

Standard specifications

KJ194EFE45
KJ194EVE45

1st Edition : March 21, 2018
2nd Edition : August 10, 2018

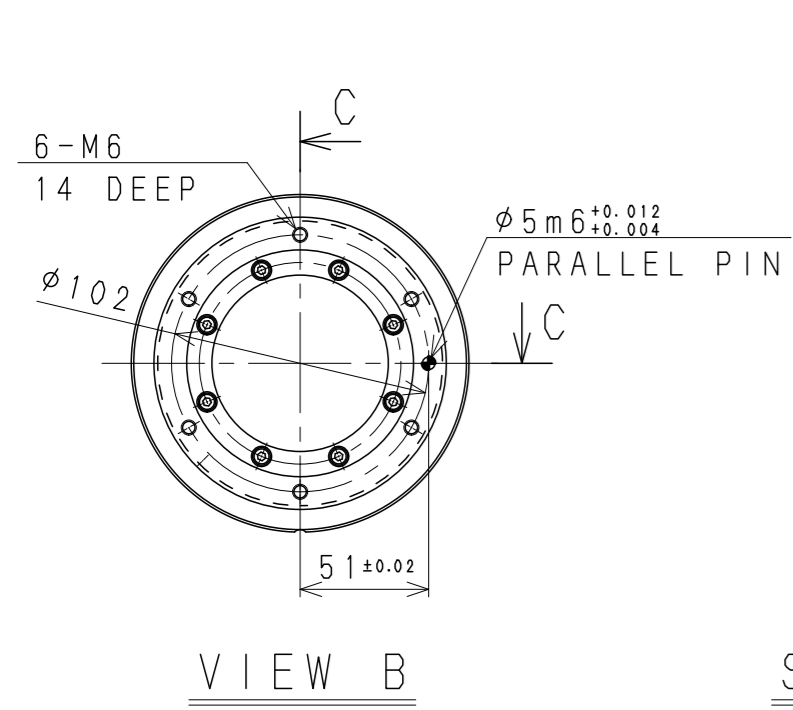
KAWASAKI HEAVY INDUSTRIES, LTD.
ROBOT DIVISION

Specification :	90101-2787DEB
(Arm) :	90151-0097DEC
(Controller) :	90152-0060DEA

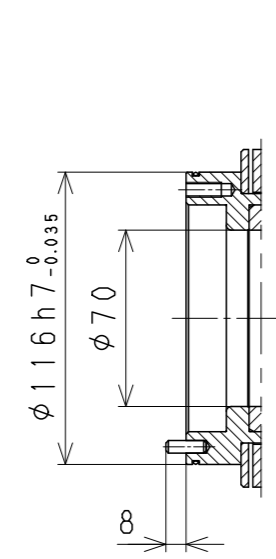
1. Specification of Robot

[1] Robot Arm (KJ194E)																		
1. Model	<table border="1"> <thead> <tr> <th>Installation mode</th> <th>Standard</th> <th>Mirror</th> </tr> </thead> <tbody> <tr> <td>Floor</td> <td>KJ194E-B□</td> <td>KJ194E-B1</td> </tr> <tr> <td>Mounting wall is left side</td> <td>KJ194E-D□</td> <td>KJ194E-D1</td> </tr> <tr> <td>Mounting wall is right side</td> <td>KJ194E-F□</td> <td>KJ194E-F1</td> </tr> <tr> <td>Shelf</td> <td>KJ194E-H□</td> <td>KJ194E-H1</td> </tr> </tbody> </table>	Installation mode	Standard	Mirror	Floor	KJ194E-B□	KJ194E-B1	Mounting wall is left side	KJ194E-D□	KJ194E-D1	Mounting wall is right side	KJ194E-F□	KJ194E-F1	Shelf	KJ194E-H□	KJ194E-H1		
Installation mode	Standard	Mirror																
Floor	KJ194E-B□	KJ194E-B1																
Mounting wall is left side	KJ194E-D□	KJ194E-D1																
Mounting wall is right side	KJ194E-F□	KJ194E-F1																
Shelf	KJ194E-H□	KJ194E-H1																
2. Type	Articulated robot																	
3. Degree of freedom	6 axes																	
4. Axis specification	<table border="1"> <thead> <tr> <th>Operating axis</th> <th>Max. operating range</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Arm rotation (JT1)</td> <td>KJ194E-B□ +120° ~ -120°</td> </tr> <tr> <td>KJ194E-D□ +120° ~ -30°</td> </tr> <tr> <td>KJ194E-F□ +30° ~ -120°</td> </tr> <tr> <td>KJ194E-H□ +120° ~ -120°</td> </tr> <tr> <td>Arm out-in (JT2)</td> <td>+130° ~ -80°</td> </tr> <tr> <td>Arm up-down (JT3)</td> <td>+90° ~ -65°</td> </tr> <tr> <td>Wrist roll (JT4)</td> <td>+720° ~ -720°</td> </tr> <tr> <td>Wrist roll (JT5)</td> <td>+720° ~ -720°</td> </tr> <tr> <td>Wrist roll (JT6)</td> <td>+410° ~ -410°</td> </tr> </tbody> </table>	Operating axis	Max. operating range	Arm rotation (JT1)	KJ194E-B□ +120° ~ -120°	KJ194E-D□ +120° ~ -30°	KJ194E-F□ +30° ~ -120°	KJ194E-H□ +120° ~ -120°	Arm out-in (JT2)	+130° ~ -80°	Arm up-down (JT3)	+90° ~ -65°	Wrist roll (JT4)	+720° ~ -720°	Wrist roll (JT5)	+720° ~ -720°	Wrist roll (JT6)	+410° ~ -410°
Operating axis	Max. operating range																	
Arm rotation (JT1)	KJ194E-B□ +120° ~ -120°																	
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Wrist roll (JT5)	+720° ~ -720°																	
Wrist roll (JT6)	+410° ~ -410°																	
5. Repeatability	±0.5 mm (at the tool mounting surface)																	
6. Max. payload	Wrist : 15 kg Upper arm : 25 kg (on the Upper Arm :Include painting equipments in pressurized compartment)																	
7. Max. painting speed	1500 mm/s (at the center of tool mounting surface)																	
8. Load capacity of wrist	<table border="1"> <thead> <tr> <th></th> <th>Max. torque</th> <th>Moment of inertia*</th> </tr> </thead> <tbody> <tr> <td>JT4</td> <td>56.2 N·m</td> <td>2.19 kg·m²</td> </tr> <tr> <td>JT5</td> <td>43.4 N·m</td> <td>1.31 kg·m²</td> </tr> <tr> <td>JT6</td> <td>22.0 N·m</td> <td>0.33 kg·m²</td> </tr> </tbody> </table> <p>Note * Each value in this table shows allowable payload moment of inertia of JT4/JT5/JT6 when max. allowed torque is applied to each axis. If more detailed data is required for your application, please contact Kawasaki.</p>		Max. torque	Moment of inertia*	JT4	56.2 N·m	2.19 kg·m ²	JT5	43.4 N·m	1.31 kg·m ²	JT6	22.0 N·m	0.33 kg·m ²					
	Max. torque	Moment of inertia*																
JT4	56.2 N·m	2.19 kg·m ²																
JT5	43.4 N·m	1.31 kg·m ²																
JT6	22.0 N·m	0.33 kg·m ²																
9. Driving motor	Brushless AC Servomotor																	
10. Working range	See attached drawing																	
11. Mass	KJ194E-B□ 530 kg (without options) KJ194E-D□, -F□, -H□ 520 kg (without options)																	
12. Color	Munsell 10GY9/1 equivalent																	
13. Installation	KJ194E-B□(Floor) KJ194E-D□(Mounting wall is left side) KJ194E-F□(Mounting wall is right side) KJ194E-H□(Shelf)																	
14. Environment cond.	(Temperature) 0 ~ 40 °C, (Humidity) 35 ~ 85 %, no dew, nor frost allowed																	
15. Explosion proof	Pressurized and intrinsically safe																	
16. Air supply to the manipulator	Clean & dry air : 0.5 Nm ³ /min, 0.4~0.7 MPa Dew point : -17 °C or less at atmospheric pressure. Solid material : 0.01 μm or less Oil content : Mist separation 99.9999% or more																	
17. Options	Adjustable Mechanical Stopper : JT1/JT2/JT3 Painting equipment FGP motor (1 unit can be equipped with) Solenoid valve for painting (up to 3 units can be equipped with) Electro pneumatic converter for painting (up to 3 units can be equipped with) Upper Arm cover																	
18. Others	Consult Kawasaki about maintenance parts and spare parts.																	

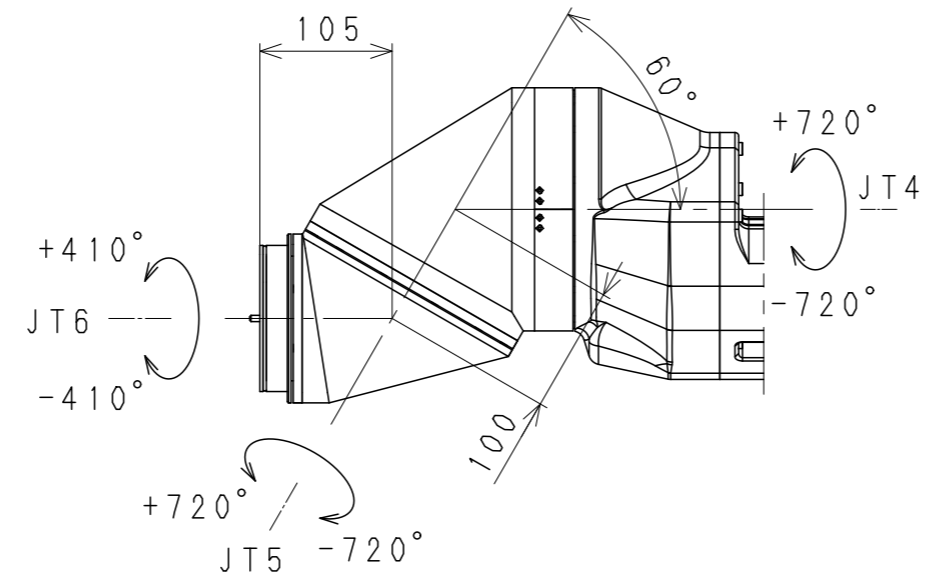
[2] Controller		
1. Model	E45/E47	
2. Enclosure	Enclosed structure / Indirect cooling system	
3. Dimensions	See attached drawing	
4. Number of controlled axes	6 axes 7/8/9 axes(built-in addition, option)	
5. Servo control and drive system	Full Digital Servo System	
6. Type of control	Teach mode	Joint, Base, Tool, Fixed Tool (option) operation mode
	Repeat mode	PTP, CP control mode Joint, Linear, Circular (option) interpolation
7. Teaching method	Teaching or AS language programming	
8. Memory capacity	8 MB	
9. External operation signals	External Motor Power Off, External Hold, etc.	
10. General purpose signals	Input signals	32 channels (Includes dedicated signals)
	Output signals	32 channels (Includes dedicated signals)
11. Operation panel	Basic Operation Switches (Teach/Repeat SW, Emergency Stop SW, Control power lamp)	
12. Cable length	Power/Signal cable in non hazardous area	3 m
	Power/Signal cable in hazardous area	3 m
	Teach Pendant cable	10 m
13. Mass	See attached drawing	
14. Power requirement	AC 380 - 415 V \pm 10%, 50/60 Hz, 3 phases, Max 5.1 kVA(E47), Max 7.3 kVA(E45)	
15. Ground	PE (Standard for Robots) Leakage current: max. 10 mA	
16. Ambient temperature	0 - 45 °C	
17. Relative humidity	35 - 85 % (non-condensation)	
18. Color	Munsell: 10GY9/1 equivalent	
19. Ex. Light Weight Teach Pendant	Intrinsically safe construction, Color display (5.7 inch TFT LCD) with touch panel Emergency Stop, Teach Lock and Enable Switches	
20. AC Outlet	AC 220 - 240V Outlet (depends on Primary input voltage)	
21. Motor brake release	Manual brake release switch	
22. Safety circuit	Category3; Performance Level = d (EN ISO 13849-1:2008)	
23. Options		
General purpose signals	Input signals	64/96/128 channels (Includes dedicated signals)
	Output signals	64/96/128 channels (Includes dedicated signals)
I/O connector	D-SUB 37pin(male,female) with cover	
Operation panel	Motor Power ON, Cycle start, RUN/HOLD, Error reset, Error lamp	
Power/Signal cable	in non hazardous area 5,7,10,15,20,25,30m in hazardous area 1,5,7,10,15m	} Total length: max. 40 m
Teach Pendant cable	3,5,7,10,15,20,25,30m	
Teach pendant Connector Box	in non hazardous area 1,3,5,7,10,15m in hazardous area 1,3,5,7,10,15m	} Total length: max. 30 m
Power requirement	AC 380 - 415 V, AC 440 - 480 V, AC 515 V, AC 575 V \pm 10%, 50/60 Hz, 3 phases, Max 7.3 kVA(E45/E47)	
Auxiliary storage	USB memory	
PC cable	1.5m, 3m	
Teach Pendant option	Cable hook, connector for TP less	
Others	LED Light, Field BUS, Software PLC, Analog input/output, Conveyor Synchronization, Paint Equipment Control and so on	
24. Others	Consult Kawasaki about maintenance parts and spare parts.	



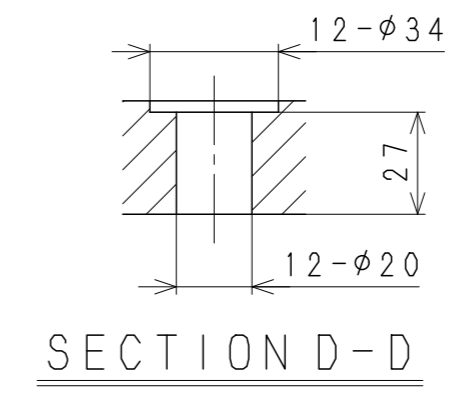
VIEW B



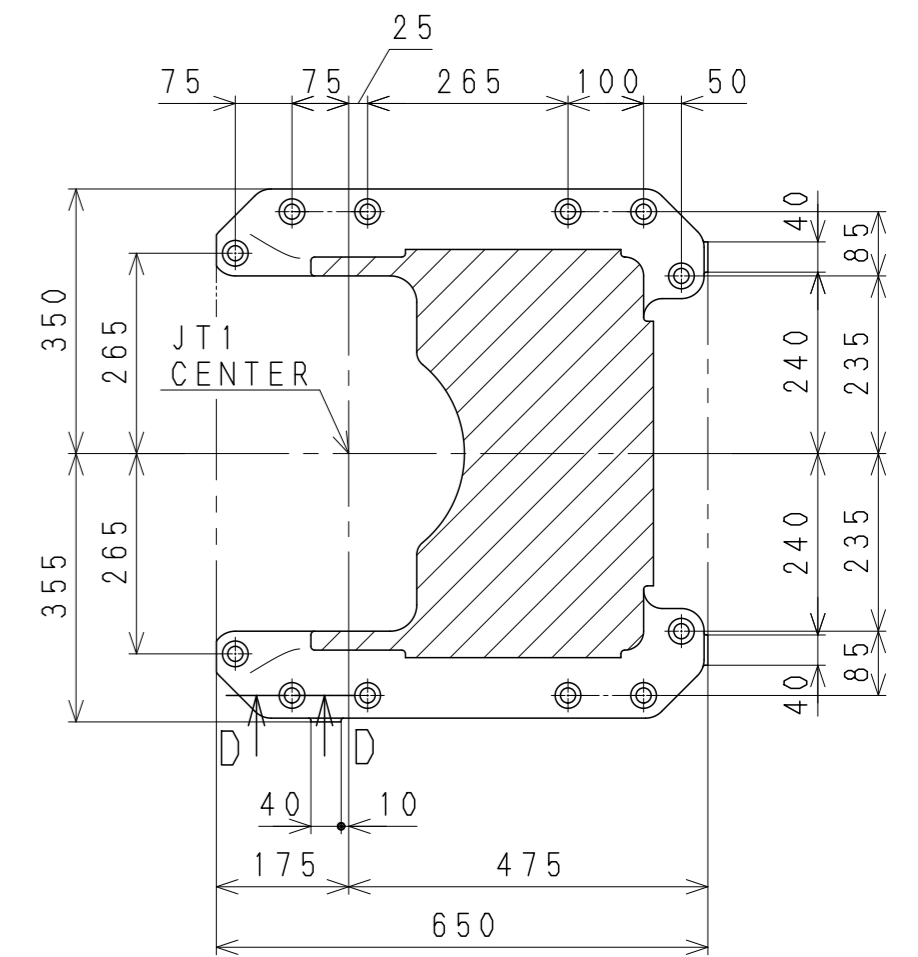
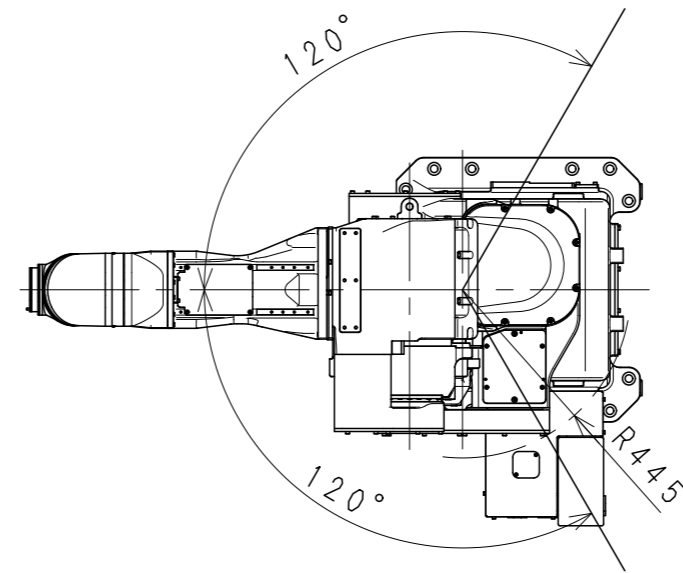
SECTION C-C



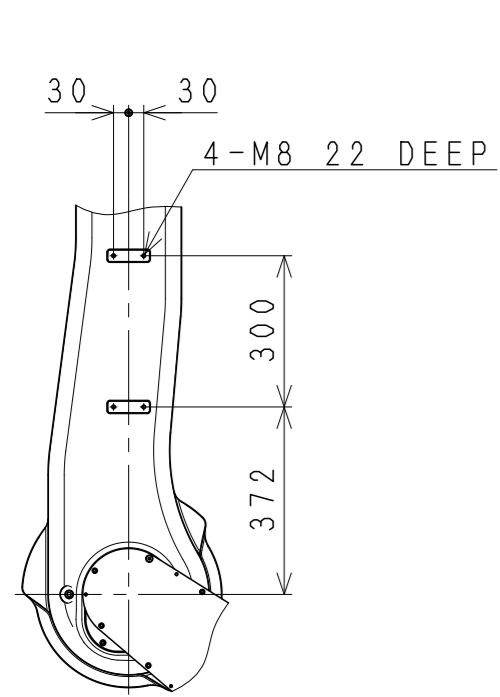
DETAIL A



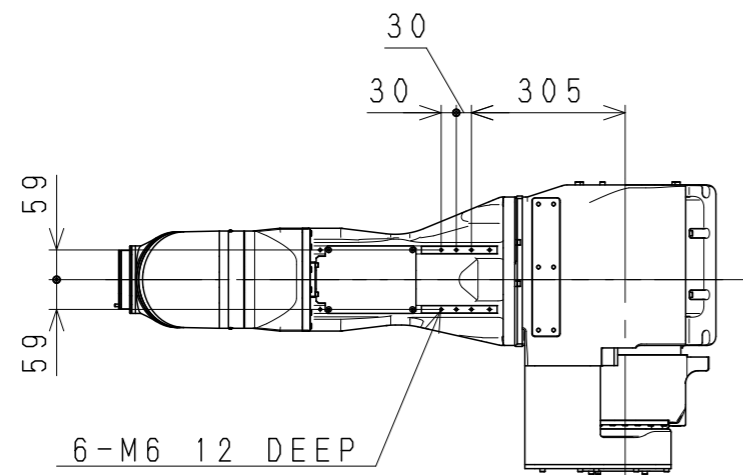
SECTION D-D



Base Installation Dimensions

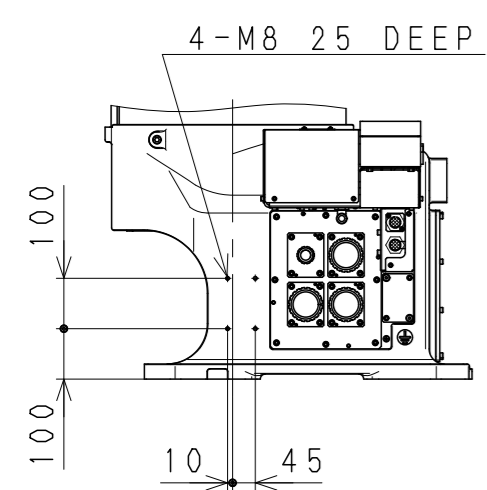
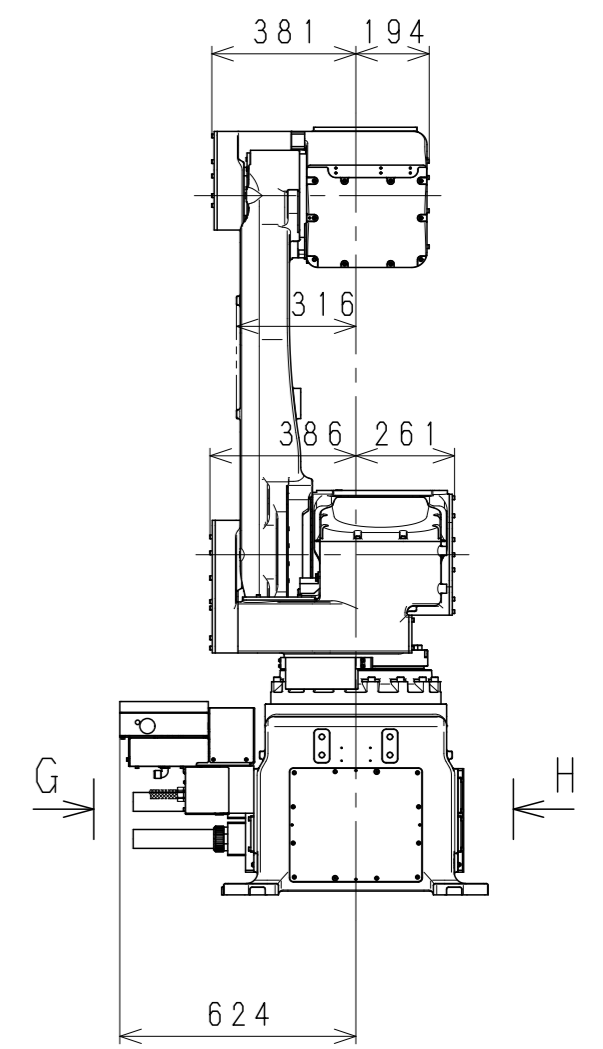
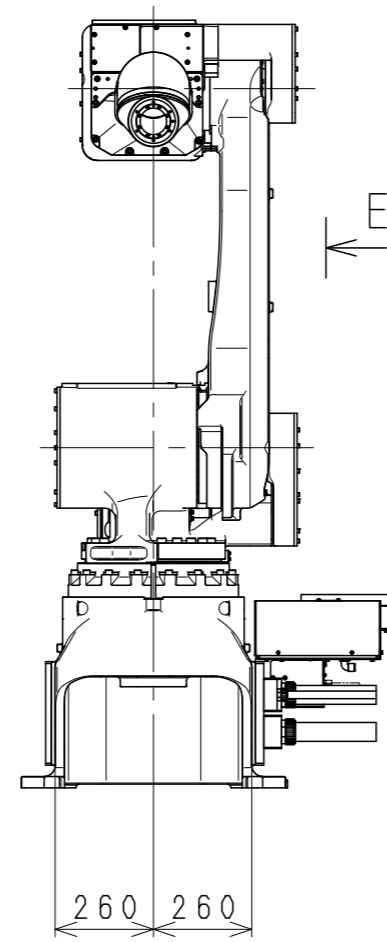
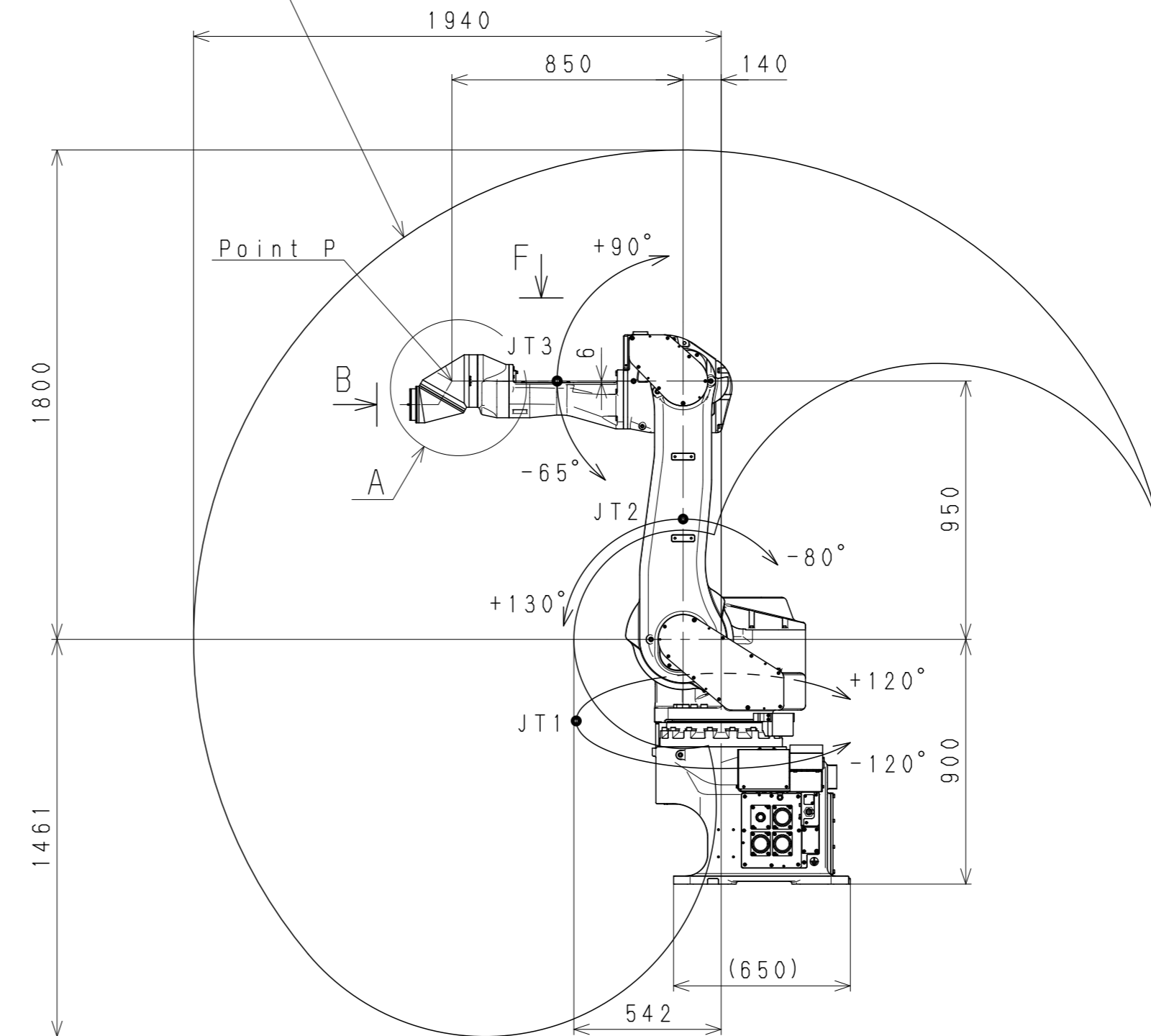


VIEW E

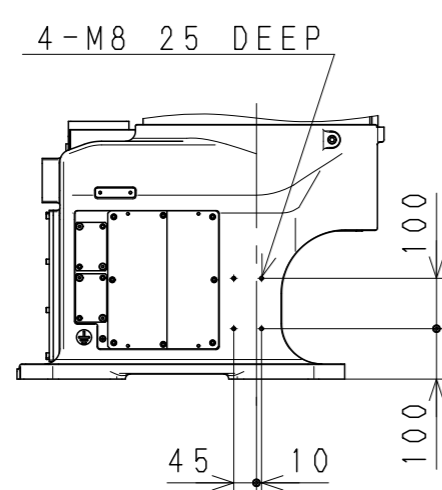


VIEW F

Working range based on point P

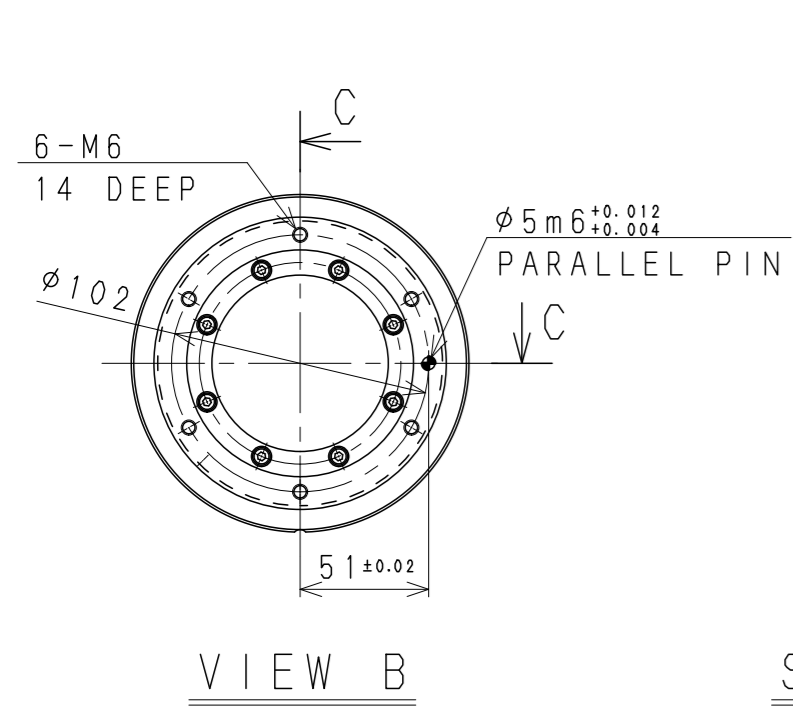


VIEW G

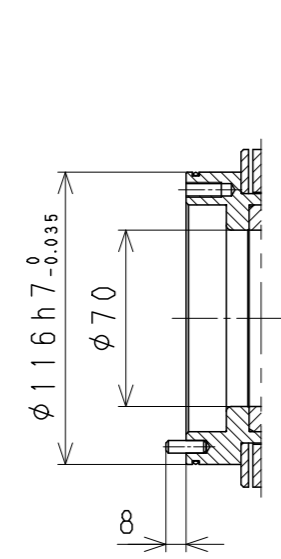


VIEW H

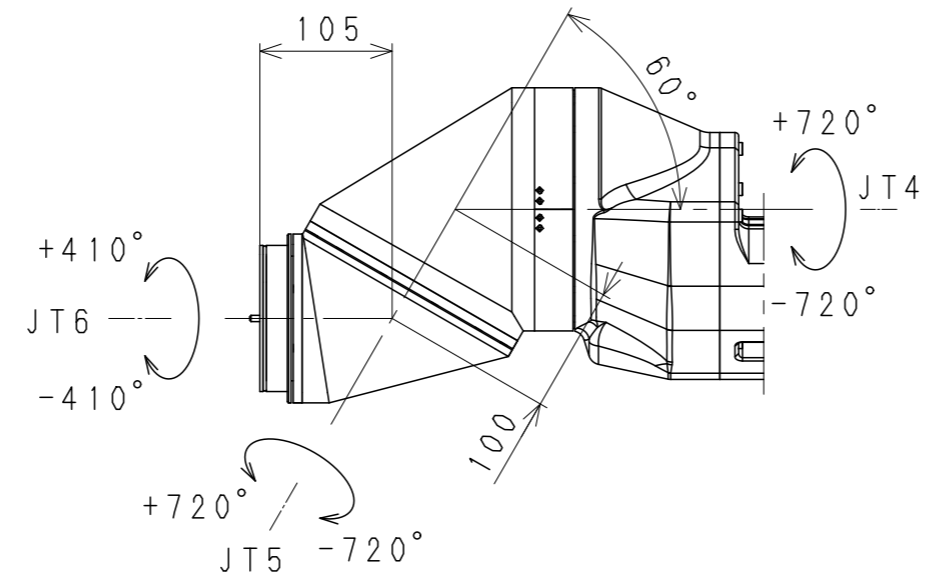
KJ194E-B0
WORKING RANGE



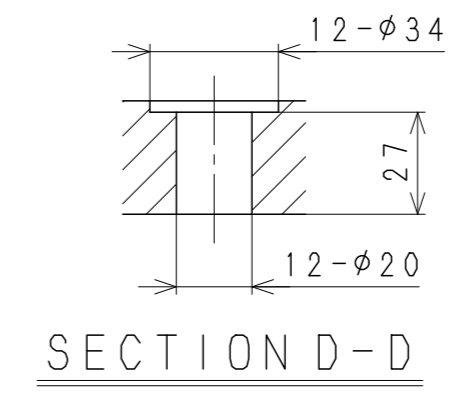
VIEW B



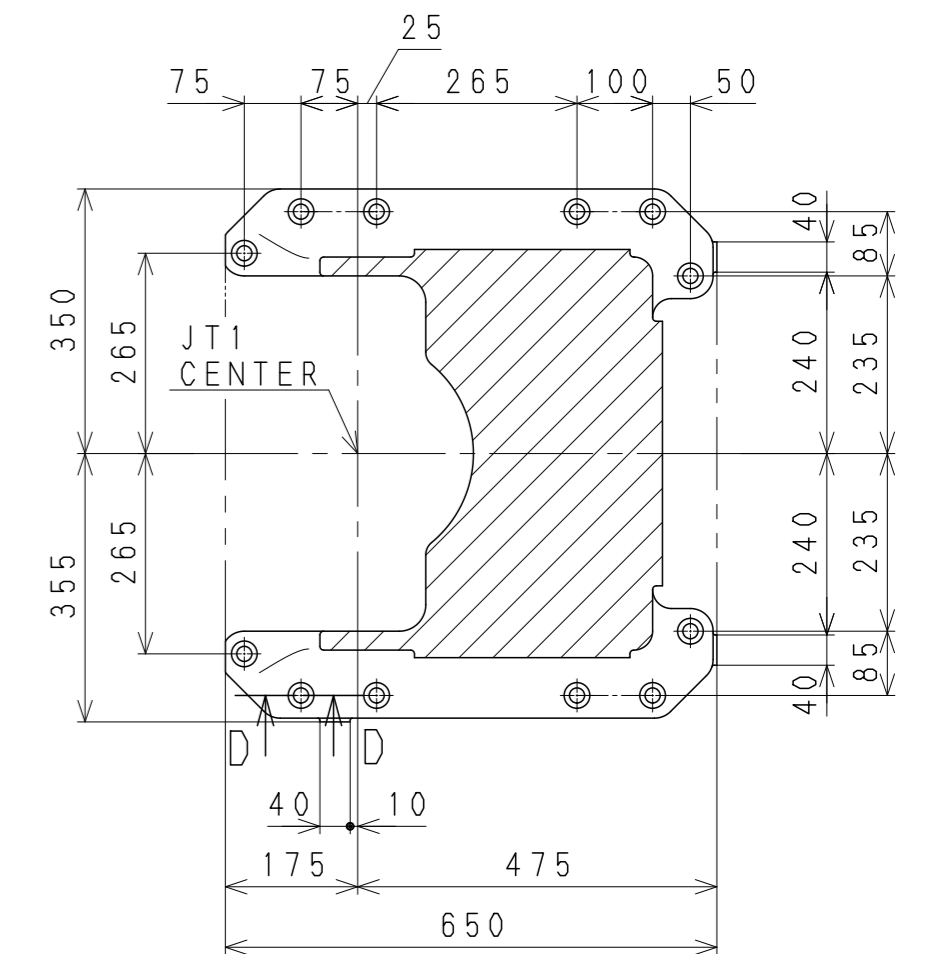
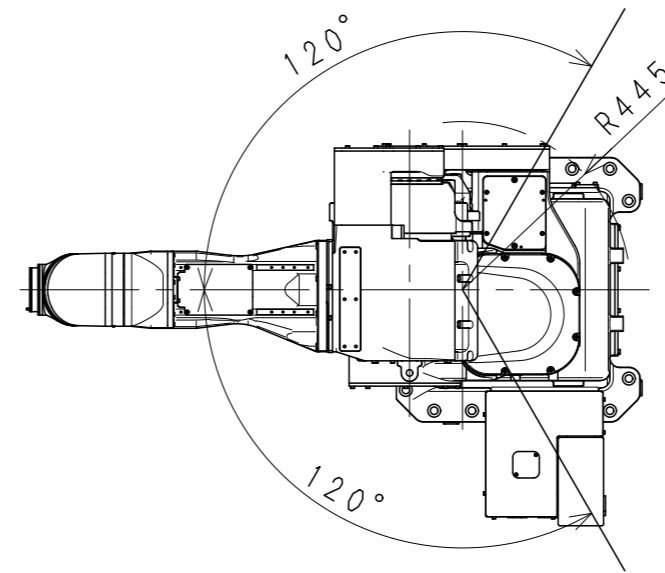
SECTION C-C



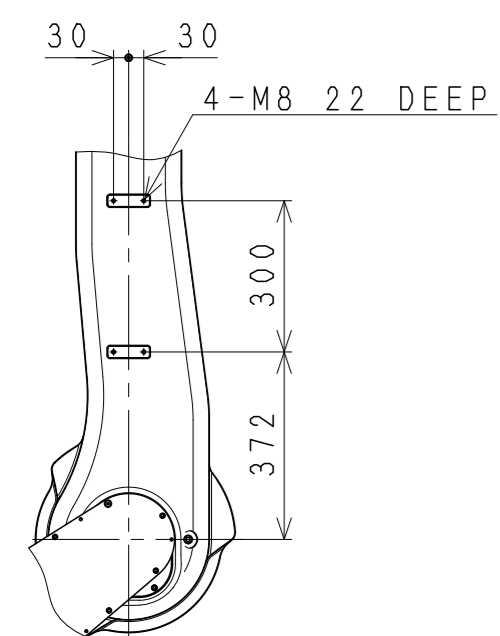
DETAIL A



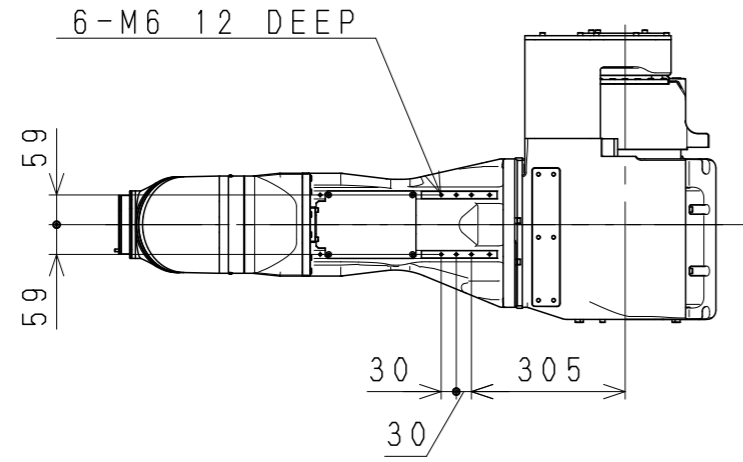
SECTION D-D



Base Installation Dimensions

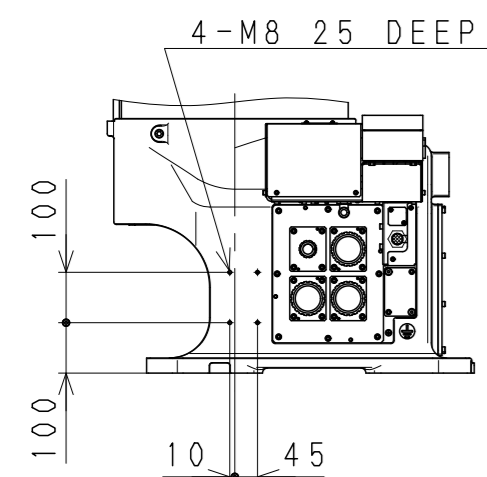
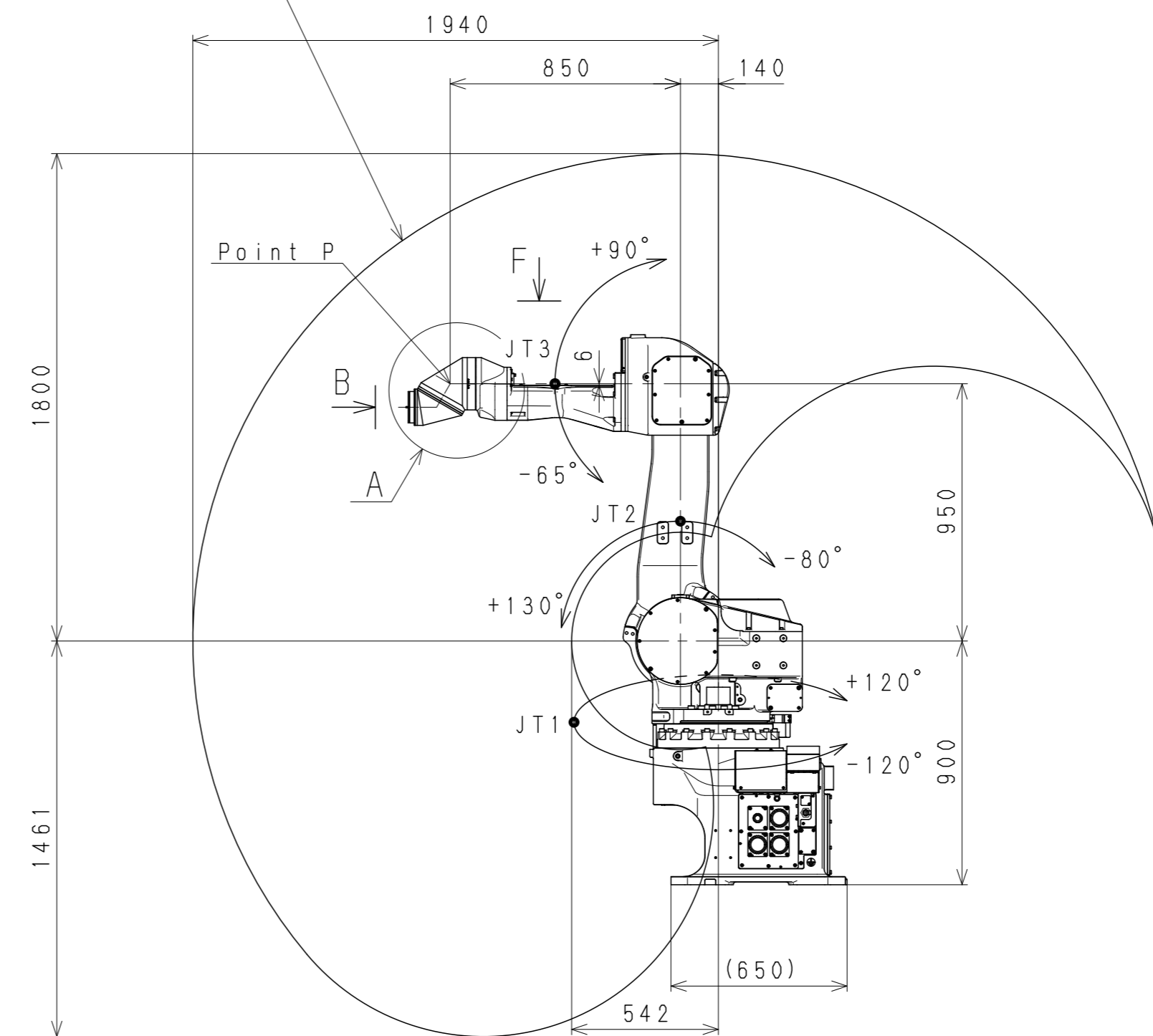


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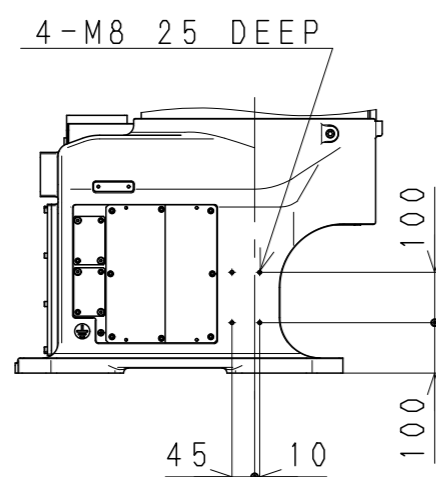


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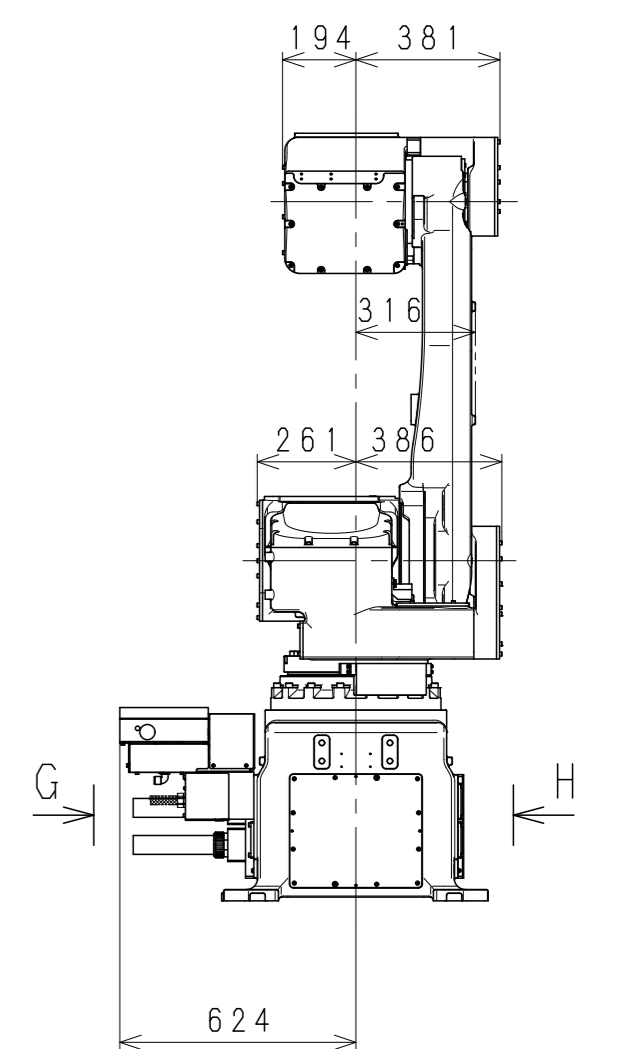
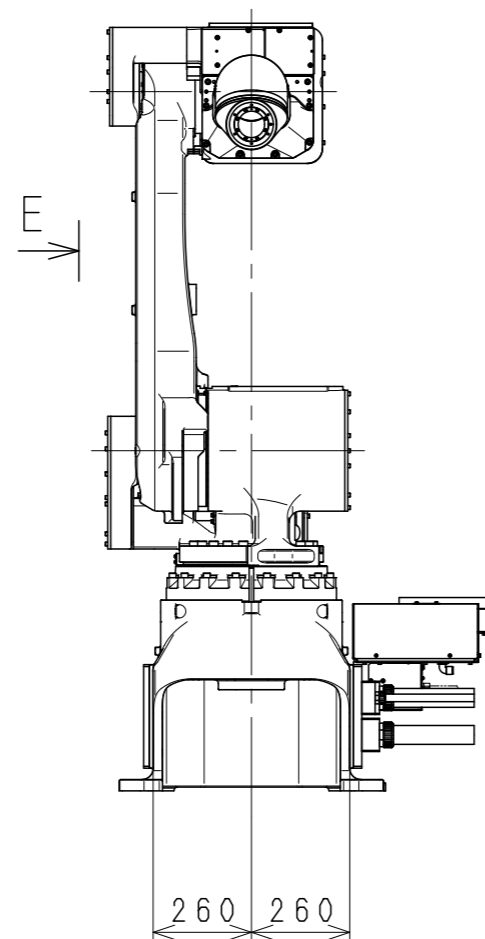
Working range based on point P



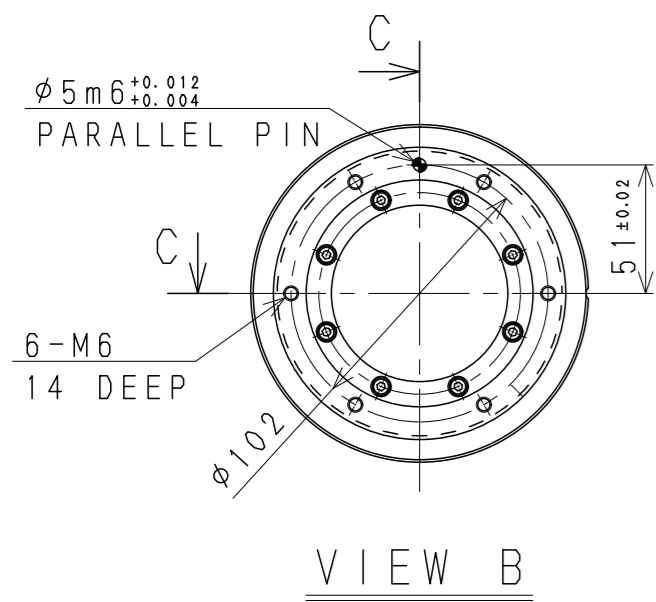
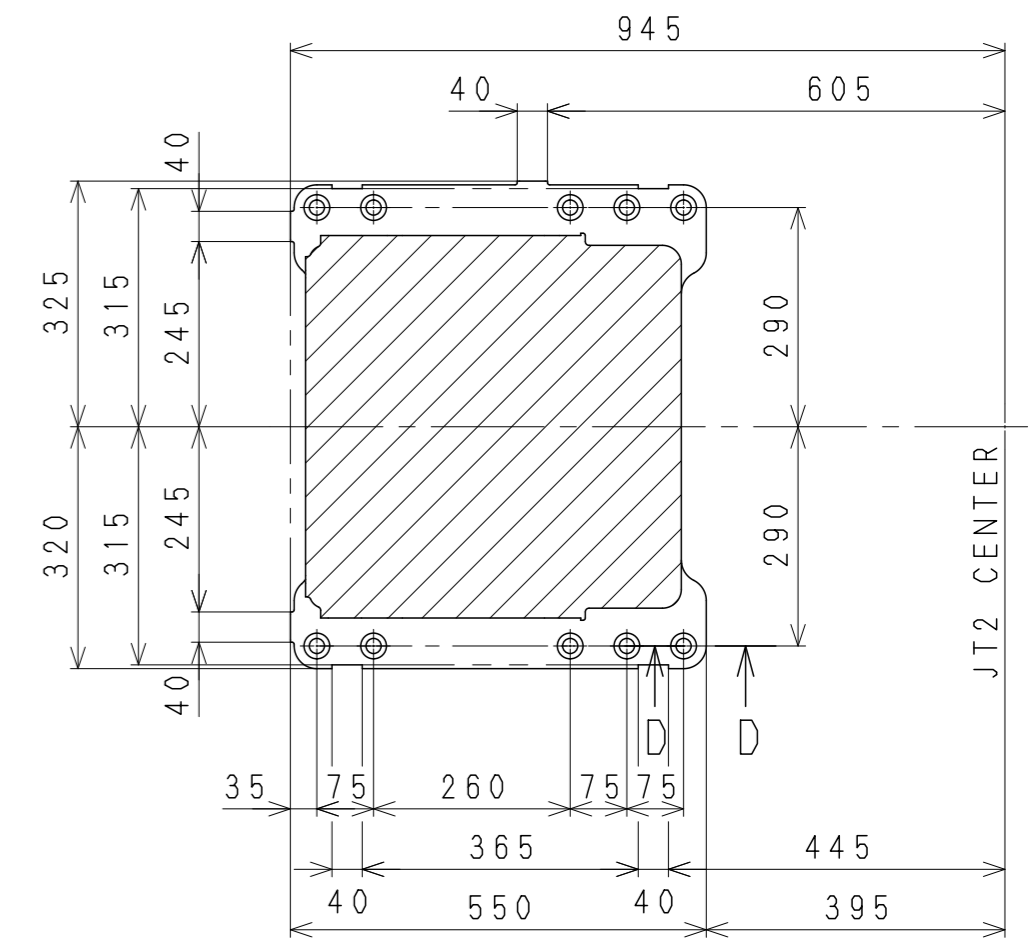
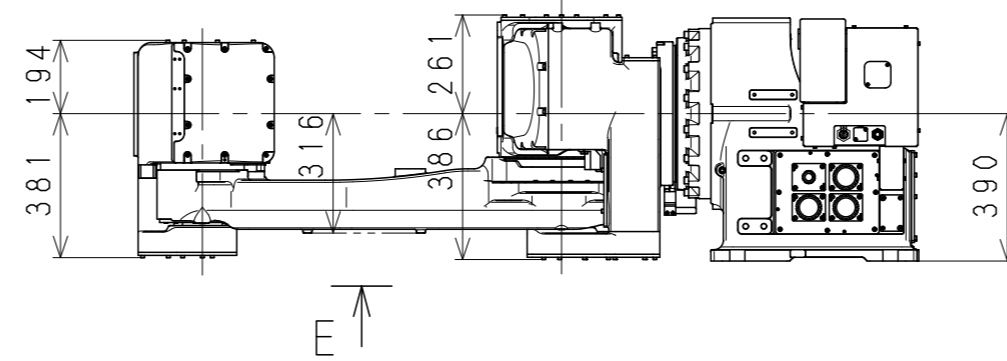
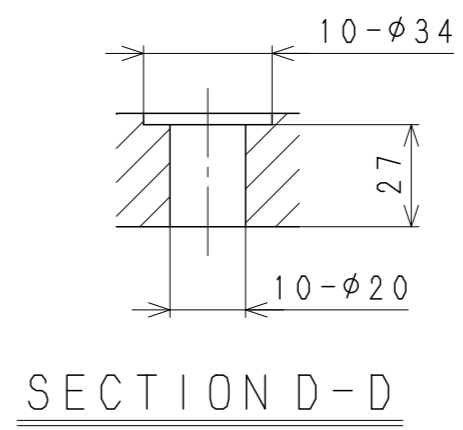
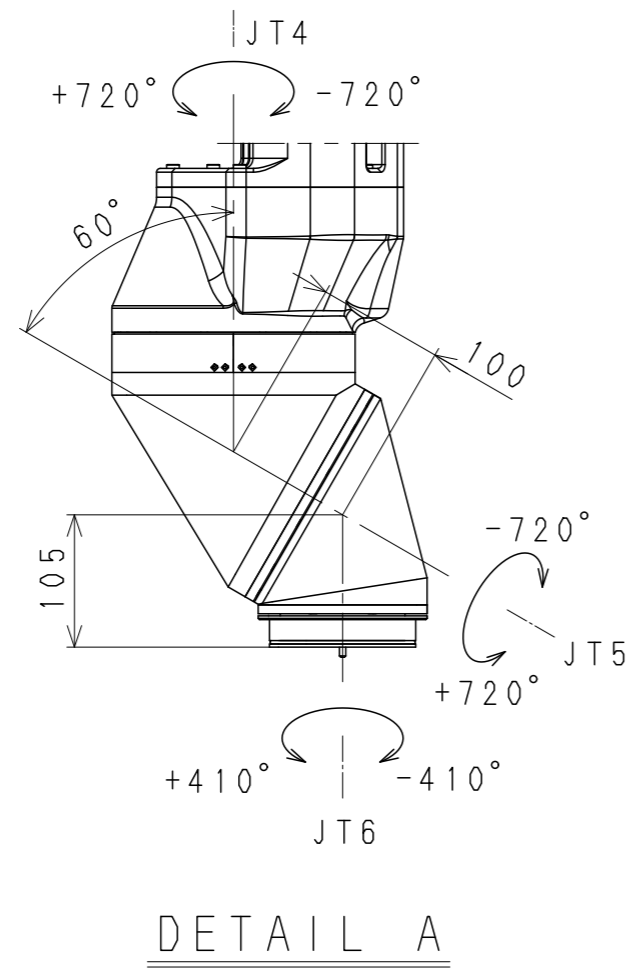
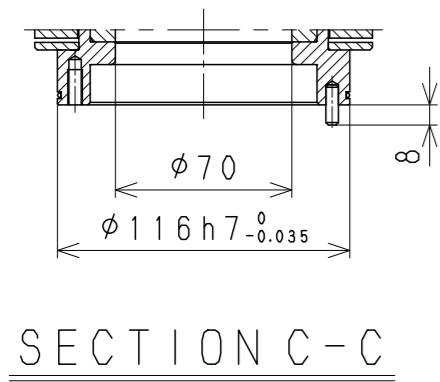
VIEW G



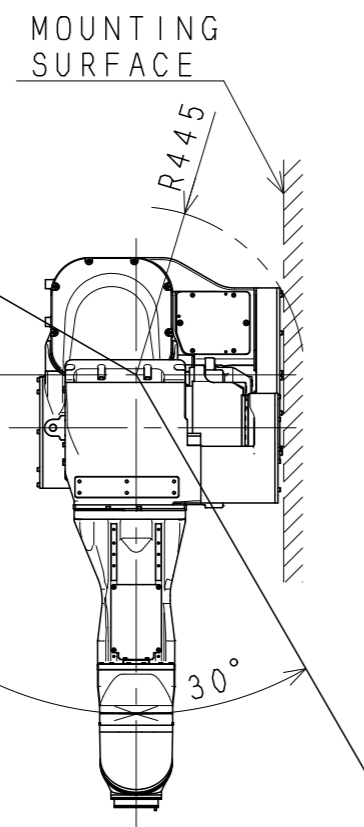
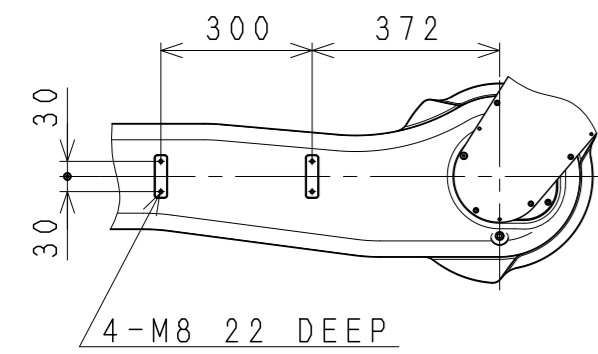
VIEW H



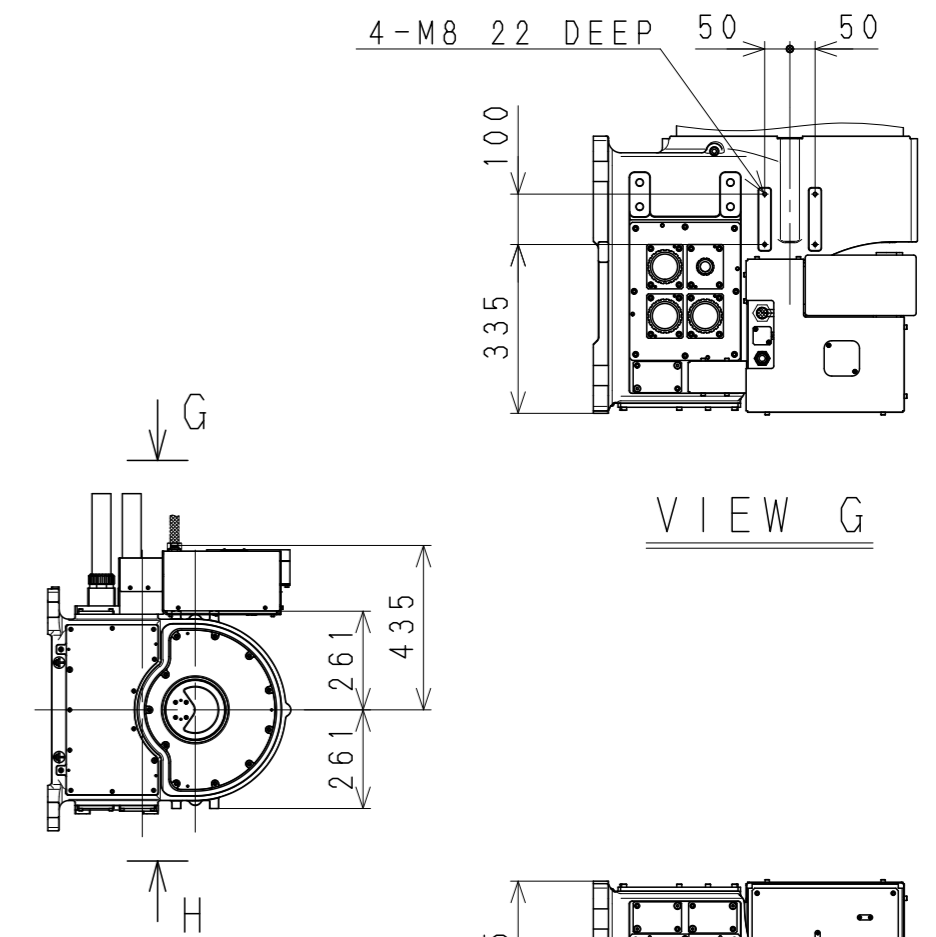
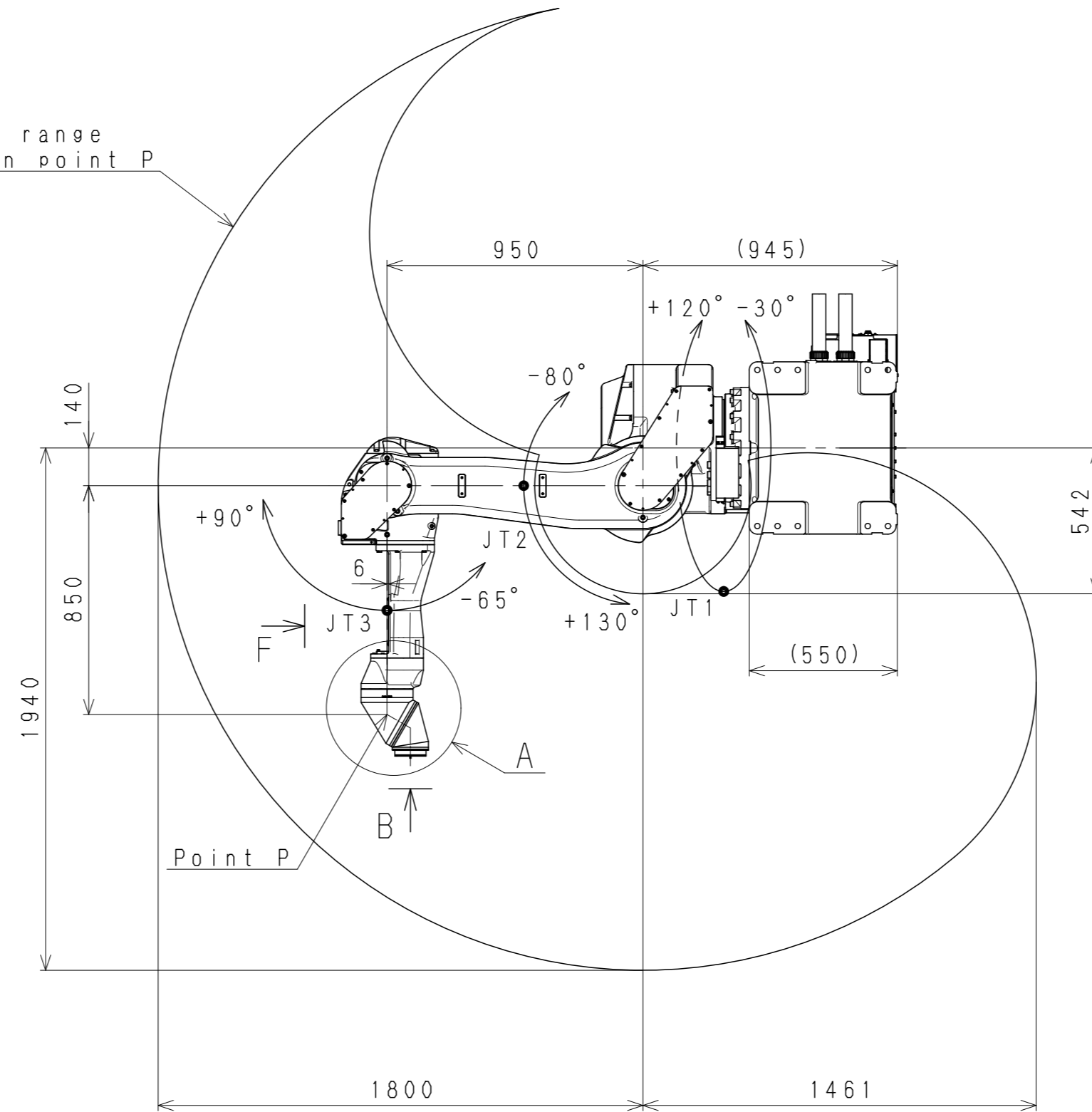
KJ194E-B1
WORKING RANGE



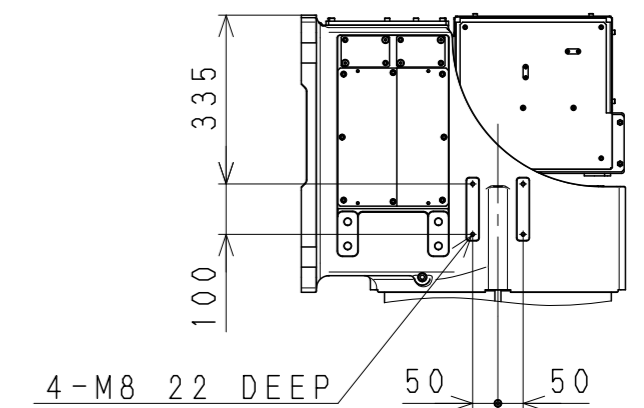
Base Installation Dimensions



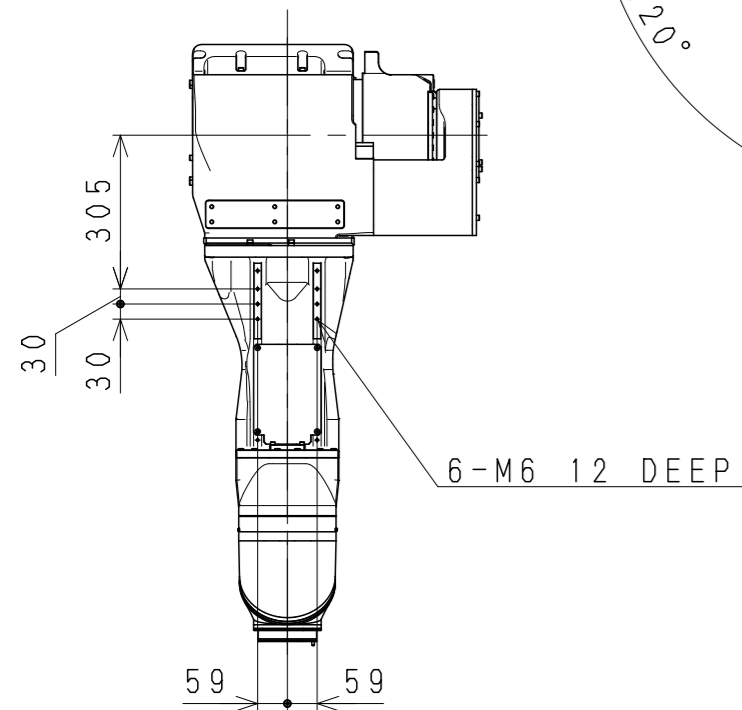
Working range based on point P



VIEW G

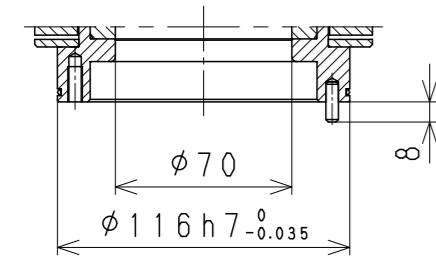


VIEW H

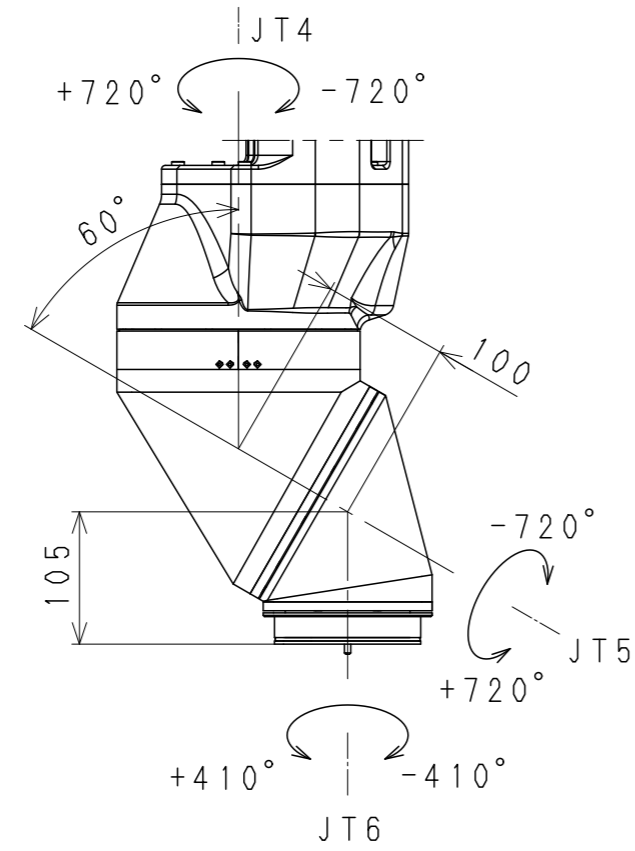


VIEW F

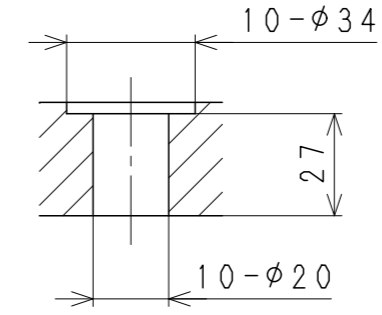
KJ194E-D0
WORKING RANGE



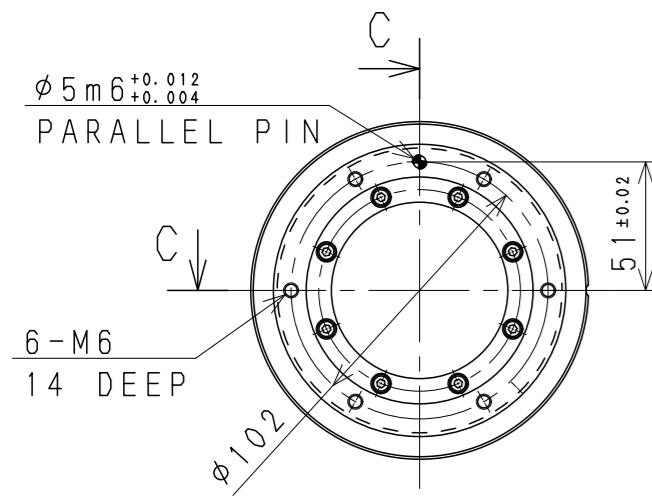
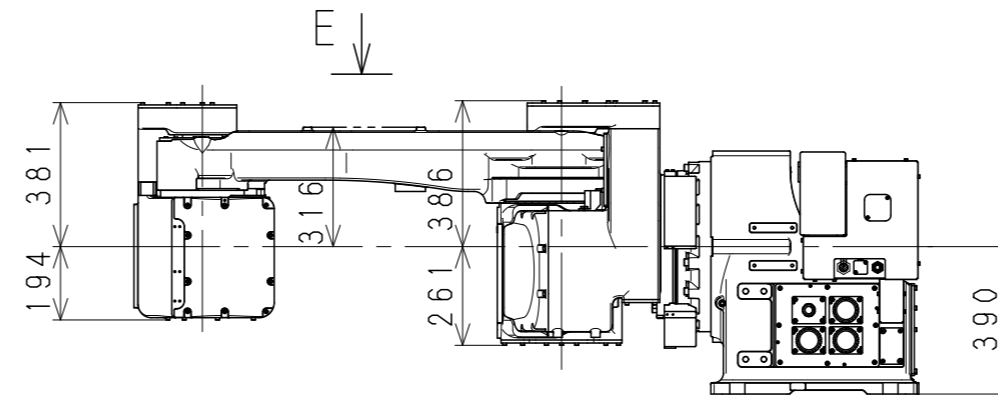
SECTION C-C



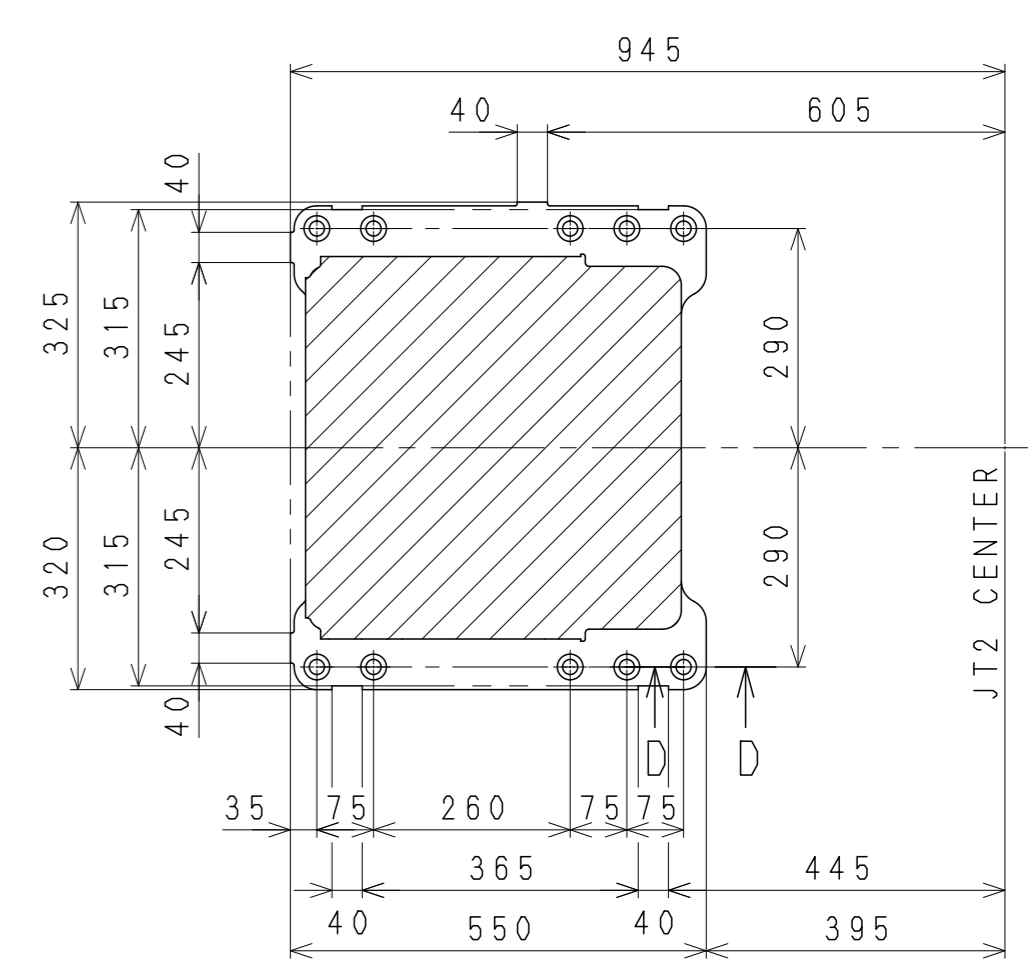
DETAIL A



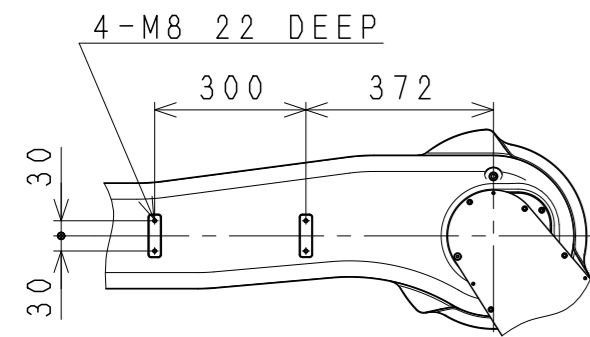
SECTION D-D



VIEW B

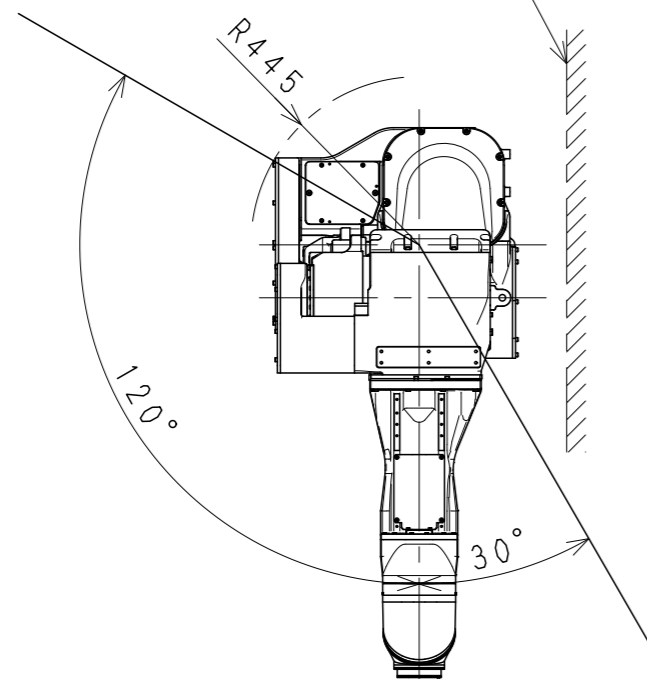


Base Installation Dimensions

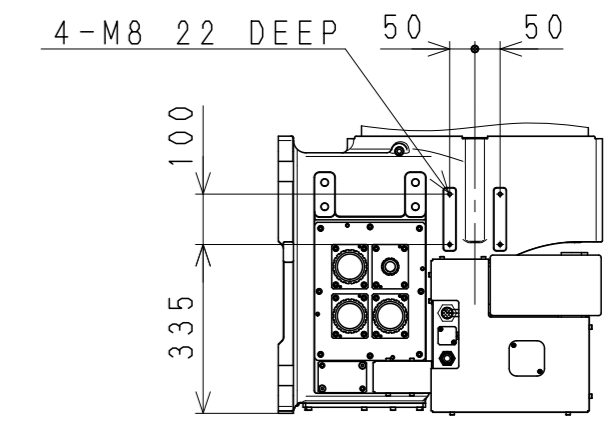
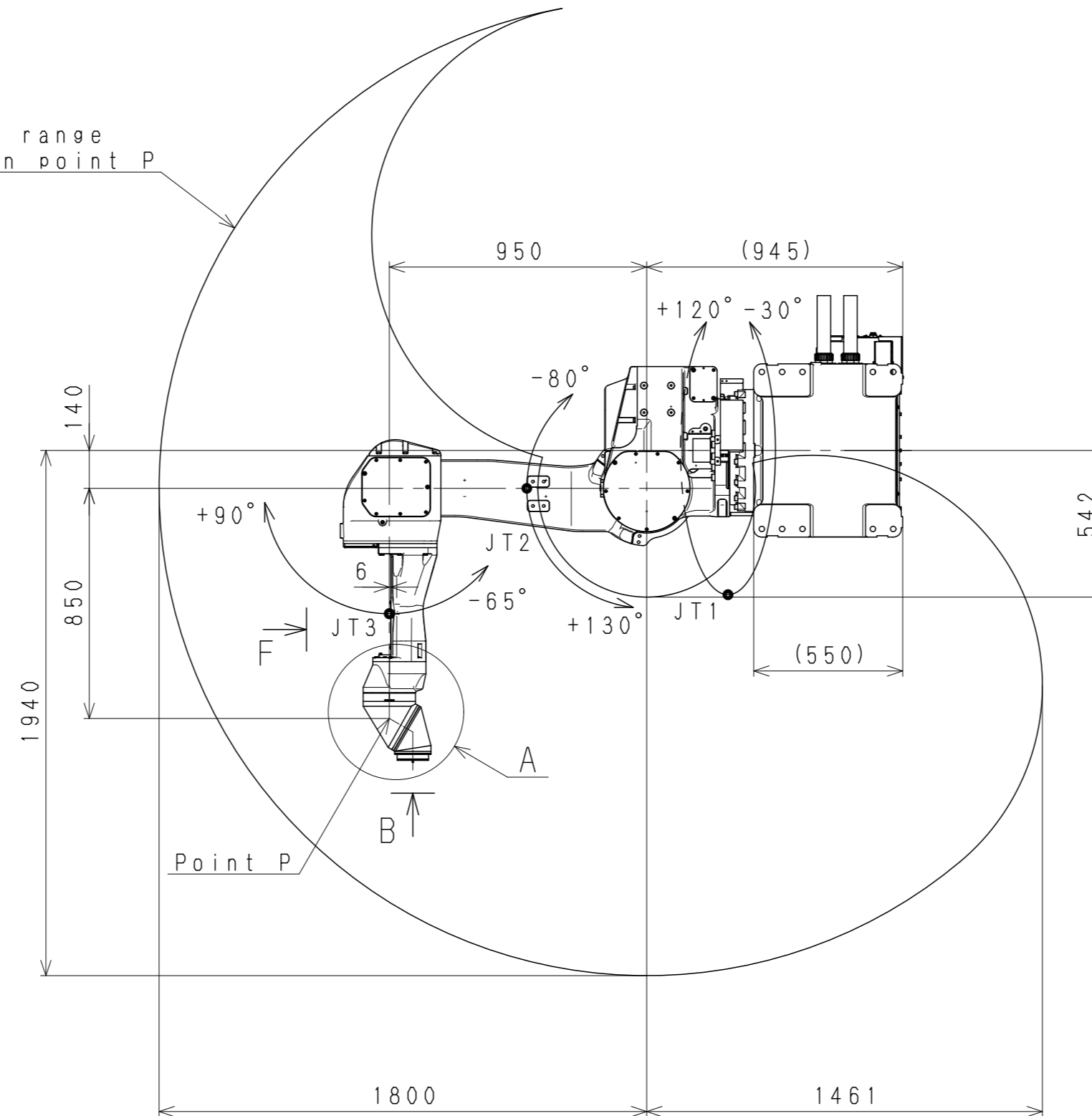


VIEW E

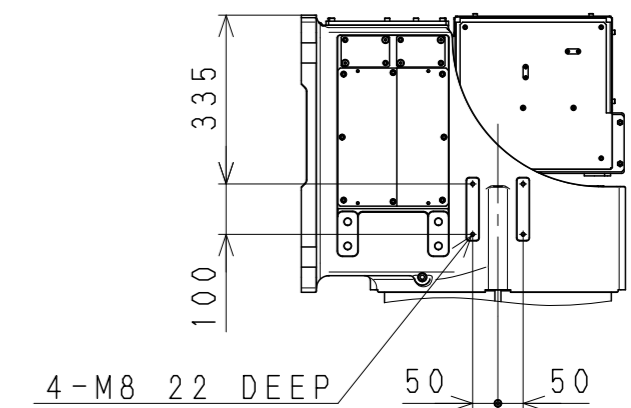
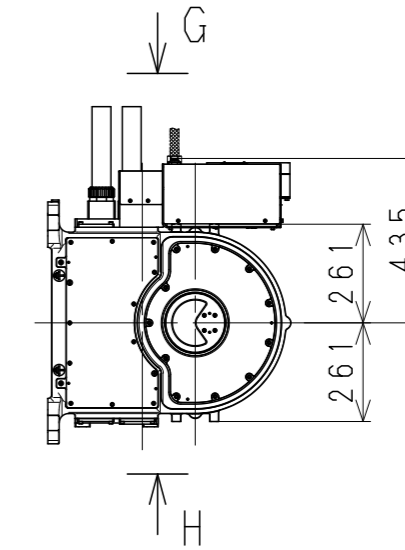
MOUNTING SURFACE



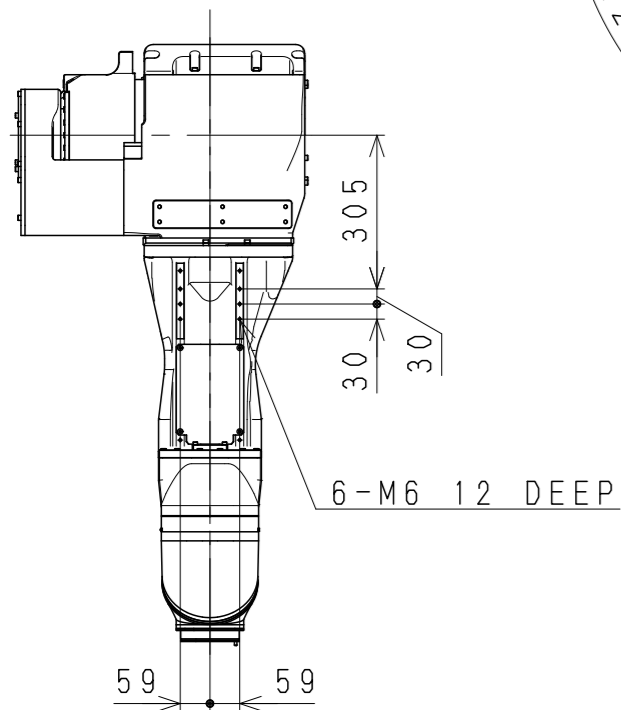
Working range based on point P



VIEW G

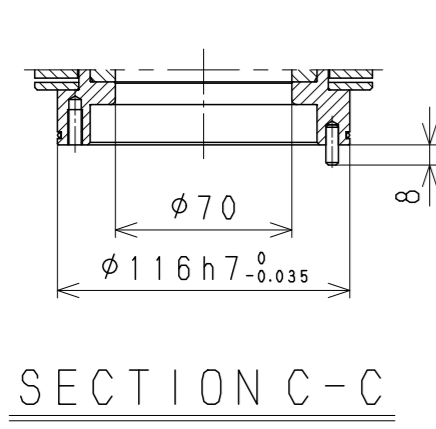


VIEW H

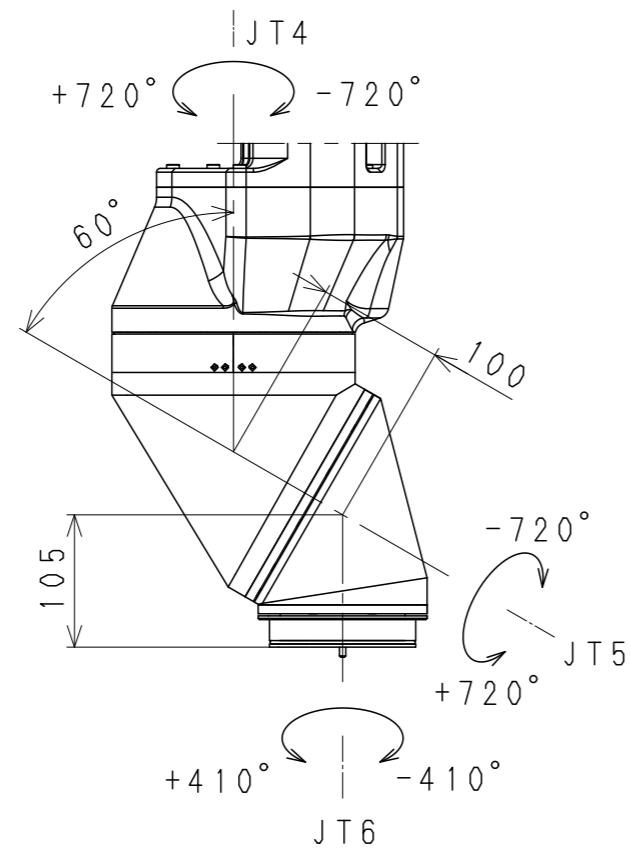


VIEW F

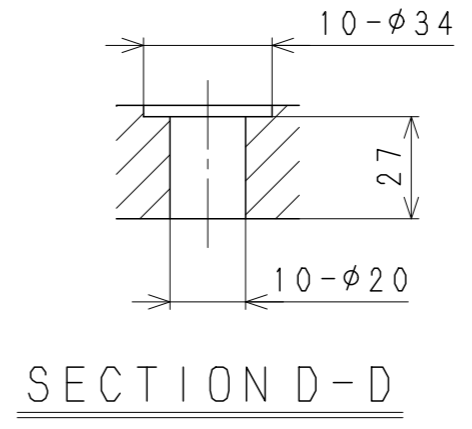
KJ194E-D1
WORKING RANGE



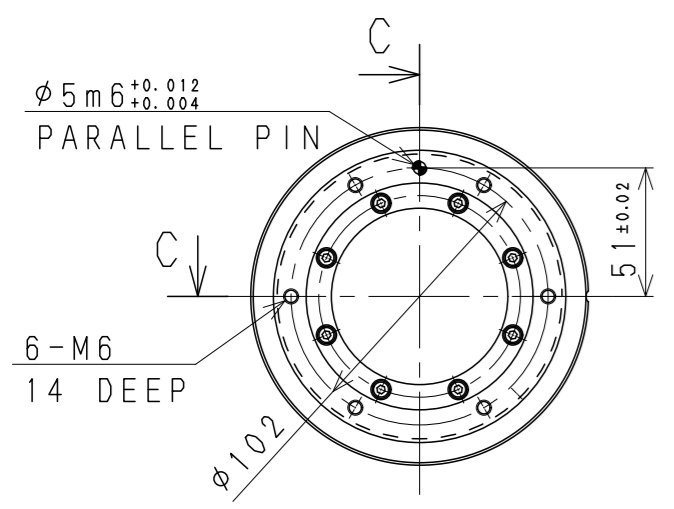
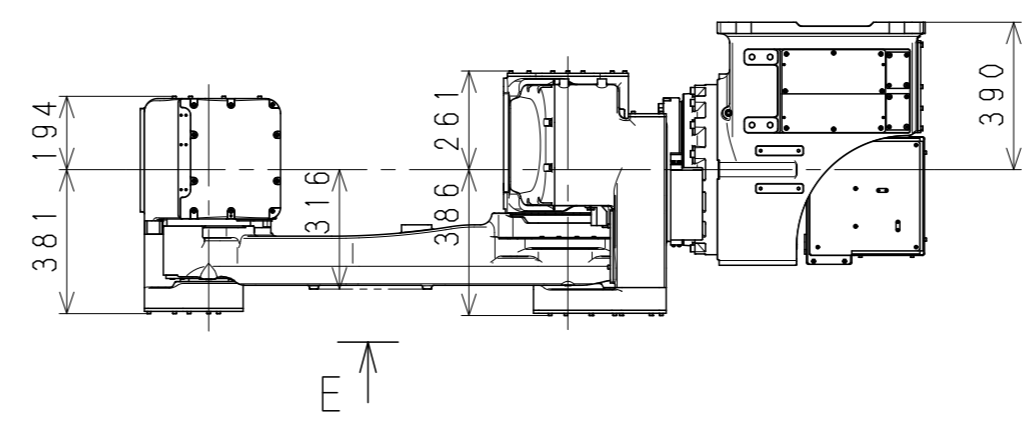
SECTION C-C



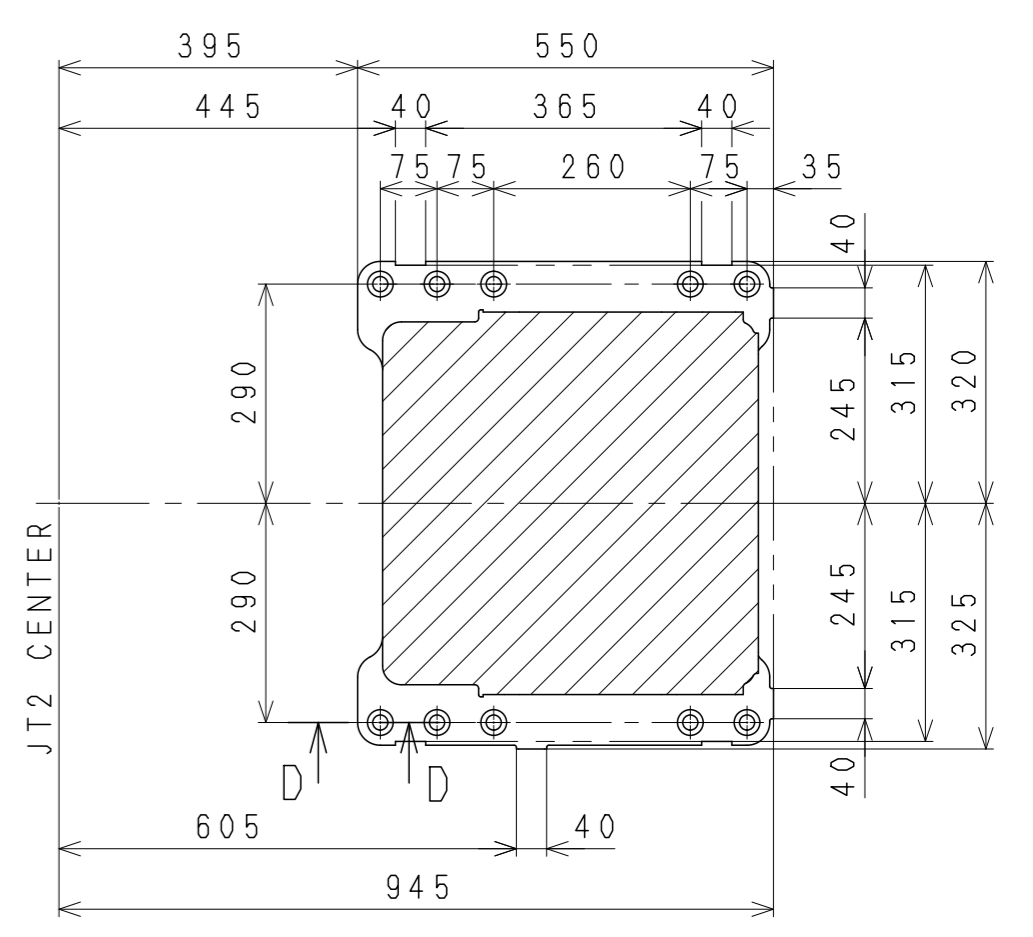
DETAIL A



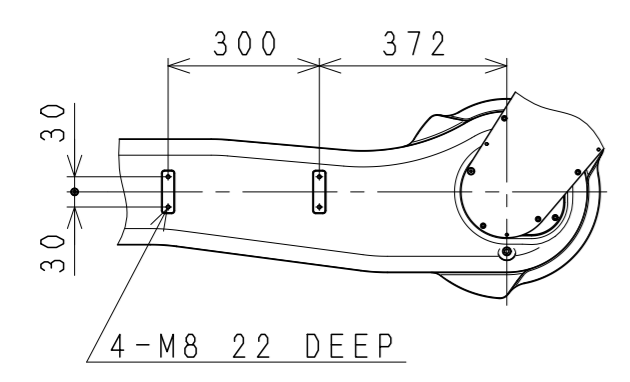
SECTION D-D



VIEW B

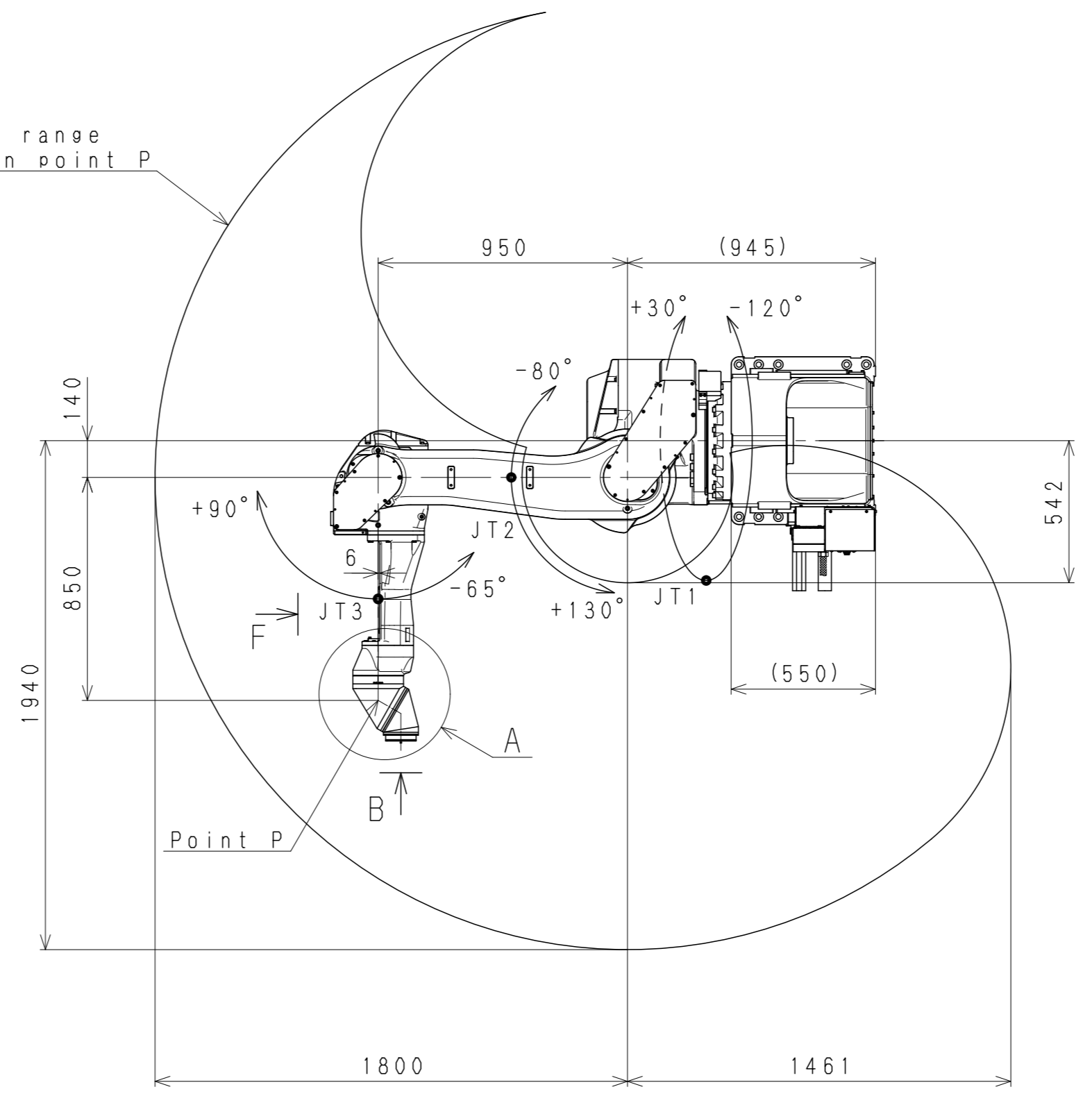


Base Installation Dimensions

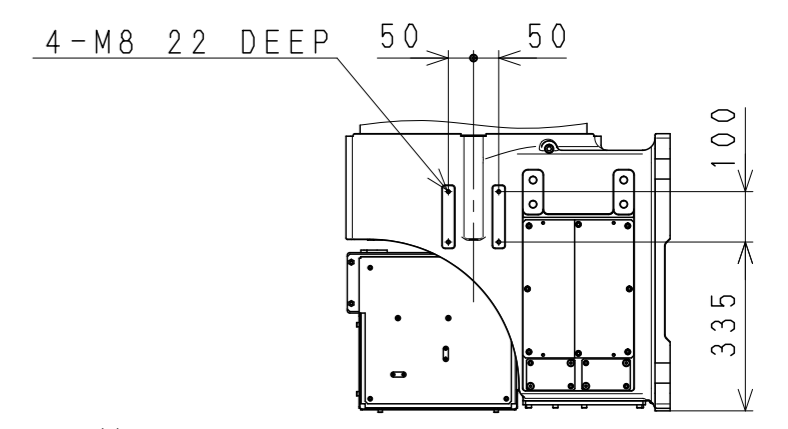


VIEW E

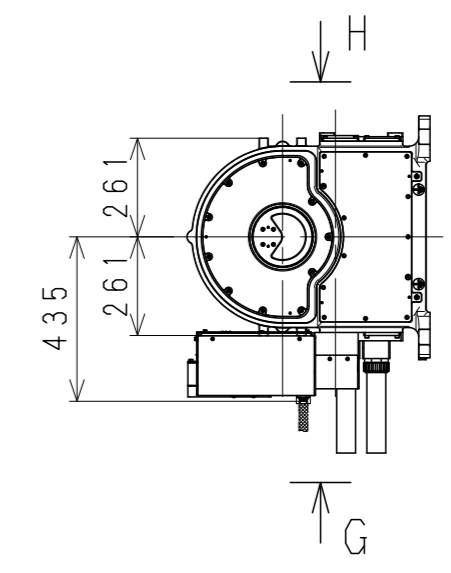
Working range based on point P



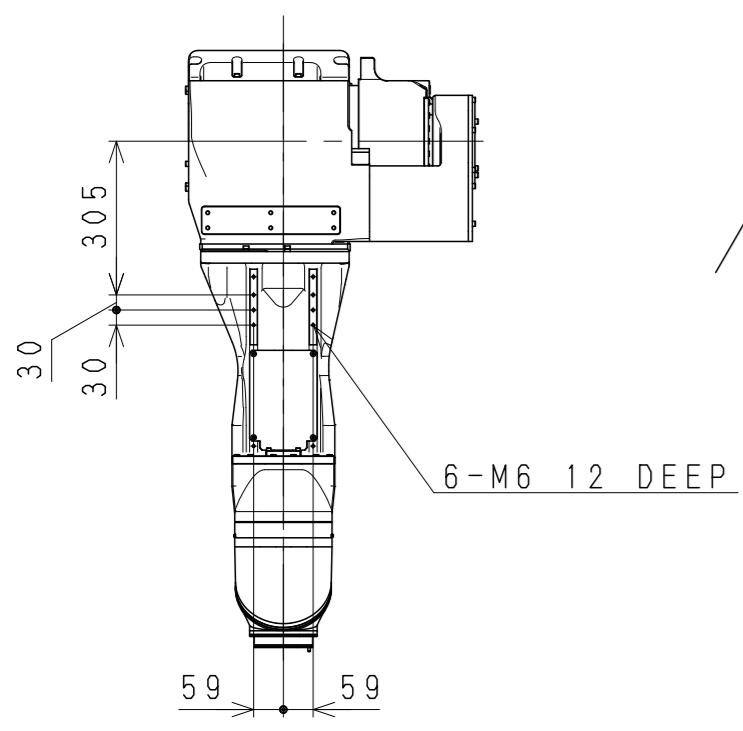
Point P



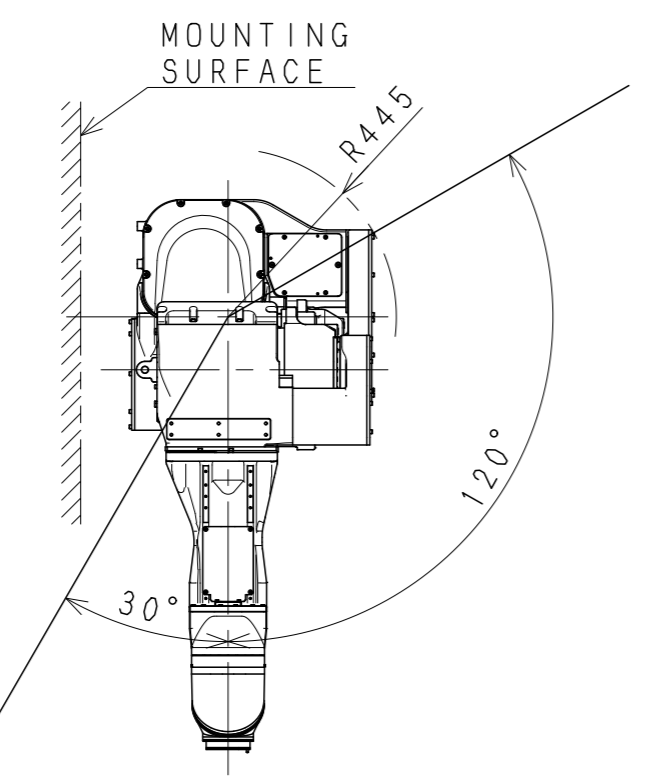
VIEW H



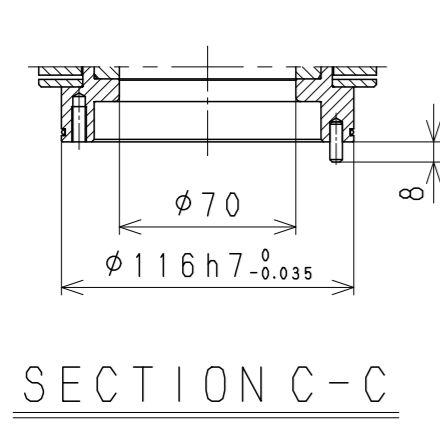
VIEW G



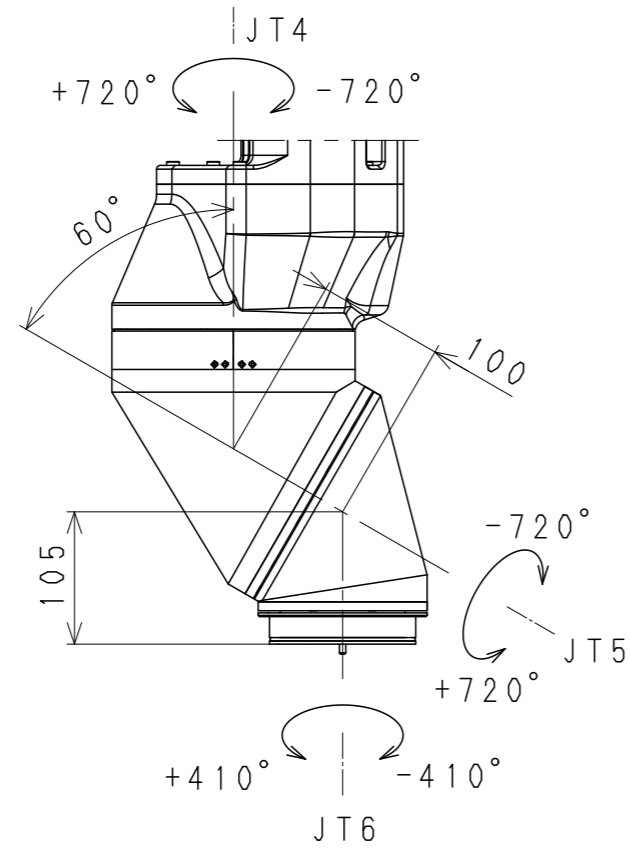
VIEW F



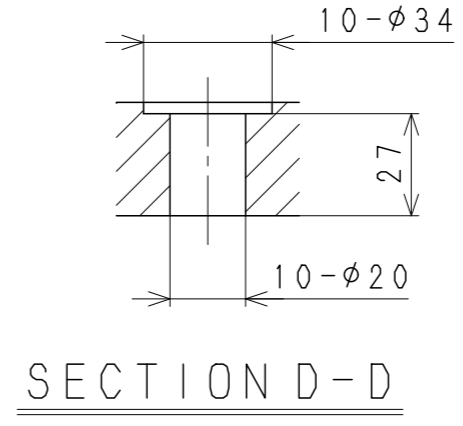
KJ194E-F0
WORKING RANGE



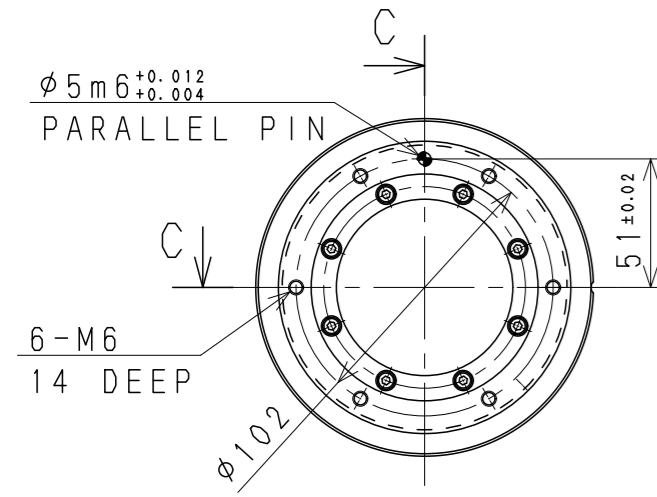
SECTION C-C



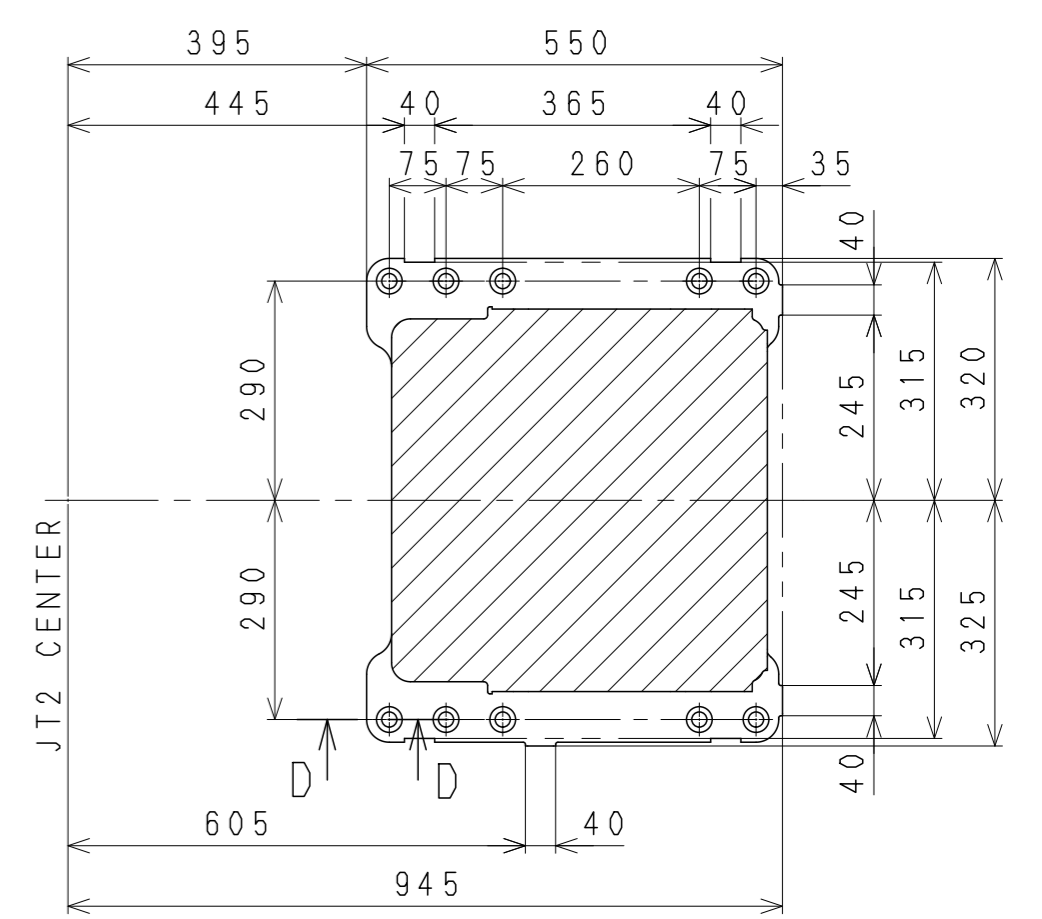
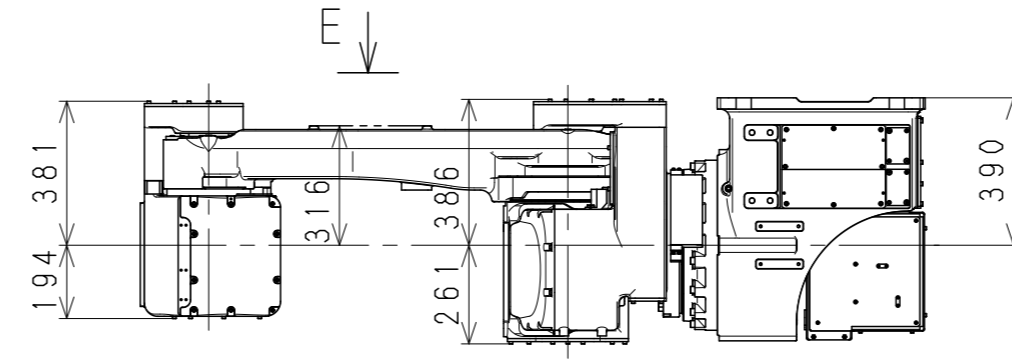
DETAIL A



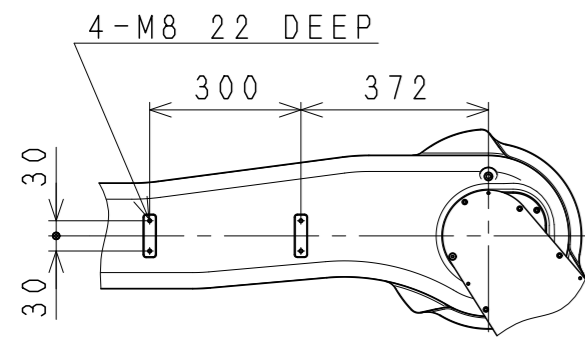
SECTION D-D



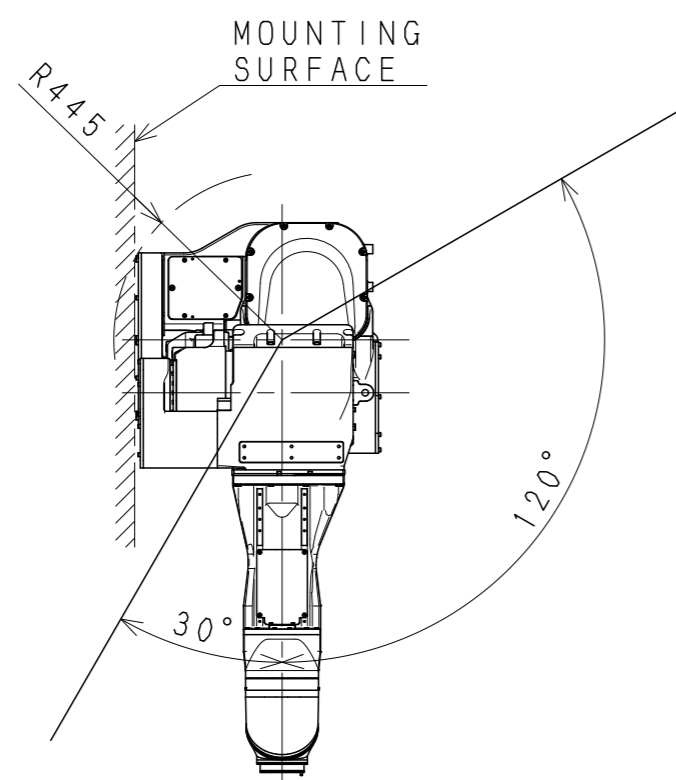
VIEW B



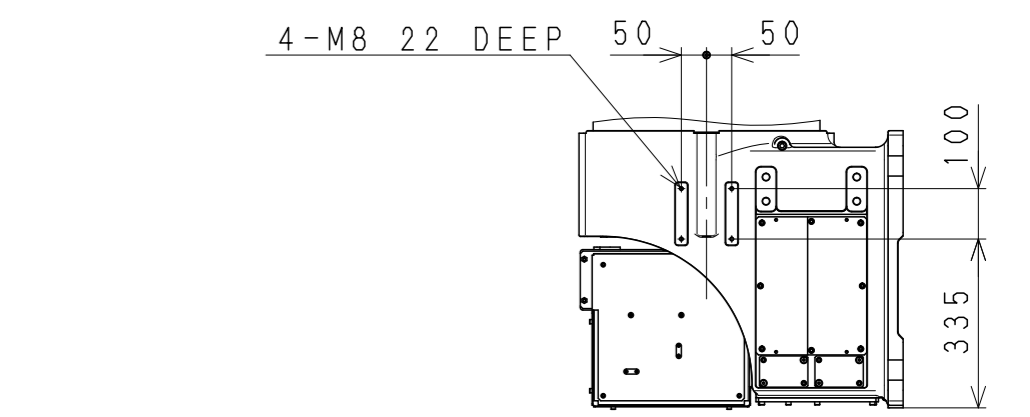
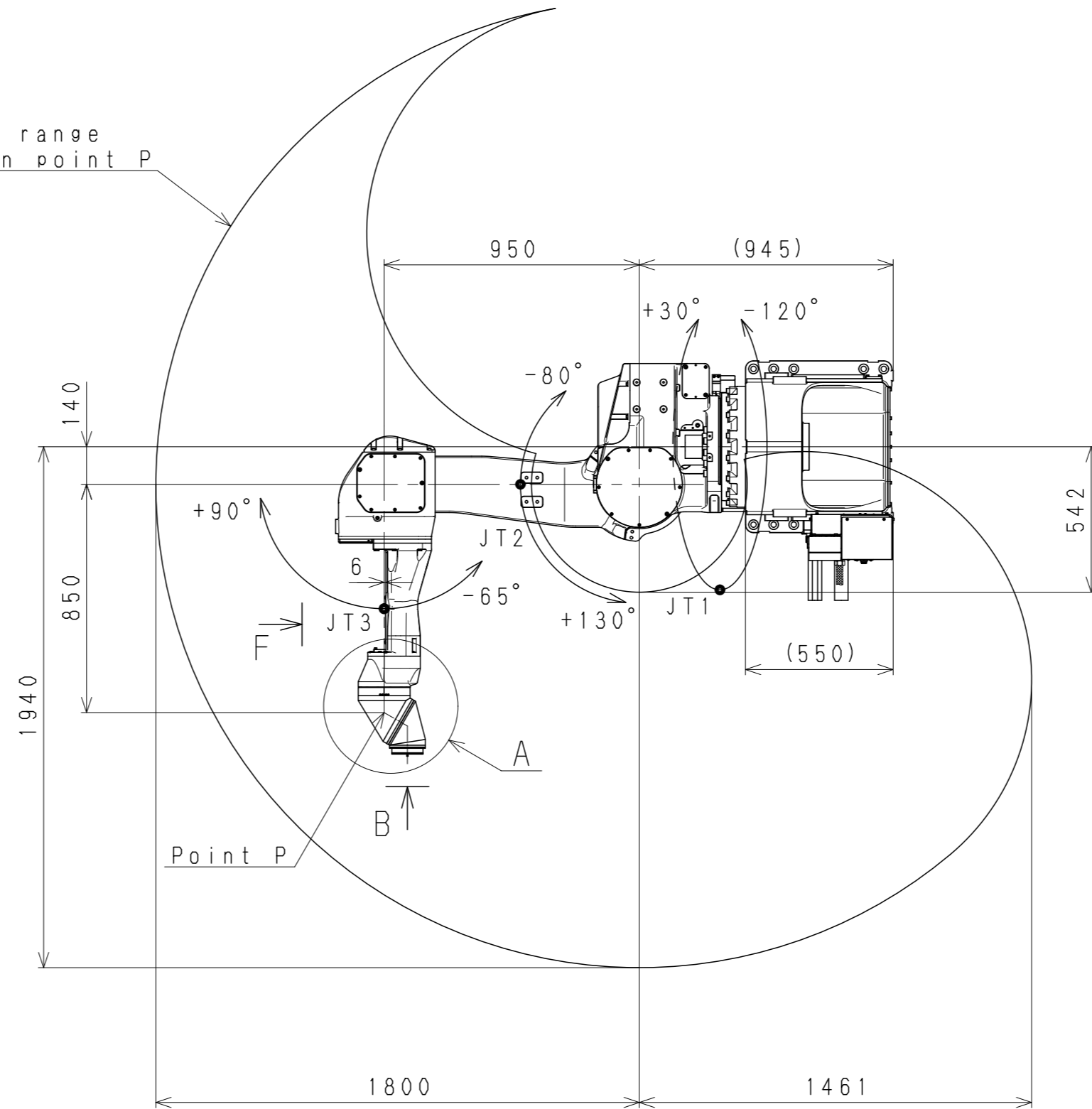
Base Installation Dimensions



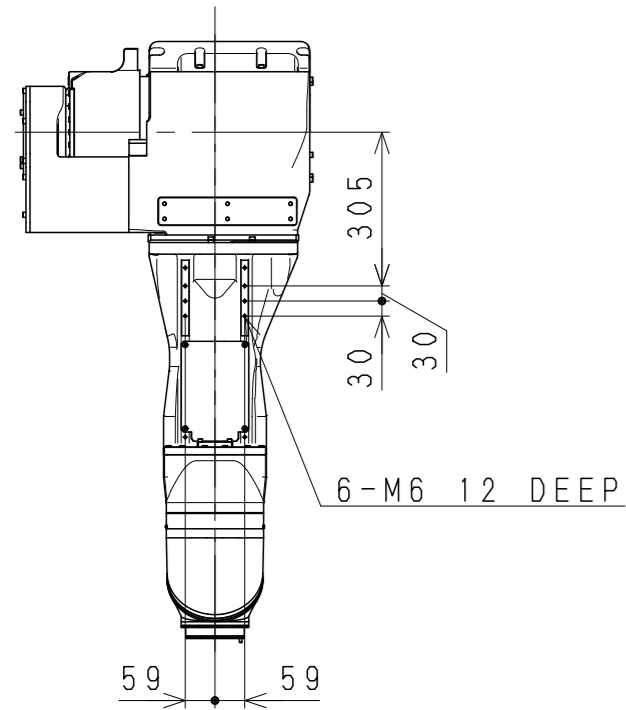
VIEW E



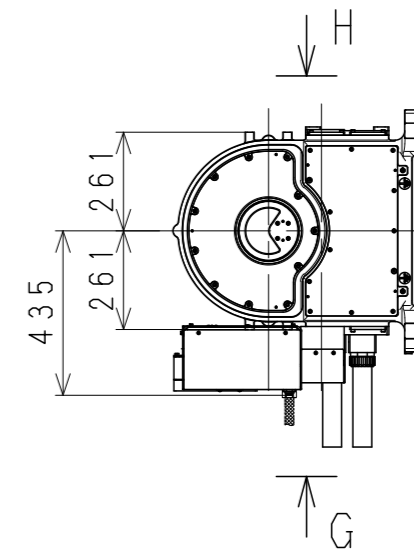
Working range based on point P



VIEW H

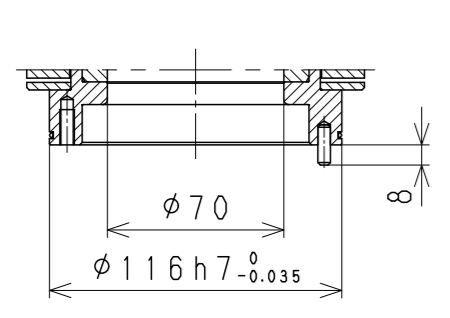


VIEW F

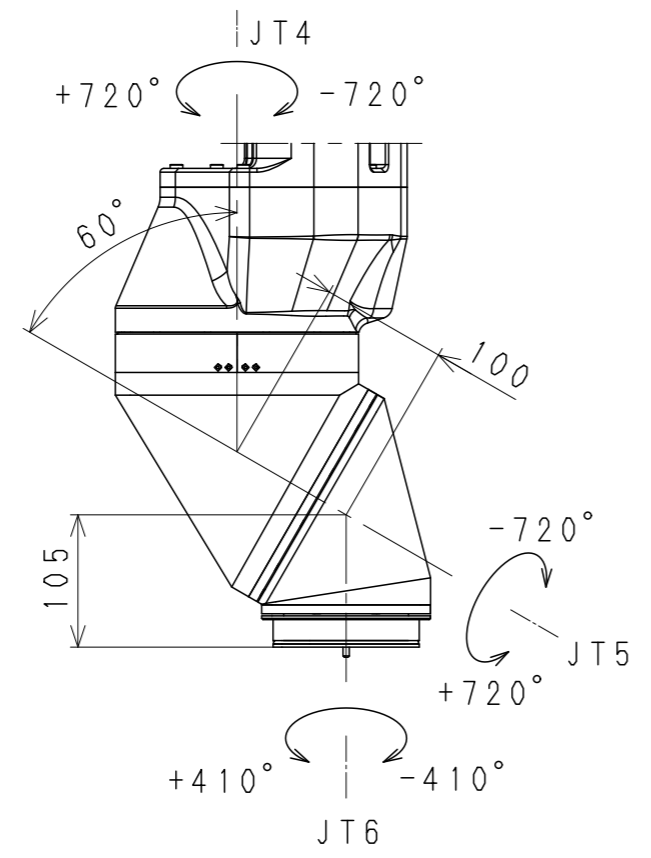


VIEW G

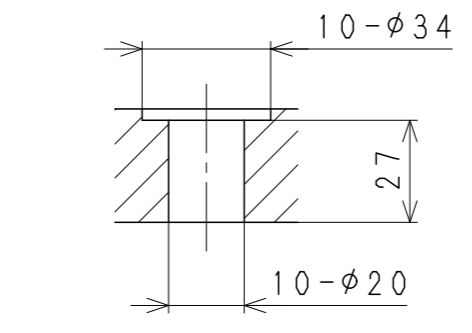
KJ194E-F1
WORKING RANGE



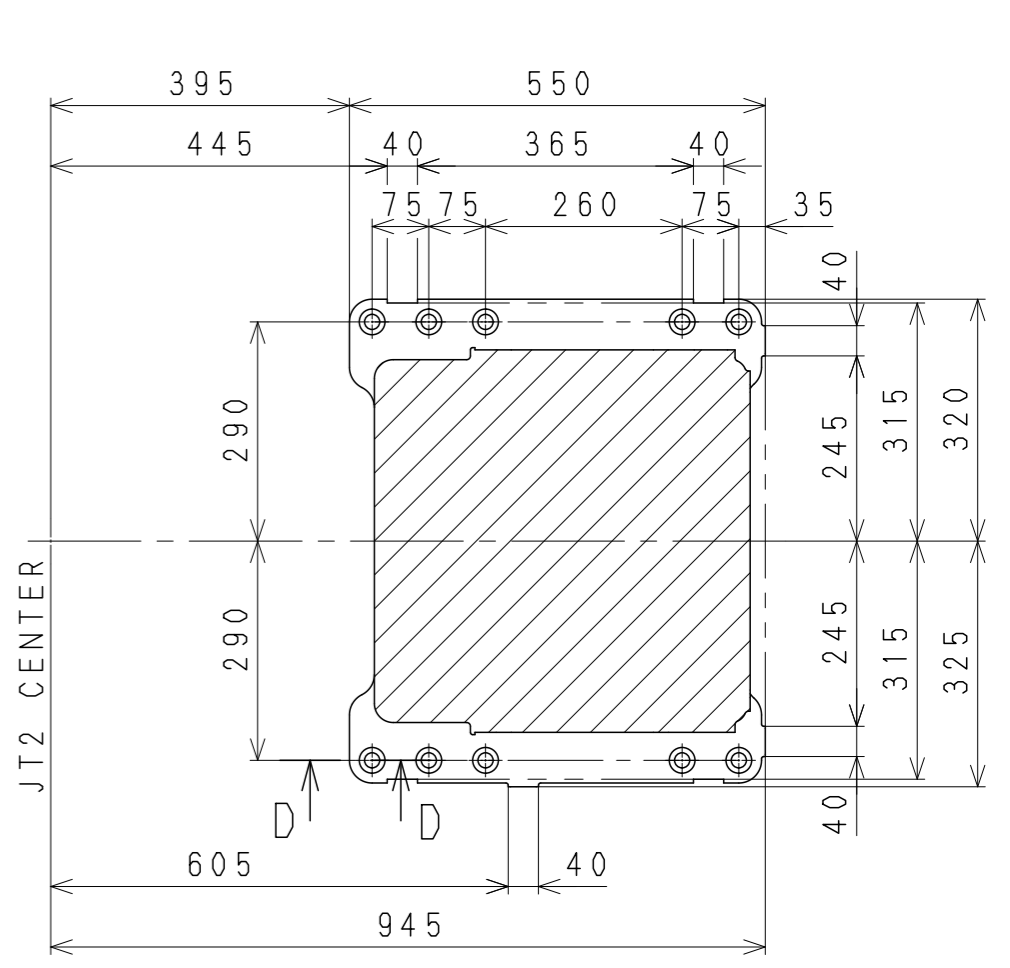
SECTION C-C



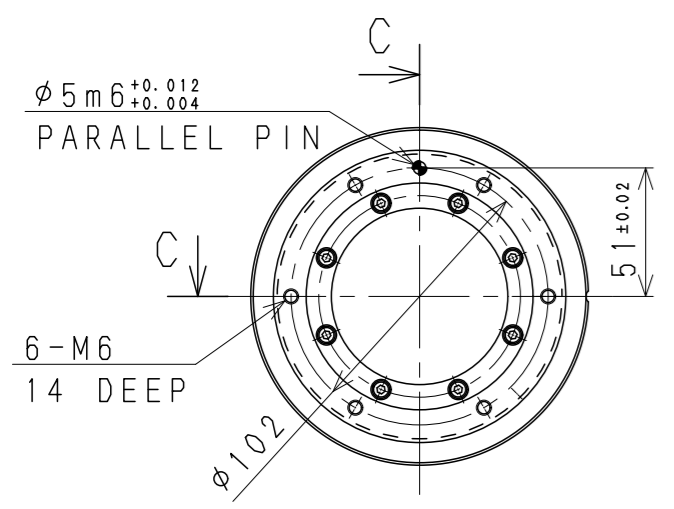
DETAIL A



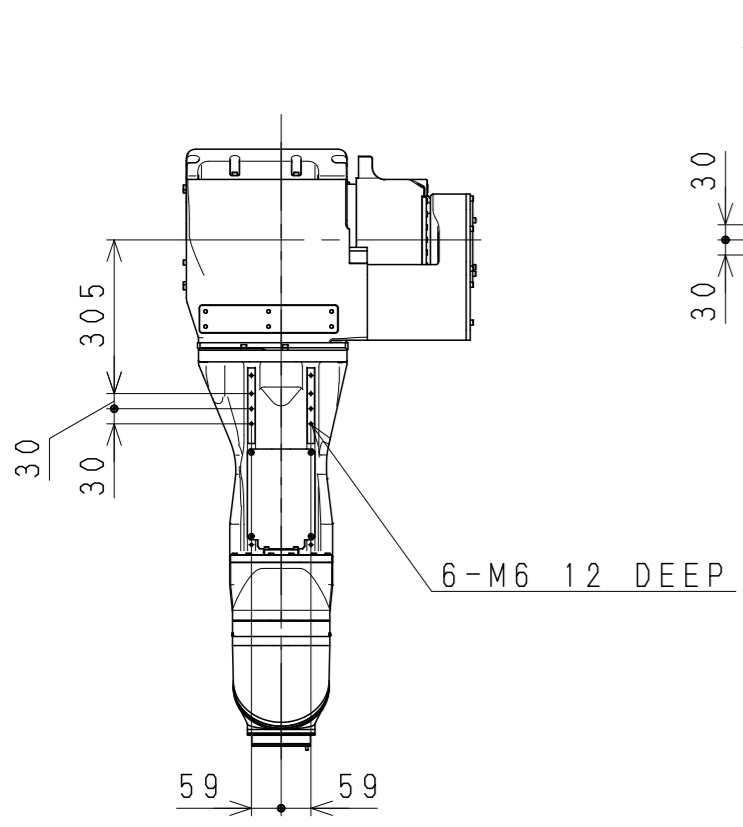
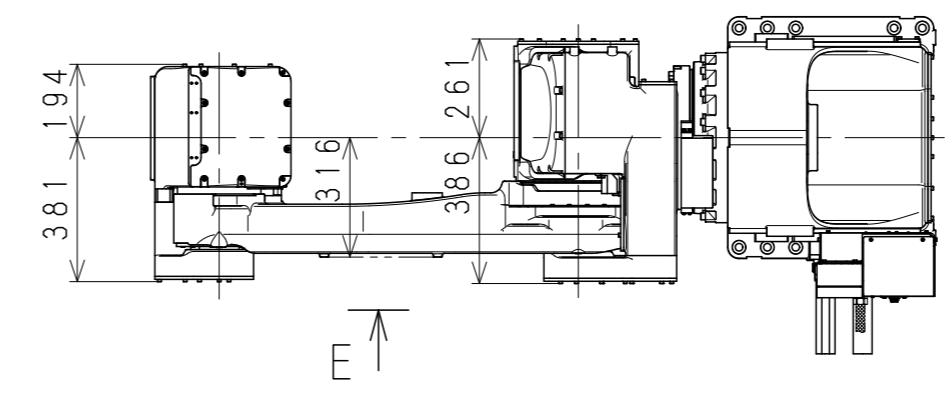
SECTION D-D



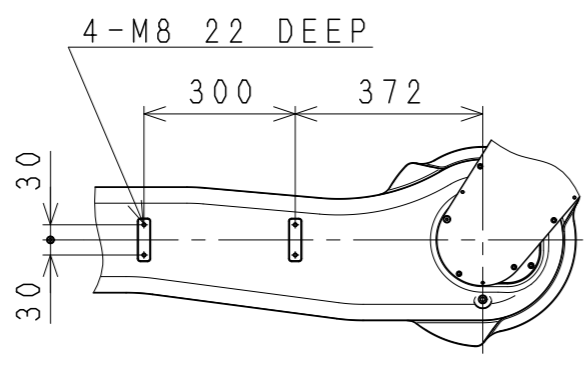
Base Installation Dimensions



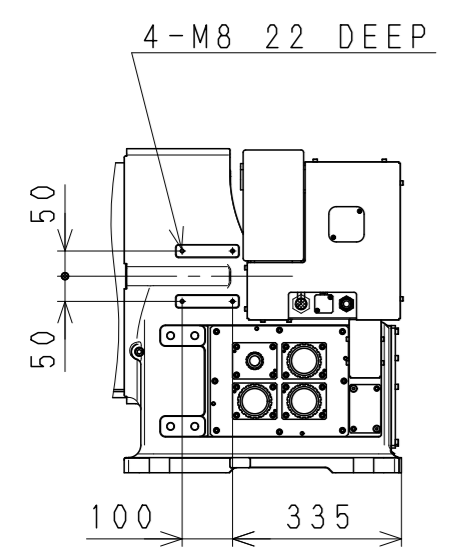
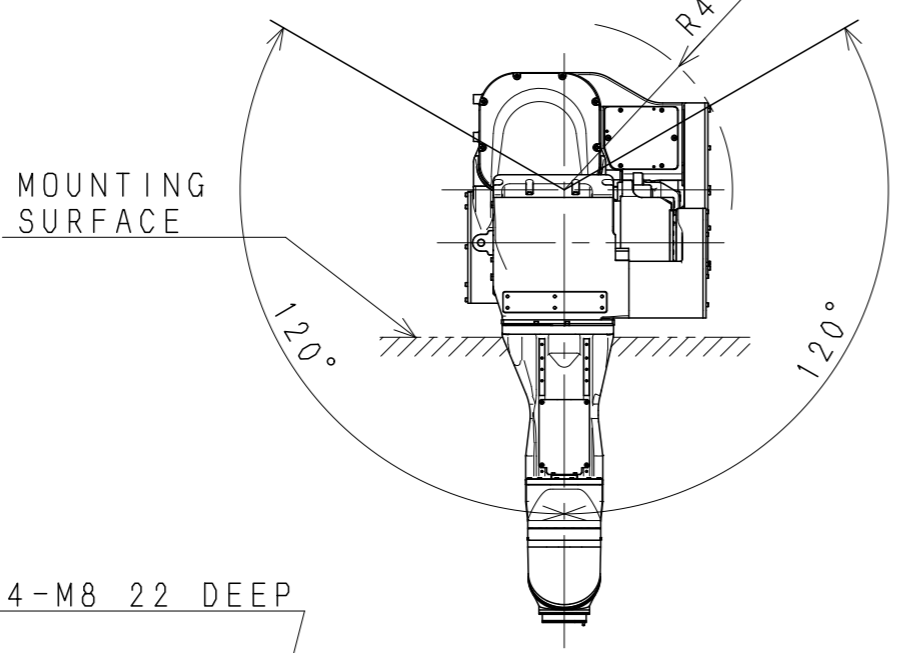
VIEW B



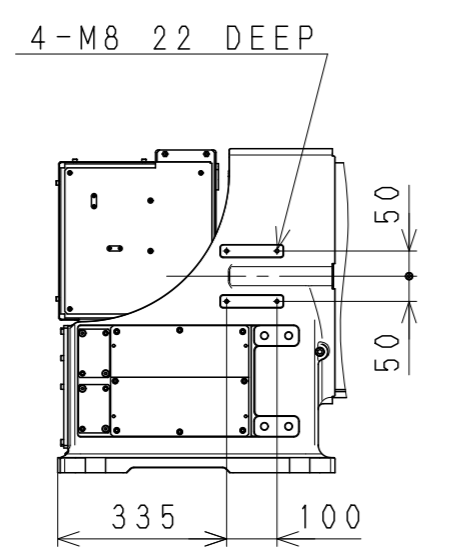
VIEW F



VIEW E

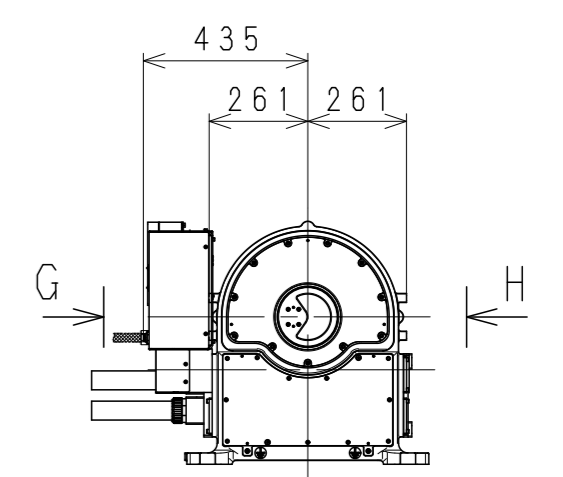
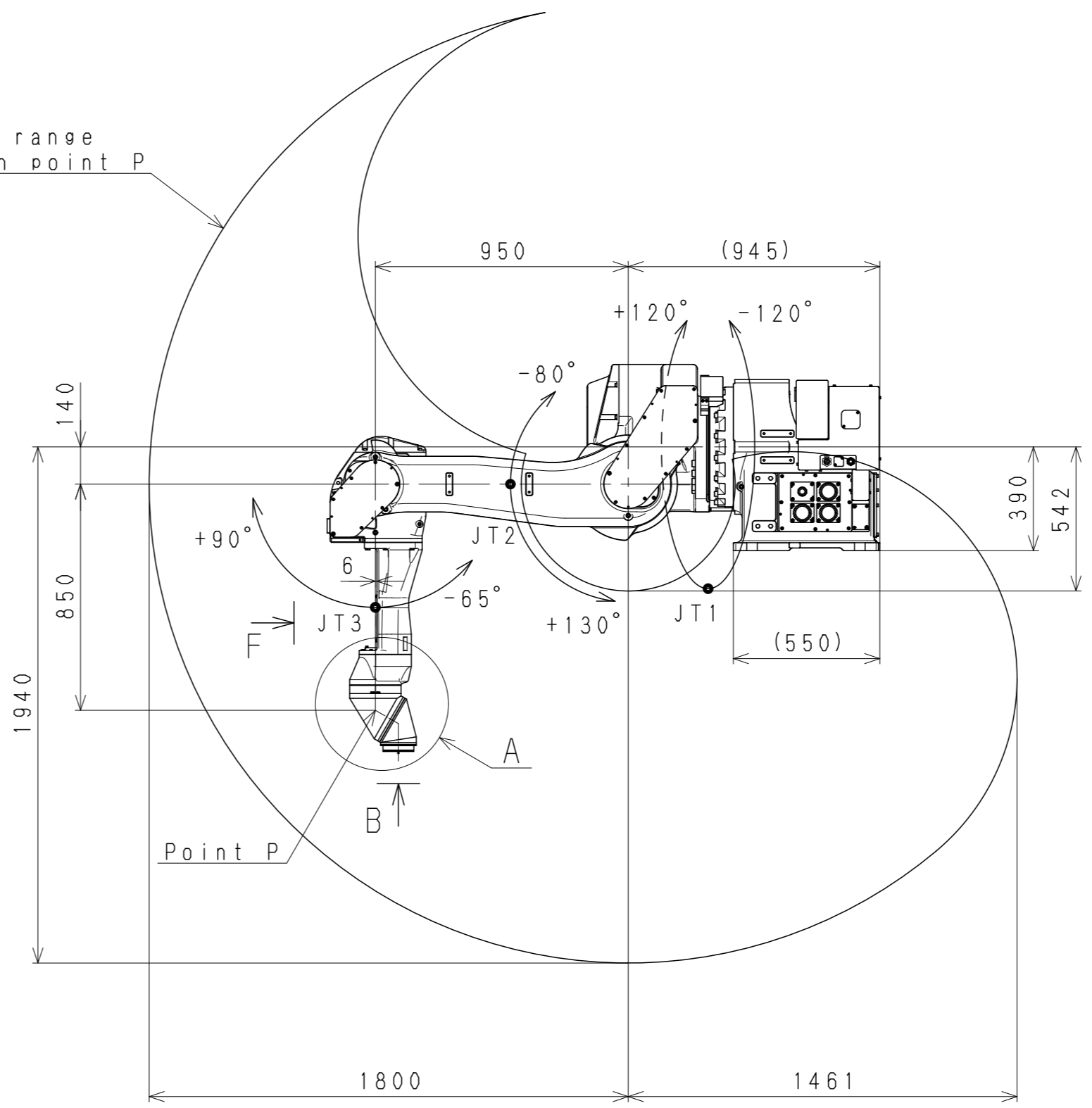


VIEW G

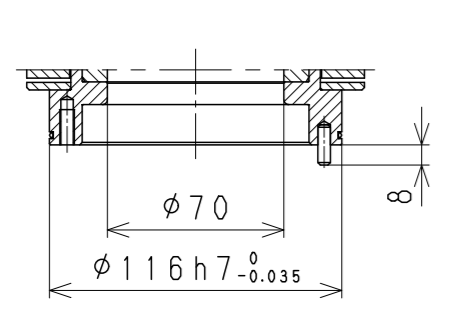


VIEW H

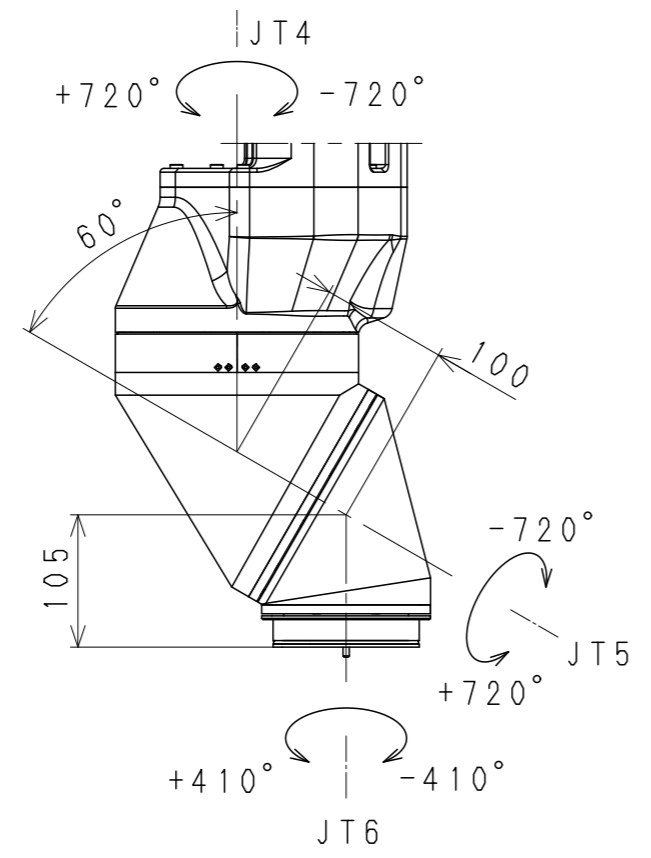
Working range based on point P



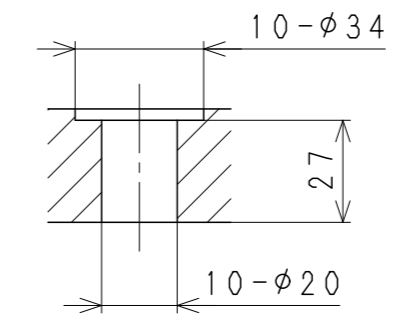
KJ194E-H0
WORKING RANGE



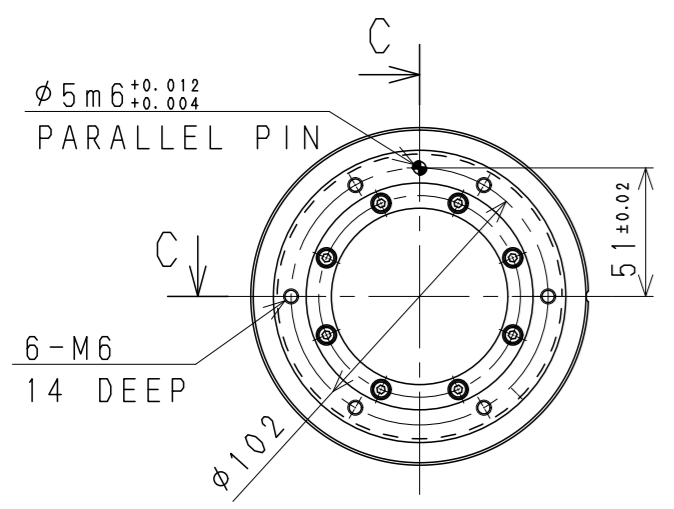
SECTION C-C



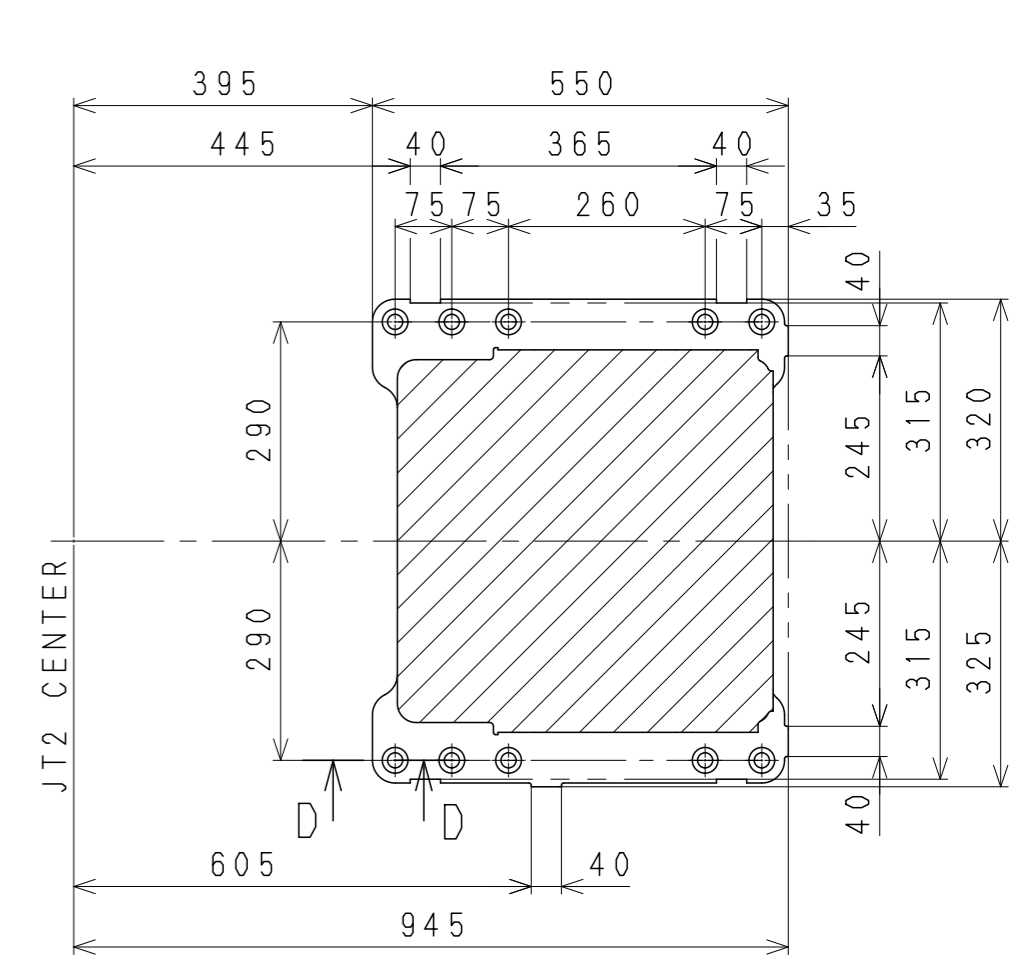
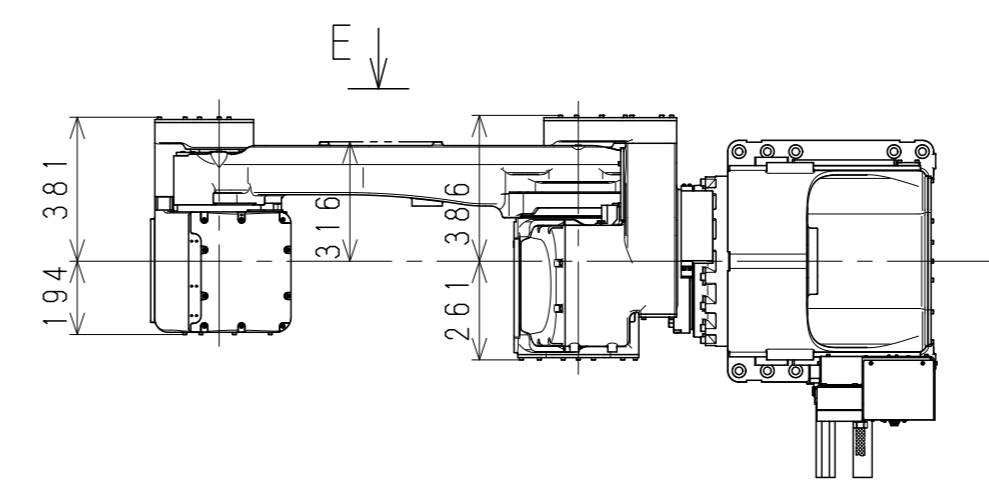
DETAIL A



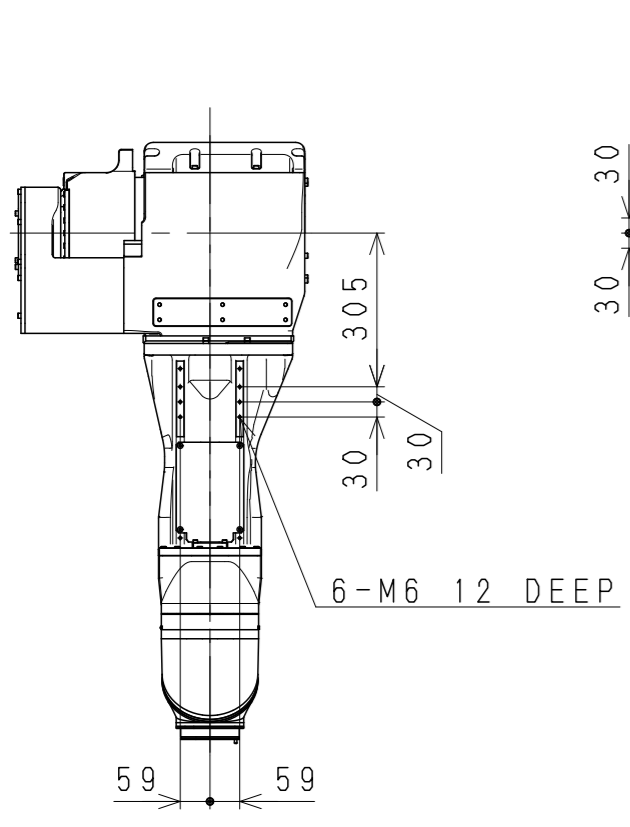
SECTION D-D



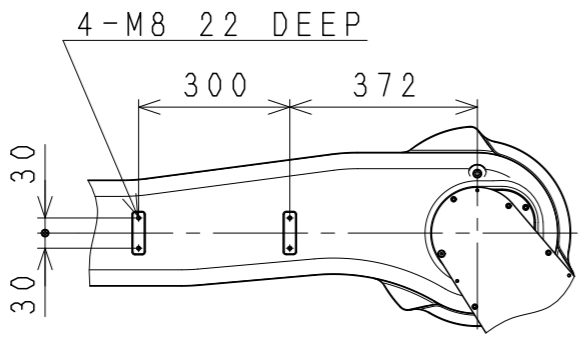
VIEW B



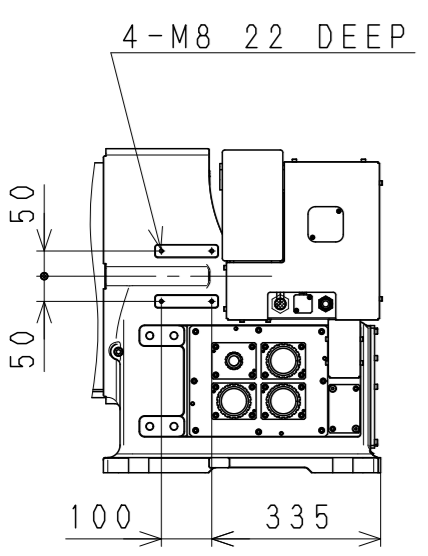
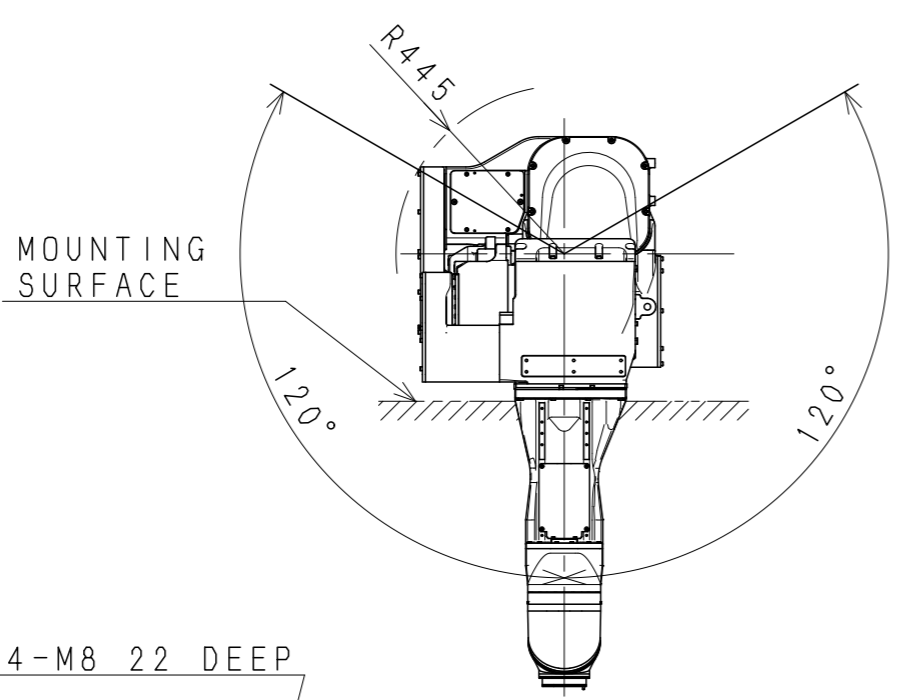
Base Installation Dimensions



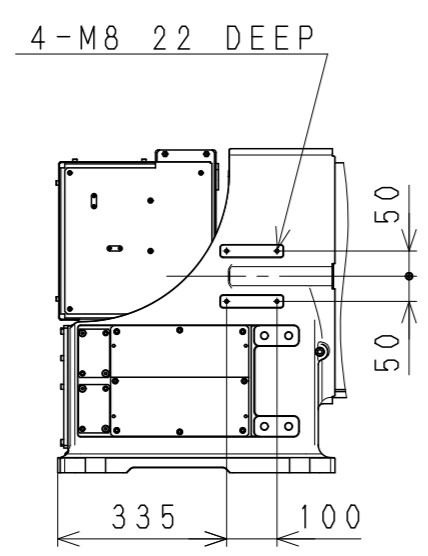
VIEW F



VIEW E

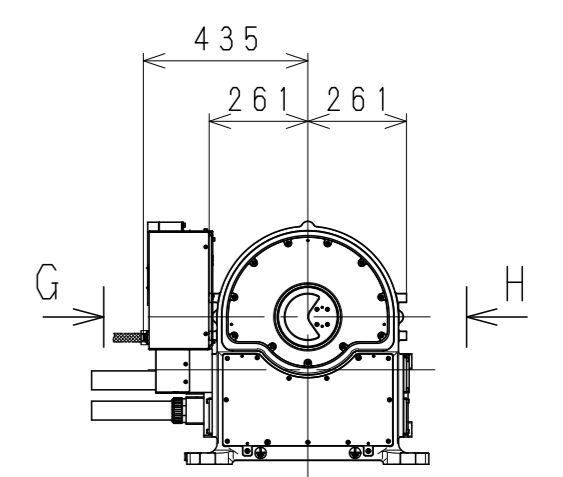
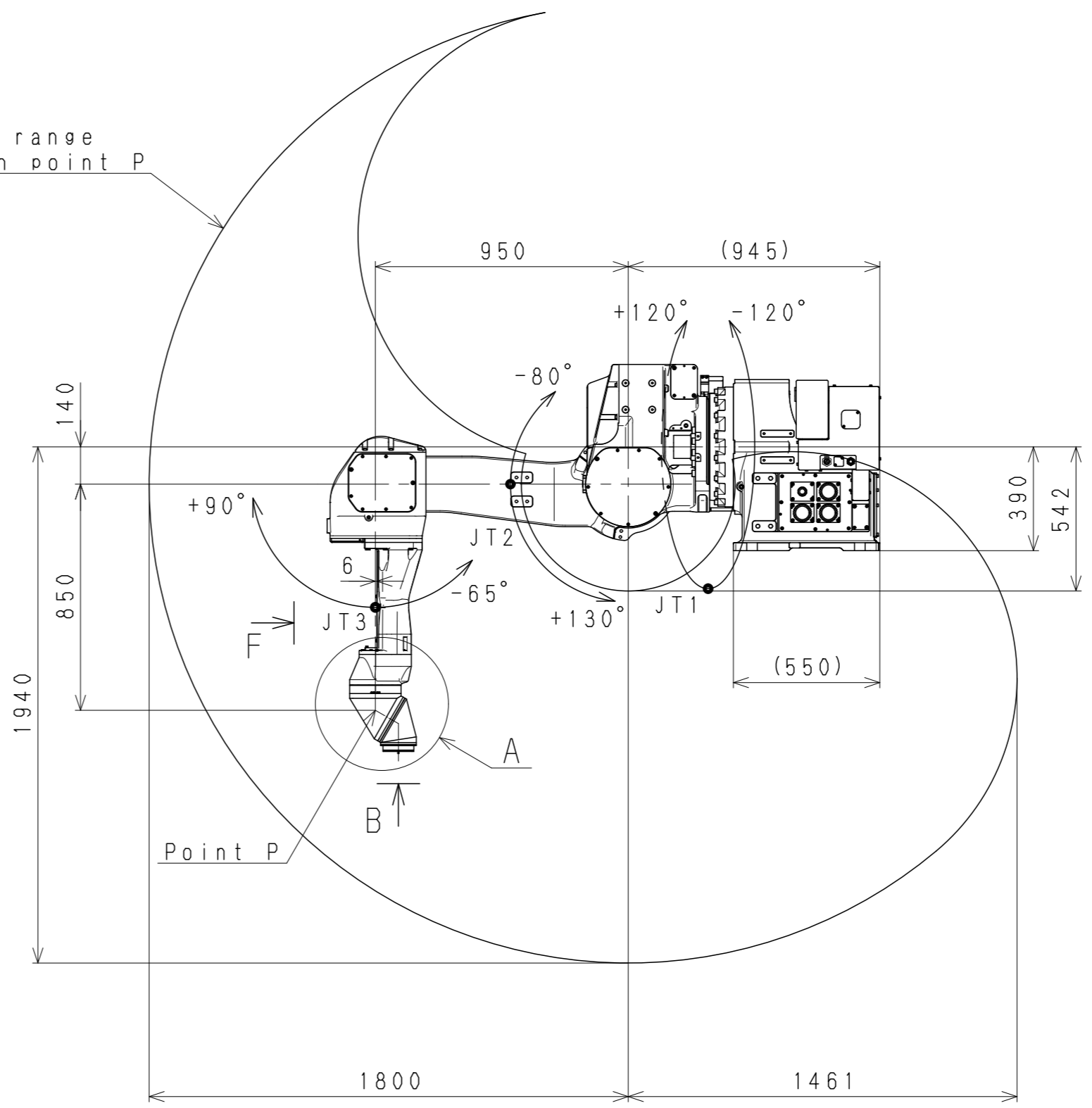


VIEW G



VIEW H

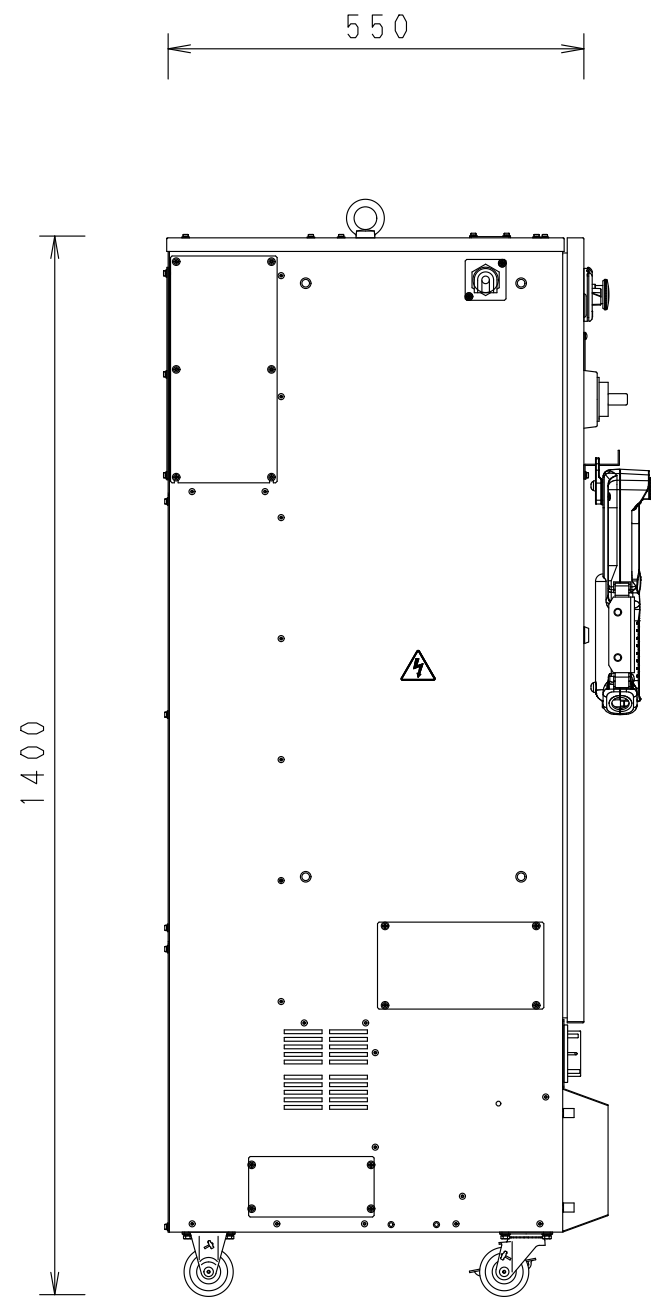
Working range based on point P



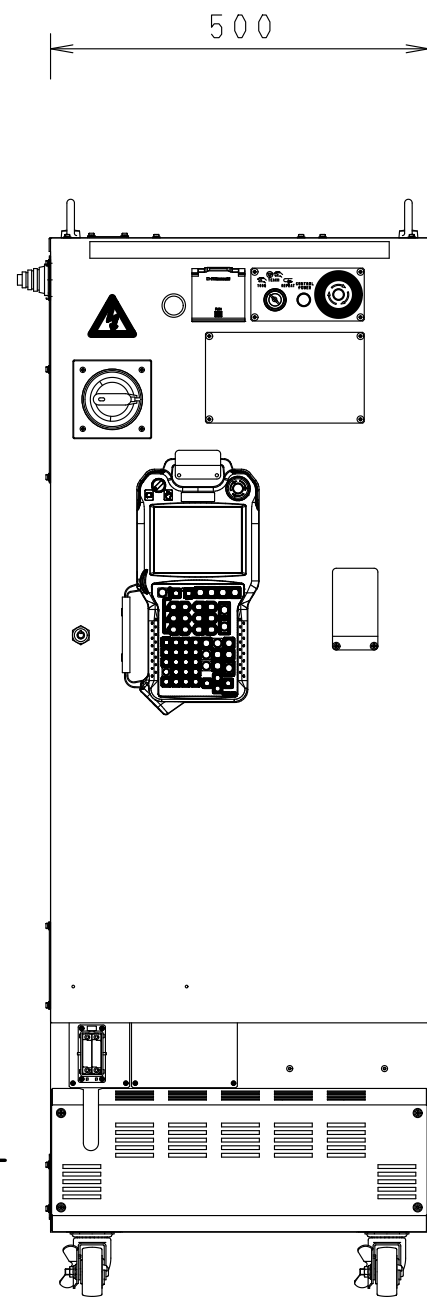
KJ194E-H1
WORKING RANGE

E45/E47 CONTROLLER

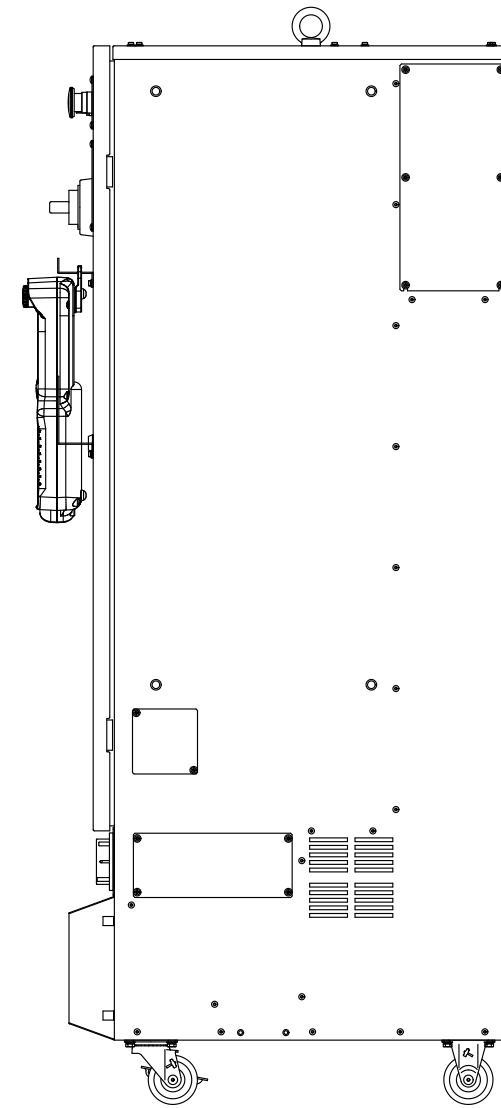
MASS: 170Kg



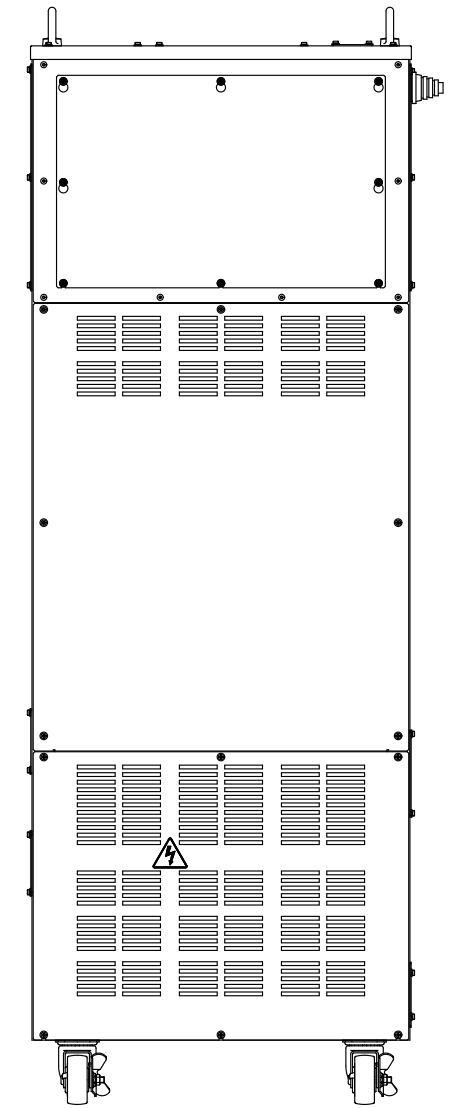
SIDE VIEW



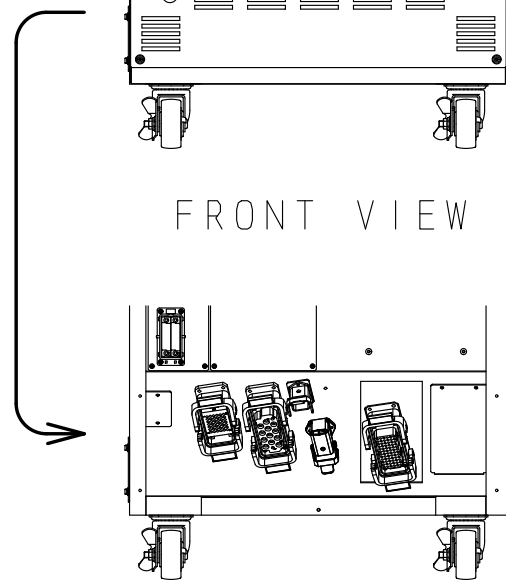
FRONT VIEW



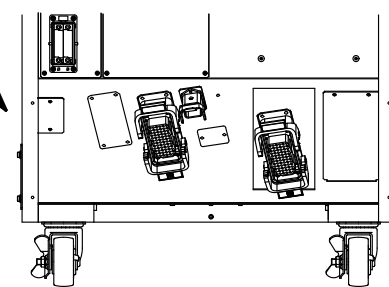
SIDE VIEW



REAR VIEW



WITHOUT CONNECTOR COVER (E45)



WITHOUT CONNECTOR COVER (E47)