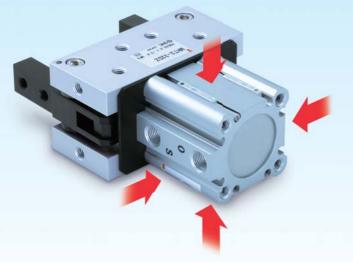
Toggle Type Air Gripper

New

RoHS

ø32, ø40, ø50, ø63

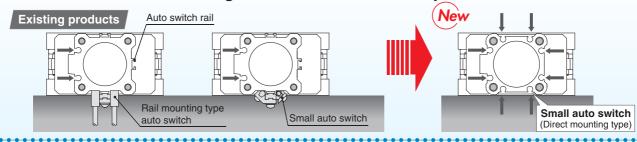
New cylinder body allows small auto switches to be mounted on 4 surfaces.





Auto switch mounting rail removed.

A round slot for mounting small auto switches is provided on 4 surfaces.

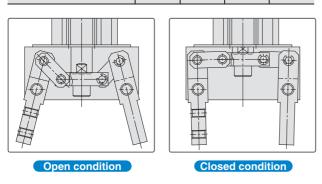


Strong and stable gripping force

can be obtained through the toggle mechanism.

Gripping moment (0.5 MPa)

Bore size [mm]	32	40	50	63
Gripping moment (Effective value) [N·m]	12.4	36.0	63.0	106

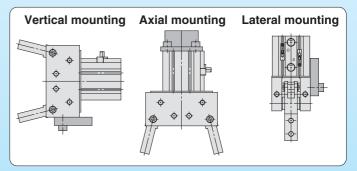


Holds workpiece even when the air is shut down. (Safety measures)

Workpiece holding status is maintained even when the air is shut down by the toggle mechanism during close operation.

■ A high degree of freedom for mounting

A variety of mounting screws are available, such as screws for air gripper mounting, brackets to prevent workpiece deflection and etc.



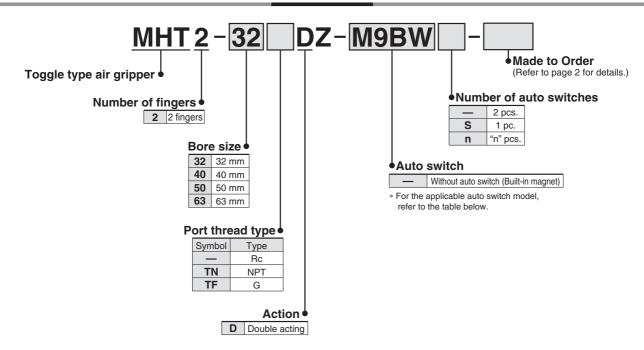




Toggle Type Air Gripper Series MHT2 Ø32, Ø40, Ø50, Ø63



How to Order



Applicable Auto Switches/Refer to pages Auto Switch Guide for further information on auto switches

			ight	100	Load voltage Auto switch model L		Lead	d wire	e len	gth [ı	m]*	Dro wired A	A					
Туре	Special function	Electrical entry	ndicator light	Wiring (Output)		IC	AC	Electrical en	ntry direction	0.5	1	3	5	None	Pre-wired connector	Appli		
		Citiy	lngi	(Output)	L		AC	Perpendicular	In-line	(—)	(M)	(L)	(Z)	(N)	CONTRECTOR	100	au	
				3-wire (NPN)		5 V,		M9NV	M9N			•	0	_	0	IC		
switch				3-wire (PNP)		12 V		M9PV	M9P	•	•	•	0	_	0	circuit		
				2-wire	2-wire 1	1	12 V		M9BV	M9B	•		•	0	_	0	_	
anto	Diagnosis			3-wire (NPN)		5 V,		M9NWV	M9NW		•	•	0	_	0	IC	Dalay	
	(2-colour indication)	Grommet	Yes	3-wire (PNP) 24 V	12 V	_	M9PWV	M9PW	•	•	•	0	_	0	circuit	Relay, PLC		
state	(2-colour indication)			2-wire		12 V		M9BWV	M9BW	•	•	•	0	_	0	_	FLO	
g g	Water resistant			3-wire (NPN)		5 V,		M9NAV**	M9NA**	0	0	•	0	_	0	IC		
Solid				3-wire (PNP)		12 V		M9PAV**	M9PA**	0	0	•	0	_	0	circuit		
	(2-colour indication)			2-wire		12 V		M9BAV**	M9BA**	0	0	•	0	_	0	_		
auto			Yes	3-wire (NPN equivalent)	_	5 V	_	A96V	A96	•	_	•	_	_	_	IC circuit	_	
eed aut switch		Grommet	res		24 V	12 V	100 V	A93V	A93	•		•	•	_	_	_	Relay,	
Reed			No	No	2-wire	24 V	5 V,12 V	100 V or less	A90V	A90	•	_	•	_	_	_	IC circuit	PLC

* "O" marked solid state auto switches are produced upon receipt of order.

- ** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.
- * Lead wire length symbols: 0.5 m------ (Example) M9NW
 - 1 m······ M (Example) M9NWM
 - 3 m····· L (Example) M9NWL
- 5 m····· Z (Example) M9NWZ * Refer to page 9 for details, because there are other auto switches available than above models.
- * Refer to pages Auto Switch Guide for the details of the auto switches with a pre-wired connector.



Toggle Type Air Gripper Series MHT2

- Ideal for gripping heavy workpiece.
- The toggle mechanism holds workpiece even when pressure drops.
- Auto switch is attachable.



Symbol

Double acting/External grip





Symbol	Specifications/Description		
-X4	-X4 Heat resistance (100°C)		
-X5	Fluororubber seal		
-X63 Fluorine grease			
-X5060 Double rod cylinder			
-X5070 With boss in head side			

Model/Specifications

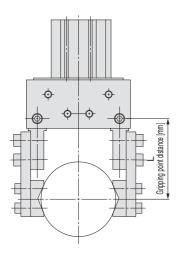
Model	MHT2-32DZ	MHT2-40DZ	MHT2-50DZ	MHT2-63DZ		
Bore size [mm]	32	40	50	63		
Action		Double acting				
Fluid		Air				
Operating pressure	0.1 to 0.6 MPa					
Ambient and fluid temperature	5 to 60°C					
Lubrication		Not re	quired			
Finger opening angle (Total)	–3° to 28°	–3° to 27°	–2° to 23°	-2° to 23°		
Weight [g]	790	1070	1890	2720		
Gripping moment Note)	12.4	36.0	63.0	106		
Gripping moment Note) (Effective value) [N·m]	12.4	36.0	63.0	106		

Note) At the pressure of 0.5 MPa



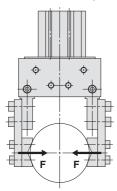
Effective Gripping Force

 Workpiece gripping point should be within the range indicated in the graph.



• Indication of effective gripping force

The effective gripping force shown in the graphs to the right is expressed as **F**, which is the thrust of one finger, when both fingers and attachments are in full contact with the workpiece as shown in the figure below.



A Precautions

Be sure to read before handling.
Refer to Safety Instructions for I
Air Gripper and Auto Switch I
Precautions.

⚠ Warning

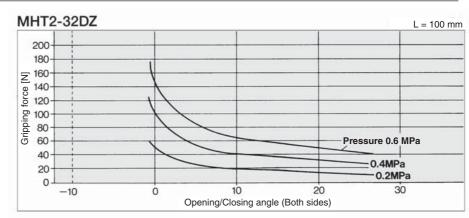
Maintenance

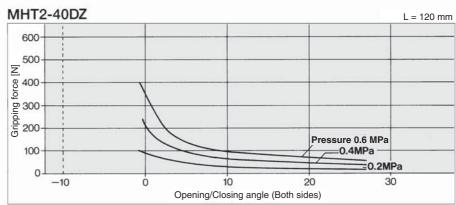
If a workpiece is to be gripped by using the toggle, make sure to periodically check that the workpiece has not shifted during the acceleration of the movement.

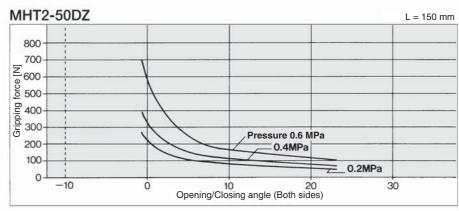
If the workpiece is not gripped in a stable manner, it could shift or drop and create a dangerous situation.

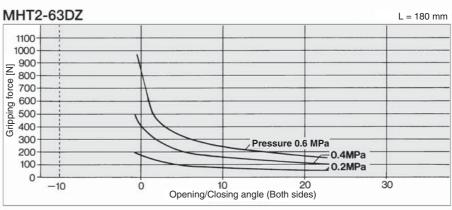
If the workpiece is not gripped in a stable manner, use shims on the attachment to adjust the gripped.

gripped.
To verify the gripping condition or to make any adjustments, make sure to do so in an area where the air gripper or the workpiece will not fall.



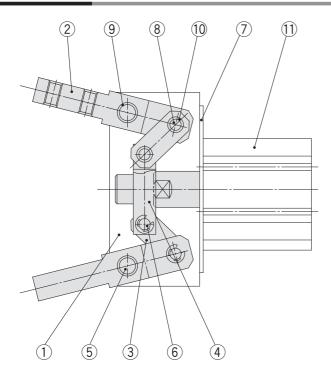








Construction



Component Parts

No.	Description	Material	Note
1	Side plate	Aluminium alloy	Hard anodised
2	Finger	Carbon steel	Black zinc chromated
3	Lever	Carbon steel	Black zinc chromated
4	Joint	Carbon steel	Black zinc chromated
5	Shaft	Stainless steel	
6	Joint pin	Stainless steel	
7	Cylinder plate	Soft steel	Black zinc chromated
8	Lever pin	Stainless steel	
9	Bearing		Steel lined oil imfilled acetal resin bearing
10	Bearing		Steel lined oil imfilled acetal resin bearing
11	Cylinder		Compact cylinder

Replacement Parts

Description	MHT2-32DZ	MHT2-40DZ	MHT2-50DZ	MHT2-63DZ	Main parts
Finger assembly	MH-TA3201	MH-TA4001	MH-TA5001	MH-TA6301	29
Lever assembly	MH-TA3202	MH-TA4002	MH-TA5002	MH-TA6302	310
Link parts assembly	MH-TA3203	MH-TA4003	MH-TA5003	MH-TA6303	<ø32, ø50>(2)(3)(4)(6)(8)(9)(10)
Link purts assembly	WIT-1 A3203	WIT-1 A4003	IVIT-1 A5003	IVIT- I A0303	<ø40, ø63>2348910
Compact cylinder	CDQ2A32-15DZ	CDQ2A40-15DZ	CDQ2A50-20DZ	CDQ2A63-20DZ	10

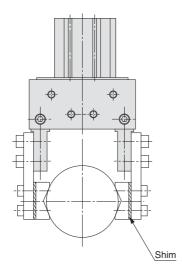
^{*} For finger assembly, lever assembly, order 2 pieces per one unit.

Replacement part/Grease pack part no.

For finger part: MH-G01 (30 g)

For cylinder part: GR-S-010 (10 g)

Attachment Design

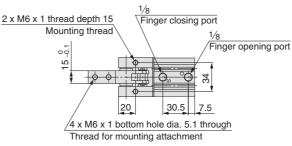


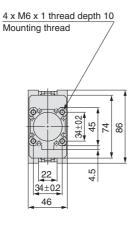
- 1) Design the attachment so that both fingers grip the workpiece when they are in parallel with each other.
- 2)Take considerations so that the fine adjustment of the attachment can be made by putting the adjustment shim.
- 3When the shim is thin, the gripping force becomes insufficient and the workpiece may become unstable. Conversely, when the shim is thick, the toggle mechanism is difficult to activate and a large impulsive sound may sometimes be produced. Carefully check this point.
- 4)The gripping status may become unstable due to continual wear of the bearing or shaft during operation. If this happens, make the adjustment, such as use of thicker shim according to the conditions.

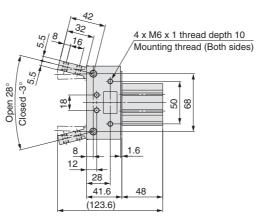


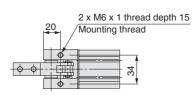
Dimensions



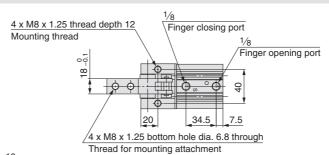


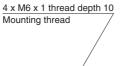


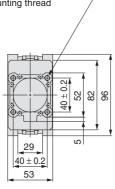


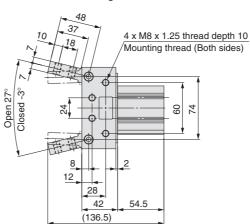


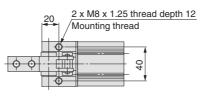
MHT2-40DZ





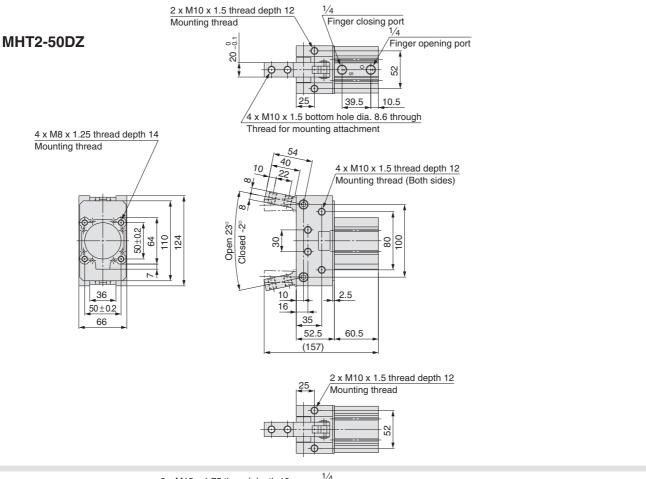


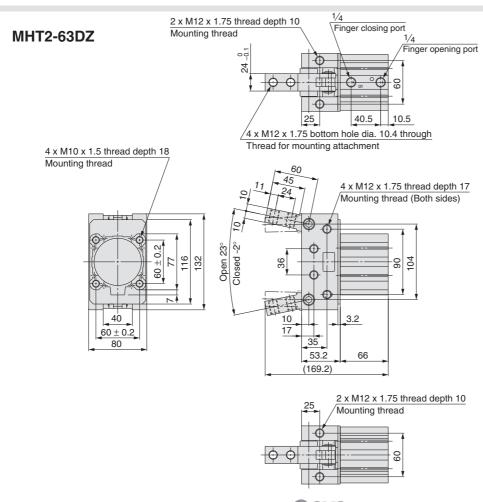






Dimensions

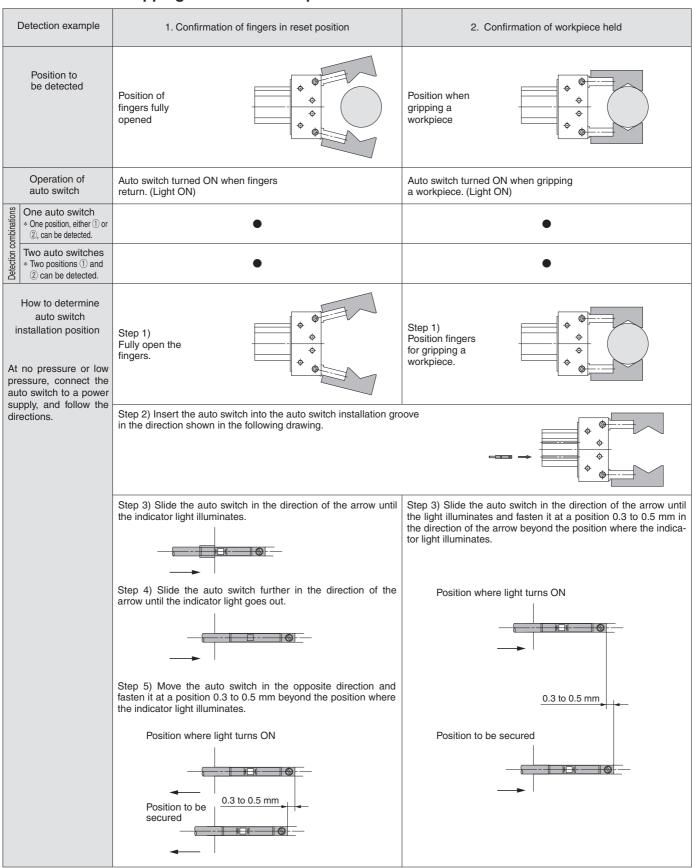




Series MHT2 Auto Switch Installation Examples and Mounting Positions

The auto switch can check the finger return and workpiece gripping through different combinations of auto switch quantities and detecting positions.

Detection when Gripping Exterior of Workpiece

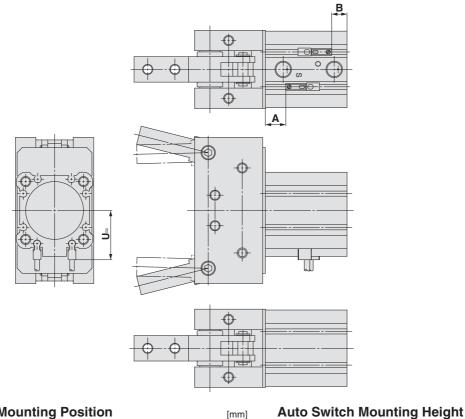


Note) Olt is recommended to grip a workpiece when the fingers are in parallel with each other.



Proper Auto Switch Mounting Position and Height





Proper Auto Switch Mounting Position

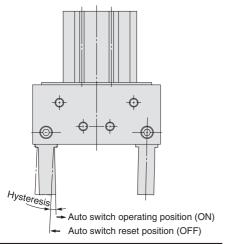
Proper Auto	Switch Mou	Switch Mounting Position				
Auto switch model	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A D-A	-		
Bore size	Α	В	Α	В		
32	12	9	8	5		
40	16	11.5	12	7.5		
50	14	14.5	10	10.5		
63	16.5	17.5	12.5	13.5		

Note) The actual mounting position should be adjusted after confirming the auto switch performance.

Auto switch model D-M9□V D-A9□V

Bore size	U	U
32	30	27.5
40	32	30
50	37.5	35
63	42.5	40.5

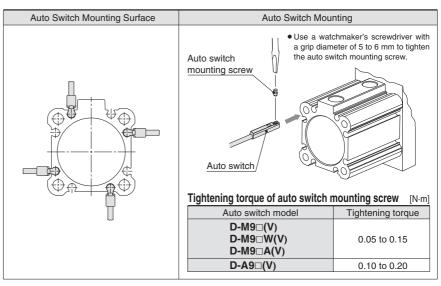
Auto Switch Hysteresis



Air gripper model	Hysteresis degree (Max. value)
MHT2-32D	3
MHT2-40D	3
MHT2-50D	3
MHT2-63D	3

Auto Switch Mounting

D-M9□ D-M9□W D-M9□A **D-A9**□ D-M9□V D-M9□WV D-M9□AV D-A9□V





In addition to applicable auto switches described in How to Order, auto switches listed below can be mounted with using auto switch mounting brackets.

For auto switches listed below, please order auto switches and auto switch mounting brackets separately. Refer to the Auto Switch Guide for the detailed specifications.

Туре	Model	Electrical entry (Fetching direction)	Features	Auto switch mounting bracket part no.	Applicable bore size
	D-A72		_		
	D-A73	Grammet (Parnandiaular)	_		
	D-A80	Grommet (Perpendicular)	Without indicator light		
	D-A79W		Diagnosis (2-colour indicator)		
Reed switch	D-A73C	Connector (Dornandiaular)	_		
	D-A80C	Connector (Perpendicular)	Without indicator light		
	D-A72H		_	BQ5-032	ø32 to ø63
	D-A73H, A76H	Grommet (In-line)	_		
	D-A80H		Without indicator light		
	D-F7NV, F7PV, F7BV		_		
	D-F7NWV, F7BWV	Grommet (Perpendicular)	Diagnosis (2-colour indicator)		
	D-F7BAVL		Water resistant (2-colour indicator)		
0-11-1	D-J79C	Connector (Perpendicular)	_		
Solid state auto switch	D-F79, F7P, J79		_		
	D-F79W, F7PW, J79W		Diagnosis (2-colour indicator)		
	D-F7BAL	Grommet (In-line)	Water resistant (2-colour indicator)		
	D-F79F		With diagnosis output (2-colour indication)		
	D-F7NTL		With timer		

^{*} For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to the Auto Switch Guide for details.

^{*} Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to the Auto Switch Guide for details.

^{*} Trimmer auto switch (D-F7K) and heat-resistant solid state auto switch (D-F7NJL) are not applicable.

Made to Order Common Specifications

Please contact SMC for detailed dimensions, specifications and lead times.



1 Heat Resistance (-10 to 100°C)

Symbol -X4

Seal material and grease have been changed, so that it could be used even at higher temperature up to 100 from -10°C.

How to Order



Note 1) Magnet is built-in, but when using an auto switch, the acceptable temperature range becomes -10 to 60 °C.

Note 2) For lubrication, specialised grease GR-F is recommended.

Specifications

Ambient temperature range	−10°C to 100°C		
Seal material	Fluororubber		
Grease	Heat resistant grease (GR-F)		
Specifications/dimensions other than the above	Same as the standard type		

Handling Precautions

Be aware that smoking cigarettes after your hands have come into contact with the grease used for this air gripper can create a gas that is hazardous to humans.

Replacement Parts: Seal Kit

Series	Model	Seal kit no.
MHT	MHT2	CQ2B□□-XB6-PS

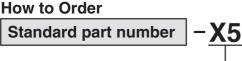
Note 1) The cylinder bore size enters II of the seal kit no. Refer to the replacement parts of each model.

Note 2) The seal kit does not include grease. Please order the grease separately.

Fluororubber Seal

Symbol

-X5



Fluororubber Seal

Note 1) Please contact SMC, since the type of chemical and the operating temperature may not allow the use of this product.

Note 2) Since the standard-type magnet is built-in, please contact SMC for the product's adaptability to the operating environment.

Specifications

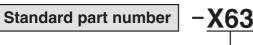
Seal material	Fluororubber			
Specifications/dimensions other than the above	Same as the standard type			

3 Fluoro Grease

Symbol

-X63

How to Order



Specifications

Grease	Fluorine grease (GR-F)				
Specifications/dimensions other than the above	Same as the standard type				

Fluorine Grease

⚠ Warning

Handling Precautions

Be aware that smoking cigarettes after your hands have come into contact with the grease used for this air gripper can create a gas that is hazardous to humans.



Note) For lubrication, specialised grease GR-F is recommended.

[•]Grease pack part no.: GR-F-005 (5 g)

Made to Order Individual Specifications

Please contact SMC for detailed dimensions, specifications and lead times.



1 Double Rod Cylinder

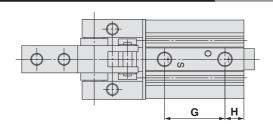
Symbol -X5060

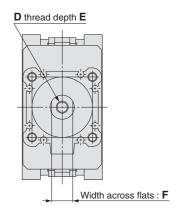
MHT2 - Bore size DZ - X5060

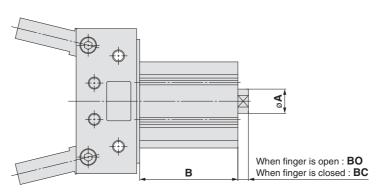
Use a double rod cylinder where a standard single rod cylinder (Series CDQ2) is used.

Note) When the toggle is used to grip a workpiece, if the rod is pushed or a load is placed on it, the workpiece may be dropped since the toggle mechanism does not work.

Dimensions (Dimensions other than specified below are the same as the standard type.)







										[mm]
Model	Α	В	во	ВС	D	Е	F	G	Н	Weight (g)
MHT2-32DZ-X5060	16	55.5	7	22	M8 x 1.25	13	14	35.5	10	850
MHT2-40DZ-X5060	16	65	7	22	M8 x 1.25	13	14	40	12.5	1,170
MHT2-50DZ-X5060	20	70.5	8	28	M10 x 1.5	15	17	42.5	14	2,050
MHT2-63DZ-X5060	20	72	8	28	M10 x 1.5	15	17	41	15.5	2,900

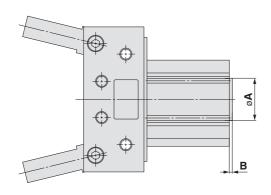
2 With Boss in Head Side

Symbol -X5070

MHT2-Bore size DZ-X5070

Use the cylinder Series CDQ2 with boss in head side.

Dimensions (Dimensions other than specified below are the same as the standard type.)



			[mm]
Model	Α	В	Weight [g]
MHT2-32DZ-X5070	21h9-0.052	2	795
MHT2-40DZ-X5070	28h9 ⁰ _{-0.052}	2	1,080
MHT2-50DZ-X5070	35h9 ⁰ _{-0.062}	2	1,905
MHT2-63DZ-X5070	35h9 ⁰ _{-0.062}	2	2,745

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution," "Warning" or "Danger." They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

Caution indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate

Warning indicates a hazard with a medium level of risk **⚠** Warning: which, if not avoided, could result in death or serious

injury.

Danger indicates a hazard with a high level of risk ⚠ Danger: which, if not avoided, will result in death or serious injury. *1) ISO 4414: Pneumatic fluid power - General rules relating to systems. ISO 4413: Hydraulic fluid power – General rules relating to systems. IEC 60204-1: Safety of machinery - Electrical equipment of machines. (Part 1: General requirements)

ISO 10218-1: Manipulating industrial robots - Safety.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalogue information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

- 3.Do not service or attempt to remove product and machinery/equipment until safety is confirmed.
 - 1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
 - 2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
 - 3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
- 4. Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.
 - 1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
 - 2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalogue
 - 3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
 - 4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".

Read and accept them before using the product.

Limited warranty and Disclaimer

- 1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, wichever is first.*2) Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
- 2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided. This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
- 3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalogue for the particular
 - *2) Vacuum pads are excluded from this 1 year warranty.

A vacuum pad is a consumable part, so it is warranted for a year after it is delivered. Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited

Compliance Requirements

- 1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
- 2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Caution

1. The product is provided for use in manufacturing industries.

The product herein described is basically provided for peaceful use in manufacturing

If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.

If anything is unclear, contact your nearest sales branch.

⚠ Caution

SMC products are not intended for use as instruments for legal metrology.

Measurement instruments that SMC manufactures or sells have not been qualified by type approval tests relevant to the metrology (measurement) laws of each country. Therefore, SMC products cannot be used for business or certification ordained by the metrology (measurement) laws of each country.

Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

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