

# Flex-40B

The BL QUICK-CHANGE Model Flex-40B is a device for automatic tool changing, designed to enable robots and automated equipment to automatically change end-effectors or other peripheral tooling. A ball-locking mechanism allows for high coupling force and increased moment. To meet your specific application requirements, such as material handling, assembly and deburring, you may select various options in pneumatic ports and electrical contacts, including motor-driving ampere capacity.

## Various Range of Utilities

The system can be structured to meet individual customer applications by varying the size and number of electrical contacts and pneumatic ports.

## Lock without touching

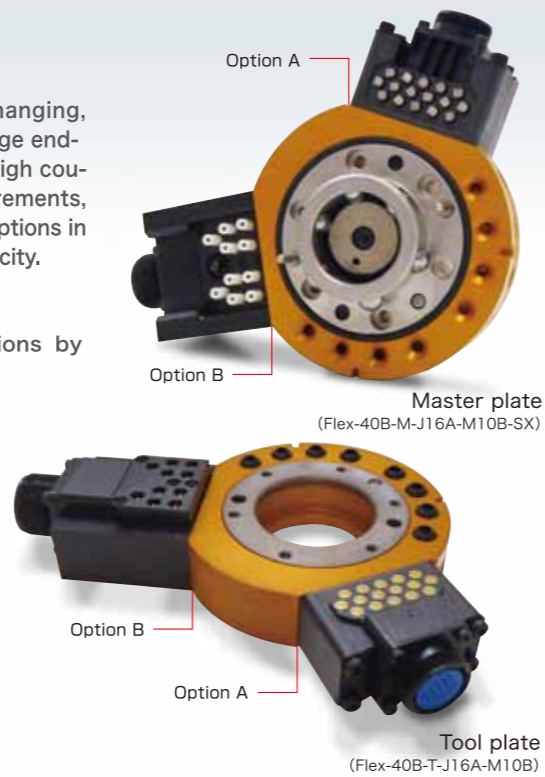
The Master plate can lock onto the Tool plate with a gap between them.

## Superior fail-safe locking mechanism

BL's unique lock/unlock mechanism contains a mechanical fail-safe feature which does not allow the Master and Tool plates to uncouple if the air pressure is shut off.



**Master plate Attachments**  
 • 6 bolts (M5×35)  
 • 1 locating pin  
 ※ Seal plate, O-ring and screws are pre-assembled.



## Specifications

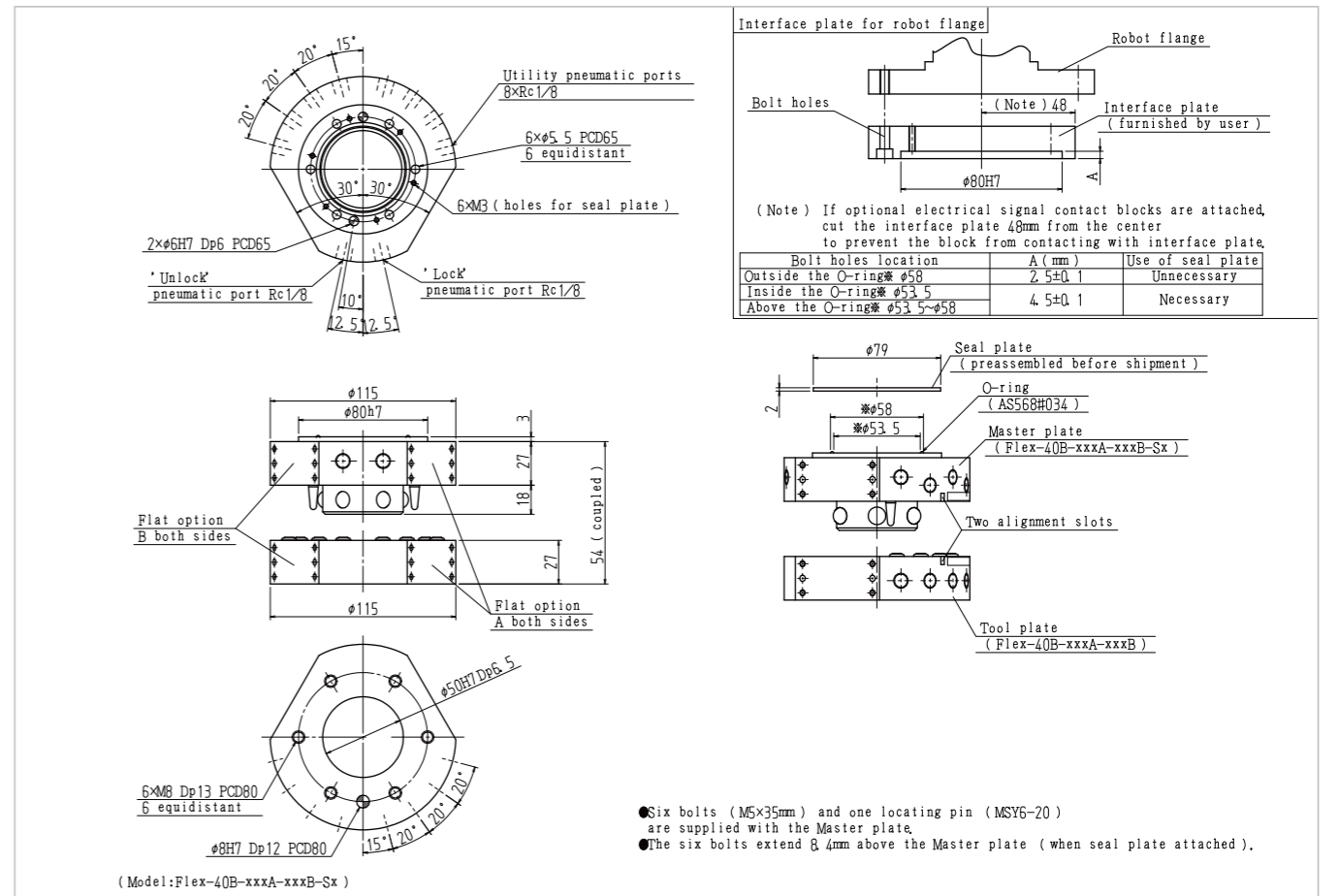
| Main Body                                        |                                       |                 |
|--------------------------------------------------|---------------------------------------|-----------------|
| Load capacity (rated load)                       | 392N(40kg)                            |                 |
| Positional repeatability                         | ±0.015mm                              |                 |
| Allowable dynamic moment                         | Bending direction (Tx, Ty)            | 314N·m(32kgf·m) |
|                                                  | Twisting direction (Tz)               | 430N·m(44kgf·m) |
| Coupling force (with air pressure of 0.49MPa) ※1 | 4,000N(408kgf)                        |                 |
| Materials                                        | Frame                                 | Aluminum alloy  |
|                                                  | Lock/unlock mechanism                 | Stainless steel |
| Overall dimension (when coupled)                 | φ                                     | 115×H57mm       |
|                                                  | Weight (Main body)                    | 1,140g          |
| Weight (Main body)                               | Master plate                          | 1,140g          |
|                                                  | Tool plate                            | 610g            |
| Self-separating mechanism                        | Ball-locking mechanism                |                 |
| Required air pressure                            | 0.39~0.68MPa(4~7kgf/cm <sup>2</sup> ) |                 |
| Allowable temperature and humidity ranges        | 0~50°C, 35~90% (Non-condensing)       |                 |
| Utilities                                        | Pneumatic ports                       | Rc1/8×8         |

| Options   |                                                    |                                                                                                    |                                                        |
|-----------|----------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Utilities | D15A<br>D15B                                       | Electrical signals<br>Max3A DC50V<br>Probe contact                                                 | 3A×15 2                                                |
|           | J16A<br>J16B                                       | Electrical signals<br>Max5A DC/AC200V<br>Probe contact                                             | 5A×16 本 3 4                                            |
|           | M10A<br>M10B                                       | Electrical signals<br>Max13A DC250/AC200V<br>Insertion contact                                     | 13A×10 3 5                                             |
|           | A16A<br>A16B                                       | Electrical signals<br>Max5A DC/AC200V<br>Probe contact                                             | Approach sensor<br>5A×16 3 4                           |
|           | A08A<br>A08B                                       | Electrical signals<br>Max13A DC250/AC200V<br>Insertion contact                                     | Approach sensor<br>13A×8 3 5                           |
|           | B15NA<br>B15NB<br>B15PA<br>B15PB<br>B15DA<br>B15DB | Electric signals<br>Max.50mA DC24V<br>Non-contact system<br>(Please refer to page 41 for details.) | 50mA×15<br>WEB series connector 3<br>In Zone 1<br>IP67 |
|           | P18A, P18B<br>P14A, P14B                           | Pneumatic ports                                                                                    | Rc1/8×4<br>Rc1/4×2                                     |
|           | Lock/unlock sensor                                 | 6                                                                                                  | Two built-in proximity switches                        |

## Flex-40B Ordering Information

|              |                     |            |            |                      |
|--------------|---------------------|------------|------------|----------------------|
| Master plate | <b>Flex-40B -M-</b> | (Option A) | (Option B) | (Lock/unlock sensor) |
| Tool plate   | <b>Flex-40B -T-</b> | (Option A) | (Option B) |                      |
|              |                     | XXXX       | XXXX       | SX                   |
|              |                     | D15A       | D15B       | SA                   |
|              |                     | J16A       | J16B       | SB                   |
|              |                     | M10A       | M10B       |                      |
|              |                     | B15NA      | B15NB      |                      |
|              |                     | B15P       | B15D       |                      |
|              |                     | A16A       | A16B       |                      |
|              |                     | A08A       | A08B       |                      |
|              |                     | P18A       | P18B       |                      |
|              |                     | P14A       | P14B       |                      |

## Main Body Dimensions



## Options

### Electrical signal contact block

**D15A, D15B**  
 3A×15 D-sub 15 contacts (female receptacles) 2  
 Plug side is DDK, 17JE-23150-02 (DBA) CG, or its equivalent.

**J16A, J16B**  
 5A×16 (JM connector) 3 4  
 Use JMR2116M-D for the J16A master side  
 Use JMR2116F-D for the J16A Tool side  
 Use JMR2116MX-D for the J16B Master side  
 Use JMR2116FX-D for the J16B Tool side

**M10A, M10B**  
 13A×10 (MS connector) 3 5  
 Use D/MS3102A18-1P for the M10A master side  
 Use D/MS3102A18-15 for the M10A Tool side  
 Use D/MS3102A18-19P for the M10B Master side  
 Use D/MS3102A18-19S for the M10B Tool side

**A16A, A16B**  
 Approach Sensor 5A×16 (JM connector) 3 4  
 Use JMR2119M-D for the A16A master side  
 Use JMR2116F-D for the A16A Tool side  
 Use JMR2119MX-D for the A16B Master side  
 Use JMR2116FX-D for the A16B Tool side

**A08A, A08B**  
 Approach Sensor 13A×8 (MS connector) 3 5  
 Use D/MS3102A18-1P for the A08A master side  
 Use D/MS3102A18-15 for the A08A Tool side  
 Use D/MS3102A18-19P for the A08B Master side  
 Use D/MS3102A18-19S for the A08B Tool side

### Non-contact electric signal block

**B15NA/B, B15PA/B (Master side only)**  
**B15DA/B (Tool side only)**  
 B15NA/B NPN output  
 B15PA/B PNP output  
 Receptacle connector: WEBR-2119S-D for B15NA/B and B15PA/B  
 Receptacle connector: WEBR-2119FS-D for B15DA/B

### Pneumatic ports

**P18A, P18B**  
 Rc1/8×4

**P14A, P14B**  
 Rc1/4×2

### Lock/unlock sensor

**SA, SB**  
 Two built-in proximity switches verify piston position, thus reliably checking the lock and unlock status.

Please contact BL Autotec, Ltd. for detailed information on the options.

※1 Coupling force is the force to achieve specified repeatability. Coupling will be maintained until unlock pressure is applied or the device is damaged. ※2 User to provide connector plugs (17JE-23150-02(DBA)-CG or the equivalent). ※3 Plug is not included. Please see the table on page 46 for connectors. ※4 Allowable current is total 30.4A for connector. ※5 Allowable current is total 57.2A for connector. ※6 An option is available on the electric signal contact block (J16A, M10A, A16A, A08A) to connect the Lock/unlock proximity switch signal. Please contact us for additional information.

Next-Generation Robots  
 ZEUS  
 GIGA  
 Automatic Tool Changer  
 1kg  
 5kg  
 10kg  
 20kg  
 40kg  
 60kg  
 70kg  
 100kg  
 150kg  
 220kg  
 300kg  
 Press Handling Specification  
 100kg  
 Spot-Welding Gun-Changer  
 300kg  
 Options  
 Wire-Saving module / Contact Block  
 Non-contact electric signal block  
 A mechanical safety valve prevents Tool plate drops  
 Option List  
 Product Overview  
 Rotary Joint  
 PN-ZERO Series  
 Wrist Compliance  
 FCC DEVICE / LDM-FCC DEVICE  
 Couple Joint  
 CJ2