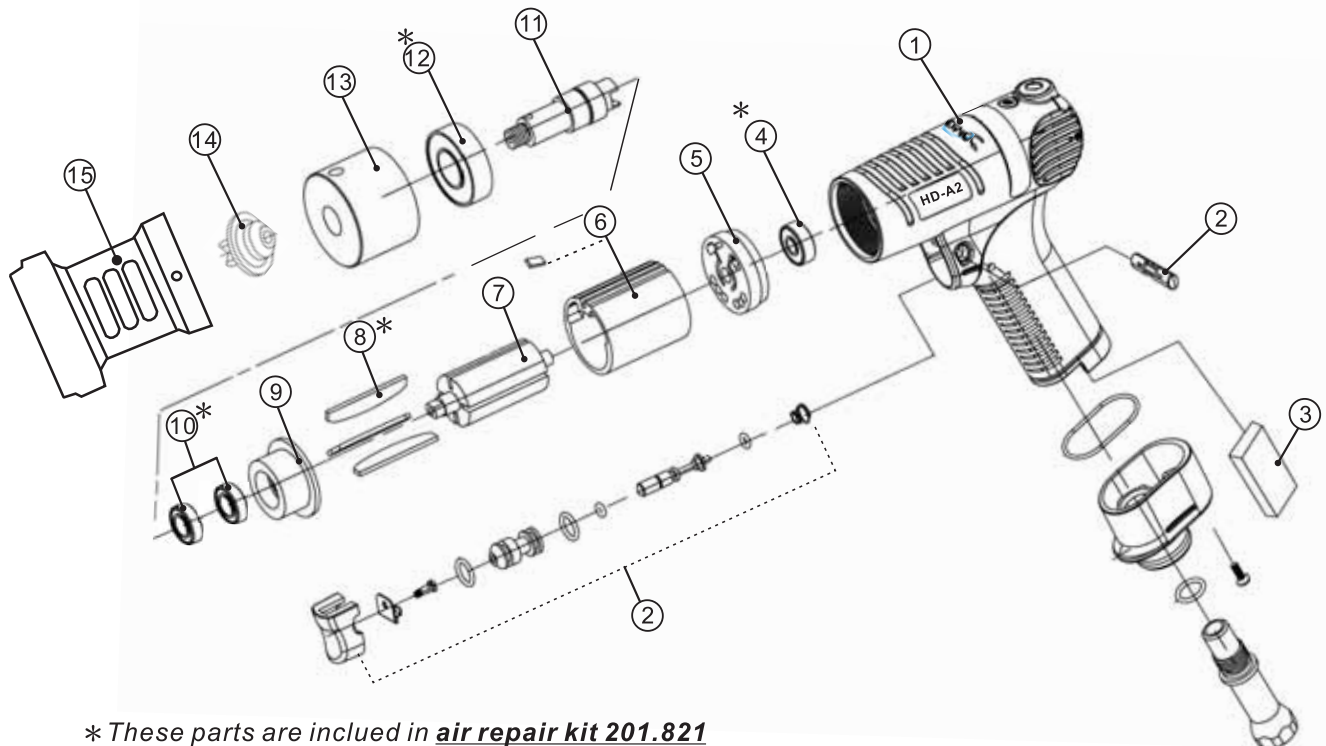
ITEM NO	DESCRIPTION	PART NUMBER
1	Housing	101-201
2	Muffler	101-301
* 3	Ball Bearing	101-401
+ 4	Pin	101-501
* 5	Gasket	101-601
+ 6	Rear Plate	101-701
+ 7	Cylinder	101-801
* 8	Blade (5 required)	101-905
+ 9	Rotor	101-100
+ 10	End plate	101-110
* 11	Ball Bearing	101-120
12	End cap	101-130
13	Motor Coupling	683-833
14	Base	690-607

● AIR MOTOR SERIES

● HD-A2 Oil Free Air Motor

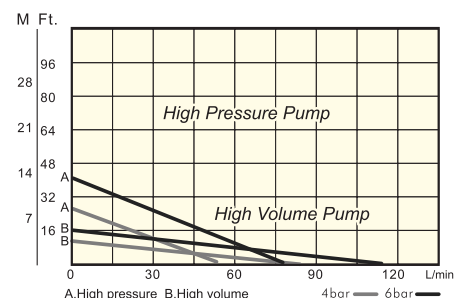
Casing : Aluminum (EPOXY)	RPM : 15,000 (5 bar air pressure)
Max. Inlet air pressure ::87psi (6bar)	RPM : 18,000 (6 bar air pressure)
Air consumption : 0.55Nm ³ /min@6kg/cm ²	Horsepower : 560w (0.75HP)
Joint (air) : 1/4"	Weight : 1.2kgs (after package)
Max. Viscosity : 1200cps	

⚠ Please install the air filter for reduce moisture from the compressed air supply.



* These parts are included in **air repair kit 201.821** which may only be purchased as a kit.

ITEM NO	DESCRIPTION	PART NUMBER
1	Motor Housing	201-101
2	Trigger Assembly	202-216
3	Muffler	203-301
* 4	Ball Bearing	209-902
5	Front Plate	205-501
6	Stator	206-602
7	Rotor	207-701
* 8	Vane (6 required)	211-113
9	Rear Plate	209-901
* 10	Bearing (2 required)	210-101
11	Shaft	212-121
* 12	Bearing	213-131
13	Front Housing	214-141
14	Motor Coupling	683-833
15	Base	690-607



Test conditions :

- A: with HD-SS1000-HP tube. B:with HD-SS1000 tube.
- Pump tested in 25°C water, 500L container, with 1" discharge.
- Performance curves may vary±10% based on applications.
- Max. head is obtained by closing outlet.

● OPTIONAL EQUIPMENT

Barrel Adaptor

Part No.	Description	Material
690-800	ID43xOD59.7mm	SUS316
690-801	ID43xOD59.7mm	PP



Air leaking Adaptor

Part No.	Description	Material
690-801-A	ID43xOD59.7mm	PP+VT
690-800-A	ID43xOD59.7mm	SS+VT

Wall bracket

Part No.	Description	Material
690-806		SUS316



Transfer hose

Part No.	Description	Material
700-101	3/4" / 700mm	PFA
700-102	1" / 1,000mm	PFA
700-103	1" / 1,500mm	PFA
700-104	1" / 2,000mm	PFA
700-105	1" / 3,000mm	PFA



Strainer

Part No.	Description	Material
690-802		SUS316
690-803		PVDF
690-804		PP+GF



Hanger

Part No.	Description	Material
607-881		SUS304



Ground wire

Part No.	Description	Material
690-815	Each 150cm length with clip	



● TROUBLESHOOTING

MALFUNCTION	POSSIBLE CAUSES	TROUBLESHOOTING
Electronic motor fail to run	Overcurrent/ motor burned.	Check and repair or replace
	Power short circuit or plug falls out.	Check and reconnect
	Bearing unit abrasion.	Check and replace
	Stator worn due to erosion.	Check and replace
	Bad power connection.	Check and repair or replace
	Switch	Check and replace
	Unstable current, Motor overload.	Please install stabilizer or overload protector
Pump suddenly stop in operating	Electronic motor overheated.	Turn off the power and restart in 20 minutes.
	Fluid too viscous.	Check the viscosity for suitable pump.
	Pump clogged	Check and remove blockage ; install or change strainer.
	Air motor became slowly or stop	Check the air supplier
Pump rupture or deformed	Liquid temperature too high	Check temperature with suitable material and replace
	Suction/ discharge line not properly stable and vibration	Make the suction/ discharge stability or replace.
In normal operating, but the flow rate is small in pumping	Tube clogged	Check and remove blockage from the bottom of tube ; install or change strainer.
	Air pressure too low	check air supplier and regulator
	Impeller damage or abrasion	Check and replace
	Connection not security tighten or damaged	Check and repair or replace
	Liquid should higher than pump foot 2cm	Check and replace drum
	Vane of air motor abrasion	Check and replace
Excessive noise or vibration	Connections not security tighten.	Check and repair
	Motor/ pump coupling abrasion or damage	Check and replace
	Bearing unit abrasion	Replace
	Shaft or guide sleeve abrasion	Replace
	Suction/ discharge line not properly stable and vibration	Make the suction/ discharge stability or replace.
	Shaft bushing abrasion	Replace

● TROUBLESHOOTING

MALFUNCTION	POSSIBLE CAUSES	TROUBLESHOOTING
Fluid leaking	Connections not security tighten.	Check and repair
	Discharge leaking	Check discharge O-ring and replace
	Oil seal, shaft, bearing unit abrasion	Replace
Air motor fail	No air supply	Check and turn on the air regulator from low to high until request
	Air pressure too low	Check the air regulator
	Overload cause vane damage	Check and replace
	Long operation cause vane abrasion	Check and replace



※ If you still have problems, turn off the power and air supply immediately and contact your local distributor or mail to info@dino.com.tw.

● CE CERTIFICATE

Worldwide Testing Services (Taiwan) Co., Ltd.
ACCREDITED TEST HOUSE

CERTIFICATION OF TESTING

Under EU EMC-DIRECTIVE 2004/108/EC.

This certifies that the following designated product

VARIABLE SPEED CONTROL MOTOR
Model No.: HD-E2-V
Multi-listing Model No.: HD-E1-V
Brand Name: DINO

(Product identification)

Has been tested in accordance to essential protection requirements of Council Directive 2004/108/EC and found the test results indeed meet the limitation of the relevant test standard(s) listed below:

EN 55014-1 (2006+A1 :2009),
IEC/EN 61000-3-2 (2006+A1:2009)+A2 (2009), IEC/EN 61000-3-3 (2008)
EN 55014-2 (1997+A2:2008),
(IEC/EN 61000-4-2(2009)-3(2006+A1:2008)-4(2004)-5(2006)/
-6 (2009)-11(2004))

(Identification of regulation / standards)

This certificate is issued for

DINO TECHNOLOGY CO., LTD.
NO.4-1 Lane 250, Fusing St., Kueishan Shiang, Taoyuan County 333, Taiwan

(Name / Address)

SPECIAL STATEMENT:

1. THE STANDARDS APPLIED TO THIS TEST SAMPLE WERE UNDER THE DEMAND OF THE APPLICANT. ANY DEVIATION FROM THE APPLICABLE PROPERTY IS VALIDATED BY THE RESPONSIBILITY OF THE APPLICANT.
2. THE OPERATING CONDITIONS OF THE TEST SAMPLE SAMPLED ARE ALL TEST ITEMS WERE UNDER THE DEMAND OF THE APPLICANT. ANY DEVIATION FROM THE REQUIRED CONDITION OF TEST IS VALIDATED BY THE RESPONSIBILITY OF THE APPLICANT.
3. THE CERTIFICATION IS VALID ONLY IN CONNECTION TO THE TEST REPORT NUMBER WTS2009-0820-01-01 AND TO THE SAMPLE BEEN TESTED BY WORLDWIDE TESTING SERVICES (TAIWAN) CO., LTD.

August 31, 2010

(Date)

Cheng Tse-Ming

Cheng Tse-Ming, Laboratory Director

Worldwide Testing Services (Taiwan) Co., Ltd.
NO. 20-1 LANE 200, BUSHY DRIVE, 3RD. FLOOR, TAIPEI TAIPEI, TAIWAN, R.O.C.

[illegible]

SGS

SGS Reference No: E2/2010/80001C

Page 1 of 1

VERIFICATION OF COMPLIANCE

Verification Report No.	EZ/2010/80001C
Representative Model	HD-A1
Series Model(s)	HD-A2
Product Name	Air Motor
Applicant	DINO TECHNOLOGY CO. LTD.
Address of Applicant	1F, No.188, Wunming Rd., Guishan Township, Taoyuan County 33377, Taiwan.
TCF Number	DINO-2010-A1
Date of Issue	September 2, 2010
Date of Expiry	September 2, 2015
Applicable Standards	EN ISO 12100-1:2003+A1:2009, EN ISO 12100-2:2003+A1:2009, EN ISO 14121-1: 2007, ISO / TR 14121-2: 2007, EN 809: 1996 + A1: 2009

Conclusion:

Based on a review of the worksheets and the Technical Documentation File, the application is deemed to meet the requirements of the above standards and hence fulfill the requirements of.

Machinery Directive 2006/42/EC

Notes: / This verification is only valid for the equipment and configuration described and in conjunction with the technical data attached above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion an EC Declaration of Conformity and compliances with all relevant EC Directives.

Authorized Signatory:



SGS TAIWAN LTD.
Jason Lin
Technical Manager



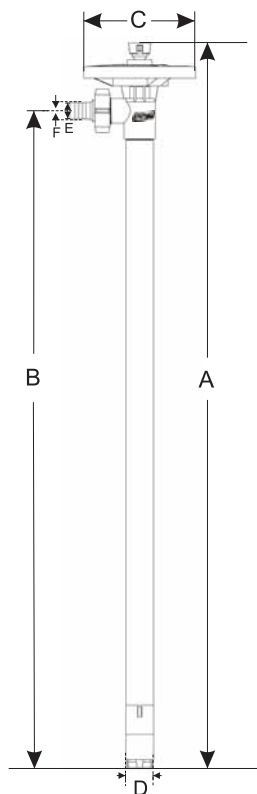
Simple information about the sample shown in this document refers only to the sample(s) tested. This test report cannot be reproduced, except in full, without prior written permission of the Company. SGS Reference No: E2/2010/80001C-A1-01. www.sgs.com 1000200909

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● DIMENSION DRAWING

■ PPHT/ PVDF TUBE

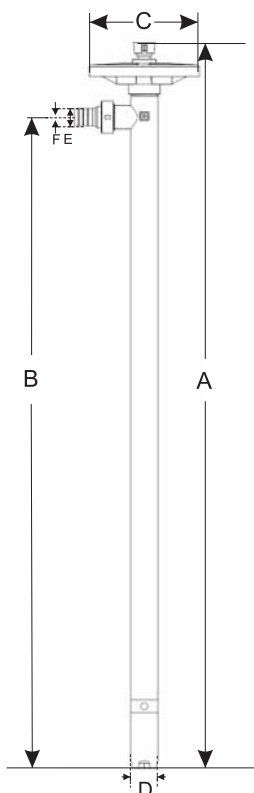


Length	A	B	C	D	E	F
700	810	700	170	41	19	27
1000	1100	1000	170	41	19	27
1200	1290	1200	170	41	19	27
1500	1590	1500	170	41	19	27
1800	1890	1800	170	41	19	27

(UNIT : MM)

* Dimension may vary $\pm 10\%$ based on product.
* Please contact us if need more information.

■ SS TUBE

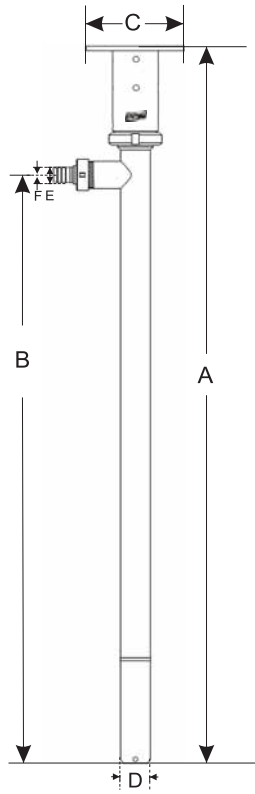


Length	A	B	C	D	E	F
700	810	700	170	42	20	27
1000	1100	1000	170	42	20	27
1200	1300	1200	170	42	20	27
1500	1600	1500	170	42	20	27
1800	1900	1800	170	42	20	27

(UNIT : MM)

* Dimension may vary $\pm 10\%$ based on product.
* Please contact us if need more information.

■ HIGH VISCOSITY TUBE



Length	A	B	C	D	E	F
1000	1300	1025	166	56	28	33

(UNIT : MM)

* Dimension may vary $\pm 10\%$ based on product.
* Please contact us if need more information.



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