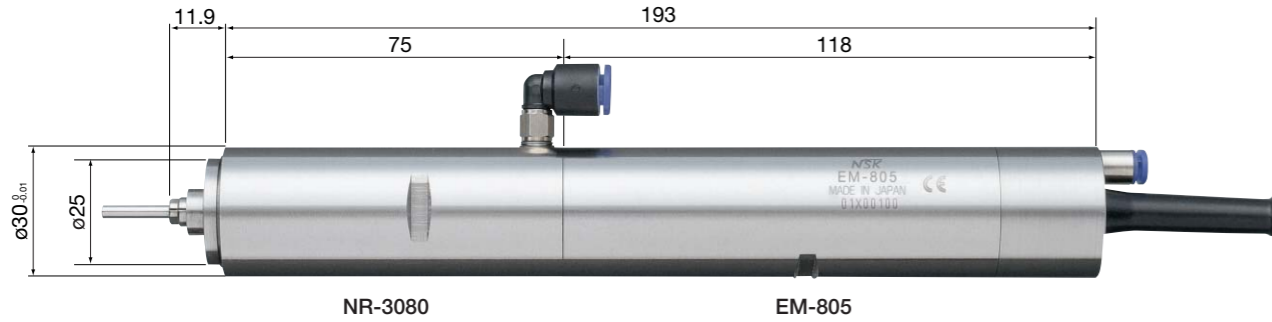


# ULTRA-PRECISION BRUSHLESS MOTOR & SPINDLE "ASTRO-E 800Z"

- 20,000~80,000 min<sup>-1</sup> ● Maximum Output 300W ● Auto or Manual Control Modes.
- Can be installed on a Special-Purpose Machine, NC Lathe, Robot, etc.
- Motor speed is displayed accurately on the front panel.

## Features of ASTRO-E 800Z



### ● Maximum Output 300W

The ASTRO-E motor is a brushless DC motor utilizing hall elements, the rotor unit is a rare-earth magnet, motor develops 300W.

### ● Brushless Motor

Excellent durability and high reliability were obtained using a high-speed brushless motor, which eliminated the nuisance of brush replacement and maintenance. Motor speed control is a wide range : 20,000~80,000 min<sup>-1</sup>{0~20,000 min<sup>-1</sup> : For centering}

### ● Motor Endurance

Brushless motor has no carbon brushes or commutator, minimizing wear and resulting in a long service life. Due to the brushless construction, electrical interference and other noises are minimized.

### ● Smooth Rotation

'The absence of a commutator' and 'the use of a photo coupler sending a feedback signal of 48 pulses per revolution' result in very smooth rotation with little vibration throughout the speed range.

### ● Excellent Durability by air-cooling system

Air-cooled motor uses a small volume of air (30L/min) to prevent heat buildup and allow long continuous operation.

Clean dry air is required to cool the motor and protect the spindle from contaminants. Use a filter, regulator and lubricator. (Proper air pressure 0.2~0.5MPa) (Use Air Line Kit AL-0203)

### ● Spindle

Ultra-precision ceramic bearings is installed with NR-3080 to withstand high-speed up to 80,000 min<sup>-1</sup>. Atomized oil is needed for NR-3080 while rotating. Air bearing mechanism is built in NRA-5080 to speed up to 80,000 min<sup>-1</sup>.

### ● Safety Relay is installed as Standard Equipment

The safety relay utilizes normally open contacts. The emergency stop signal lines must be supplied with power to hold the safety relay contacts closed and allow the control unit to supply power to the motor. Any system errors, trouble with the machining center or the connections between the ASTRO-E 800Z control unit and the machining center's controller will cause the relay contacts to open and the ASTRO-E 800Z motor or stop.

### ● Overload Protection System

The control unit constantly monitors the motor conditions, and will cut power in the event of a motor overload. The system will alert the operator by an error code output.

### ● Dual Voltage 115V/230V AC Power Source

The control unit is compatible with 115V-230V main supply voltage and is equipped with a switch for voltage selection. Verify that voltage selection, power cord and fuse type are compatible with supply voltage prior to connecting to power supply.

### ● LED Load Monitor

6 LED load monitor allows the operator to easily assess operating conditions. Continuous Duty (3 Green LEDs), Intermittent Duty (2 Yellow LEDs), Overload (1 Red LED). If the system is operated in overload for more than 15 seconds, the overload protection system will activate and interrupt power to the motor.

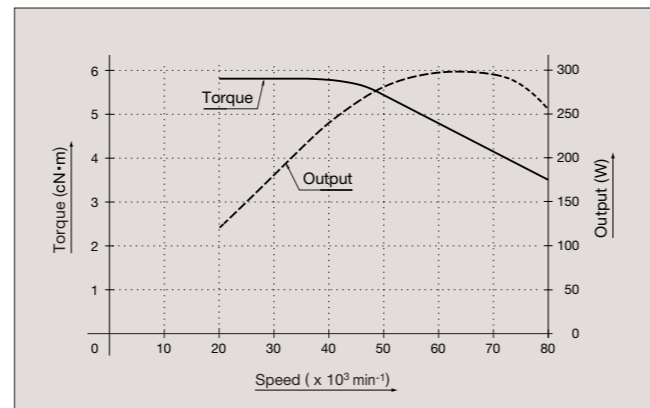
### ● Front panel can be detached (Option)

Front panel can be detached and extended to your control unit with 'an optional control panel extension cord' (Max. 4 m length)

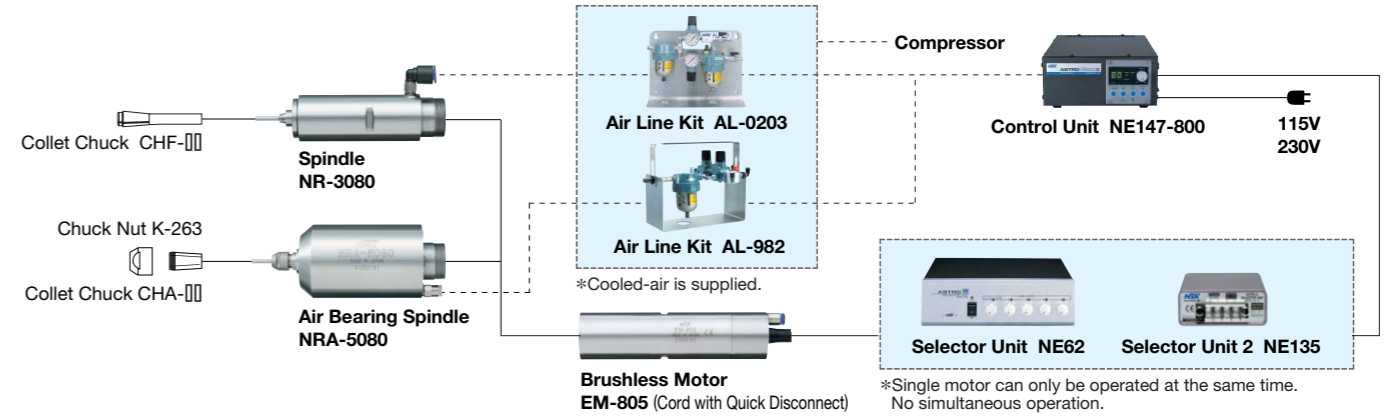
### ● Incorporates all the functions of the ASTRO-E 800 system.

All of the functions of the ASTRO-E 800 system have been incorporated into the new ASTRO-E 800Z.

### ● Torque Characteristics of ASTRO-E 800Z



## ASTRO-E 800Z System Chart



## ASTRO-E 800Z Combination Example

80,000 min<sup>-1</sup>



### Unit Specifications

Model	NE147-800
Power Source	AC 115V/230V Switchable type
Power Consumption	180W
Weight	5.8 kg
Dimensions	W210 x D290 x H97 mm

### Motor & Spindle

Motor	EM-805
Spindle	NR-3080
Speed	20,000~80,000 min <sup>-1</sup>
Weight	1,263 g (w/cord)
Dimensions	ø30.0 x 193 mm

< Optional >

Air Line Kit (AL-0203) ..... For Control Unit (NE147-800)  
 ..... For Spindle (NR-3080)

### ASTRO-E 800Z, EM-805, NR-3080 Combination Example

CAT. No.	Model	Product
9789 (115V)	NE147-800	Control Unit
9067	EM-805	Brushless Motor
9057	NR-3080	Spindle

## Bracket attachment example ... for rack mount



Horizontal Mounting Brackets  
(Bracket : CAT. No. 8410)

Vertical Mounting Brackets  
(Bracket : CAT. No. 8412)

Suspended Mounting Brackets  
(Bracket : CAT. No. 8413)

\*Mounting Brackets are available as optional accessories. (Refer to 2-p22)  
 \*Refer to 2-p4 about "Dimensions of attachment".

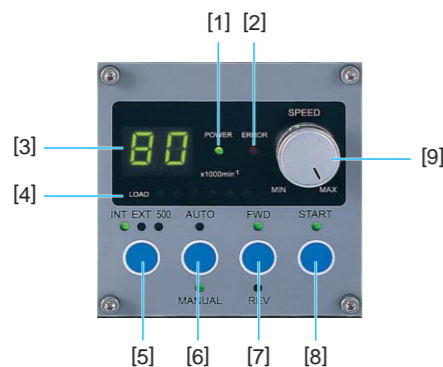
## High Precision and High-Performance Control Unit

- **High-Performance Electric Circuit**  
 High grade feedback loop to maintain constant spindle speed even if load is varied, and Gentle start/Quick stop functions are provided.
- **Error Function**  
 Motor/Spindle is stopped safety, Error LED is lit, and Error Signal is output to external when there is something wrong with the motor/spindle, or any breakage is detected. ex.) Overheat/Overload operation, Air shortage
- **External Input-Output Connector**  
 (Refer to Technical Data p2~p6 in detail)  
 Motor/Spindle can be controlled and monitored by external input-output connector. Control : Start/Stop, Motor Speed Control, FWD./REV. Rotation and etc. Monitor : While Rotating, Rotation Pulse, Unit Power Source Detection, AUTO Mode, Motor Speed Voltage and etc.
- **Motor Speed Display**  
 Motor speed is displayed precisely and digitally.
- **LOAD Monitor LED**  
 Motor load is displayed by 6 LEDs to mean load level.

## ASTRO-E 800Z CONTROL UNIT NE147-800 80,000 min<sup>-1</sup>

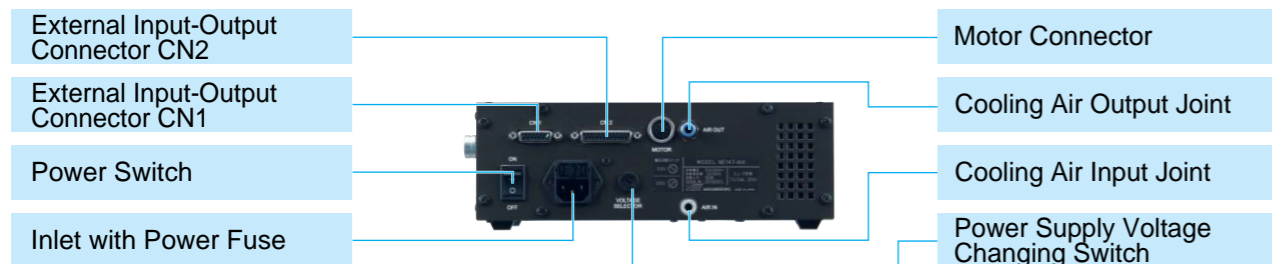
- **Overload Protection System** ensures safe operation and stops the motor in case of overload.
- **LED overload warning.** If the system is operated in overload for more than 15 seconds the overload protection system will activate and interrupt power to the motor. (The stop signal can be output outside)
- **500 min<sup>-1</sup> operation for centering.** ([5] Motor Speed Control Select Switch)

- [1] Power LED
- [2] ERROR LED (ERROR)
- [3] Motor Speed Display (SPEED)
- [4] Load Situation LED\*
- [5] Motor Speed Control Select Switch
- [6] Control Switch (AUTO/MANUAL)
- [7] Motor Rotation Direction Control Switch (FWD./REV.)
- [8] START Switch (START)
- [9] Motor Speed Control Knob



**Specifications**  
 Model : NE147-800  
 Power Source : AC 115V/230V (switchable type)  
 50-60 Hz  
 Power Consumption : 180W  
 Weight : 5.8 kg  
 Dimensions : W210 x D290 x H97 mm

\* : Load Situation LED  
  
 LOAD   
 : Continuous load area  
 : Intermittent load area  
 : Overload



### ASTRO-E 800Z Control Unit

CAT. No.	Model	Standard Equipment & Accessories
9789 (115V)	NE147-800	¥ Power Cord ¥ Air Hose with filter (K-251) : φ6 mm x 2 m ¥ Reducer ¥ Clamp Core ¥ Fuse
9790 (230V)		

\*Please refer to Technical Data p2-p6 in detail about External Input-Output Connector.

## ASTRO-E SELECTOR UNIT NE62 for 40,000 á 50,000 á 80,000 min<sup>-1</sup>

Up to 5 motors can be connected to Selector Unit NE62 providing individual control of each motor. (Multiple motors can not be operated simultaneously.)



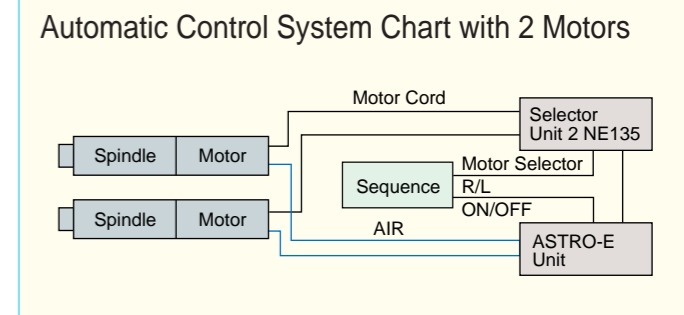
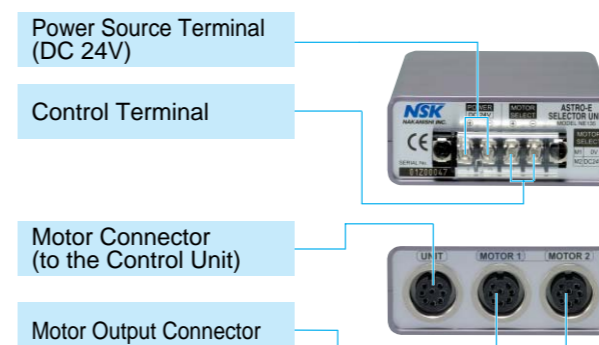
Specifications Model : NE62 / Power Source : AC115V/230V, 50-60 Hz / Power Consumption : 7W / Weight : 3.6 kg / Dimensions : W301 x D262 x H97 mm

### ASTRO-E Selector Unit

CAT. No.	Model	Standard Equipment & Accessories
9933 (115V)	NE62	¥ Power Cord ¥ Cord with Plug ¥ Air Coolant Hose ¥ Bracket
9934 (230V)		

## CAT. No. 8219 ASTRO-E SELECTOR UNIT 2 NE135 for 40,000 á 50,000 á 80,000 min<sup>-1</sup>

By connecting Selector Unit 2 NE135 to the control unit, 2 motors are able to control individually. (Two motors can not be operated simultaneously.)



Specifications Model : NE135 / Power Source : DC24V / Power Consumption : 7W / Weight : 265 g / Dimensions : W75 x D111 x H30 mm

### ASTRO-E Selector Unit 2

CAT. No.	Model	Standard Equipment & Accessories
8219	NE135	¥ Cord with 8 pin plug ¥ Air Hose Adaptor

# “ASTRO-E 800Z” BRUSHLESS MOTOR & SPINDLE

1  
E-max  
ROTUS  
ESPERT  
VIVA-MATE 3  
PNEU-SONIC  
IMPULSE  
PRESTO MIRACLE  
SHEENUS  
SONIC CUTTER

1  
E-max  
ROTUS  
ESPERT  
VIVA-MATE 3  
PNEU-SONIC  
IMPULSE  
PRESTO MIRACLE  
SHEENUS  
SONIC CUTTER

2  
ASTRO-E 500Z  
ASTRO-E 800Z  
ASTRO-E 2550  
ASTRO-E 250  
ASTRO-E 6040

3  
ASTRO SYSTEM  
ø22.8  
ø25  
ø30  
ASTRO SERIES  
ø19.05  
ø20  
ø23  
ø25  
HIGH OUTPUT

4  
ABS

5  
ASTRO-X

6  
PS · PSA  
PST  
TECHNICAL DATA

7  
HES  
SMS  
HTS  
BANTAM  
PLANET

8  
FALCON

9  
AIR LINE KIT

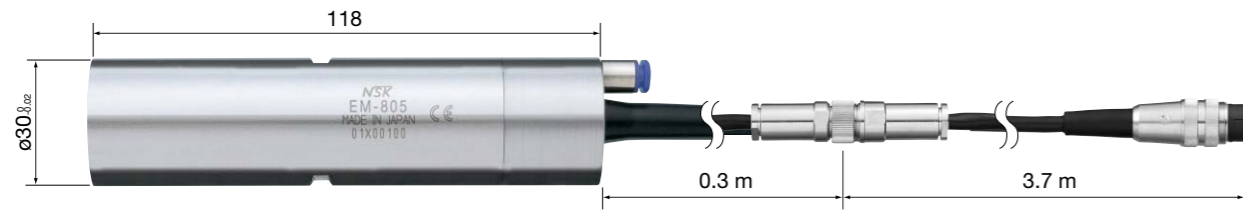
10  
PARTS

11  
APPLICATION EXAMPLES  
TECHNICAL DATA

ASTRO-E 800Z can be used in conjunction with water or oil based coolants.

\*Do not exceed the allowable motor speed for the spindle.

## CAT. No. 9067 BRUSHLESS MOTOR EM-805 (Cord with Quick Disconnect) 80,000 min<sup>-1</sup>



- Motor Speed ..... 20,000~80,000 min<sup>-1</sup> [20,000 min<sup>-1</sup> or less for centering rotation.]
- Max. Output Power ..... 300W
- Housing ..... Stainless steel (SUS416)
- Cord with Quick Disconnect ..... Length 4 m
- Air Coolant Hose ..... Length 4 m
- Weight ..... 843 g (w/cord)

### Brushless Motor

CAT. No.	Model	Standard Equipment · Accessories
9067	EM-805	<ul style="list-style-type: none"> <li>• Cord with Quick Disconnect</li> <li>• Air Coolant Hose : 4 m</li> <li>• Reducer</li> <li>• Spanner (22 x 27) : 1 pc.</li> </ul>

\*Each motor cord 5, 6, 8 m is available.

## CAT. No. 9057 SPINDLE NR-3080 80,000 min<sup>-1</sup>

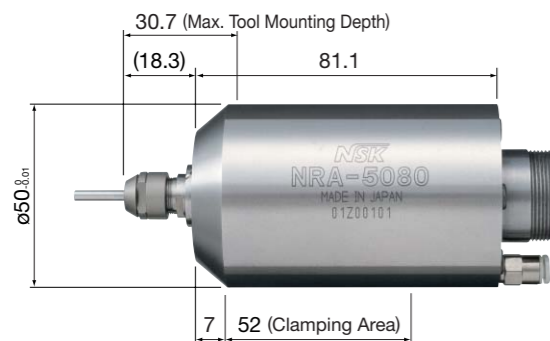


- Allowable Motor Speed ..... 80,000 min<sup>-1</sup>
- Spindle Accuracy ..... Within 1 μm
- Standard Size Collet Chuck (CHF-3.0) ..... ø3.0 mm
- Weight ..... 420 g
- < Optional >
- Collet Chuck (CHF-□□) ..... ø3.0, ø3.175 mm

### Spindle

CAT. No.	Model	Standard Equipment · Accessories
9057	NR-3080	<ul style="list-style-type: none"> <li>• Collet Chuck ø3.0 mm (CHF-3.0)</li> <li>• Air Hose : ø4 mm</li> <li>• Spanner (7 x 5.1), (22 x 27) : 1 pc. each</li> </ul>

## CAT. No. 9058 AIR BEARING SPINDLE NRA-5080 80,000 min<sup>-1</sup>



- Allowable Motor Speed ..... 80,000 min<sup>-1</sup>
- Spindle Accuracy ..... Within 1 μm
- Standard Size Collet Chuck (CHA-3.0) ..... ø3.0 mm
- Weight ..... 960 g
- < Optional >
- Collet Chuck (CHA-□□) ..... ø0.5 mm~ø4.0 mm in 0.1 mm increments and ø2.35, ø3.175 mm
- Chuck Nut (K-263) ..... For Collet Chuck (CHA)

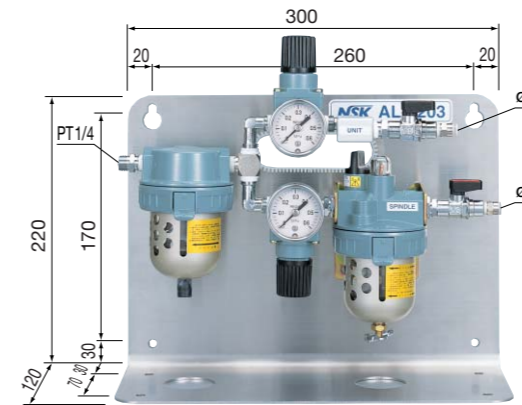
### Air Bearing Spindle

CAT. No.	Model	Standard Equipment · Accessories
9058	NRA-5080	<ul style="list-style-type: none"> <li>• Collet Chuck ø3.0 mm (CHA-3.0)</li> <li>• Chuck Nut (K-263)</li> <li>• Air Hose : ø4 mm</li> <li>• Spanner (8 x 5), (10 x 10), (20 x 27) : 1 pc. each</li> <li>• Bar Wrench (K-236) : 1 pc.</li> </ul>

- This air bearing type spindle incorporates an air pressure bearing that floats the spindle resulting in almost no vibration and extremely high accuracy for extremely high precision machining.
- The adoption of air bearing made it the maintenance free.
- \* Air line kit AL-982 is recommendable as air supply system.

# “ASTRO-E 800Z” AIR LINE KIT, REDUCER & OIL

## CAT. No. 9066 AIR LINE KIT AL-0203

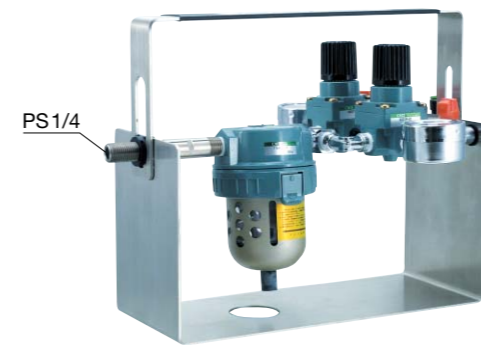


- The AL-0203 is the air supply unit provided as the standard set for ASTRO-E 800Z. Control Unit NE147-800 supplies clean air and atomized oil to the Spindle NR-3080 at the same time.

### Air Line Kit (Filter Mesh 0.3 μm)

CAT. No.	Model	Standard Equipment · Accessories
9066	AL-0203	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Lubricator</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-260) : 2 m</li> <li>• Lubricating Oil (K-211) : 1 pc.</li> </ul>

## CAT. No. 1227 AIR LINE KIT AL-982



- The AL-982 is an air supply unit for air bearing spindle “NRA-5080” and control unit “NE147-800”. Supply air to “NRA-5080” first, and rotate motor only after spindle is floated. When stopping the motor, you must supply air to the spindle until the motor stops completely.

### Air Line Kit (For ø6 mm Hose · Filter Mesh 5 μm)

CAT. No.	Model	Standard Equipment · Accessories
1227	AL-982	<ul style="list-style-type: none"> <li>• Air Filter</li> <li>• Air Regulator</li> <li>• Air Pressure Gauge</li> <li>• Air ON-OFF Valve</li> <li>• Hose for Piping (K-260) : 2 m</li> </ul>

## CAT. No. 1544 REDUCER (ø6 - ø4 Adaptor)



### Reducer

CAT. No.	Model	Specifications
1544	Reducer	• ø6 - ø4 Adaptor

## LUBRICATING OIL

- Use ISO VG15 Liquid Paraffin (Shell Ongina oil #15) for lubricator.

### Lubricating Oil (70 cc)

CAT. No.	Model	Product
1057	K-211	




### Lubricating Oil (1L)

CAT. No.	Model	Product
1058	K-202	


# “ASTRO-E 800Z” PARTS

1
E-max
ROTUS
ESPERT
VIVA-MATE 3
PNEU-SONIC
IMPULSE
PRESTO MIRACLE
SHEENUS
SONIC CUTTER
2
ASTRO-E 500Z
ASTRO-E 800Z
ASTRO-E 2550
ASTRO-E 250
ASTRO-E 6040
3
ASTRO SYSTEM
φ22.8
φ25
φ30
ASTRO SERIES
φ19.05
φ20
φ23
φ25
HIGH OUTPUT
4
ABS
5
ASTRO-X
6
PS · PSA
PST
TECHNICAL DATA
7
HES
SMS
HTS
BANTAM
PLANET
8
FALCON
9
AIR LINE KIT
10
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11
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TECHNICAL DATA


## ■ Bracket

Product	CAT. No.	Model	Description / Specifications	Fit to
	8410	BRB-4	Horizontal Mounting Brackets (4 pcs. / set)	NE147 · NE147-800 · NE147-400
	8412	BRB-2	Vertical Mounting Brackets (2 pcs. / set)	NE147 · NE147-800 · NE147-400
	8413	BRC-4	Suspended Mounting Brackets (4 pcs. / set)	NE147 · NE147-800 · NE147-400


## ■ Control Panel Extension Cord

Product	CAT. No.	Model	Description / Specifications	Fit to
	8411	PEX-4	Control Panel Extension Cord Assembly (4 m)	NE147 · NE147-800 · NE147-400

## ■ AC Power Socket

Product	CAT. No.	Model	Description / Specifications	Fit to
	8414	AC-SO3	AC Power Socket No cord common used for 115V and 230V Socket for 3 cores cable	NE147 · NE147-800 · NE147-400

## ■ Power Cord Retaining Bracket

Product	CAT. No.	Model	Description / Specifications	Fit to
	8409	AC-STP1	Power Cord Retaining Bracket For 115V	NE147 · NE147-800 · NE147-400
	8408	AC-STP2	Power Cord Retaining Bracket For 230V	



Power Cord Retaining Bracket Attachment Example  
\*These Brackets are not available for AC Power Socket.

## ■ Dsub Connector (Purchase specified connectors from outside source.)

### ● Outside input-output connector CN1

- Available plug product No. : XM2A-1501 (Dsub Connector Plug, 15 poles type, male) / made in OMRON CORP. (or equivalent product)
- Available hood product No. : XM2S-1511 (Dsub Connector Hood, 15 poles type) / made in OMRON CORP. (or equivalent product)
- Available product No. : NEDJ-P-A-15-2.0 (Dsub connector standard harness, 15 pins, male) / made in MISUMI CORP. (or equivalent product)  
[Connector with 2 m cable]

### ● Outside input-output connector CN2

- Available plug product No. : XM2A-2501 (Dsub Connector Plug, 25 poles type, male) / made in OMRON CORP. (or equivalent product)
- Available hood product No. : XM2S-2511 (Dsub Connector Hood, 25 poles type) / made in OMRON CORP. (or equivalent product)
- Available product No. : NEDJ-P-A-25-2.0 (Dsub connector standard harness, 25 pins, male) / made in MISUMI CORP. (or equivalent product)  
[Connector with 2 m cable]

1
E-max
ROTUS
ESPERT
VIVA-MATE 3
PNEU-SONIC
IMPULSE
PRESTO MIRACLE
SHEENUS
SONIC CUTTER
2
ASTRO-E 500Z
ASTRO-E 800Z
ASTRO-E 2550
ASTRO-E 250
ASTRO-E 6040
3
ASTRO SYSTEM
φ22.8
φ25
φ30
ASTRO SERIES
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