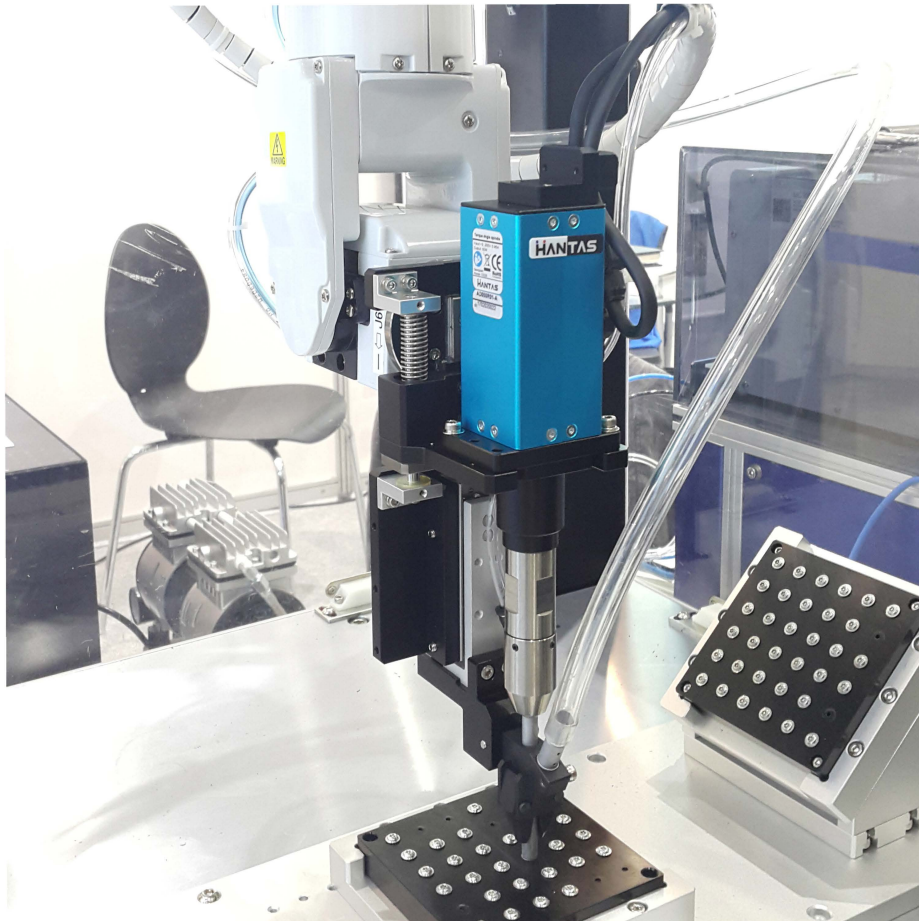


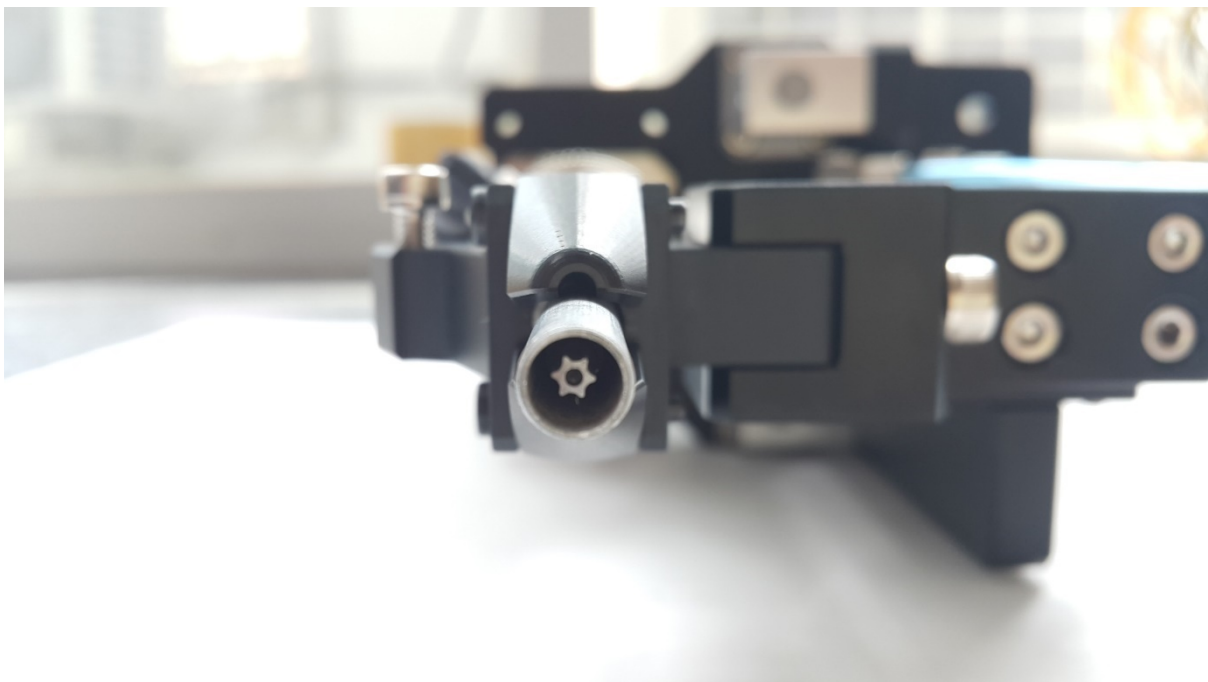
AD series

Digital Torque & Angle Control Spindle



Main features

- 1) Digital torque and angle setting in 15 presets and 2 multi step sequence programs
- 2) 15 Models managing variable presets with counting no. and I/O in sequential 10 steps
- 3) Extended 99 presets and Models program with the optional ParaMon Touch pad
- 4) Auto safe speed by torque setting as a standard factory setting
- 5) Self customizing on actual tightening application for optimized setting.
- 6) Monitoring fastening quality and count of screw numbers
- 7) Error information by code display
- 8) Easy parameter setting and monitoring by ParaMON (PC software)
- 9) Real time torque data and curve display
- 10) Real time fastening data output
- 11) Modbus RTU protocol
- 12) RS422 & USB communication port
- 13) Fastening data storage in ParaMon Touch pad (Option)
- 14) 10% torque accuracy in full scale and +/- 3% of repeatability
- 15) Fastening torque data analysis (Stdev, Mean, Average, CP, CPK) on ParaMon
- 16) 16 inputs and 8 outputs flexible digital I/O
- 17) Long life time over 5 million cycle

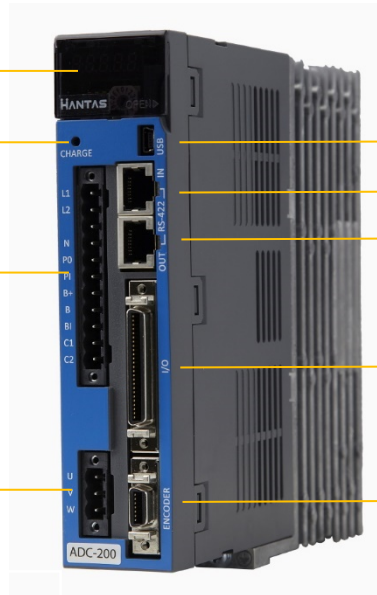


LED Display
Preset # - Target torque

High voltage
charged alarm

AC power input

Power cable to
spindle motor



USB port

RS422 port (link in)

RS422 link out

50P I/O

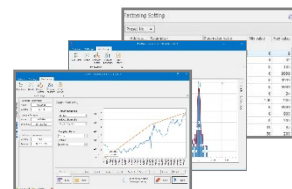
Encoder cable to spindle

ADC controller



ParaMon Touch PAD

Modbus protocol
RS422 or USB



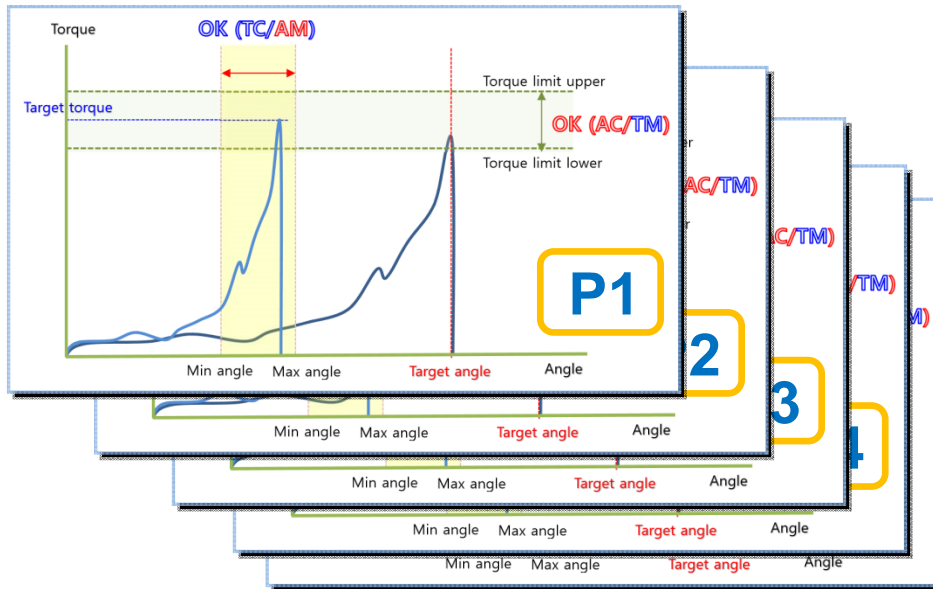
PC
(Free software - ParaMon)



PLC

Easy guidance to the optimized tightening condition by built-in self customizing simulation feature

Total 15 tightening presets consist of each 15 key parameters. This strategy can be extended up to 99 presets with optional ParaMon Touch.

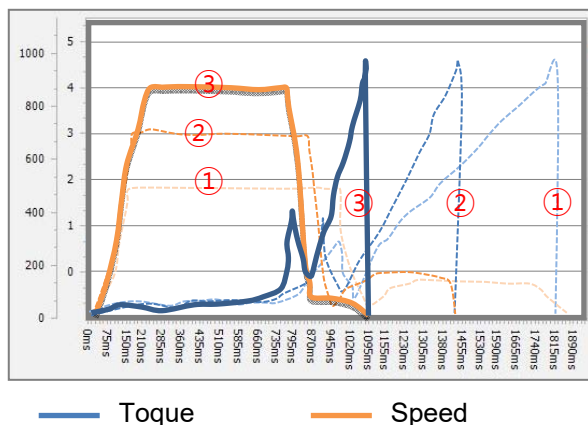


Each preset programs have the customized parameters as below;

- Tightening mode
 - Torque control + angle monitoring (TC/AM)
 - Angle control + torque monitoring (AC/TM)
- Torque
 - Target torque, min/max torque, snug torque, seating torque, torque compensation
- Angle
 - Target angle, min/max angle, free speed angle
- Speed
 - Target speed, Free speed
- Time
 - Soft start time, torque rising time, torque holding time

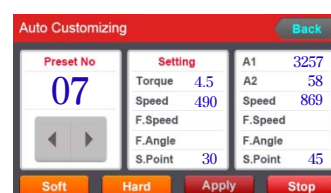


[Self customizing simulation]



Self customizing software will find the optimized parameter condition to provide torque accuracy for the target torque in most fast speed.

Just apply tightening with factory setting parameters until the software stop changing parameter settings.



Sequence control by managing tightening preset # & screw number, time delay, Input & Output provides automation without PLC or sequence control device.

Total 15 process sequence managing Models consist of each 10 steps of sequence program capacity. This feature can be extended up to 99 Models with optional ParaMon Touch.

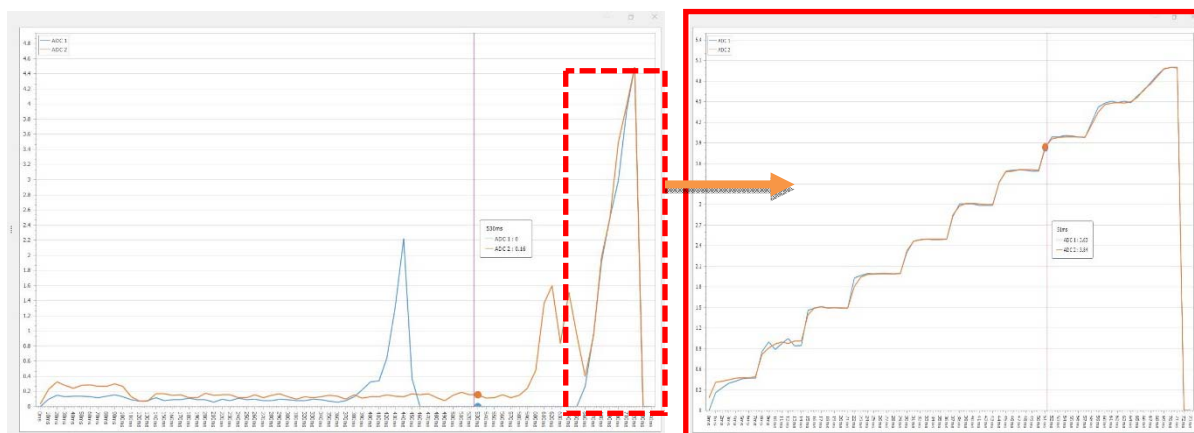
Sample program of sequence control

- Step 1 - Input
Detect workpiece arrival on the position.
- Step 2 - Delay
Time delay 0.5 second to the next step
- Step 3 - Output
Lock the workpiece with air cylinder
- Step 4 - Tightening
Tightening total 7 with Preset #12
- Step 5 - Output
Release the workpiece from air cylinder lock



Synchronized fastening up to 31 tools

ADC provides the synchronized fastening feature up to 31 spindles.



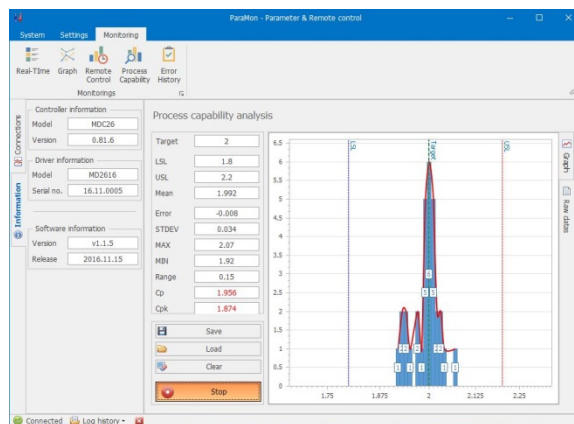
Free PC software ParaMon provides easy parameter setting, data monitoring & analysis

2 channel realtime curve display for torque, speed, angle.
Torque capability analysis for mean value, standard deviation, CP and CPK.
Auto data output on every event in Modbus protocol.

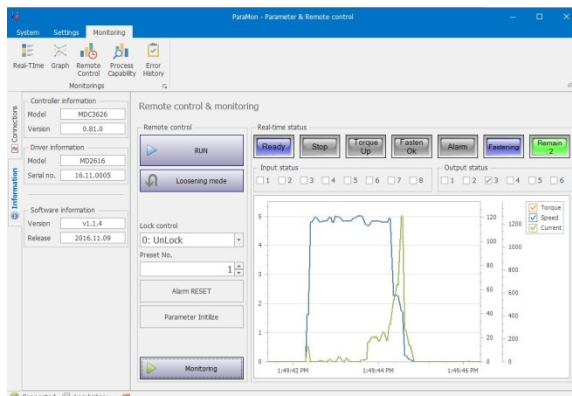
Fastening Setting

Address...	Parameter	Parameter value	Min value	Max value
Preset No.: 01				
A001	Type	TC/AM <input checked="" type="radio"/> AC/TM <input type="radio"/>	0	1
A002	Target torque	5	4	34
A003	Torque limit (%)	3.5	0	100
A004	Target angle (not use)	0	0	9999
A005	Min angle (degree)	360	0	9999
A006	Max angle (degree)	1080	0	9999
A007	Snug torque	0	0	34
A008	Speed (rpm)	113	100	900
A009	Free angle (degree)	0	0	9999
A010	Free speed (rpm)	0	0	900
A011	Soft start (ms)	0	0	300
A012	Seating point torque (%)	50	10	95
A013	Torque rising time (ms)	50	50	200
A014	Torque holding time (ms)	2	1	20
A015	Torque compensation (%)	100	80	120

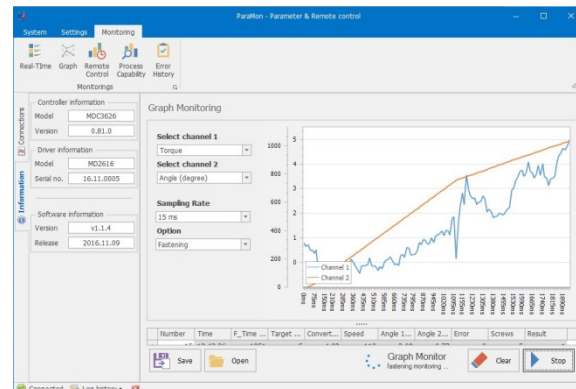
Fastening parameter setting



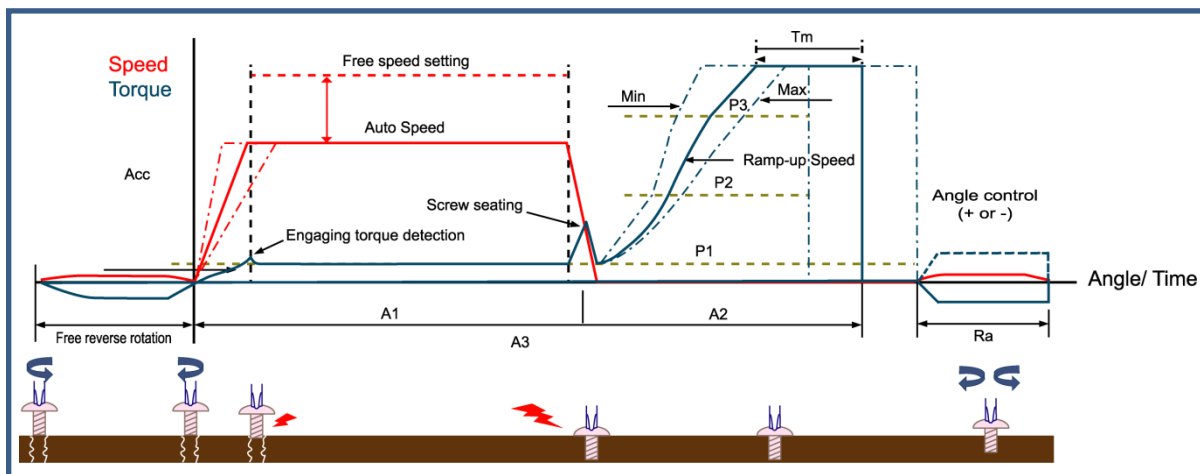
Process capability analysis



Remote control & monitoring



Real-time graph monitoring (2 channel)



Specifications of Spindle & control drive

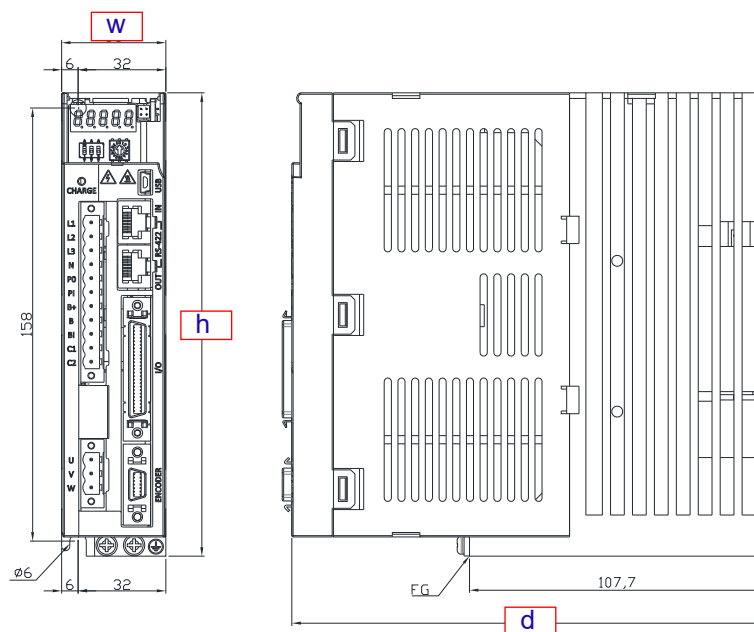
■ ADC control drive



ADC-100, 200, 400



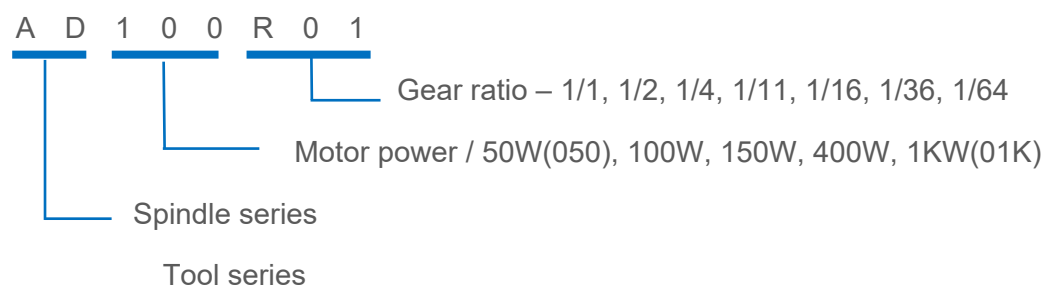
ADC-1K



ADC-100,200 : 38(w) 173(d) 158(h) mm, 915gr
 ADC-400 : 38(w) 173(d) 158(h) mm, 945gr
 ADC-1K : 58(w) 197(d) 158(h) mm, 1475gr
 ADC-2K : 88(w) 197(d) 158(h) mm, 2400gr

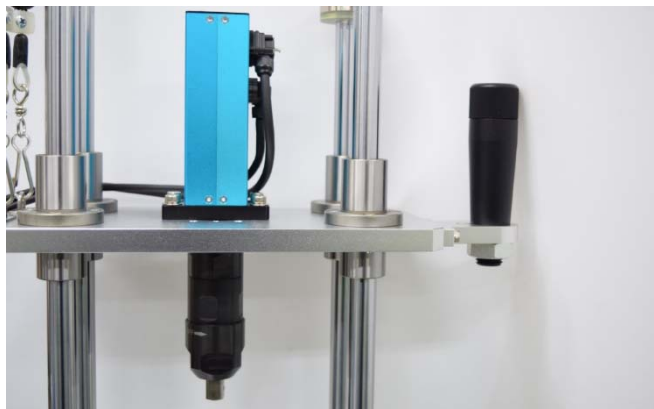
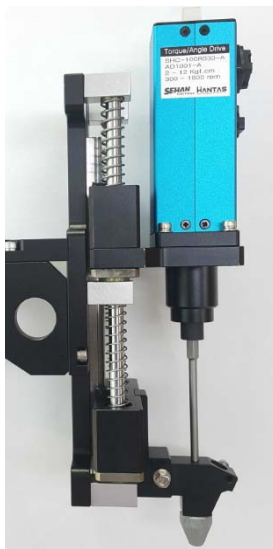
Model	ADC-100	ADC-200	ADC-400	ADC-1K	ADC-2K
Input power	AC200-230V, 50/60Hz single phase			AC200-230V 3 phase	
Rated Output	1.4A	1.7A	3.0A	6.75A	13.5A
Temperature	Operation 0-50°C, Storage -20~65°C / 90% RH				
Humidity	90% RH				
Protection	Over current, over load, over heat, over & low voltage				
COM port	RS-422 (Modbus-RTU) / max 200m, USB 2.0 (mini B)				
Protocol	Modbus RTU				
No. of program	15 presets				
Auto paring	Auto detection of the spindle when power ON of the drive				

■ AD Spindles



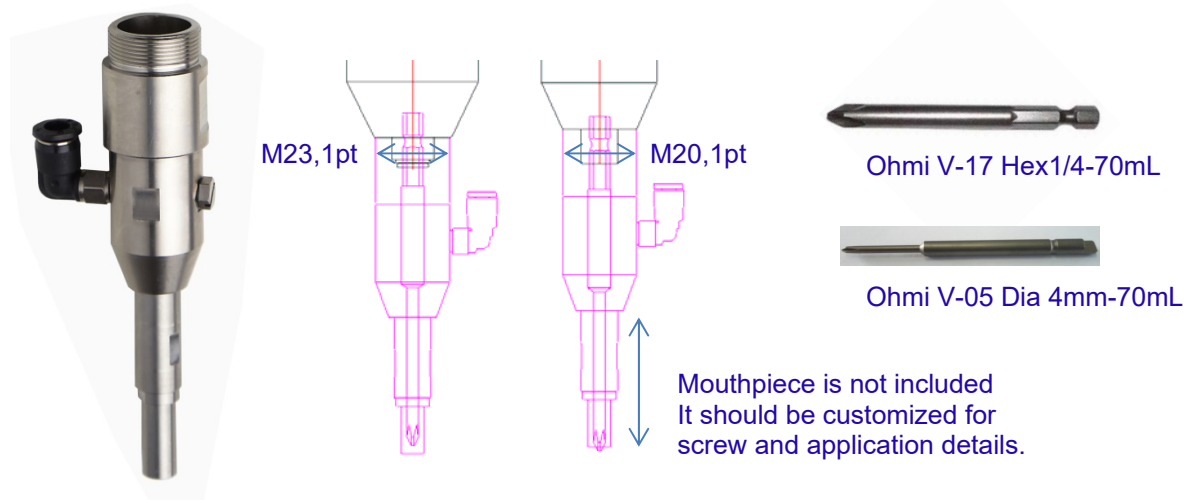
Model	Torque(kgf.cm)	Max speed	Bit socket	Spindle drive
AD050R01	0.5 ~ 6	150~2000	Hex1/4" or dia.4	ADC-100
AD100R01	2 ~ 12	150~2000	Hex1/4"	ADC-200
AD150R01	2 ~ 20	150~2000	Hex1/4"	ADC-400
AD150R02	4~ 28	150~2000	Hex1/4"	
AD150R04	5 ~ 50	100~1200	Hex1/4"	
AD150R11	15 ~ 100	50~450	Hex1/4"	
AD150R16	30 ~ 180	30~310	Hex1/4" or SQ3/8"	
AD150R36	50 ~ 300	30~140	SQ3/8"	
AD150R64	100 ~ 500	30~75	SQ3/8" or SQ1/2"	

Custom design



Optional accessories

■ Vacuum pick-up assy (VPA)



Code	Item	Specification	Screwdriver	Bit
300056	Vacuum Pick-up Assy	Hex 1/4", M20	MD26xx-A	Ohmi V-17, 70mmL
300057	Vacuum Pick-up Assy	Hex 1/4", M23	MD32xx-A	Ohmi V-17, 70mmL
300058	Vacuum Pick-up Assy	Dia 4 mm, M20	MD26xx-E	Dia 4mm half moon

■ Bit holder assy

Extra bit holder with bearing provide better bit concentricity for especially long length bit.



Code	Item	Specification	Screwdriver	Bit
300053	Bit Holder Assy	Hex 1/4", M20	MD26xx-A	Ohmi V-17, 70mmL
300054	Bit Holder Assy	Hex 1/4", M23	MD32xx-A	Ohmi V-17, 70mmL
300055	Bit Holder Assy	Dia 4 mm, M20	MD26xx-E	Dia 4mm half moon

■ ParaMon Touch for AD

8" color TFT LCD with touch screen pad, ParaMon Touch provides total 99 extended presets and models. Programs are saved in the pad itself and change settings through the preset#1 of the controller.

Automatic data saving in SD card.

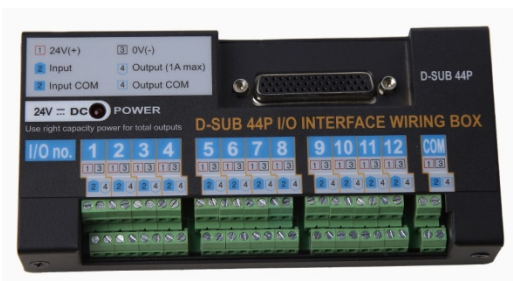


105006 ParaMon Touch for MD

- Power : DC24V 1A
- Connection to MDC by RS232
- Total 99 presets programs
- Total 99 model programs
- 7 inputs to select 99 programs
- Data memory in SD card
- Include same settings of MDC
- Easy mounting on the panel

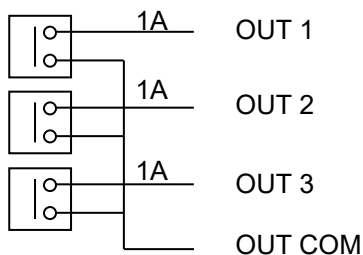
■ 44P I/O Wiring Box

It provides easy and convenient wiring for 12 inputs and outputs of MDC controller by sharing one single 24V power source.



105004 I/O wiring box D-Sub 44P

Output port has the relay contact with the max 1A capacity for each port.
Be sure that the 24VDC power supply should have enough capacity for total output load



D_Sub 44P		D_Sub 44P		D_Sub 44P	
1	IN 1	16	OUT 1	31	24V+
2	IN 2	17	OUT 2	32	24V+
3	IN 3	18	OUT 3	33	24V+
4	IN 4	19	OUT 4	34	-
5	IN 5	20	OUT 5	35	Out Com
6	IN 6	21	OUT 6	36	Out Com
7	IN 7	22	OUT 7	37	Out Com
8	IN 8	23	OUT 8	38	-
9	IN 9	24	OUT 9	39	-
10	IN 10	25	OUT 10	40	-
11	IN 11	26	OUT 11	41	-
12	IN 12	27	OUT 12	42	-
13	-	28	-	43	-
14	IN Com	29	Out Com	44	-
15	IN Com	30	Out Com		



500392 I/O cable D-Sub 25P-44P (MDC controller)

■ Spindle cable set (power & Encoder)

There are 4 different length of the spindle cable sets. 3 meter long cable is standard.



Code	Item	Model	Description
300049	Spindle cable set	CB-AD01-3M	Standard 3 m
300050	Spindle cable set	CB-AD01-5M	5 m long
300051	Spindle cable set	CB-AD01-7M	7 m long
300052	Spindle cable set	CB-AD01-10M	10 m long

■ I/O cable

There are 3 different type of the I/O cables.



Code	Item	Model	Description
500349	I/O cable	AD-50P-3M-OPEN	Standard, with numbering
500368	I/O cable	AD-50P-3M-DSUB25	Connect to I/O simulation box
500369	I/O cable	AD-50P-3M-DSUB44	Connect to 44P I/O wiring box

■ I/O simulation box

12 toggle switches for input no.1 to 12 and 12 LED lights for output no. 1 to 12 by 25P D-Sub connector.
It is easy to demonstrate AD tools without PLC.



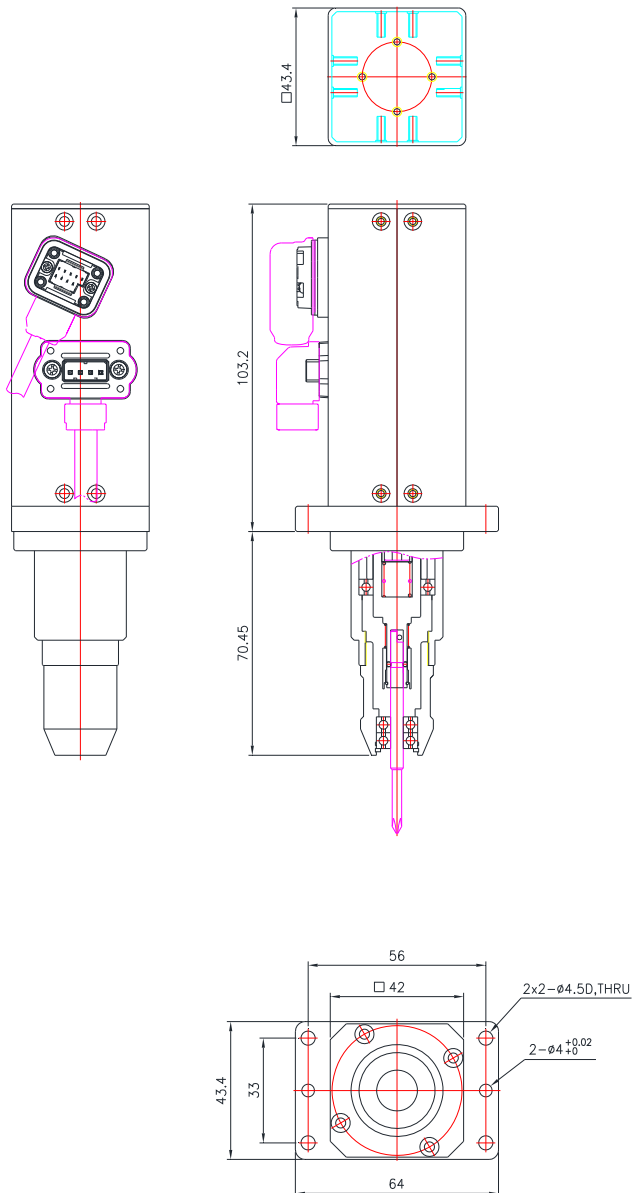
■ Cable fixing block

Cable fixing block prevent over stress of spindle cable sets on the connector. The cable should be firmly held apart from the connector by using the fixing block

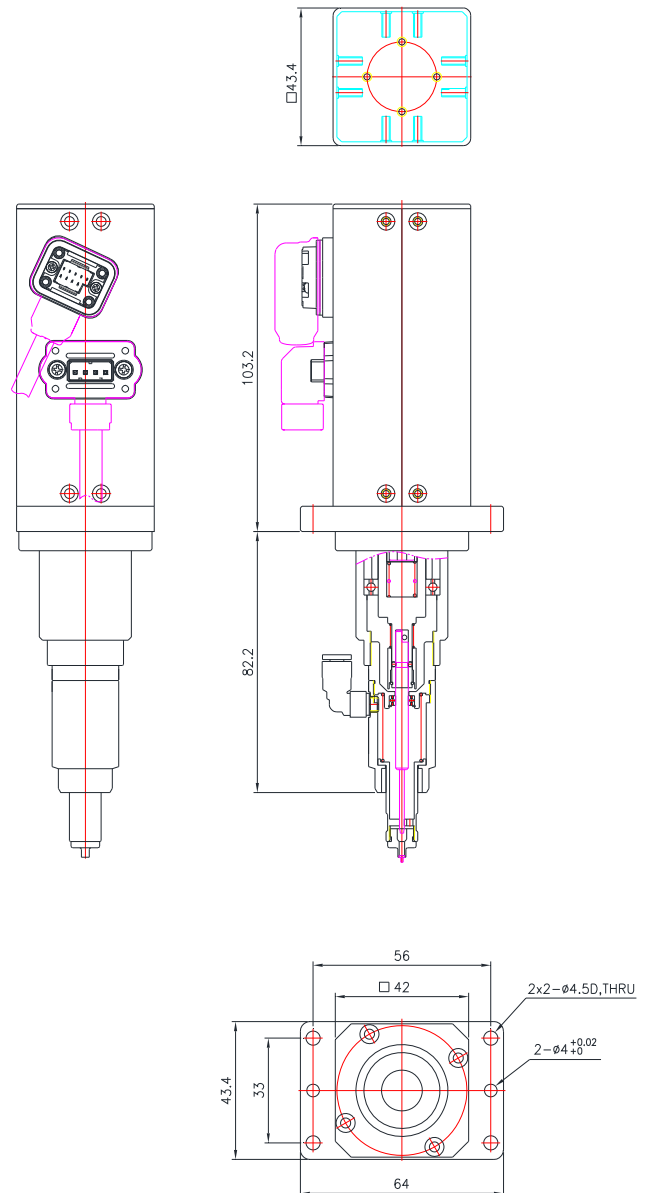


Layout drawings

AD050R01-E
AD050R01-E+C



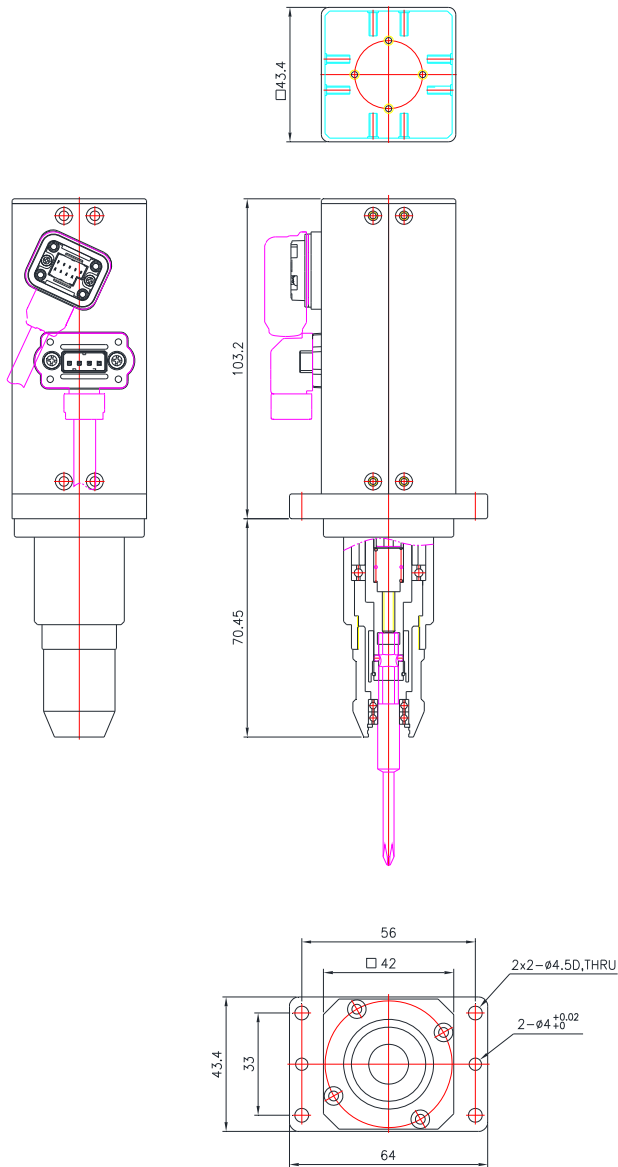
AD050R01-E+V
AD050R01-E+VC



Bit holder (Option)
for Ohmi V-05 bit or equivalent
(with Dia. 4mm body hold by bearing)

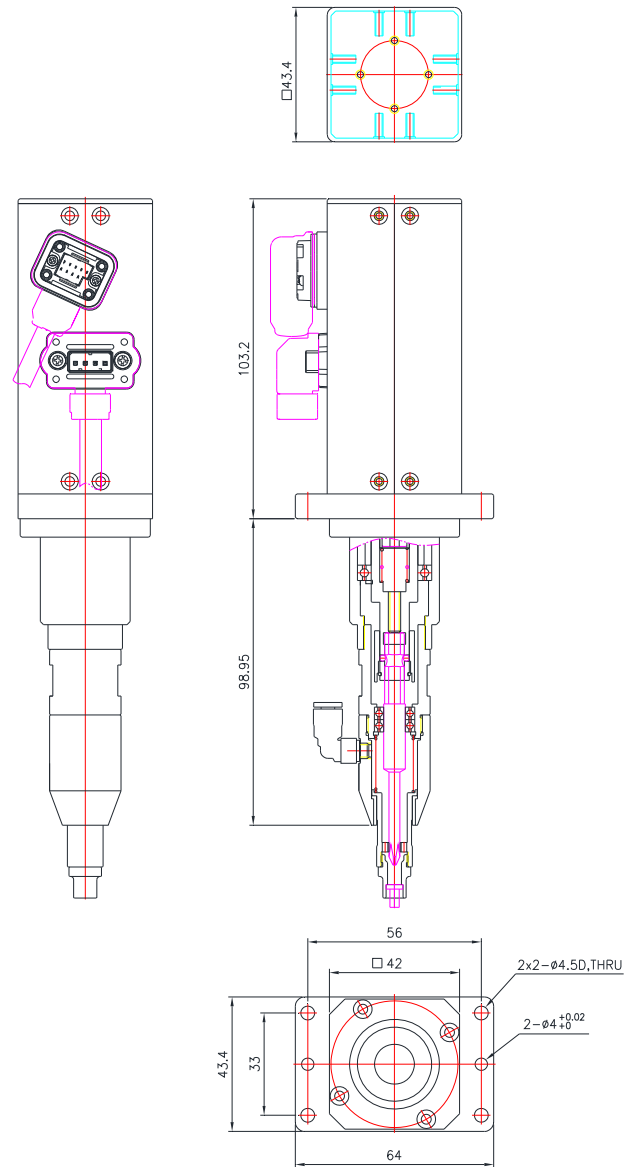
Vacuum pick-up assy (Option)
for Ohmi V-05 or equivalent
(with Dia. 4mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum pick-up
assy is for one of the application.
It doesn't work for all application.

AD050R01-A
AD050R01-A+C



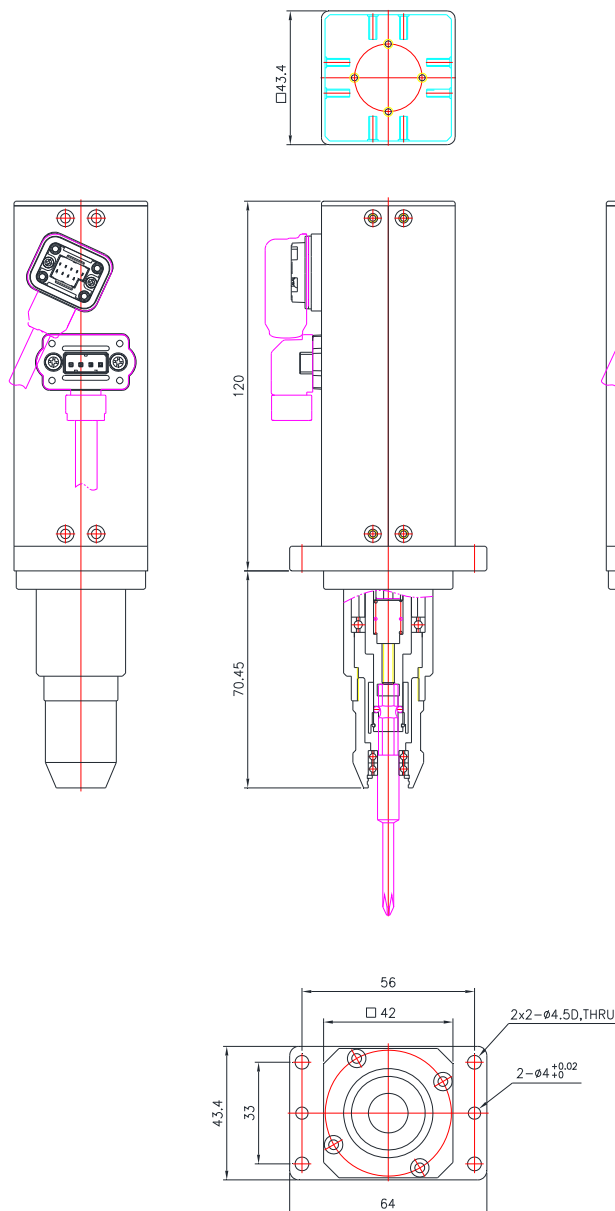
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

AD050R01-A+V
AD050R01-A+VC



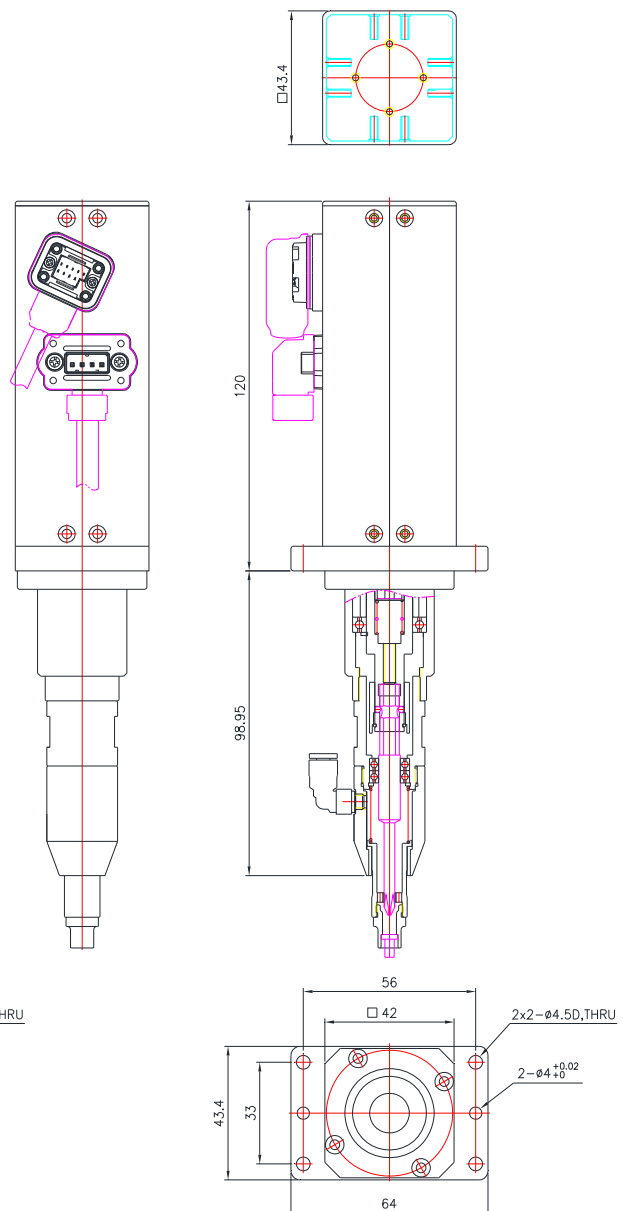
Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD100R01-A
AD100R01-A+C



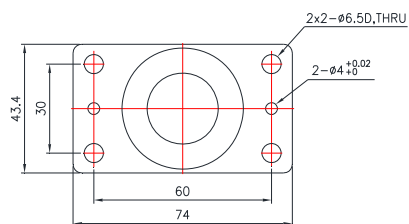
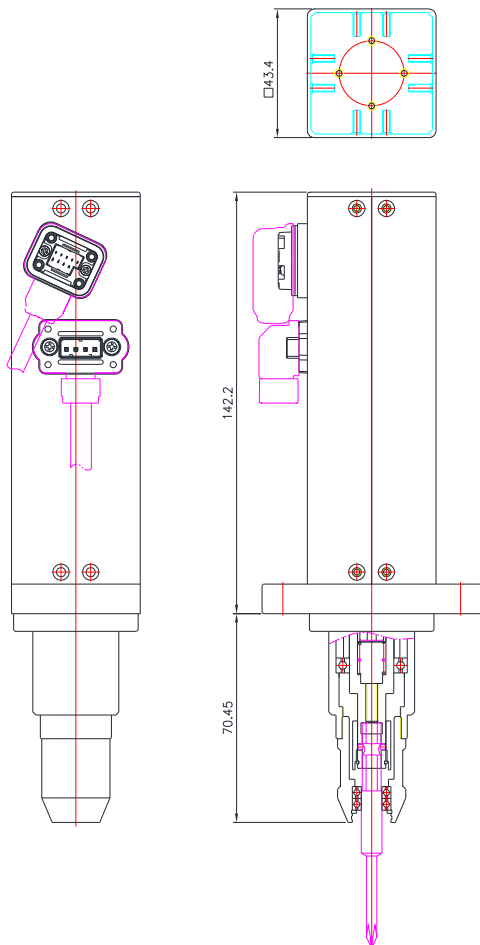
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

AD100R01-A+V
AD100R01-A+VC



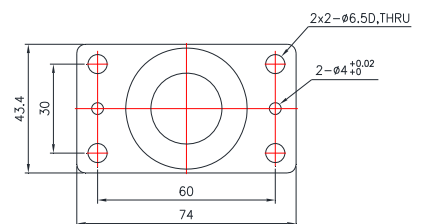
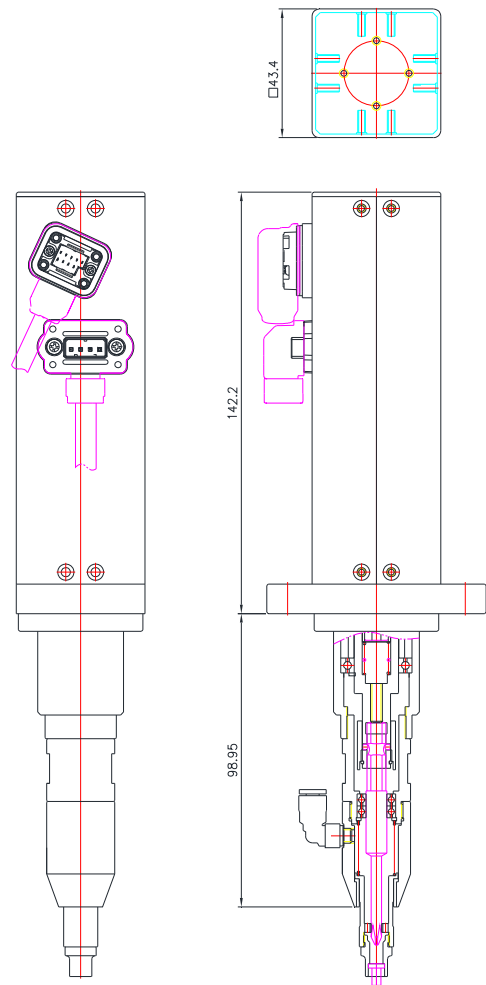
Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD100R01-A
AD100R01-A+C



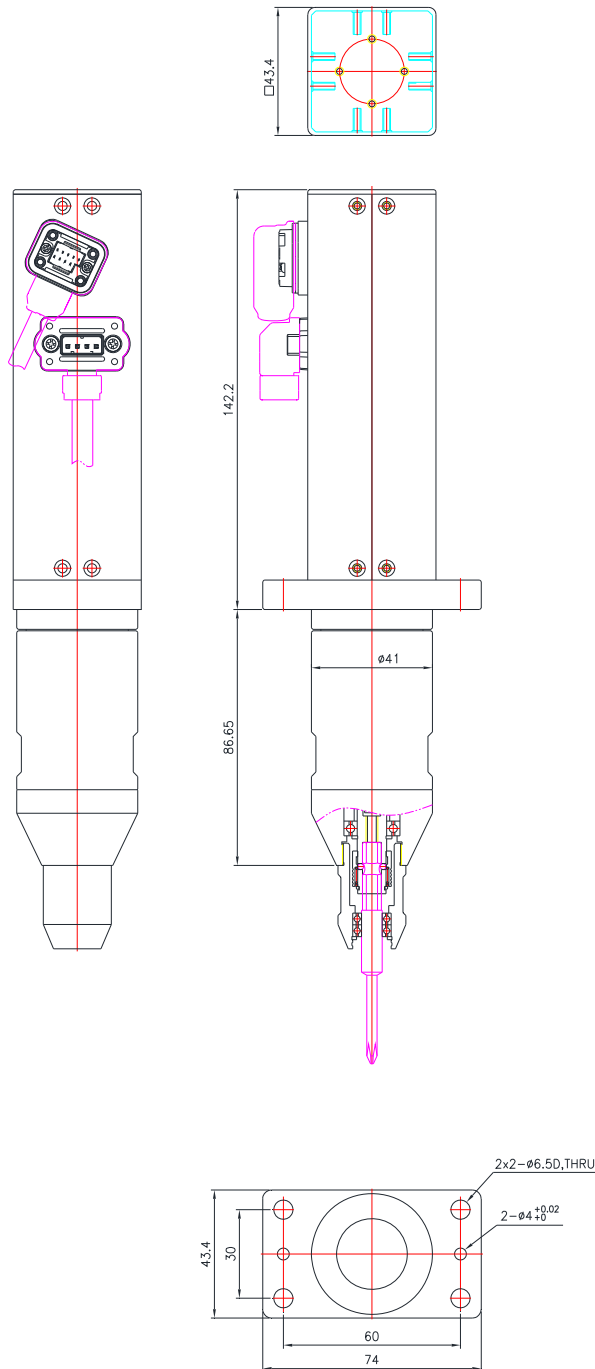
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

AD100R01-A+V
AD100R01-A+VC



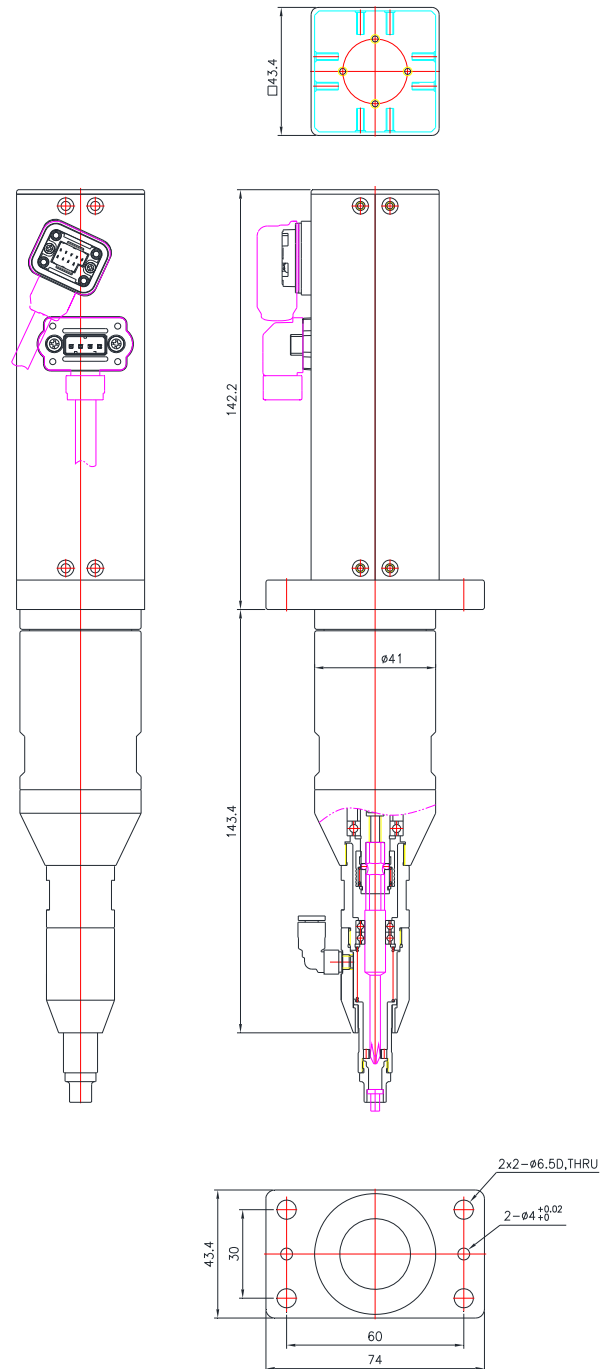
Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD150R02-A



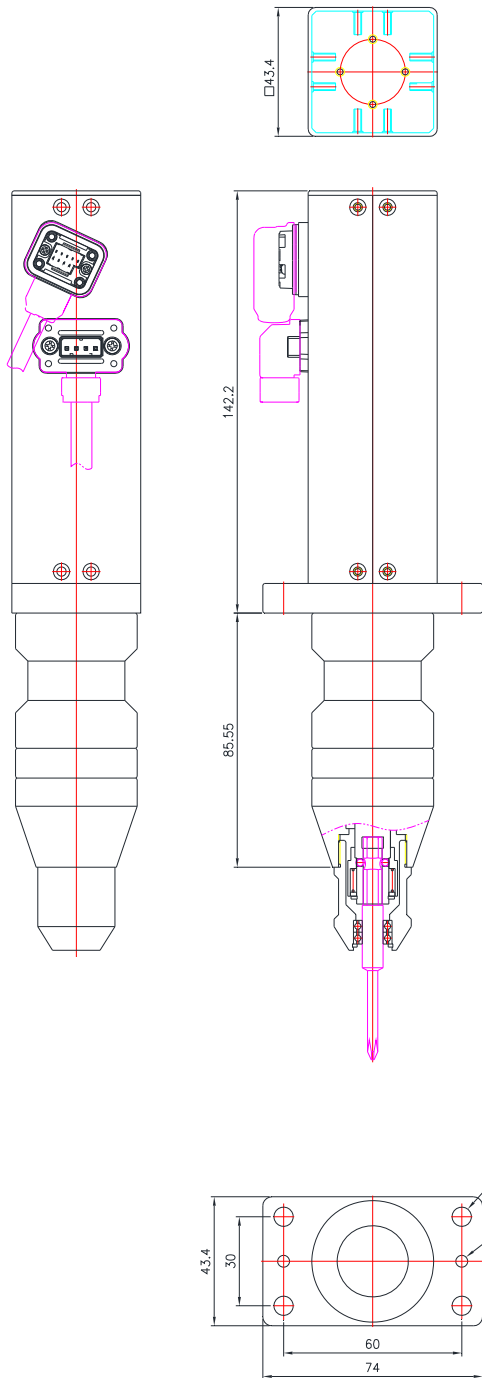
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

AD150R02-A+V



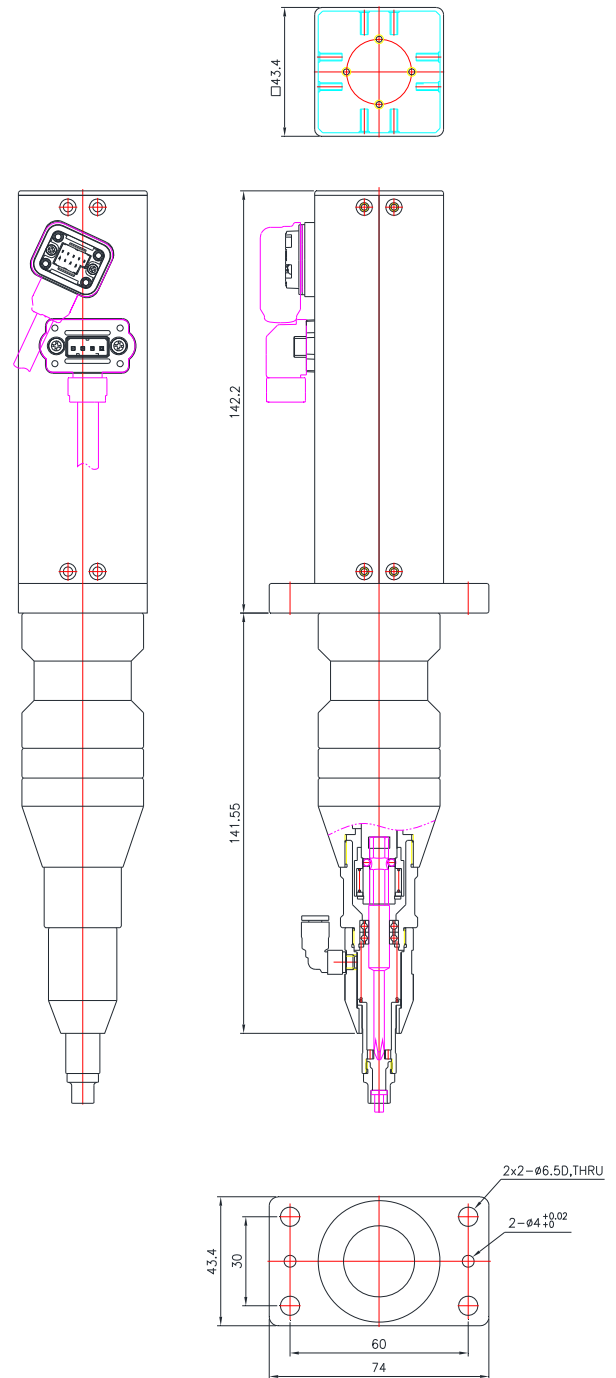
Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD150R04-A



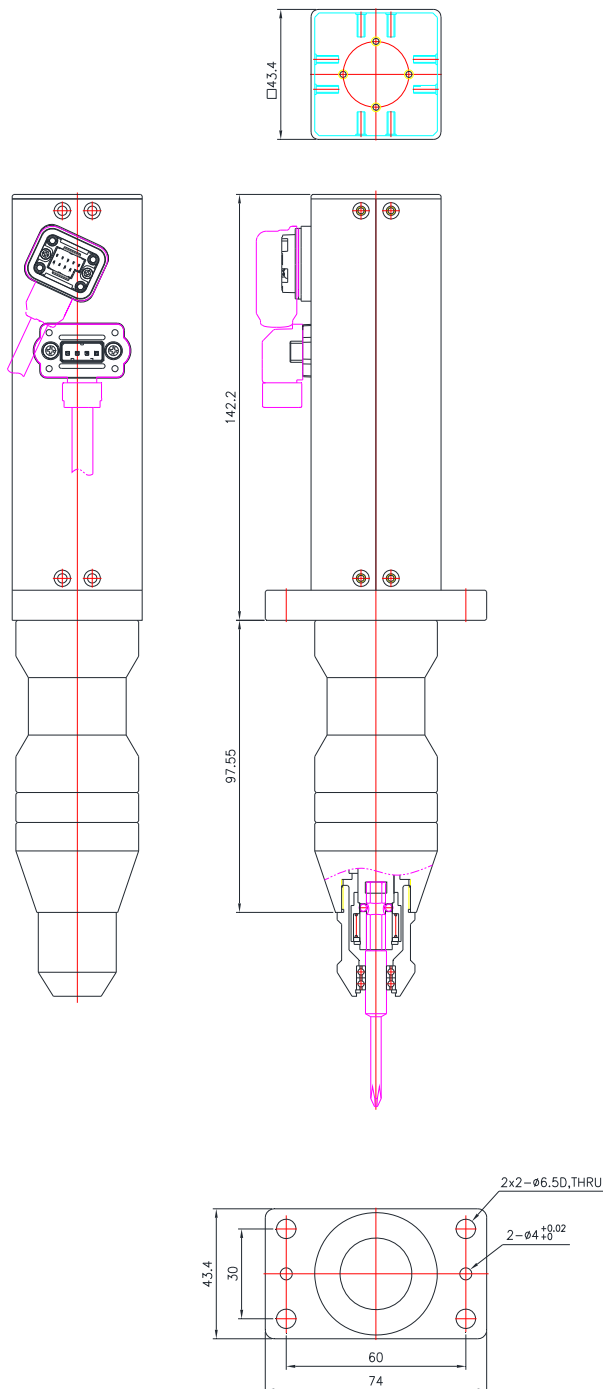
Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

AD150R04-A+V



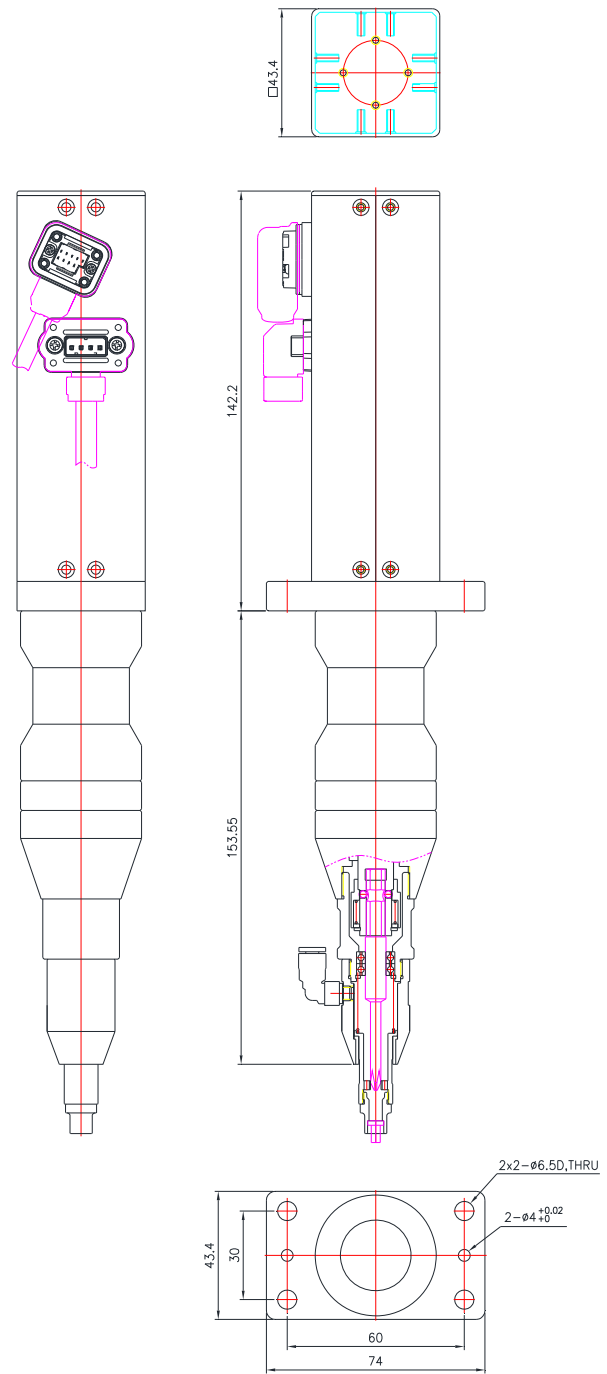
Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD150R11-A
AD150R16-A



Bit holder (Option)
for Ohmi V-17 or equivalent (Hex1/4"
with Dia 7mm body hold by bearing)

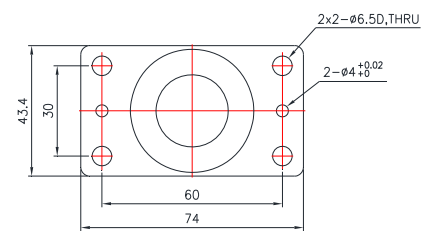
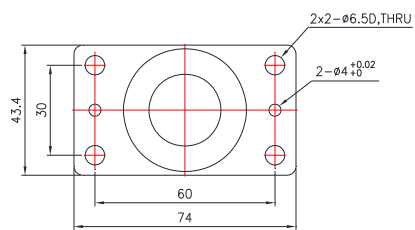
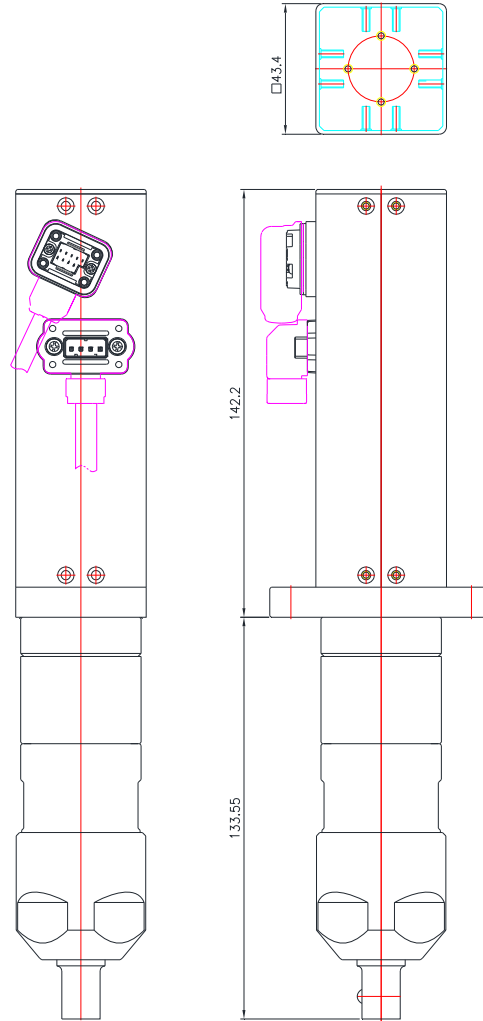
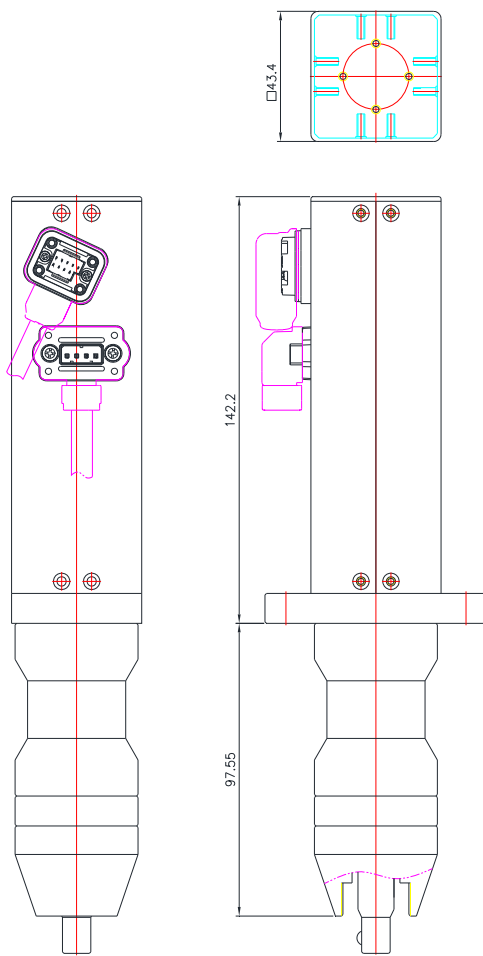
AD150R11-A+V
AD150R16-A+V



Vacuum pick-up assy (Option)
for Ohmi V-17 or equivalent (Hex1/4" with Dia
7mm body hold by bearing)
Mouth piece is not included in the assy.
It is custom designed for each screw size and
applications. The above described vacuum
pick-up assy is for one of the application. It
doesn't work for all application.

AD150R11-SQ3/8
AD150R16-SQ3/8

AD150R36-SQ1/2 or SQ3/8
AD150R64-SQ1/2 or SQ3/8





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