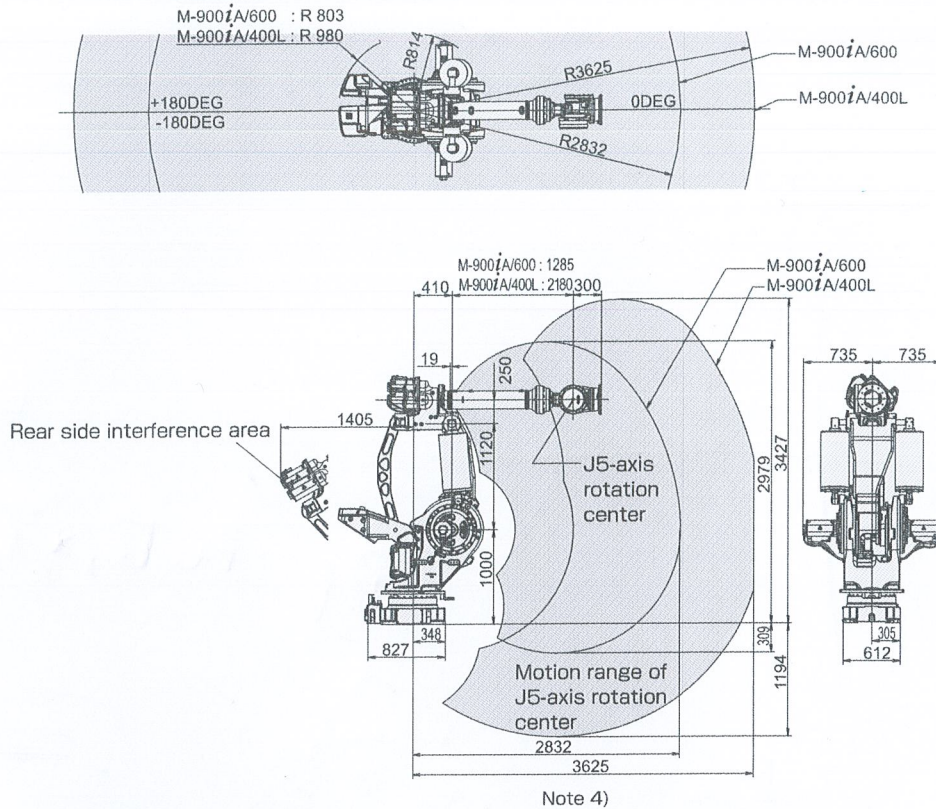


## Operating space (M-900iA/600, /400L)



## Specifications

| Item                                       |                        | Specifications                                                                                                                                                                                                     |                                                   |
|--------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
|                                            |                        | M-900iA/600                                                                                                                                                                                                        | M-900iA/400L                                      |
| Type                                       |                        | Articulated Type                                                                                                                                                                                                   |                                                   |
| Controlled axes                            |                        | 6 axes (J1, J2, J3, J4, J5, J6)                                                                                                                                                                                    |                                                   |
| Reach                                      |                        | 2832mm                                                                                                                                                                                                             | 3625mm(Note 4)                                    |
| Installation                               |                        | Floor                                                                                                                                                                                                              |                                                   |
| Motion range<br>(Maximum speed)<br>Note 1) | J1 axis rotation       | 360° (80° /sec)<br>6.28rad (1.40rad/sec)                                                                                                                                                                           |                                                   |
|                                            | J2 axis rotation       | 154° (80° /sec)<br>2.69rad (1.40rad/sec)                                                                                                                                                                           |                                                   |
|                                            | J3 axis rotation       | 160° (80° /sec)<br>2.79rad (1.40rad/sec)                                                                                                                                                                           |                                                   |
|                                            | J4 axis wrist rotation | 720° (100° /sec)<br>12.57rad (1.75rad/sec)                                                                                                                                                                         |                                                   |
|                                            | J5 axis wrist swing    | 244° (100° /sec)<br>4.26rad (1.75rad/sec)                                                                                                                                                                          |                                                   |
|                                            | J6 axis wrist rotation | 720° (160° /sec)<br>12.57rad (2.79rad/sec)                                                                                                                                                                         |                                                   |
| Max. load capacity at wrist                |                        | 600kg (Max 700kg) Note 2)                                                                                                                                                                                          | 400kg                                             |
| Max. load capacity on J3 arm               |                        | 25kg                                                                                                                                                                                                               |                                                   |
| Allowable load moment at wrist             | J4 axis                | 3381N·m<br>345kgf·m                                                                                                                                                                                                | 2744N·m<br>280kgf·m                               |
|                                            | J5 axis                | 3381N·m<br>345kgf·m                                                                                                                                                                                                | 2744N·m<br>280kgf·m                               |
|                                            | J6 axis                | 1725N·m<br>176kgf·m                                                                                                                                                                                                | 1725N·m<br>176kgf·m                               |
| Allowable load inertia at wrist            | J4 axis                | 510kg·m <sup>2</sup><br>5204kgf·cm·s <sup>2</sup>                                                                                                                                                                  | 510kg·m <sup>2</sup><br>5204kgf·cm·s <sup>2</sup> |
|                                            | J5 axis                | 510kg·m <sup>2</sup><br>5204kgf·cm·s <sup>2</sup>                                                                                                                                                                  | 510kg·m <sup>2</sup><br>5204kgf·cm·s <sup>2</sup> |
|                                            | J6 axis                | 320kg·m <sup>2</sup><br>3265kgf·cm·s <sup>2</sup>                                                                                                                                                                  | 320kg·m <sup>2</sup><br>3265kgf·cm·s <sup>2</sup> |
| Drive method                               |                        | Electric servo drive by AC servo motor                                                                                                                                                                             |                                                   |
| Repeatability                              |                        | ±0.3mm                                                                                                                                                                                                             | ±0.5mm                                            |
| Mass Note 3)                               |                        | 2800kg                                                                                                                                                                                                             | 3150kg                                            |
| Installation environment                   |                        | Ambient temperature : 0~45°C<br>Ambient humidity : Normally 75%RH or less (No dew nor frost allowed)<br>Short term 95%RH or less (within one month)<br>Vibration acceleration : 4.9m/s <sup>2</sup> (0.5G) or less |                                                   |

Note 1) In case of short distance motion, the axis speed may not reach the maximum value stated.

Note 2) In case that 700kg option is ordered

Note 3) Without controller

Note 4) When the reach is between 3136mm and 3350mm, CG of the workpiece should be within 30 degrees from the wrist downward direction.

When the reach is over 3350mm, CG of the workpiece should be downward from the wrist.

# 1

## ROBOT INTERFERENCE AREA

### 1.1 External Dimensions

Fig. 1.1(a),(b) show the external dimensions of the robot. When installing peripheral devices, be careful to clear away any objects that are in the robot's motion path in normal operation.

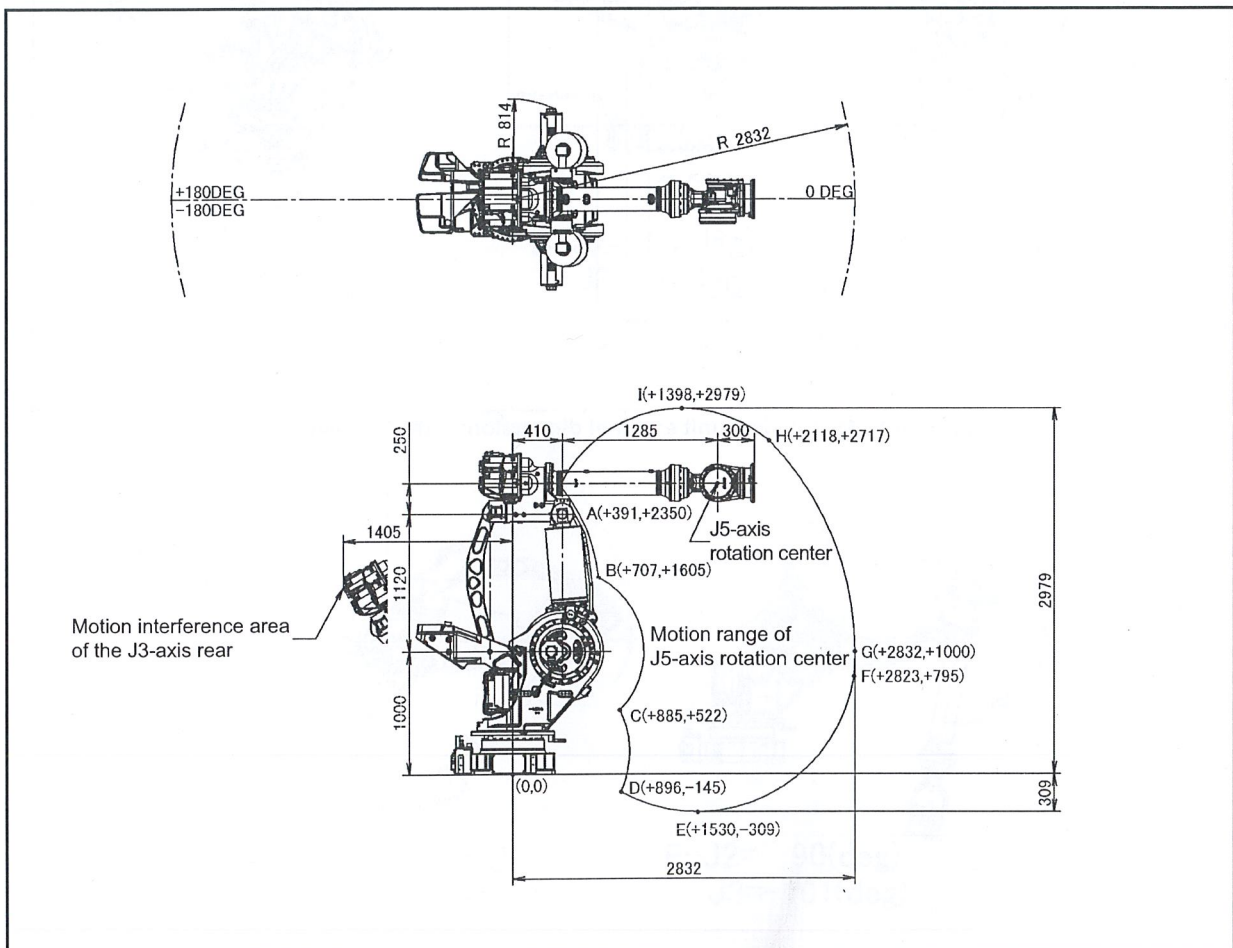
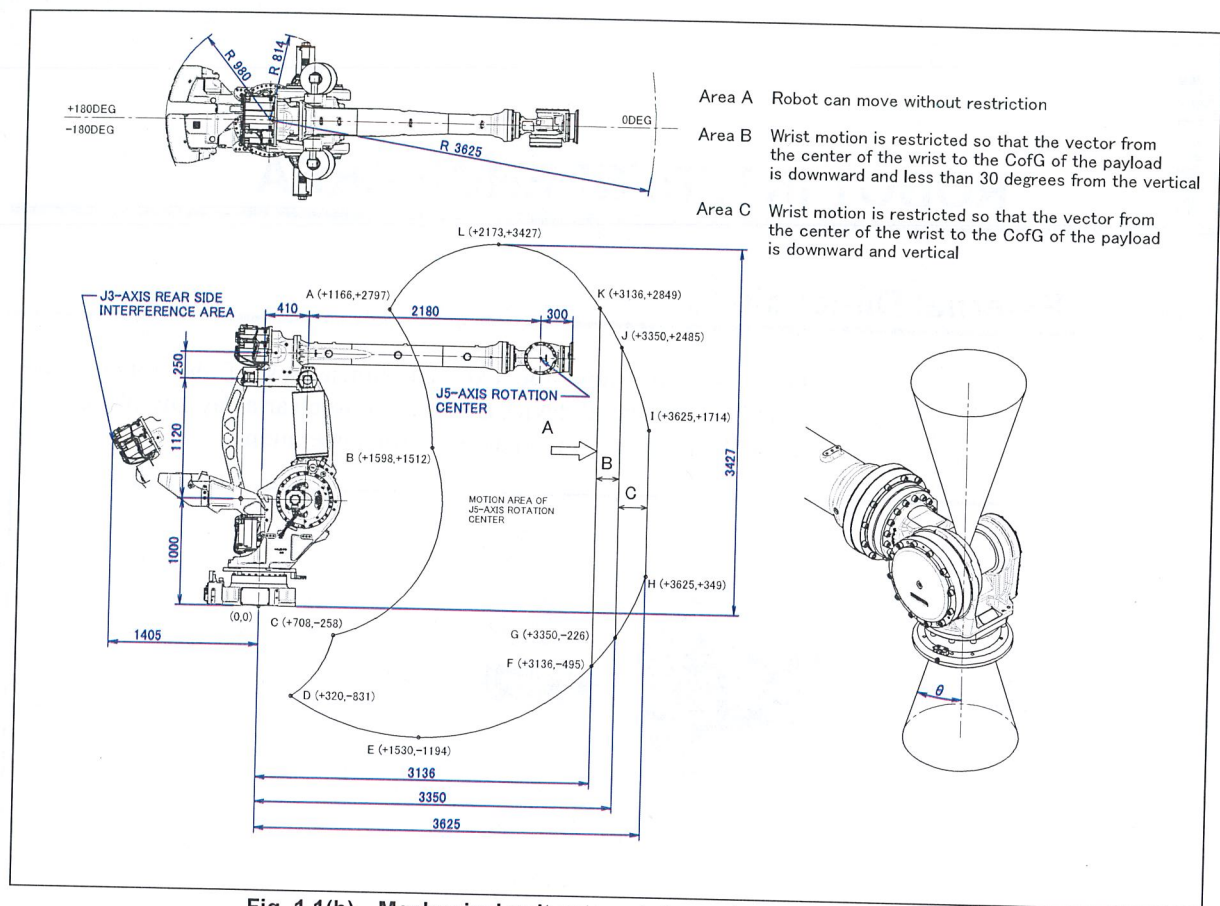


Fig. 1.1(a) Mechanical unit external dimensions (M-900/A/600)



## 1.2 Operation Area

Fig. 1.2 shows the operations area of the robot.

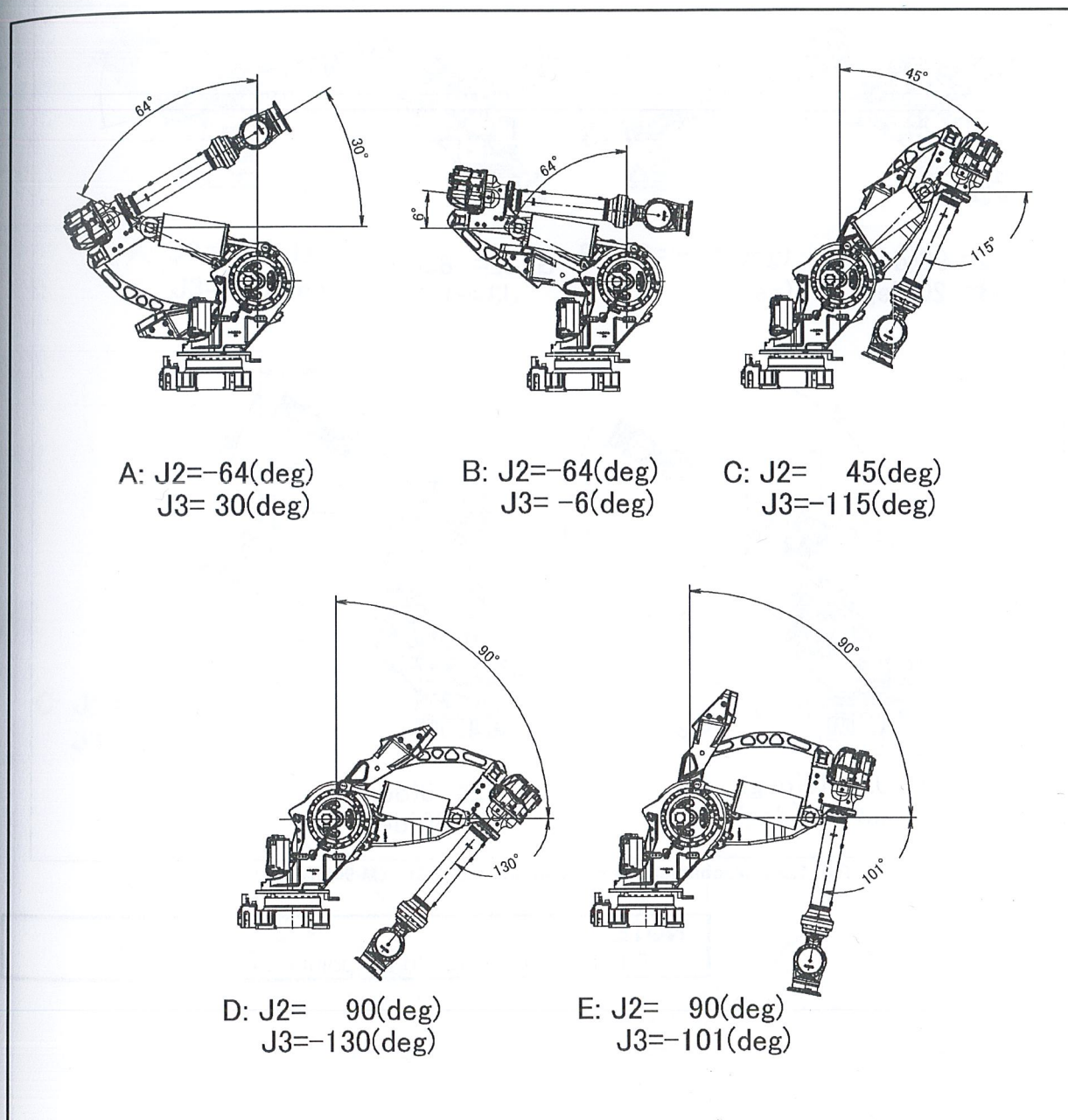


Fig. 1.2(a) Mechanical unit operation area (1/2) (M-900iA/600)

### NOTE

A to E are equivalent to the point A to E of Fig. 1.1

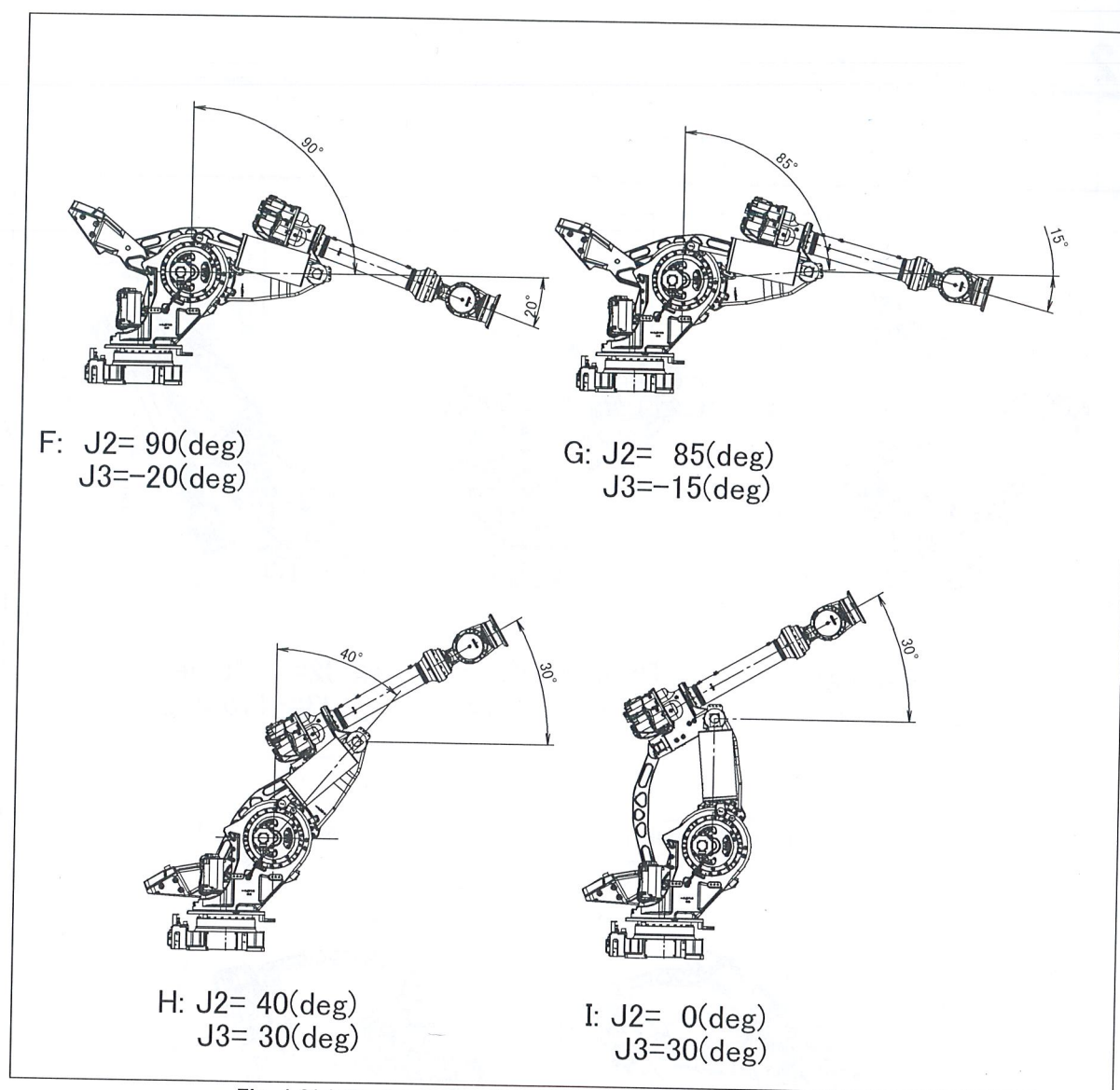
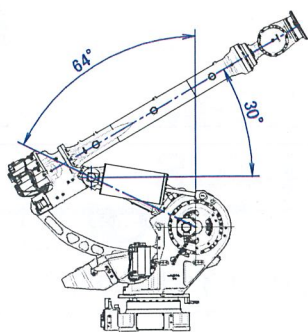


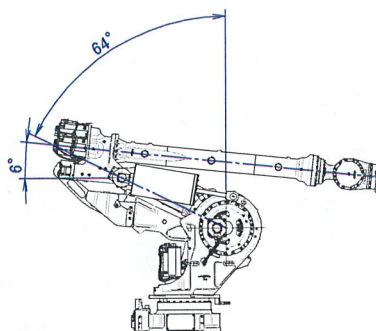
Fig. 1.2(a) Mechanical unit operation area (2/2) (M-900iA/600)

**NOTE**

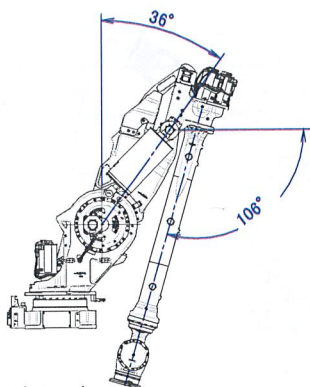
F to I are equivalent to the point F to I of Fig. 1.1.



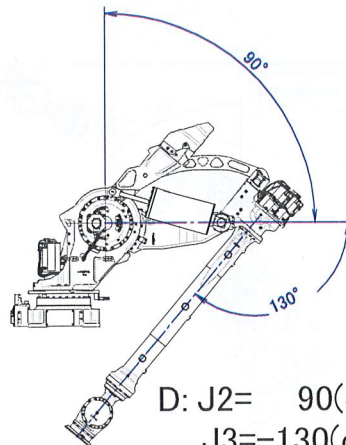
A: J2= -64(deg)  
J3= 30(deg)



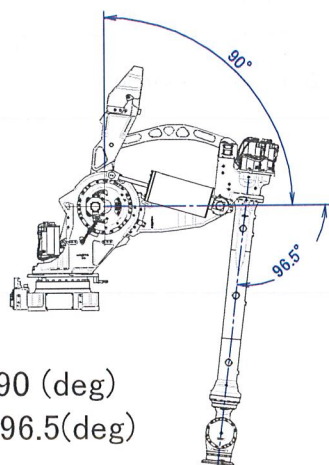
B: J2= -64(deg)  
J3= -6(deg)



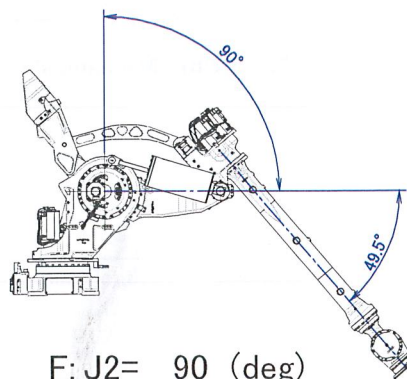
C: J2= 36(deg)  
J3=-106(deg)



D: J2= 90(deg)  
J3=-130(deg)



E: J2= 90 (deg)  
J3= -96.5(deg)



F: J2= 90 (deg)  
J3= -49.5(deg)

Fig. 1.2(b) Mechanical unit operation area (1/2) (M-900iA/400L)

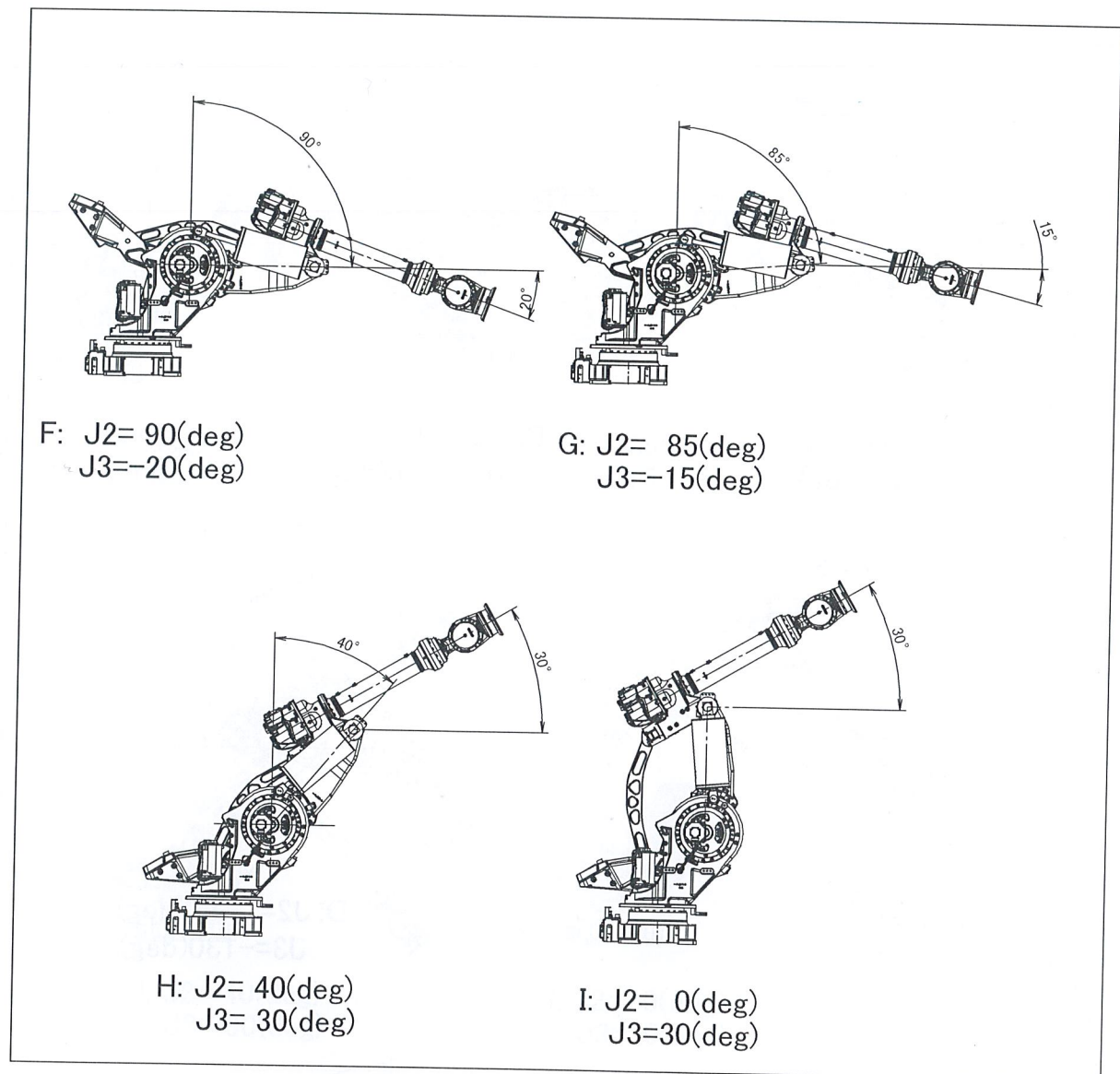


Fig. 1.2(b) Mechanical unit operation area (2/2) (M-900iA/400L)

## 1.2 J2/J3-AXIS DRIVE MECHANISM

Fig. 1.2 shows the J2/J3-axis drive mechanism. Rotation of the J2-axis motor (M2) is fed to the reducer via gear J21, and the output moves the J2-axis arm. Rotation of the J3-axis motor (M3) is fed to the reducer via gear J31, and the output moves the J3-axis arm via the Link1 and Link2.

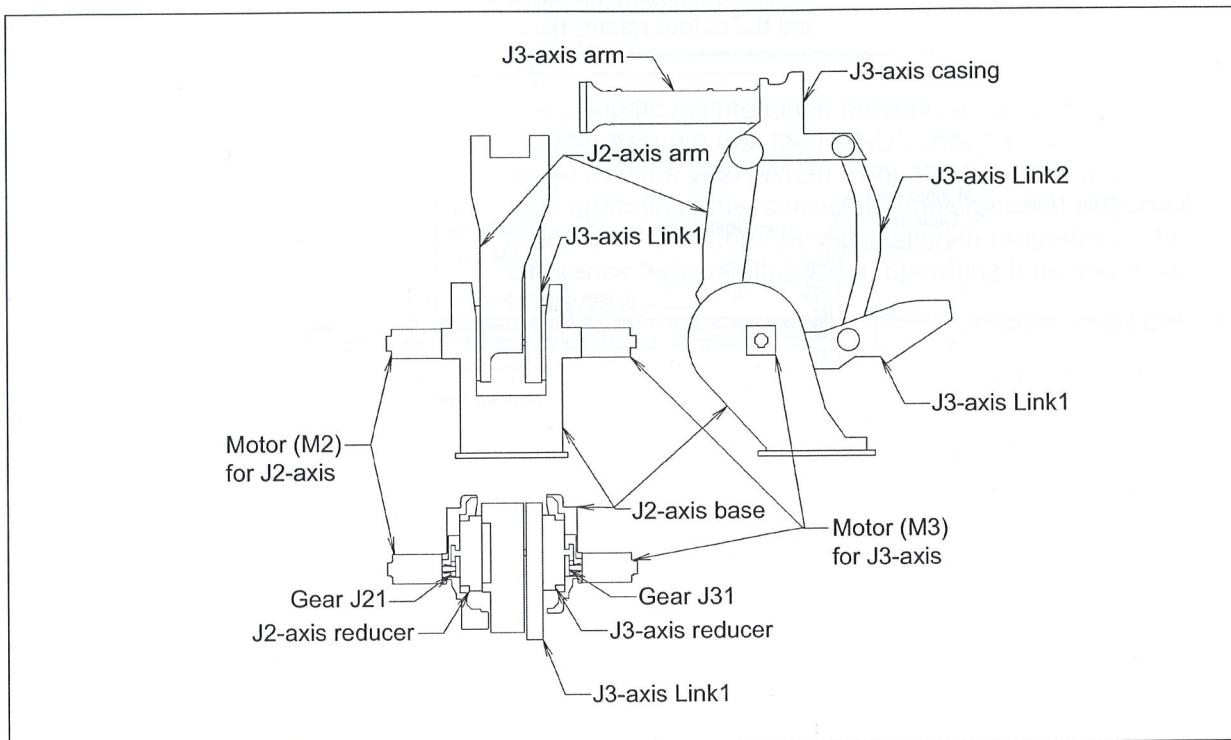


Fig. 1.2 shows the J2/J3-axis drive mechanism.