5.3.2 Models α3 and Higher

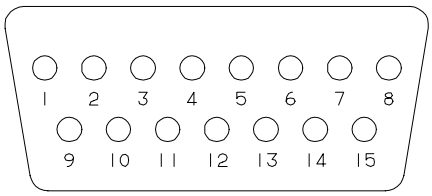
The motor power cable and brake fan unit must be connected using the connectors and cable clamps specified below.

Cable Type	Motor model name	Plug connector maker specification [FANUC specification]		Cable clamp specification and connector maker name
For Power	α3/3000, α6/2000, α6/3000, αM6/3000, αM9/3000 αL6/ 3000, αL9/3000, αC3/2000, αC6/2000, α3/ 3000HV, α6/3000HV, αM6/3000HV, αM9/3000HV	Straight type	H/MS3106A18–10S–D–T (10) [A63L–0001–0648/61810SH]	H/MS3057–10A (10) [A63L–0001–0592/10AK] Hirose Electric
		L–shape type	H/MS3108B18–10S–D–T (10) [A63L–0001–0648/81810SH]	
	α12/2000, α12/3000, α22/1500, α22/2000, α30/1200, αC12/2000, αC22/1500, α12/3000HV, α22/3000HV, α30/3000HV, αM22/3000HV, αM30/3000HV	Straight type	JL04V–6A22–22SE–EB [A63L–0001–0648/62222SJ]	JL04–2022CK–(14) [A63L–0001–0653/12A] Japan Aviation Electronics Industry
		L–shape type	JL04V–8A22–22SE–EB [A63L–0001–0648/82222SJ]	
	α22/3000, α30/2000, α30/3000, α40/2000, α40/2000FAN αM22/3000, αM30/3000, αL25/3000, αL50/2000	Straight type	JL04V–6A24–10SE (G)–EB [A63L–0001–0648/62410SJ]	JL04–2428CK–(17) [A63L–0001–0653/16A] Japan Aviation Electronics Industry
		L–shape type	JL04V–8A24–10SE (G)–EB [A63L–0001–0648/82410SJ]	
90V brake fan unit connection	Common to all models excluding α (HV) series	Straight type	JL04V–6A10SL–3SE–EB [A63L–0001–0648/610SL3SJ]	JL04–1012CK–(05) [A63L–0001–0653/04A] Japan Aviation Electronics Industry
		L–shape type	JL04V–8A10SL–3SE–EB [A63L–0001–0648/810SL3SJ]	

6.4 DETECTOR INPUT/OUTPUT SIGNALS

The α–type pulse coders signals are inputed or outputed as shown below. The pin assignments of the signals for the connector used for each model are also shown.

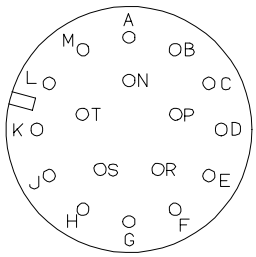
Models αA1/3000, αA2/2000, αA2/3000, αAM2/3000, αAM2.5/3000



D–SUB 15P

Signal name	Pin No.	
	αA64 αA1000	αI64
SD	12	12
*SD	13	13
REQ	5	5
*REQ	6	6
+5V	8, 15	8, 15
0V	1, 2, 3	1, 2, 3
Shield	4	4
+6VA	14	–
0VA	10	–

Models αA3/3000 to αA400/1200 αA3/3000HV to αA1000/2000HV αC3/2000 to αC22/1500 αAM3/3000 to αAM40/3000, αAM40/3000 (with fan) αAM6/3000HV to αAM40/3000HV αL3/3000 to αL50/3000



3102A 20–29PW

Signal name	Pin No.	
	αA64 αA1000	αI64 αI8
SD	A	A
*SD	D	D
REQ	F	F
*REQ	G	G
+5V	J, K	J, K
0V	N, T	N, T
Shield	H	H
+6VA	R	–
0VA	S	–

Incremental pulse coder unit

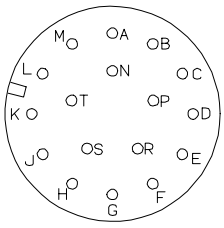
Absolute pulse coder unit

High–speed and high–resolution pulse coder unit

Item		Specification
Power voltage		5 (V) ± 5%
Current consumption		Up to 0.35 (A)
Working temperature range		0 to +60 (°C)
Maximum response frequency		100×10^3 (Hz)
Input shaft inertia		Up to 5×10^{-3} (kg·m^2)
Input shaft startup torque		Up to 0.8 (Nm)
Rated loads	Radial	20 (N)
	Axial	10 (N)
Shaft diameter runout		0.02×10^{-3} (m)
Weight		Approx. 2.0 (kg)

6.5.3 Input Signals and Layout of Connector Pins of Separate Type Pulse Coder

Pulse coder αA1000S

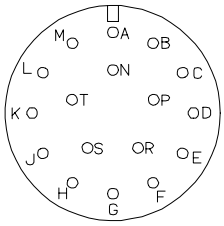


3102A20–29PW

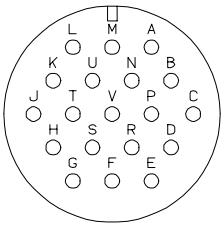
Signal name	Pin No.
	αA1000S 3102A20–29P
SD *SD	A D
REQ *REQ	F G
+5V 0V	J, K N, T
Shield	H
+6VA 0VA	R S

Incremental pulse coder unit

Absolute pulse coder unit



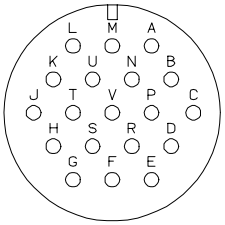
Incremental
3102A20–29P



Absolute
3102A22–14P

Signal name	Pin No.	
	Incremental 310A20-29P	Absolute 3102A22-14P
A *A	A D	A B
B *B	B E	C D
Z *Z	F G	E F
C1 C2 C4 C8	– – – –	G H J K
+5V 0V	C, J, K N, P, T	L M
Shield	H	N
OH1 OH2		– –
REQ		S
+6VA 0VA		T U

High–speed and high–resolution pulse coder unit



3102A22–14P

Signal name	Pin No
	High–speed and high–resolution 3102A22-14P
A *A	A B
B *B	C D
Z *Z	E F
C1 C2 C4 C8	G H J K
+5V 0V	L, T M, U
Shield	N
OH1 OH2	– –

Fig. *6.5.4 (a)* Pulse coder αA1000S

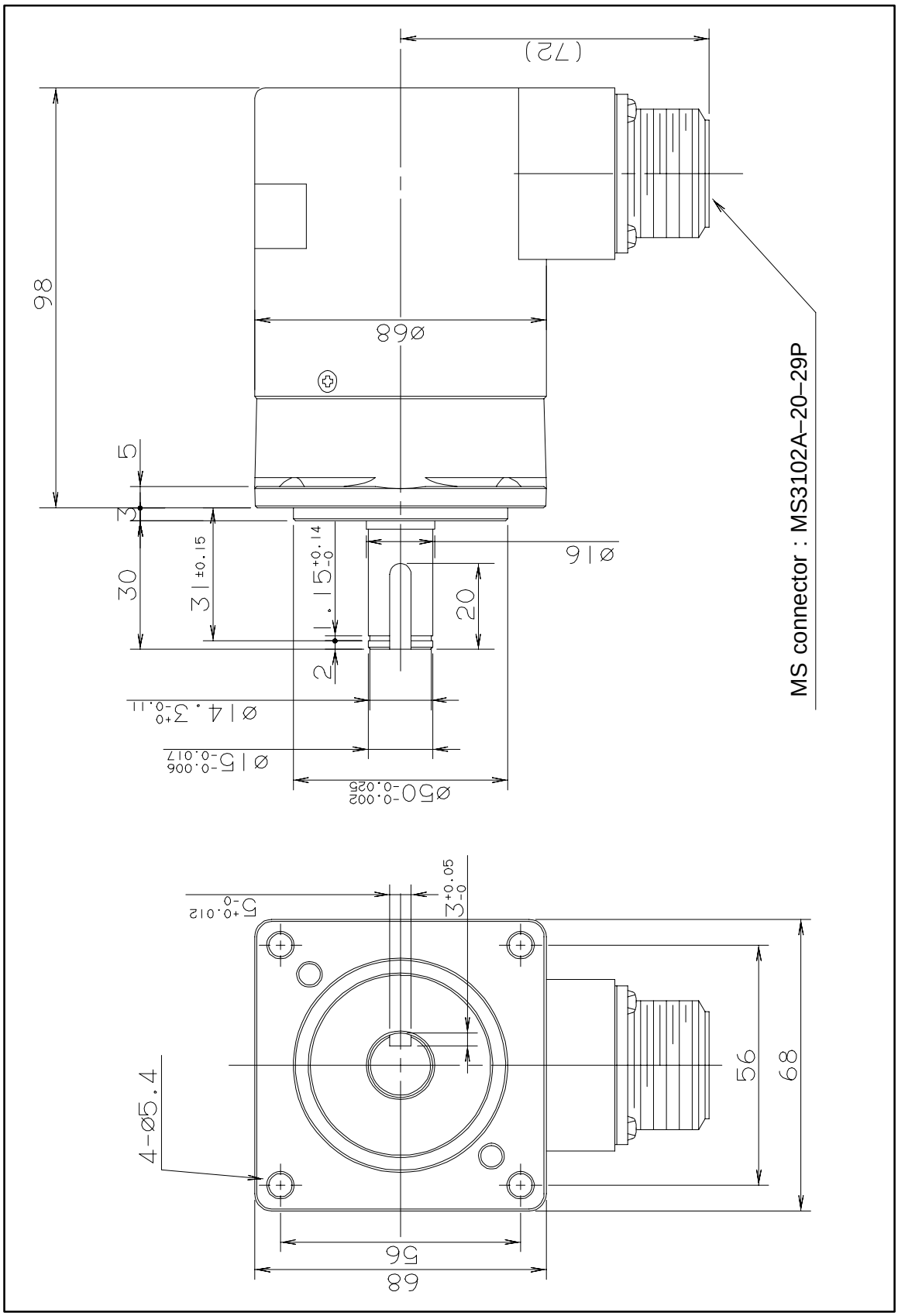


Fig. *6.5.4 (b)* Incremental pulse coder unit

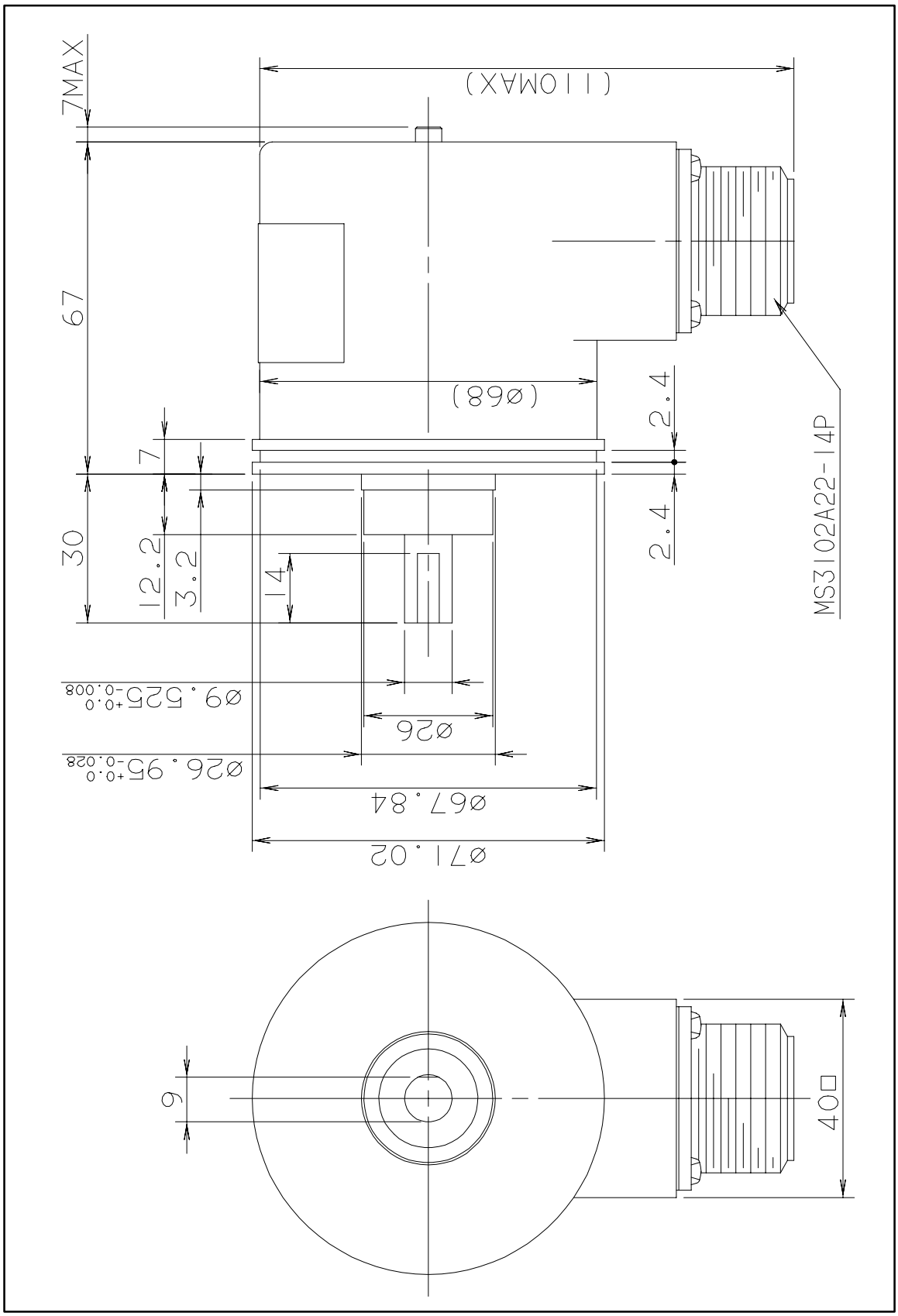
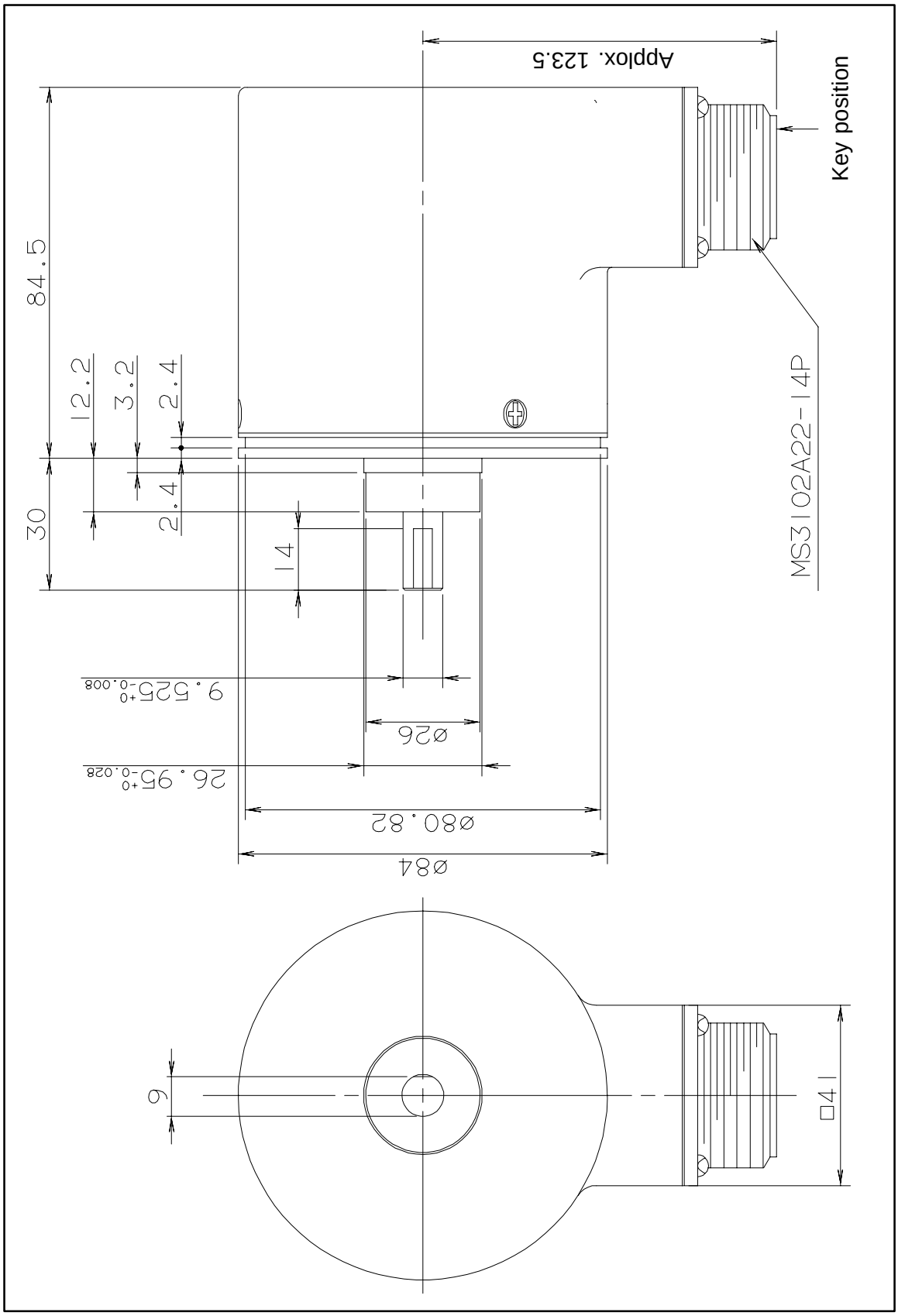


Fig. *6.5.4 (c)* Absolute pulse coder unit/High–speed and high–resolution pulse coder unit



7.2 CAUTIONS

CAUTION

Pay attention to the following points when motors with brakes are used.

1 Configure the brake circuit referring to the brake wiring diagrams and recommended parts described in the following items.
2 For the α, αM, αL and αC brake power supplies, use the full–wave rectified 100 VAC or 90 VDC power supplies. The allowable voltage fluctuation for both of these power supplies is ±10%. Do not use a half–wave rectified 200 VAC power supply. Doing so will damage the surge absorber.
3 For the α(HV) and αM(HV), use the 24 VDC power supply. The allowable voltage fluctuation for this power supply is ±10%.
4 The brake in the motor is used to hold the machine when the servo motor control is OFF. It is possible to brake the machine by turning OFF the brake power in an emergency stop or during a power interruption. However, it is impossible to use this brake to reduce the stop distance in normal operation.
5 Allow sufficient time to start the servo motor before releasing the brake. Don't use the brake as an aid for the axis to stop at the same position for a long time, such as an index table. Turn the servo off when holding the axis by the built-in brake or another holding means. At this time, allow sufficient time to set the brake before turning off the servo.
6 Models α40/2000 are longer because they contain a brake. If an excessive load is applied to the opposite side of the flange, the flange may be damaged. Do not apply any load to the opposite side of the flange. Do not subject the motor to excessive force.
7 Motor brake connectors do not have polarity.

8.1 CONNECTOR ON THE MOTOR SIDE

The FANUC α series AC servo motors use TÜV–approved connectors on the power cable and brake/fan unit in order to comply with the IEC34 standard. Dripproof receptacle connectors are used as standard for all cables including those for signals (except for the α1, and α2 series). These connectors are dripproof even when not engaged.

Strictly speaking, the IEC34 for connectors is different from the MS standard with respect to the connector disengaged–state waterproof function and appearance (black in color). However, the TÜV–approved connectors are compatible with the MS–standard round connectors in size and shape. So, MS–standard plug connectors other than those recommended below are also usable. (The waterproof plug connectors recommended in Sections 8.3.1 and 8.3.2 should be used if it is necessary to keep the whole system waterproof.)

8.1.1 Specifications of Connectors on the Motor Side

Connectors for α1 and α2

Motor Type	For Power	For Signal	For Brake
α1/3000 α2/2000, α2/3000 αM2/3000 αM2.5/3000	176339–2 (AMP Japan)	SDAB–15P (Hirose Electric)	Power connectors are used. For details, see chapter “7. Brakes.”

Connectors for α3 to α40

Motor Type	For Power	For Signal	For Brake
α3/3000, α6/2000 α6/3000 αM6/3000, αM9/3000, αL6/3000, αL9/3000, αC3/2000, αC6/2000	H/MS3102A18–10P–D–T (10) (Hirose Electric)	H/MS3102A20–29PCW4 (10) (Hirose Electric)	JL04V–2E10SL–3PE–B (Japan Aviation Electronics Industry)
α3/3000HV α6/3000HV αM6/3000HV αM9/3000HV			H/MS3102A10SL–4P (Hirose Electric)
α12/2000, α12/3000 α22/1500, α22/2000 α30/1200 αC12/2000, αC22/1500	JL04HV–2E22–22PE–B (Japan Aviation Electronics Industry)		JL04V–2E10SL–3PE–B (Japan Aviation Electronics Industry)
α12/3000HV, α22/3000HV α30/3000HV α40/2000HV αM22/3000HV αM30/3000HV αM40/3000HV			H/MS3102A10SL–4P (Hirose Electric)
α22/3000, α30/2000 α30/3000, α40/2000 α40/2000FAN αM22/3000, αM30/3000, αM40/3000, αM40/3000FAN, αL25/3000, αL50/2000	JL04V–2E24–10PE(G)–B (Japan Aviation Electronics Industry)		JL04V–2E10SL–3PE–B (Japan Aviation Electronics Industry)

Fan connectors

Motor Type	For Fan
α40/2000FAN αM40/3000FAN	JL04V–2E10SL–3PE–B (Japan Aviation Electronics Industry)
α300, α400	H/MS3102A18–10P–D–T(10) (Hirose Electric)

CAUTION

1 The motors should be installed with their connector facing downward as long as possible. When it is impossible to install a motor in this position, allow slack in the cable to keep liquids such as a dielectric fluid from going along the cable into the cable or motor. If there is a possibility that the motors and connectors get wet, provide a cover to protect them.

2 If a motor is not connected to the earth ground through the machine (frame), connect the motor grounding point and the amplifier grounding point to absorb noise using a 1.25 mm^2 or larger conductor other than the grounding conductor in the power cable. Keep the grounding conductor as far from the power cable as possible.

8.3.1 Specifications of Plug Connectors on the Cable Side (Waterproof TÜV–approved Type)

Model Name	[A] Straight Type Plug Connector	[B] Elbow Type Plug Connector	[C] Cable Clamp	[D] Single Block Type Plug Connector
For Power				
α3/3000, α6/2000 α6/3000, αM6/3000, αM9/3000 αL6/3000, αL9/3000 αC3/2000, αC6/2000 α3/3000HV α6/3000HV αM6/3000HV αM9/3000HV	H/MS3106A18–10S–D–T(10) (Hirose Electric)	H/MS3108A18–10S–D–T(10) (Hirose Electric)	H/MS3057–10A(10) (Hirose Electric)	H/MS3106A18–10S–D–T(13) (Hirose Electric)
α12/2000, α12/3000 α22/1500, α22/2000 α30/1200 αC12/2000, αC22/1500 α12/3000HV α22/3000HV α30/3000HV α40/2000HV αM22/3000HV αM30/3000HV αM40/3000HV	JL04V–6A22–22SE–EB (Japan Aviation Electronics Industry)	JL04V–8A22–22SE–EB (Japan Aviation Electronics Industry)	JL04–2022CK–(14) (Japan Aviation Electronics Industry)	JL04V–6A22–22SE (Japan Aviation Electronics Industry)
α22/3000, α30/2000 α30/3000, α40/2000 α40/2000FAN (*1) αM22/3000 αM30/3000 αM40/3000 αM40/3000FAN (*1) αL25/3000 αL50/2000	JL04V–6A24–10SE(G)–EB (Japan Aviation Electronics Industry)	JL04V–8A24–10SE(G)–EB (Japan Aviation Electronics Industry)	JL04–2428CK–(17) (Japan Aviation Electronics Industry)	JL04V–6A24–10SE(G) (Japan Aviation Electronics Industry)
For Signal				
Common to all models	Not subject to IEC34 standard (Select from the water–proof connectors in the following item.)			
For Brake				
Common to all models (excluding αHV series) (*1)	JL04V–6A10SL–3SE–EB (Japan Aviation Electronics Industry)	JL04V–8A10SL–3SE–EB (Japan Aviation Electronics Industry)	JL04–1012CK–(05) (Japan Aviation Electronics Industry)	JL04V–6A10SL–3SE (Japan Aviation Electronics Industry)
αHV series	Not subject to IEC34 standard (Select from the water–proof connectors in the following item.)			

*1 The connector for the α40 fan and αM40 fan is the same connector used on a standard brake.

NOTE
1 You must pay attention when selecting connectors made by manufacturers not listed in the table above.
For details, “5. IEC34 Standard Compliance Authorization Conditions.”
2 When connector type [D] is used, and a seal adapter must be used for compliance with the IEC34 standard, consult the contact manufacturer separately.
3 Signal connectors and brake connectors for the αHV series are not subject to the IEC34 standard. Select from the water–proof connectors in the following item.

8.3.2 Specifications of Plug Connectors on the Cable Side (Waterproof Type)

Model Name	[A] Straight Type Plug Connector	[B] Elbow Type Plug Connector	[C] Cable Clamp	[D] Single Block Type Plug Connector
For Power				
α3/3000, α6/2000 α6/3000, αM6/3000, αM9/3000 αL6/3000, αL9/3000 αC3/2000, αC6/2000 α3/3000HV α6/3000HV αM6/3000HV αM9/3000HV	JA06A–18–10S–J1–EB (Japan Aviation Electronics Industry) H/MS3106A18–10S(10) (Hirose Electric) MS3106A18–10S–B–BSS (DDK Ltd.)	JA08A–18–10S–J1–EB (Japan Aviation Electronics Industry) H/MS3108A18–10S(10) (Hirose Electric) MS3108A18–10S–B–BAS (DDK Ltd.)	JL04–18CK(13) (Japan Aviation Electronics Industry) H/MS3057–10A(10) (Hirose Electric) CE3057–10A–1(D265) (DDK Ltd.)	JA06A–18–10S–J1–(A72) (Japan Aviation Electronics Industry) H/MS3106A18–10S(13) (Hirose Electric) MS3106A18–10S–B (D190) (DDK Ltd.)
α12/2000, α12/3000 α22/1500, α22/2000 α30/1200 αC12/2000, αC22/1500 α12/3000HV α22/3000HV α30/3000HV α40/2000HV αM22/3000HV αM30/3000HV αM40/3000HV	JA06A–22–22S–J1–EB (Japan Aviation Electronics Industry) H/MS3106A22–22S(10) (Hirose Electric) MS3106A22–22S–B–BSS (DDK Ltd.)	JA08A–22–22S–J1–EB (Japan Aviation Electronics Industry) H/MS3108B22–22S(10) (Hirose Electric) MS3108A22–22S–B–BAS (DDK Ltd.)	JL04–2022CK–(14) (Japan Aviation Electronics Industry) H/MS3057–12A(10) (Hirose Electric) CE3057–12A–1(D265) (DDK Ltd.)	JA06A–22–22S–J1–(A72) (Japan Aviation Electronics Industry) H/MS3106A22–22S(13) (Hirose Electric) MS3106A22–22S–B (D190) (DDK Ltd.)
α22/3000, α30/2000 α30/3000, α40/2000 α40/2000FAN (*1) αM22/3000 αM30/3000 αM40/3000 αM40/3000HVFAN (*1) αL25/3000 αL50/2000	JA06A–24–10S–J1–EB (Japan Aviation Electronics Industry) H/MS3106A24–10S(10) (Hirose Electric) MS3106A24–10S–B–BSS (DDK Ltd.)	JA08A–24–10S–J1–EB (Japan Aviation Electronics Industry) H/MS3108B24–10S(10) (Hirose Electric) MS3108A24–10S–B–BAS (DDK Ltd.)	JL04–2428CK–(17) (Japan Aviation Electronics Industry) H/MS3057–16A(10) (Hirose Electric) CE3057–16A–1(D265) (DDK Ltd.)	JA06A–24–10S–J1–(A72) (Japan Aviation Electronics Industry) H/MS3106A24–10S(13) (Hirose Electric) MS3106A24–10S–B (D190) (DDK Ltd.)

Model Name	[A] Straight Type Plug Connector	[B] Elbow Type Plug Connector	[C] Cable Clamp	[D] Single Block Type Plug Connector
For Signal				
Common to all models	JA06A–20–29SW–J1–EB (Japan Aviation Electronics Industry) H/MS3106A20–29SW(11) (Hirose Electric) MS3106A20–29SW–B–BSS (DDK Ltd.)	JA08A–20–29SW–J1–EB (Japan Aviation Electronics Industry) H/MS3108B20–29SW(11) (Hirose Electric) MS3108A20–29SW–B–BAS (DDK Ltd.)	JL04–2022CK–(14) (Japan Aviation Electronics Industry) H/MS3057–12A(10) (Hirose Electric) CE3057–12A–1(D265) (DDK Ltd.)	JA06A–20–29SW–JA–(A72) (Japan Aviation Electronics Industry) H/MS3106A20–29SW(14) (Hirose Electric) MS3106A20–29SW–B(D190) (DDK Ltd.)
For Brake				
Common to all models (excluding αHV series)*1	JA06A–10SL–3S–J1–EB (Japan Aviation Electronics Industry) H/MS3106A10SL–3S(10) (Hirose Electric) MS3106A10SL–3S–B–BSS (DDK Ltd.)	JA08A–10SL–3S–J1–EB (Japan Aviation Electronics Industry) H/MS3108B10SL–3S(10) (Hirose Electric) MS3108A10SL–3S–B–BAS (DDK Ltd.)	JA04–1012CK–(06) (Japan Aviation Electronics Industry) H/MS3057–4A1(10) (Hirose Electric) CE3057–4A–1(D265) (DDK Ltd.)	JA06A–10SL–3S–J1–(A72) (Japan Aviation Electronics Industry) H/MS3106A10SL–3S(13) (Hirose Electric) MS3106A10SL–3S–B–(D190) (DDK Ltd.)
αHV series	JA06A–10SL–4S–J1–EB (Japan Aviation Electronics Industry) H/MS310610SL–4S(10) (Hirose Electric) MS3106A10SL–4S–B–BSS (DDK Ltd.)	JA08A–10SL–4S–J1–EB (Japan Aviation Electronics Industry) H/MS3108B10SL–4S(10) (Hirose Electric) MS3108A10SL–4S–B–BAS (DDK Ltd.)	JL04–1012CK–(06) (Japan Aviation Electronics Industry) H/MS3057–4A1(10) (Hirose Electric) CE3057–4A–1(D265) (DDK Ltd.)	JA06A–10SL–4S–J1–(A72) (Japan Aviation Electronics Industry) H/MS3106A10SL–4S(13) (Hirose Electric) MS3106A10SL–4S–B–(D190) (DDK Ltd.)

*1 The connector for the α40 fan or αM40 fan is the same connector used on a standard brake.

Cable–side plug connector specification (waterproof/seal adapter specification)

Model Name	[E] Cable Seal Adapter Straight Type	[F] Cable Seal Adapter Elbow Type	[G] Conduit Hose Seal Adapter Straight Type	[H] Conduit Hose Seal Adapter Elbow Type
For Power				
α3/3000, α6/2000 α6/3000, αM6/3000, αM9/3000 αL6/3000, αL9/3000 αC3/2000, αC6/2000 α3/3000HV α6/3000HV αM6/3000HV αM9/3000HV	YSO 18–12–14 (DAIWA DENGYOU CO., LTD.) ACS–12RL–MS18F (NIPPON FLEX CO., LTD.) CKD12–18 (SANKEI MANUFACTURING CO., LTD.)	YLO 18–12–14 (DAIWA DENGYOU CO., LTD.) ACA–12RL–MS18F (NIPPON FLEX CO., LTD.) C90° KD12–18 (SANKEI MANUFACTURING CO., LTD.)	MSA 16–18 (DAIWA DENGYOU CO., LTD.) RCC–104RL–MS18F (NIPPON FLEX CO., LTD.) KKD16–18 (SANKEI MANUFACTURING CO., LTD.)	MAA 16–18 (DAIWA DENGYOU CO., LTD.) RCC–304RL–MS18F (NIPPON FLEX CO., LTD.) K90° KD16–18 (SANKEI MANUFACTURING CO., LTD.)
α12/2000, α12/3000 α22/1500, α22/2000 α30/1200 αC12/2000, αC22/1500 α12/3000HV α22/3000HV α30/3000HV α40/2000HV αM22/3000HV αM30/3000HV αM40/3000HV	YSO 22–12–14 (DAIWA DENGYOU CO., LTD.) ACS–16RL–MS22F (NIPPON FLEX CO., LTD.) CKD16–22 (SANKEI MANUFACTURING CO., LTD.)	YLO 22–12–14 (DAIWA DENGYOU CO., LTD.) ACA–16RL–MS22F (NIPPON FLEX CO., LTD.) C90° KD16–22 (SANKEI MANUFACTURING CO., LTD.)	MSA 22–22 (DAIWA DENGYOU CO., LTD.) RCC–106RL–MS22F (NIPPON FLEX CO., LTD.) KKD22–22 (SANKEI MANUFACTURING CO., LTD.)	MAA 22–22 (DAIWA DENGYOU CO., LTD.) RCC–306RL–MS22F (NIPPON FLEX CO., LTD.) K90° KD22–22 (SANKEI MANUFACTURING CO., LTD.)

Model Name	[A] Straight Type Plug Connector	[B] Elbow Type Plug Connector	[C] Cable Clamp
α12/2000, α12/3000 α22/1500, α22/2000 α30/1200 αC12/2000, αC22/1500 α12/3000HV α22/3000HV α30/3000HV α40/2000HV αM22/3000HV αM30/3000HV αM40/3000HV	MS3106B22–22S–(A72) (Japan Aviation Electronics Industry) H/MSA3106A22–22S(10) (Hirose Electric) MS3106B22–22S–B (DDK Ltd.)	MS3108B22–22S–(A72) (Japan Aviation Electronics Industry) H/MSA3108B22–22S(10) (Hirose Electric) MS3108B22–22S–B (DDK Ltd.)	MS3057–12A–(A72) (Japan Aviation Electronics Industry) H/MSA3057–12A(10) (Hirose Electric) MS3057–12A(D265) (DDK Ltd.)
α22/3000, α30/2000 α30/3000, α40/2000 α40/2000FAN (*1) αM22/3000 αM30/3000 αM40/3000 αM40/3000FAN (*1) αL25/3000 αL50/2000	MS3106B24–10S–(A72) (Japan Aviation Electronics Industry) H/MSA3106A24–10S(10) (Hirose Electric) MS3106A24–10S–B (DDK Ltd.)	MS3108B24–10S–(A72) (Japan Aviation Electronics Industry) H/MSA3108B24–10S(10) (Hirose Electric) MS3108B24–10S–B (DDK Ltd.)	MS3057–16A–(A72) (Japan Aviation Electronics Industry) H/MSA3057–16A(10) (Hirose Electric) MS3057–16A(D265) (DDK Ltd.)
For Signal			
Common to all models	MS3106B20–29SW–(A72) (Japan Aviation Electronics Industry) H/MSA3106A20–29SW(11) (Hirose Electric) MS3106A20–29SW–B (DDK Ltd.)	MS3108B20–29SW–(A72) (Japan Aviation Electronics Industry) H/MSA3108B20–29SW(11) (Hirose Electric) MS3108B20–29SW–B (DDK Ltd.)	MS3057–12A–(A72) (Japan Aviation Electronics Industry) H/MSA3057–12A(10) (Hirose Electric) MS3057–12A(D265) (DDK Ltd.)
For Brake			
Common to all models (excluding αHV series)*1	MS3106B10SL–3S–(A72) (Japan Aviation Electronics Industry) H/MSA3106A10SL–3S(10) (Hirose Electric) MS3106A10SL–3S–B (DDK Ltd.)	MS3108B10SL–3S–(A72) (Japan Aviation Electronics Industry) H/MSA3108B10SL–3S(10) (Hirose Electric) MS3108A10SL–3S–B (DDK Ltd.)	MS3057–4A–(A72) (Japan Aviation Electronics Industry) H/MSA3057–4A(10) (Hirose Electric) MS3057–4A(D265) (DDK Ltd.)
αHV series	MS3106B10SL–4S–(A72) (Japan Aviation Electronics Industry) H/MSA3106A10SL–4S(10) (Hirose Electric) MS3106A10SL–4S–B (DDK Ltd.)	MS3108B10SL–4S–(A72) (Japan Aviation Electronics Industry) H/MSA3108B10SL–4S(10) (Hirose Electric) MS3108A10SL–4S–B (DDK Ltd.)	MS3057–4A–(A72) (Japan Aviation Electronics Industry) H/MSA3057–4A(10) (Hirose Electric) MS3057–4A(D265) (DDK Ltd.)

*1 The connector for the α40 fan or αM40 fan is the same connector used on a standard brake.

The table only examples. Contact each manufacturer for details.

9.1 COOLING FAN SPECIFICATIONS

Motor Type	α40 with Fan	
Input Voltage [V]	Single–phase 200 VAC	Single–phase 230 VAC
Rated Current [A]	0.64 ± 0.06	0.74 ± 0.06
Surge Current [A]	1.06 ± 0.1	1.22 ± 0.1
Protection Circuit Setting Temperature [°C]	135	
Protection Type (IEC34–5)	IP00	

Motor Type	Input voltage	Rated current(Arms)	
		50Hz	60Hz
αM40/3000 (with fan)	200V (Single–phase)	0.25 Arms	0.23Arms
α300/2000 α400/2000	200V (Three–phase)	0.25 Arms	0.35Arms
α1000/2000HV	200V (Three–phase)	0.75 Arms	0.75Arms

9.2 MOTOR CONNECTOR SPECIFICATIONS

Motor Type	Receptacle Connector
α40 with Fan	JL04V–2E10SL–3PE–B (Japan Aviation Electronics Industry)
α300, α400	H/MS3102A18–10P–D–T(10) (Hirose Electric)

* 1 Standard brake connectors are used as fan connectors for the α40/αM40.
* 2 α3–class power connectors are used as fan connectors for the α300/α400.

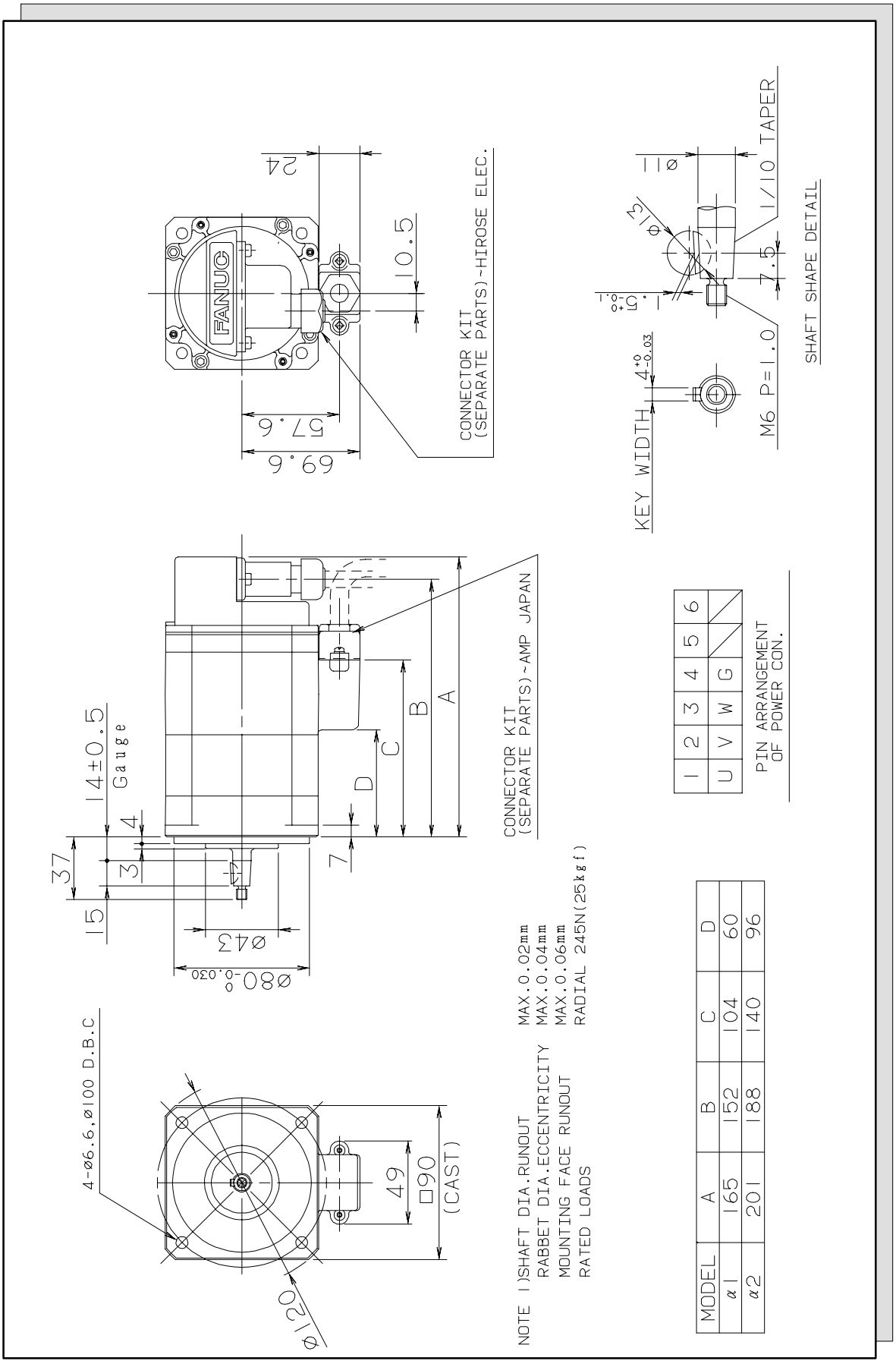
9.3 ABOUT CONNECTOR CABLES

α40/2000 with fan, αM40/3000 with fan, α300/2000, α400/2000, α1000/2000HV

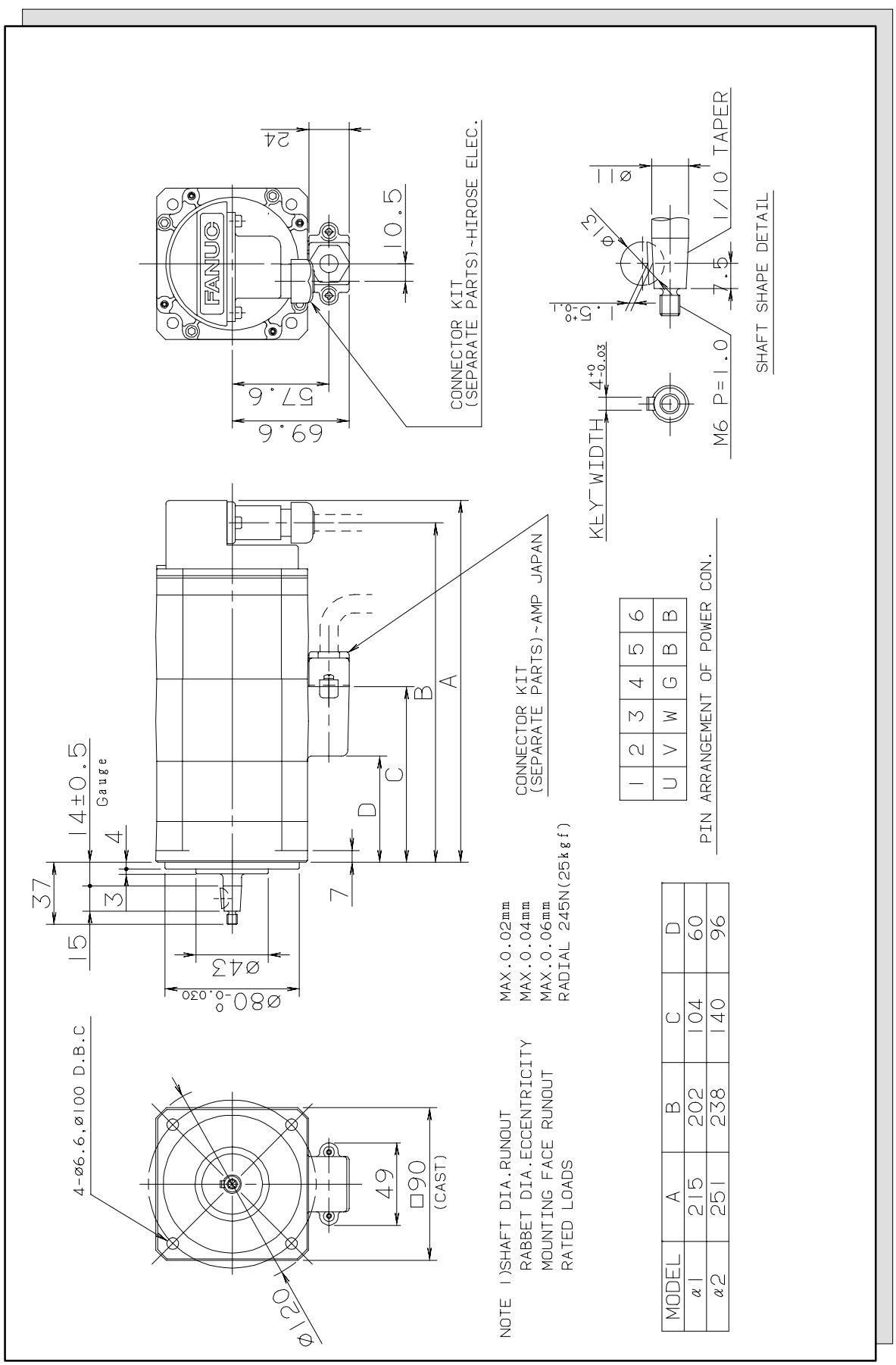
The user must prepare connector cables referring to the following specifications.

Item	Specification
Cable plug connector	For details, see the brake and fan connector specifications in “8.3 Cable Connector Specifications.”
Recommend Lead Diameter (conductor diameter)	1 mm^2 (AWG18 or equivalent) max.

Fig. 3.3 (a) Models α1 and α2



MODEL	A	B	C	D
α1	165	152	104	60
α2	201	188	140	96



MODEL	A	B	C	D
α1	215	202	104	60
α2	251	238	140	96

Fig. 3.3 *(b)* **Models α1 and α2 (with the brake)**

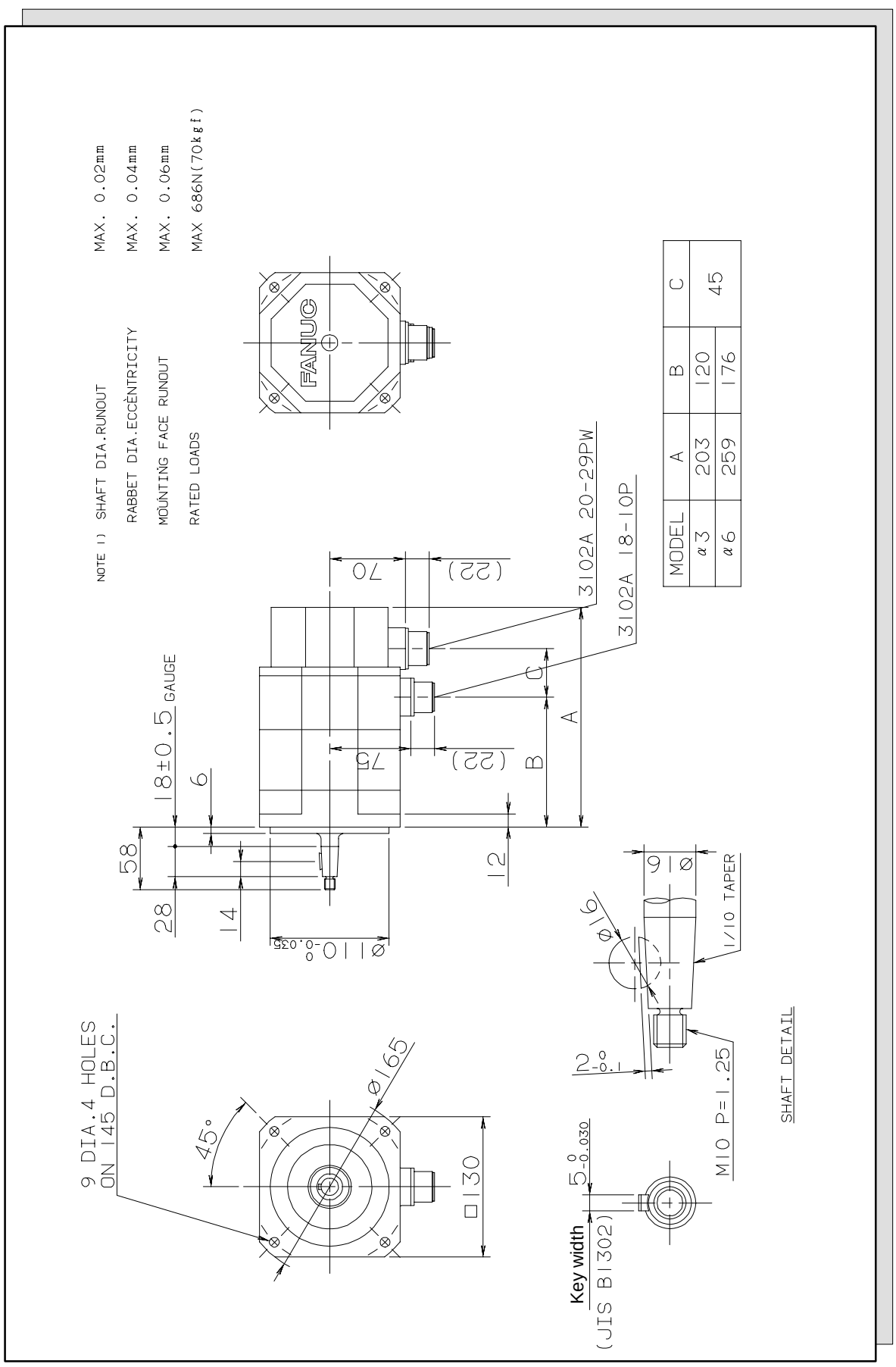


Fig. 3.3 *(d)* **Models α3 and α6**

Fig. 3.3 (e) Models α3 and α6 (with the brake)

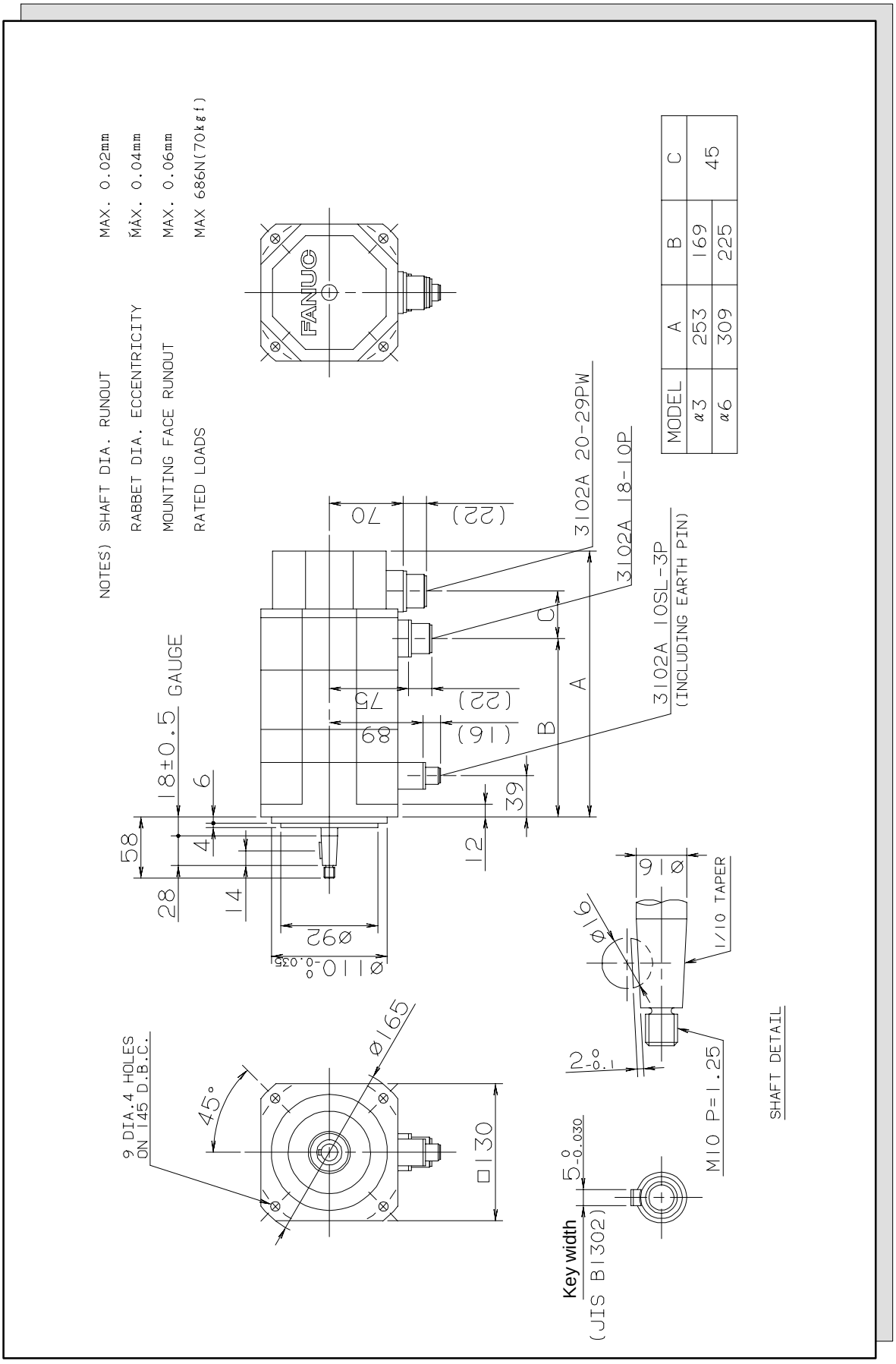


Fig. 3.3 (g) Models α12, α22, α30, and α40

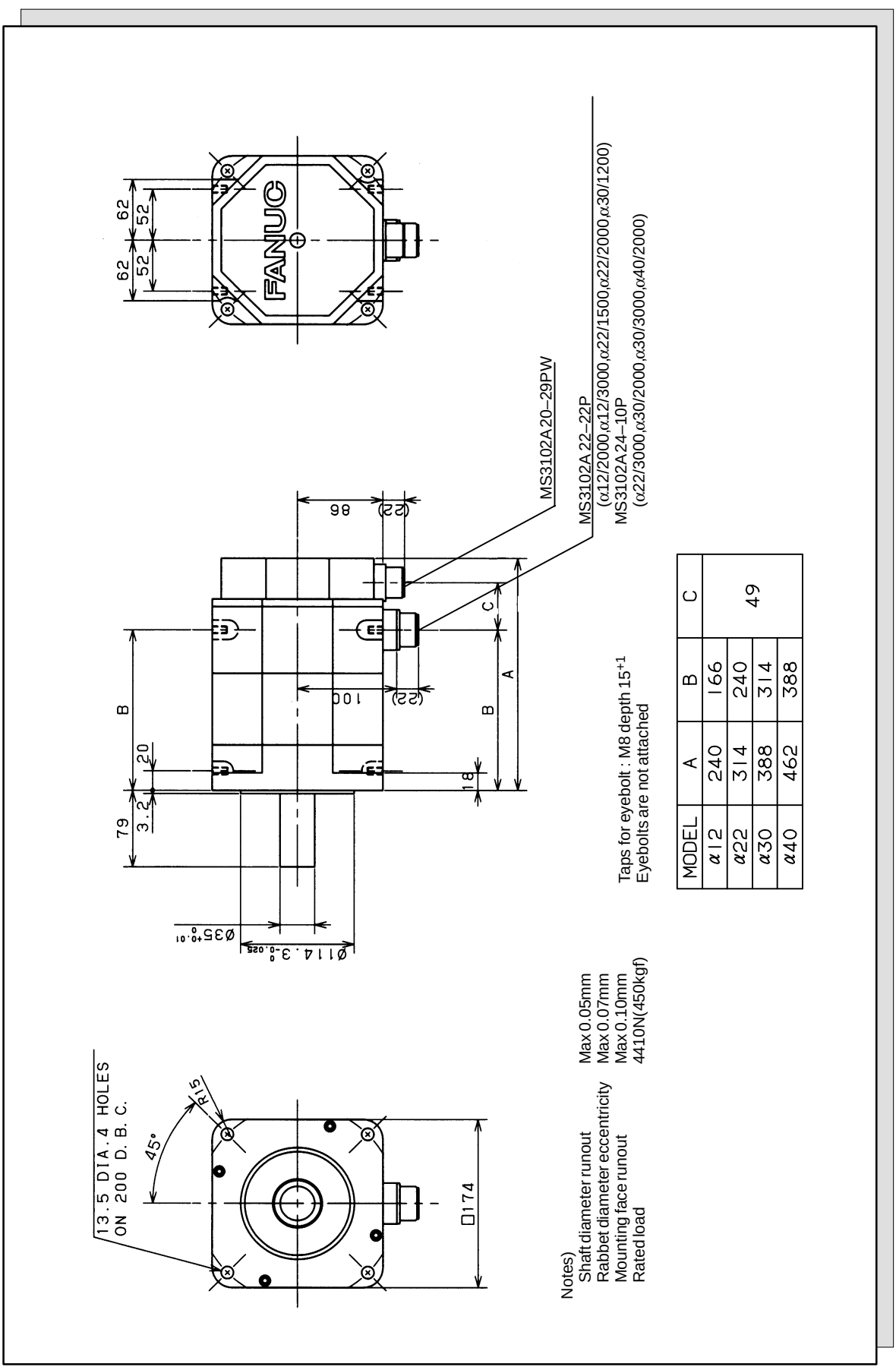
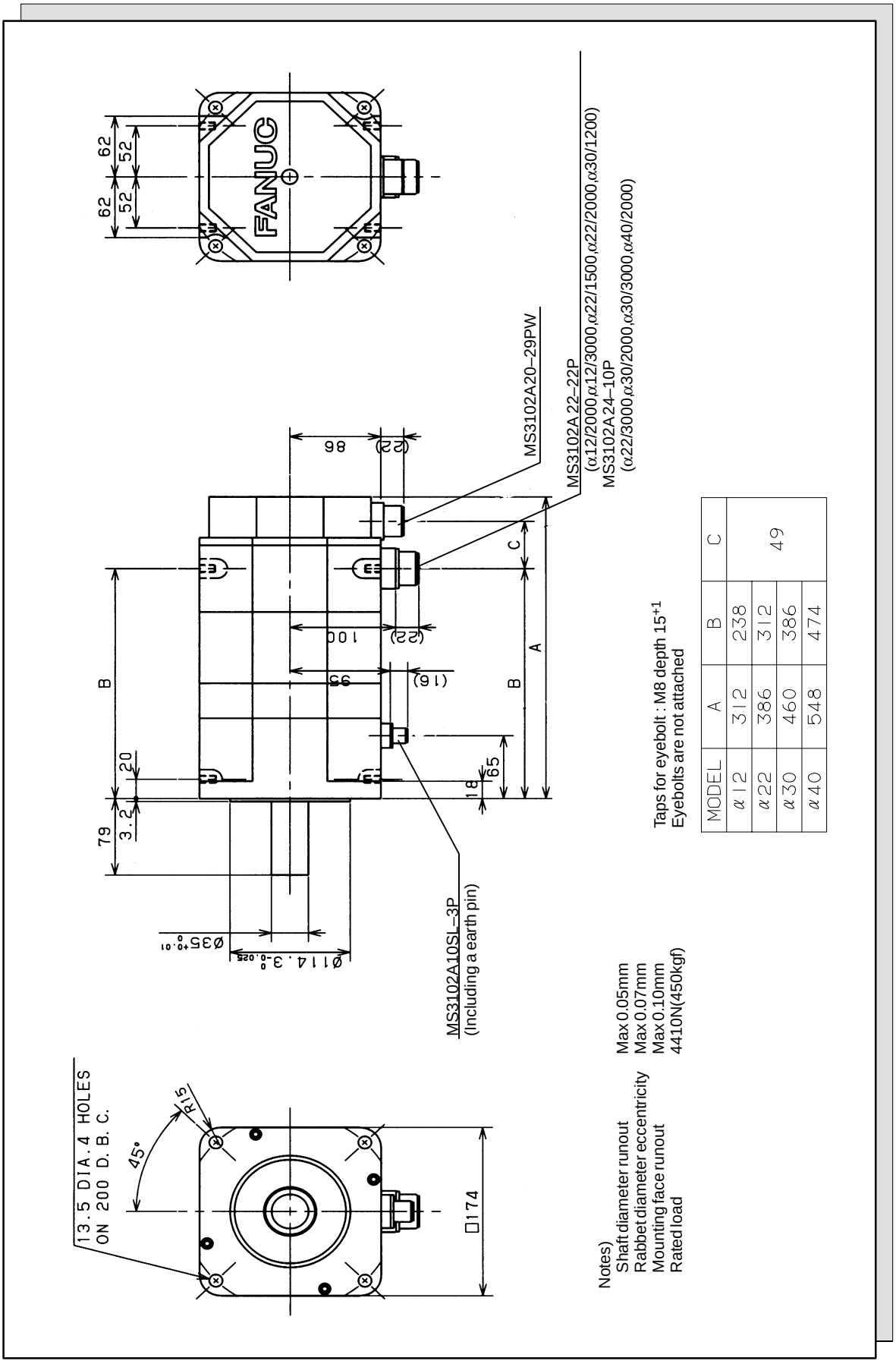


Fig. 3.3 *(h)* **Models α12, α22, α30, and α40 (with the brake)**



MODEL	A	B	C
α12	312	238	49
α22	386	312	
α30	460	386	
α40	548	474	

Fig. 3.3 (j) Model α40 (with fan)

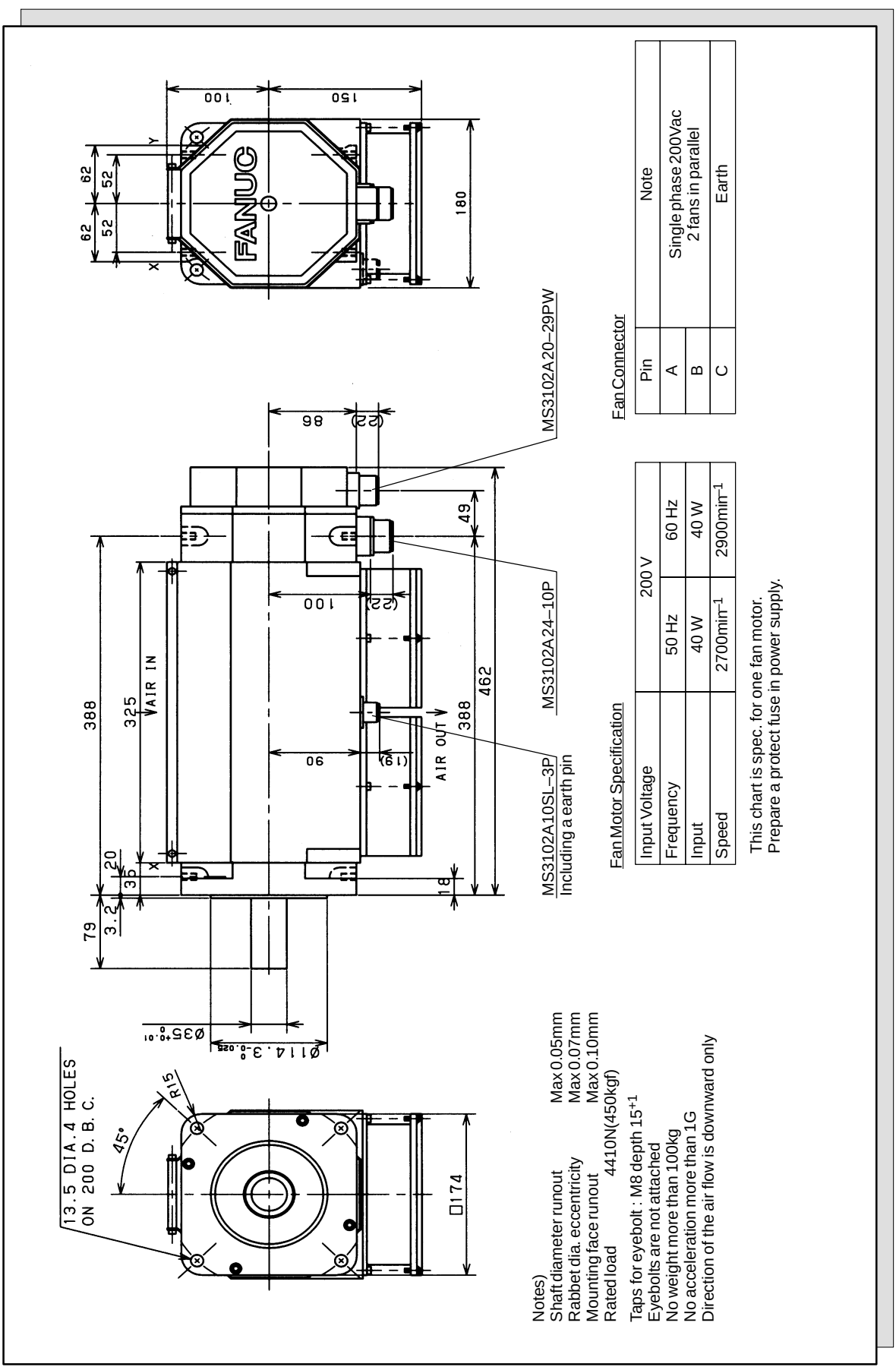


Fig. 3.3 (k) Model α40 (with the brake)

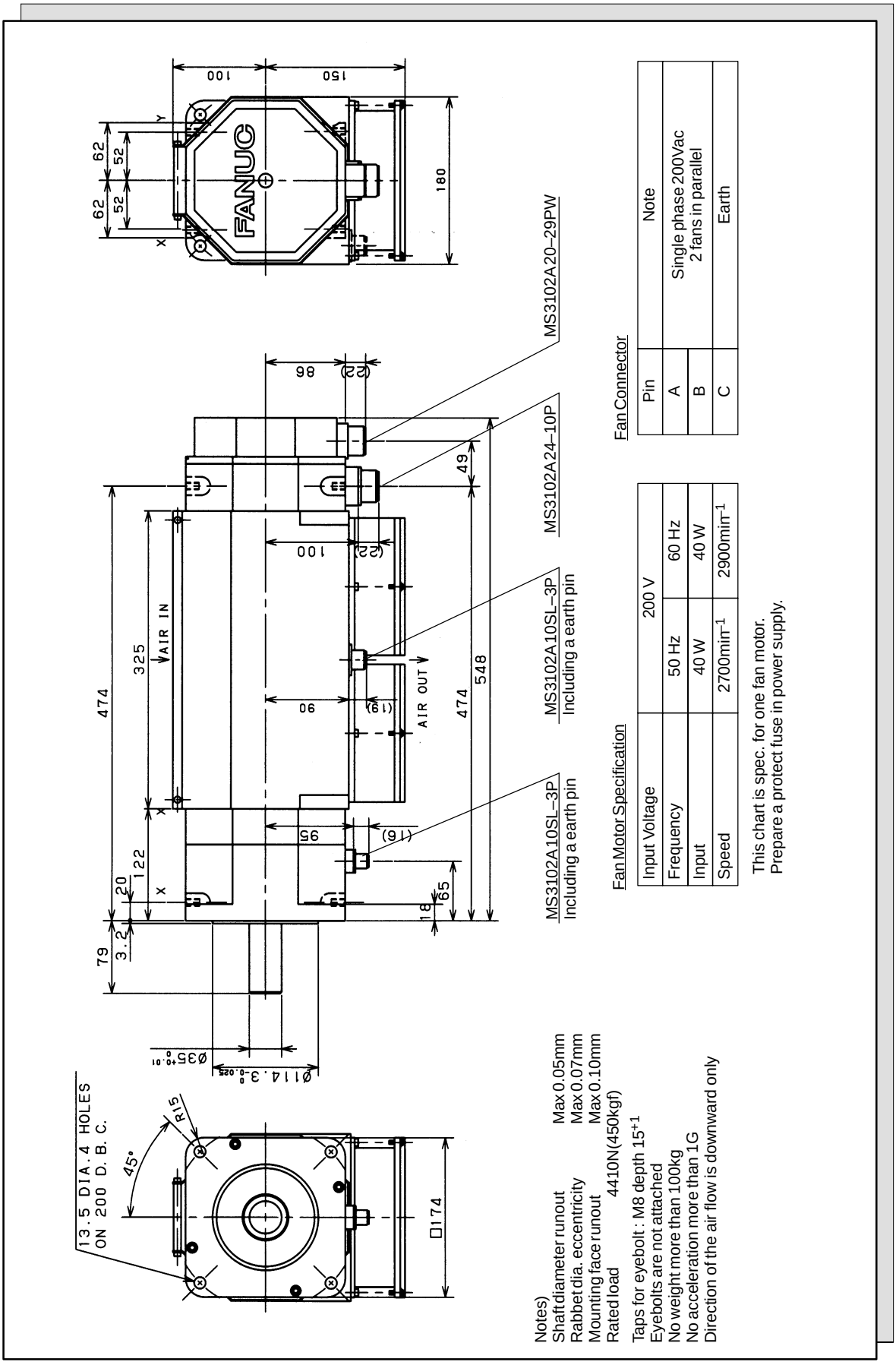
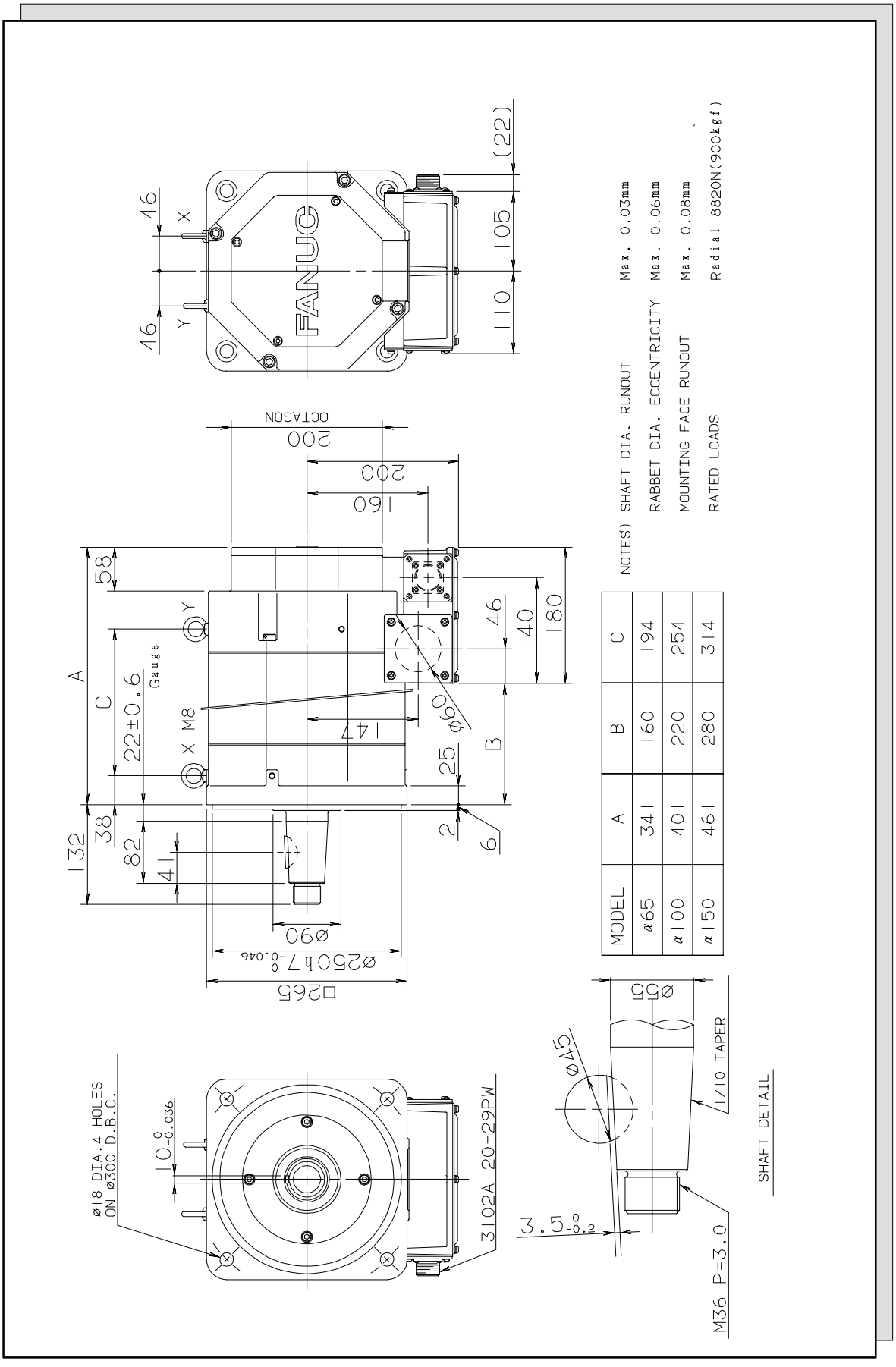
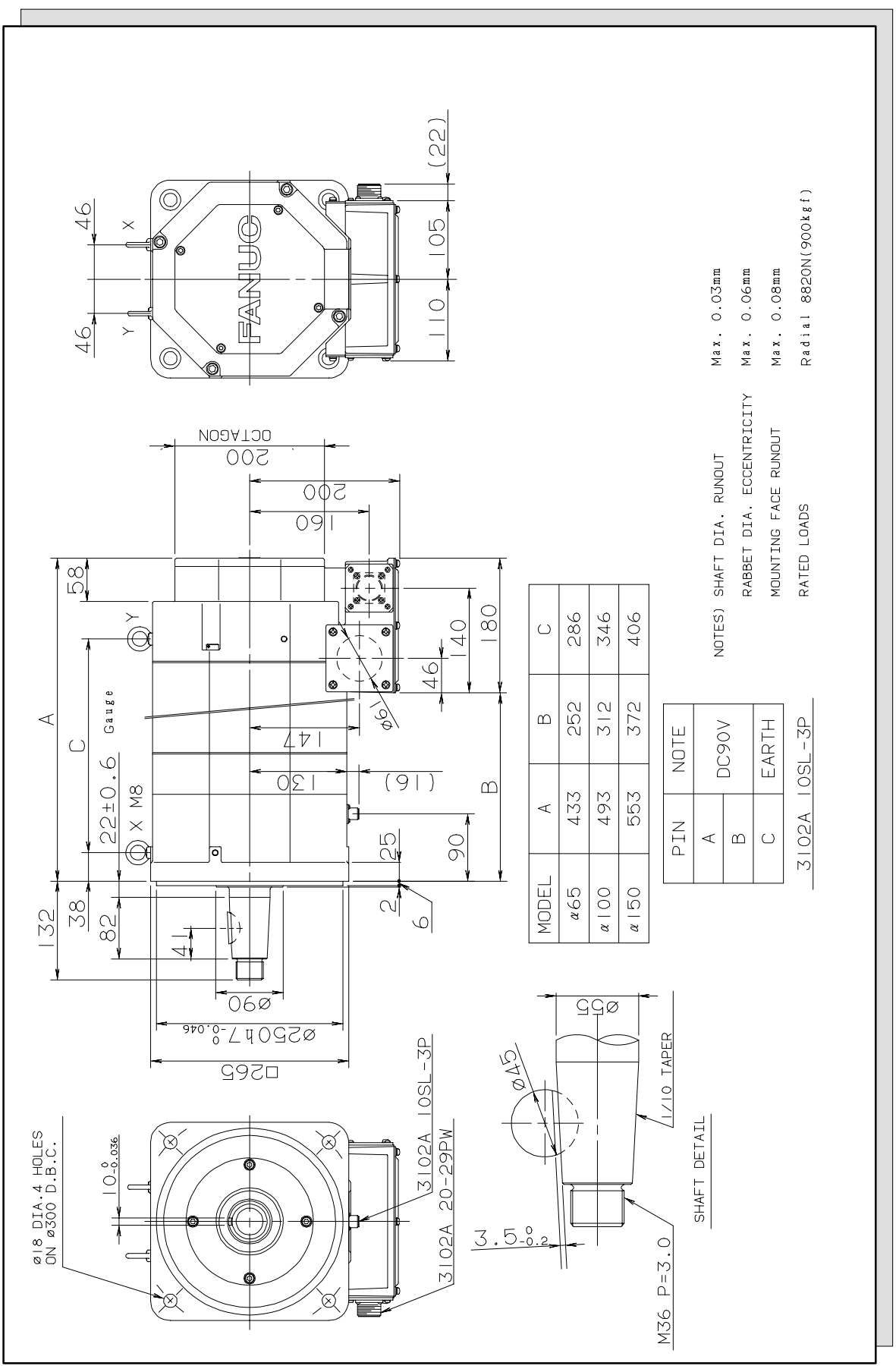


Fig. 3.3 (l) Models α65, α100, and α150





MODEL	A	B	C
α65	433	252	286
α100	493	312	346
α150	553	372	406

PIN	NOTE
A	DC90V
B	
C	EARTH

Fig. 3.3 (m) Models α65, α100, and α150 (with the brake)

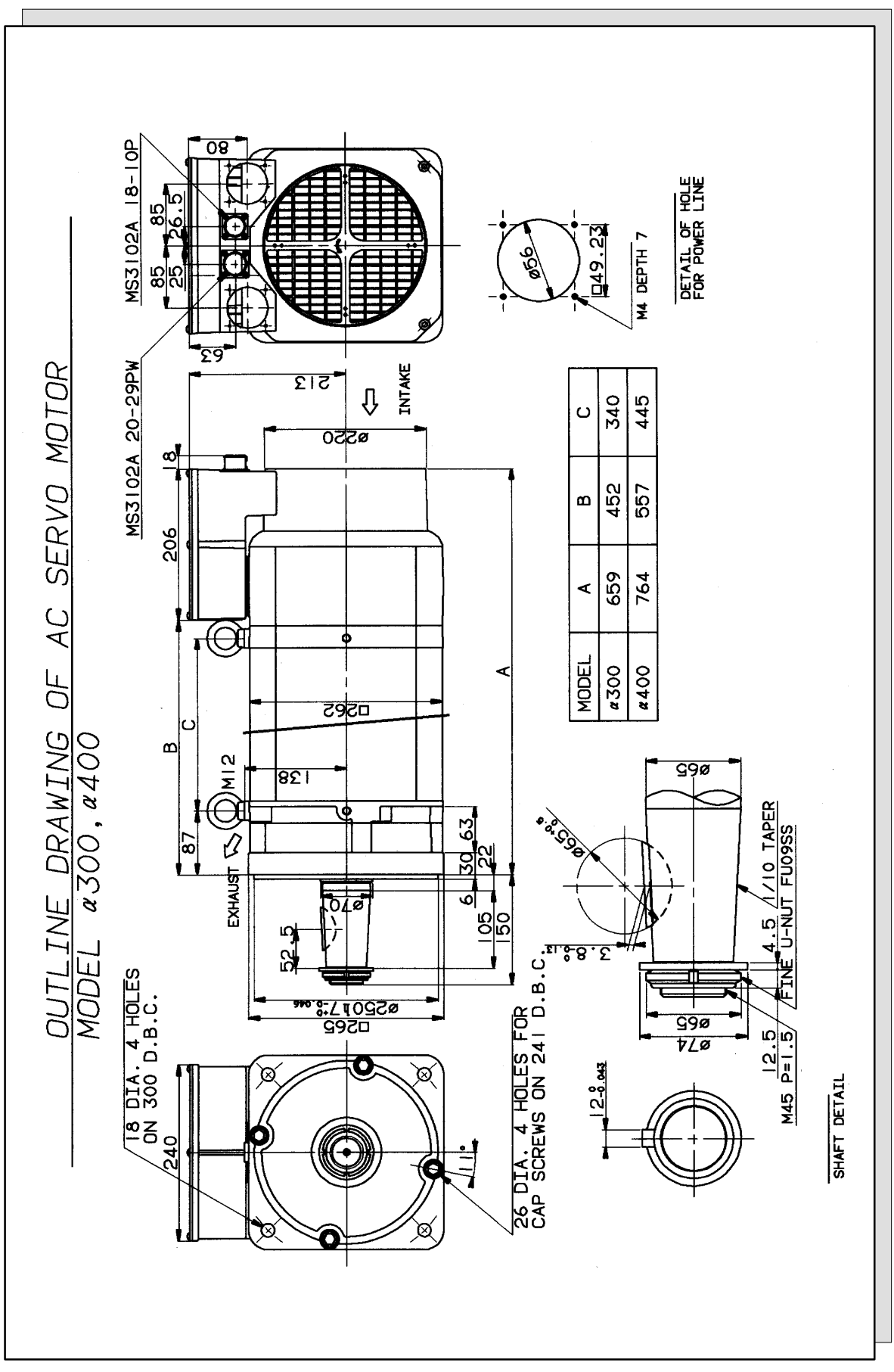


Fig. 3.3 *(n)* **Models α300/2000 and α400/2000**

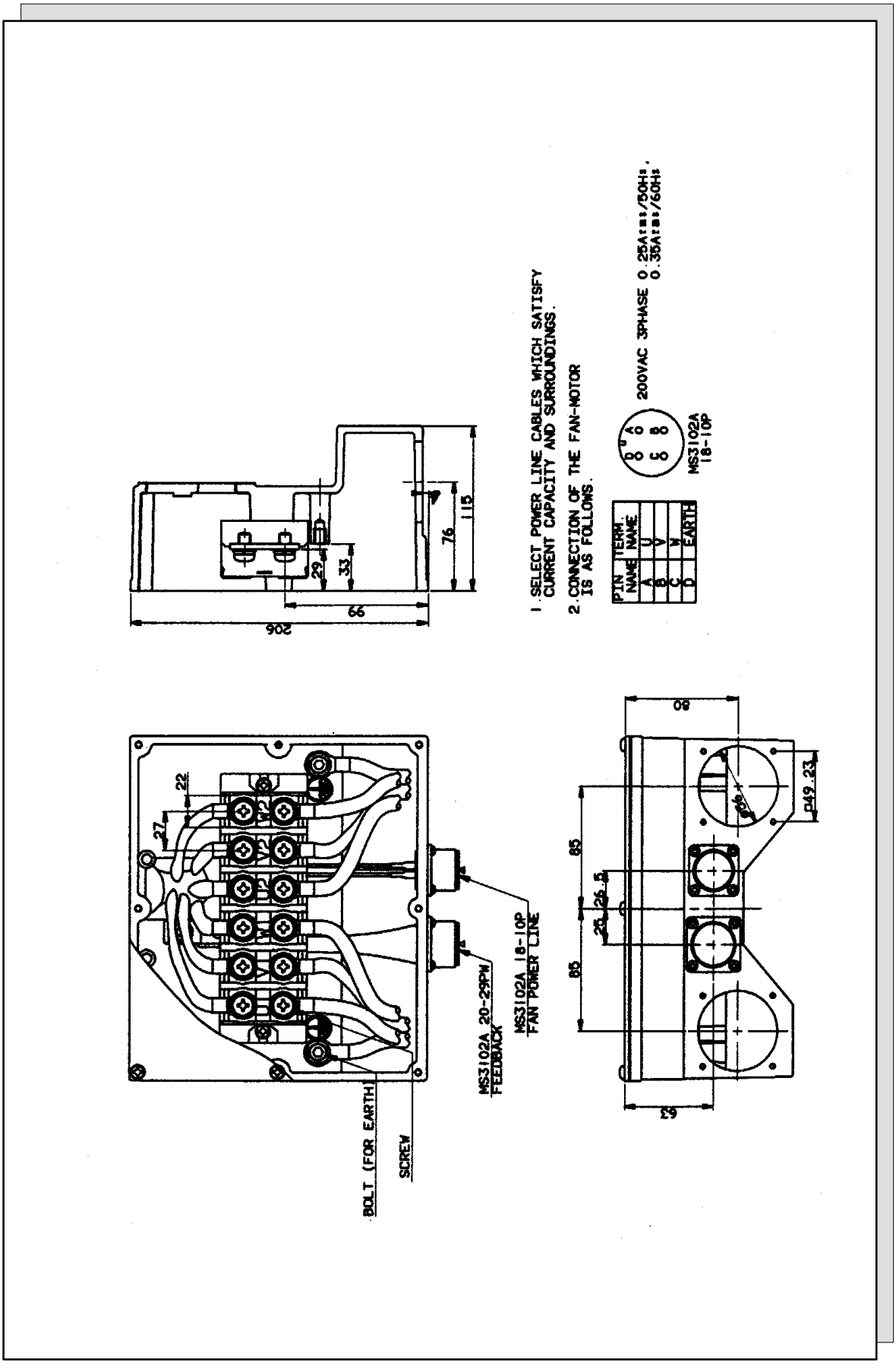
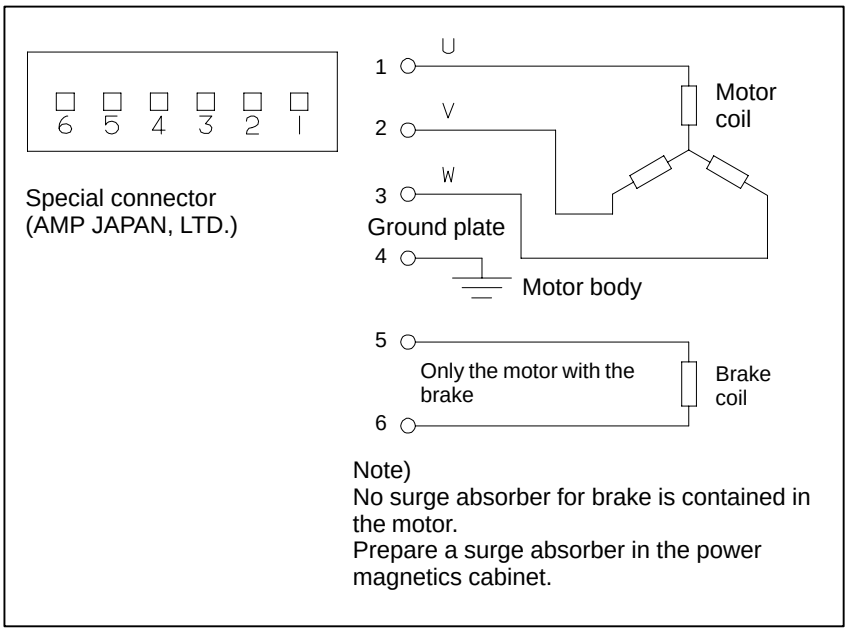


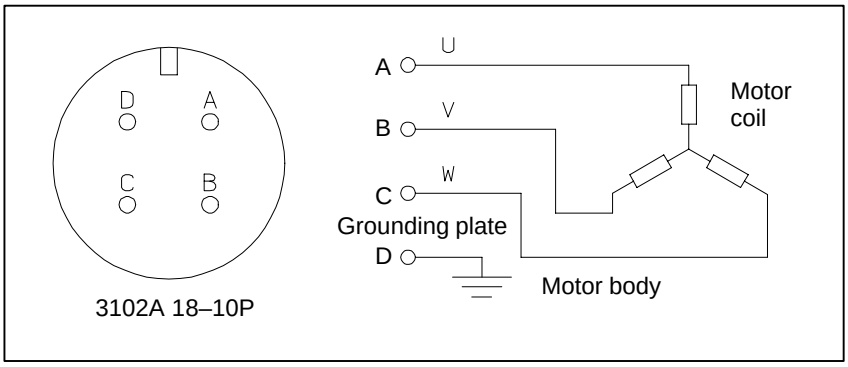
Fig. 3.3 (o) Models α300/2000 and α400/2000 (terminal box)

3.4 CONNECTION OF POWER LINE

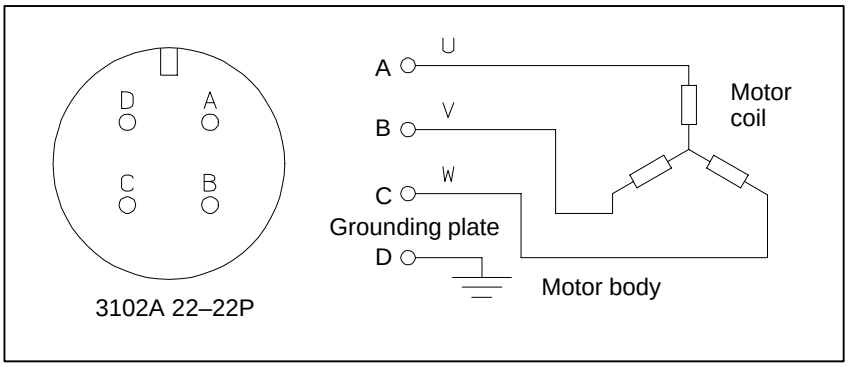
Models α1/3000, α2/2000, and α2/3000



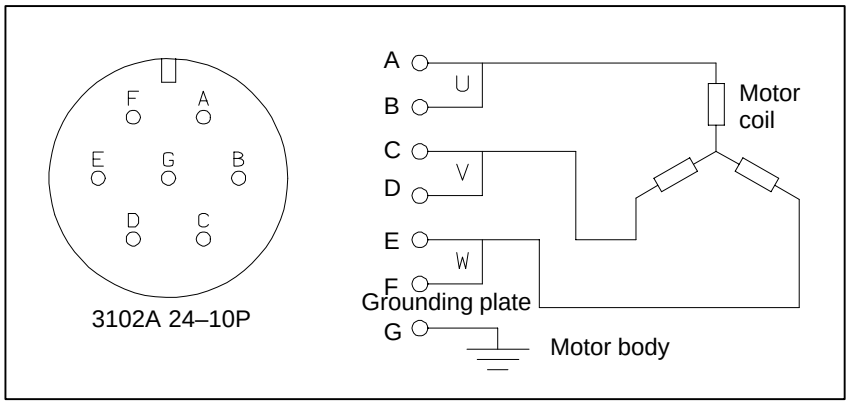
Models α3/3000, α6/2000, and α6/3000



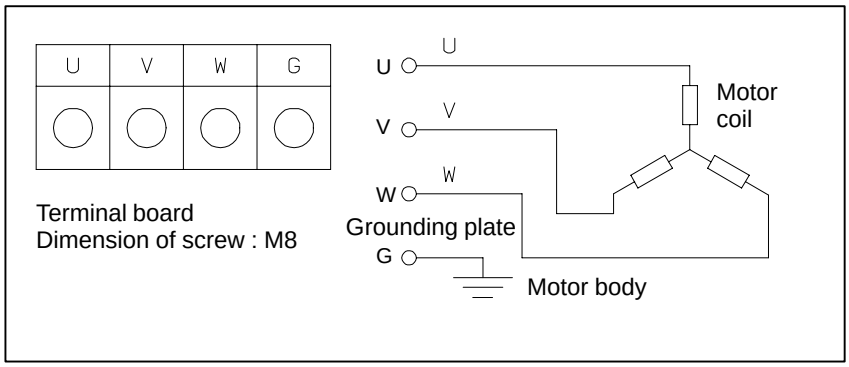
Models α12/2000, α12/3000, α22/1500, α22/2000, and α30/1200



Models α22/3000, α30/2000, α30/3000, and α40/2000



Models α65/2000, α100/2000, and α150/2000



Models α40/2000 and α400/2000

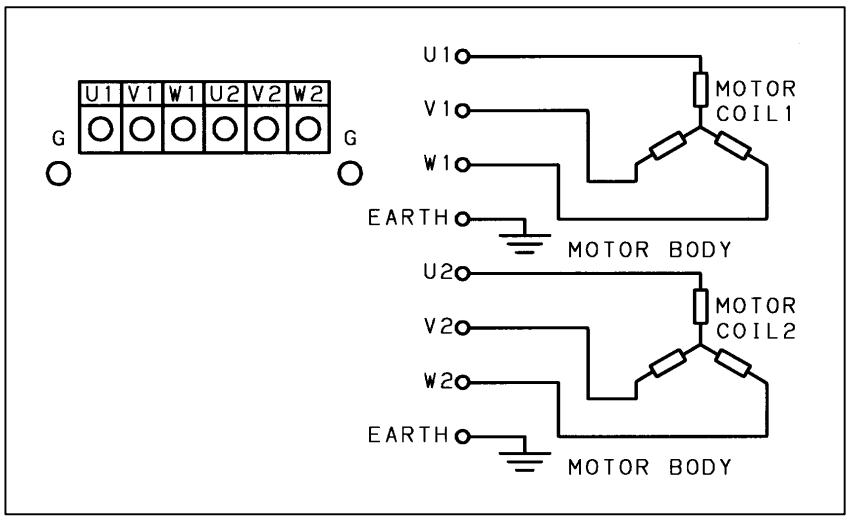
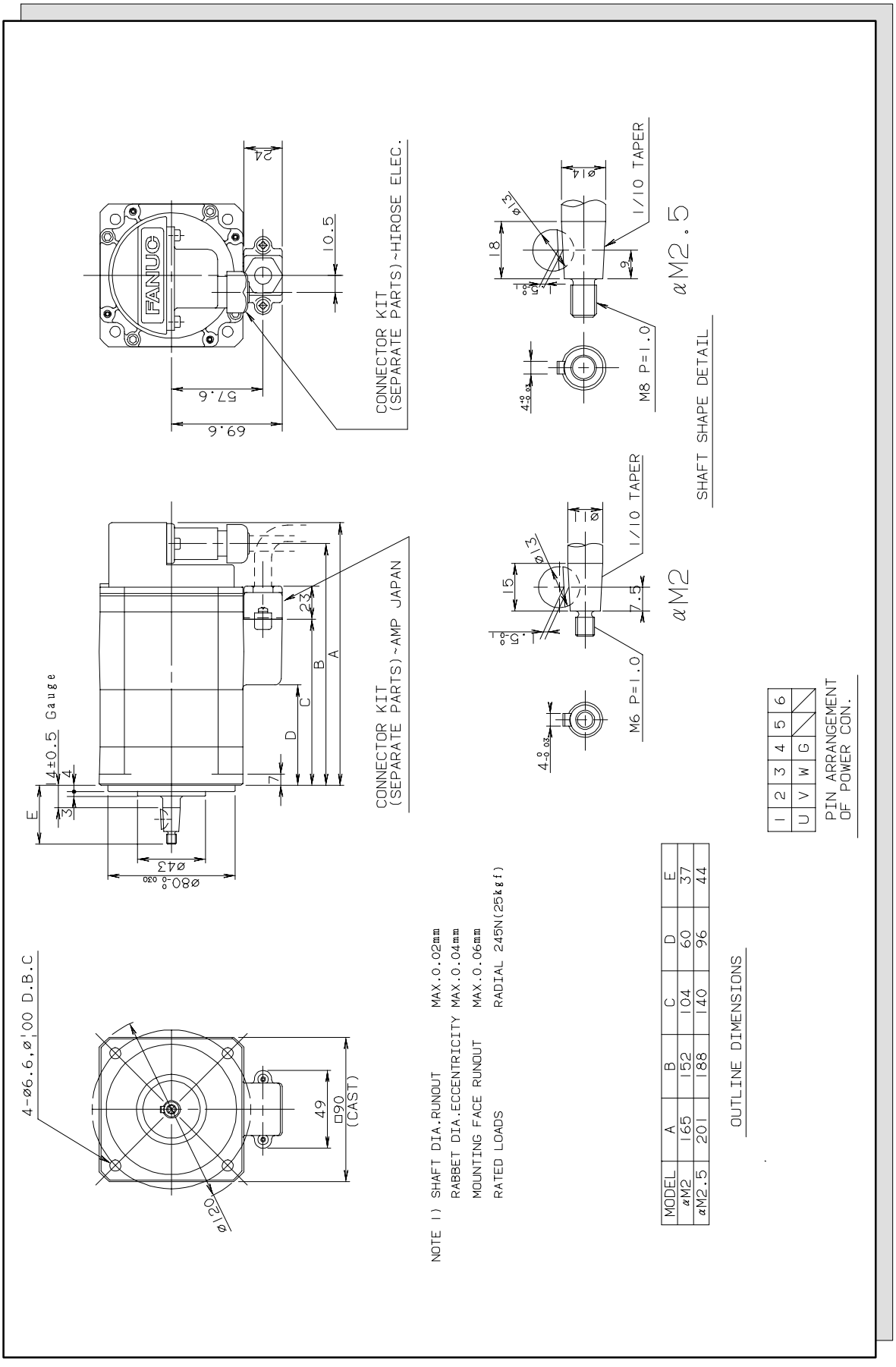


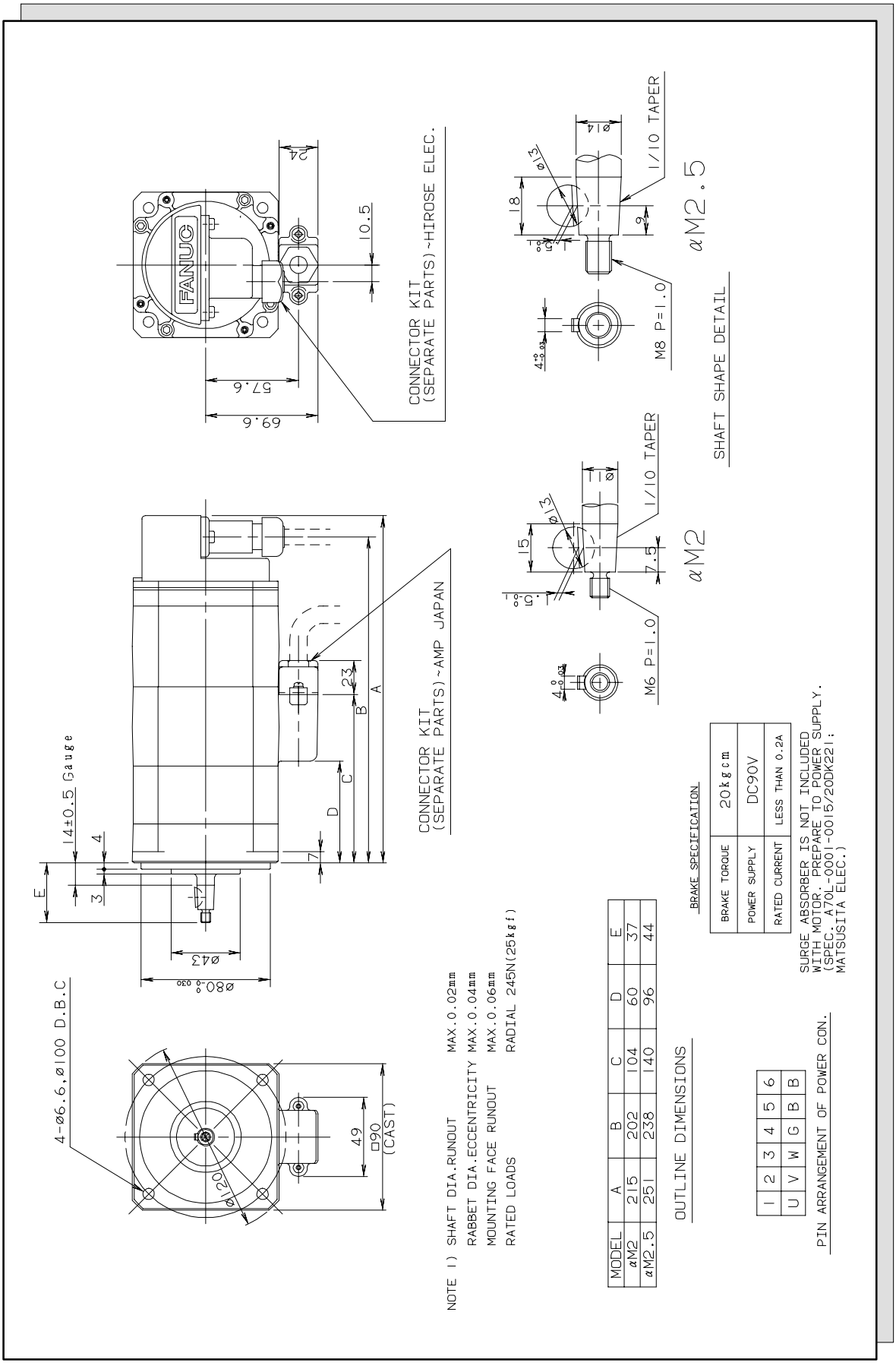
Fig. 3.3 (a) Models αM2/3000 and αM2.5/3000 (standard)



MODEL	A	B	C	D	E
αM2	165	152	104	60	37
αM2.5	201	188	140	96	44

1	2	3	4	5	6
U	V	W	G		

Fig. 3.3 *(b)* **Models αM2/3000 and αM2.5/3000 (with the brake)**



MODEL	A	B	C	D	E
αM2	215	202	104	60	37
αM2.5	251	238	140	96	44

1	2	3	4	5	6
U	V	W	G	B	B

Fig. 3.3 (e) Models αM6/3000 and αM9/3000 (standard)

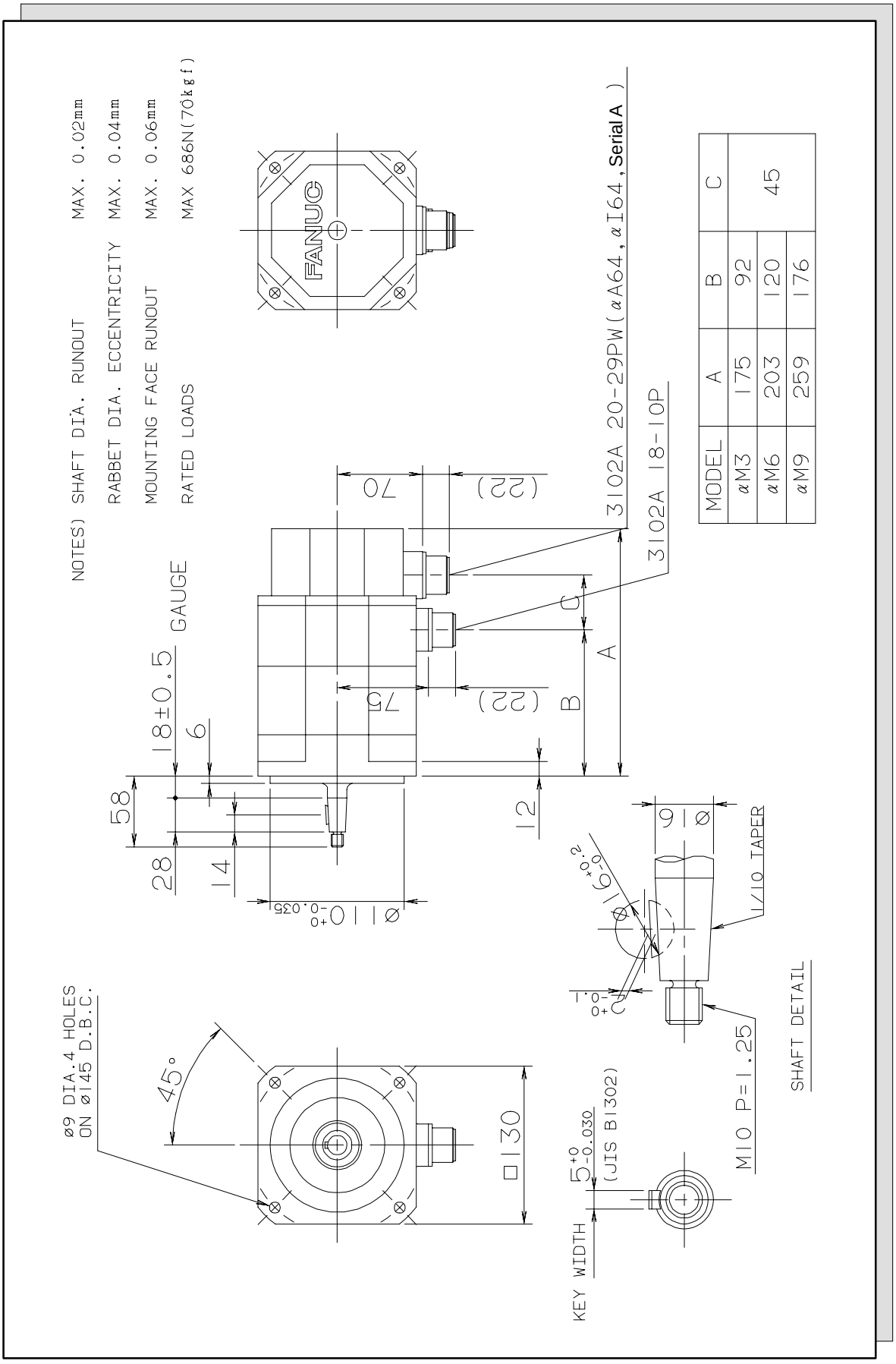


Fig. 3.3 (f) Models αM6/3000 and αM9/3000 (with the brake)

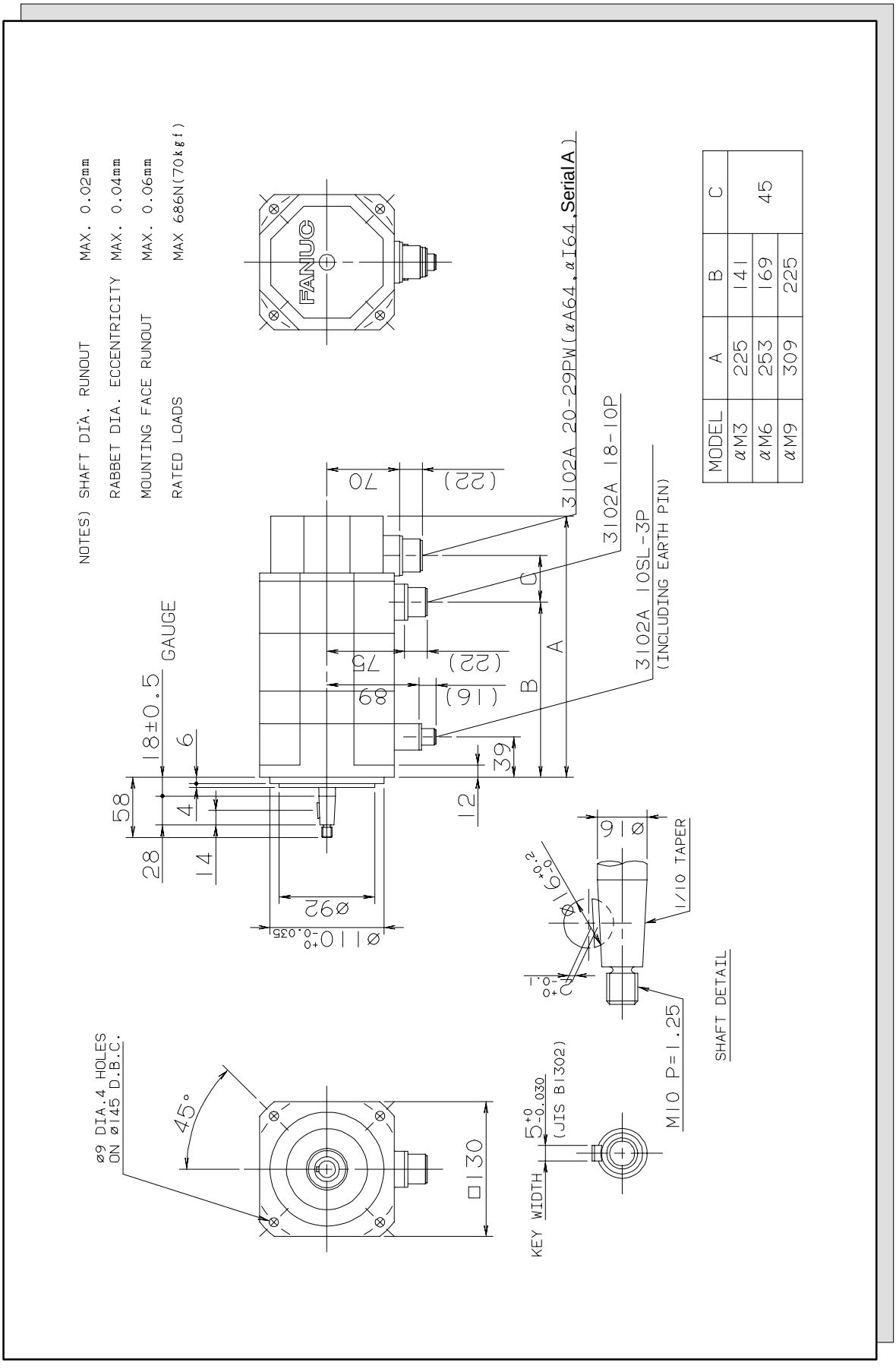


Fig. 3.3 (i) Models αM22/3000 to αM40/3000 (standard)

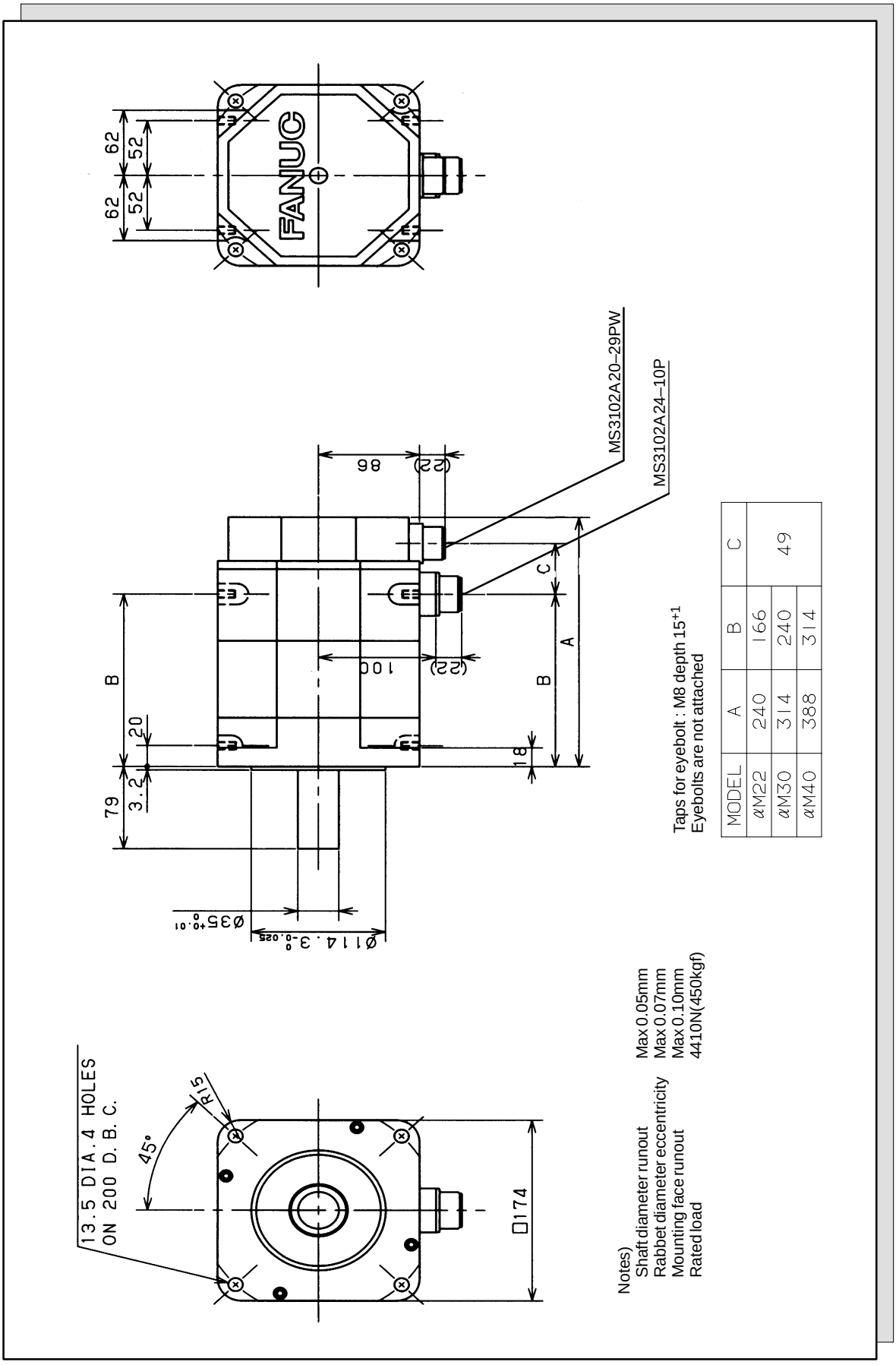


Fig. 3.3 (j) Models αM22/3000 to αM40/3000 (with the brake)

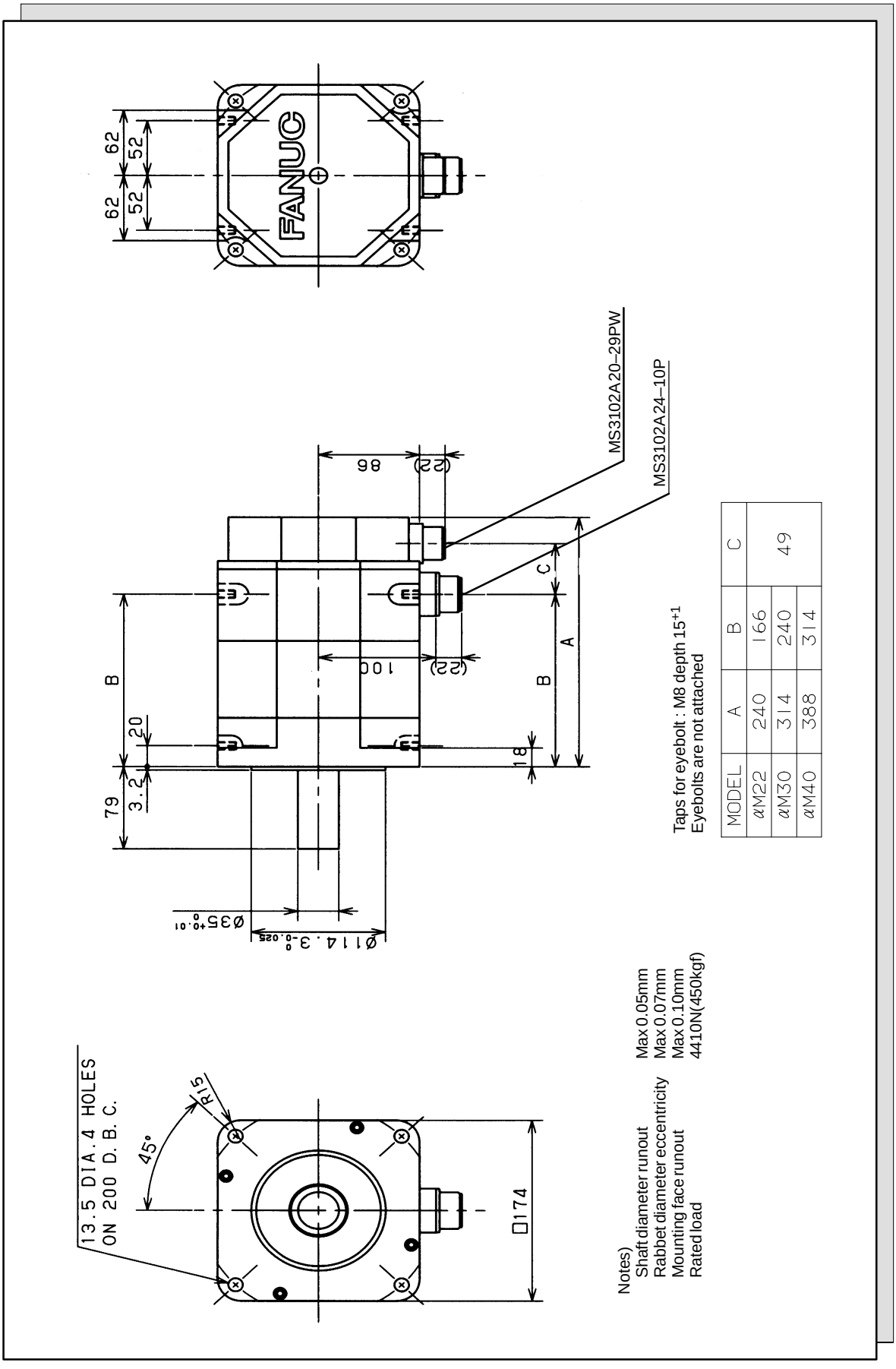


Fig. 3.3 (k) Models αM22/3000 to αM40/3000 (shaft option)

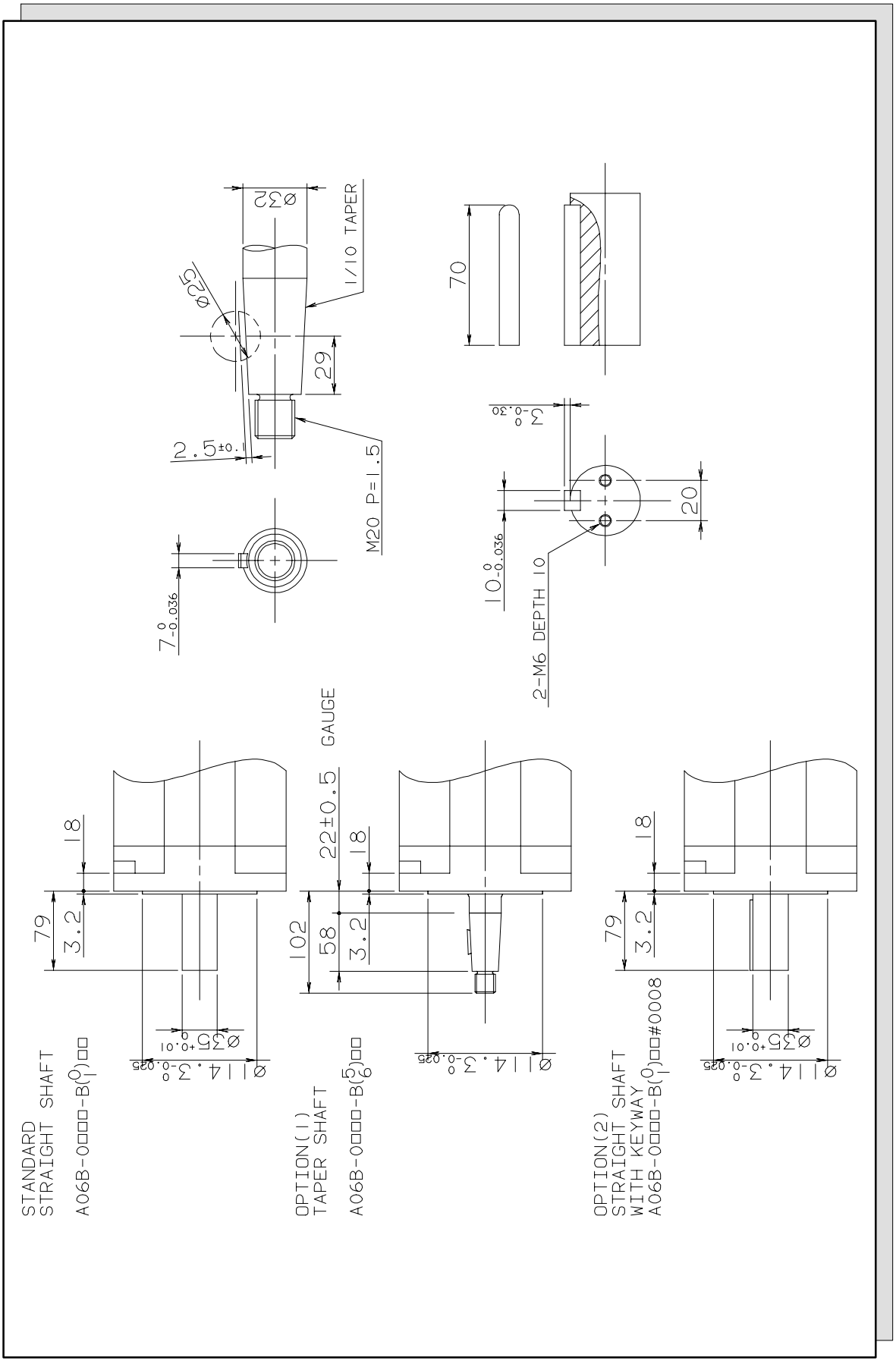
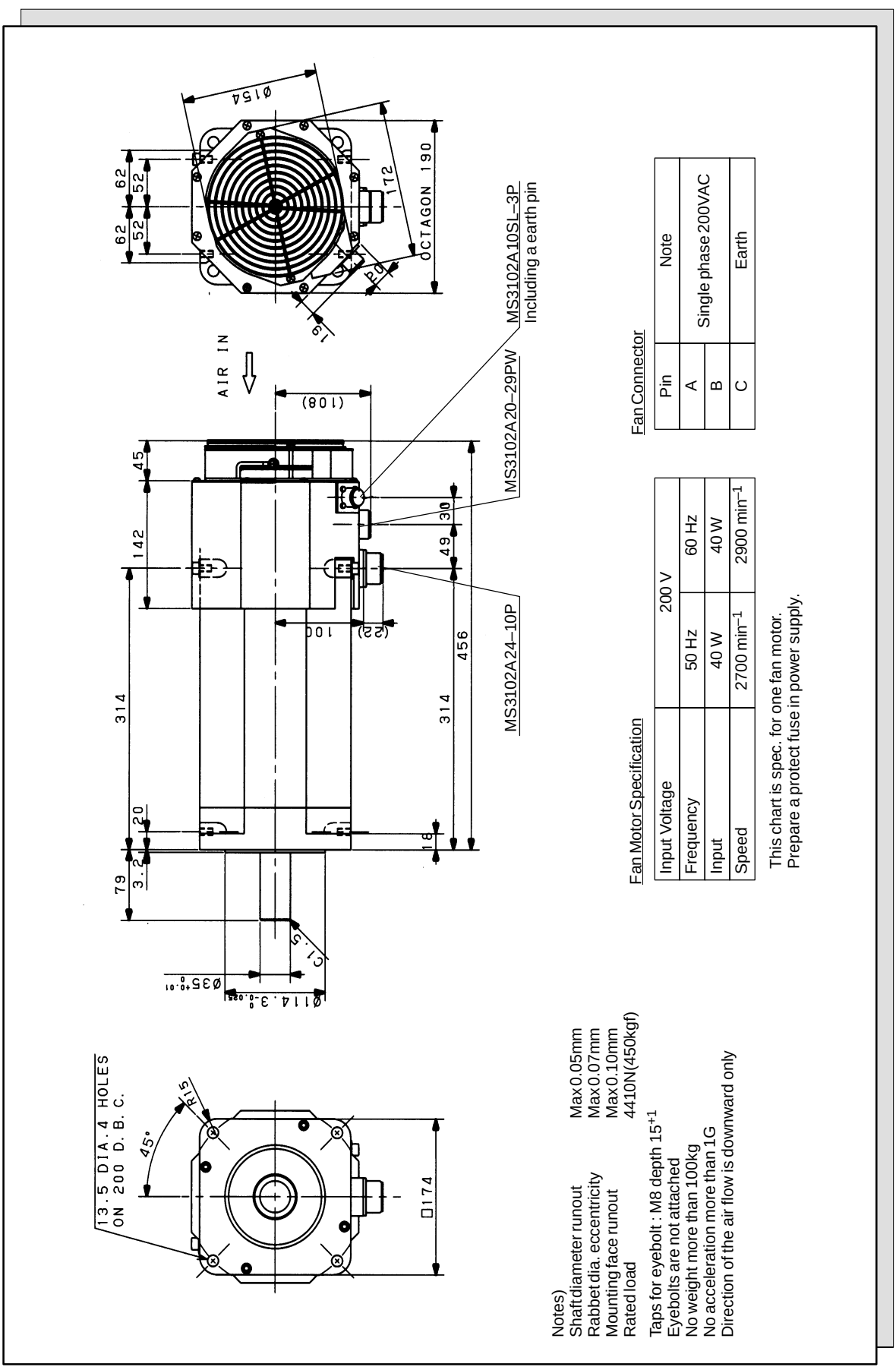


Fig. 3.3 (l) Model αM40/3000 (with fan)



Notes)
Shaftdiameter runout Max0.05mm
Rabbet dia. eccentricity Max0.07mm
Mounting face runout Max0.10mm
Rated load 4410N(450kgf)
Taps for eyebolt : M8 depth 15^{+1}
Eyebolts are not attached
No weight more than 100kg
No acceleration more than 1G
Direction of the air flow is downward only

Fan Motor Specification

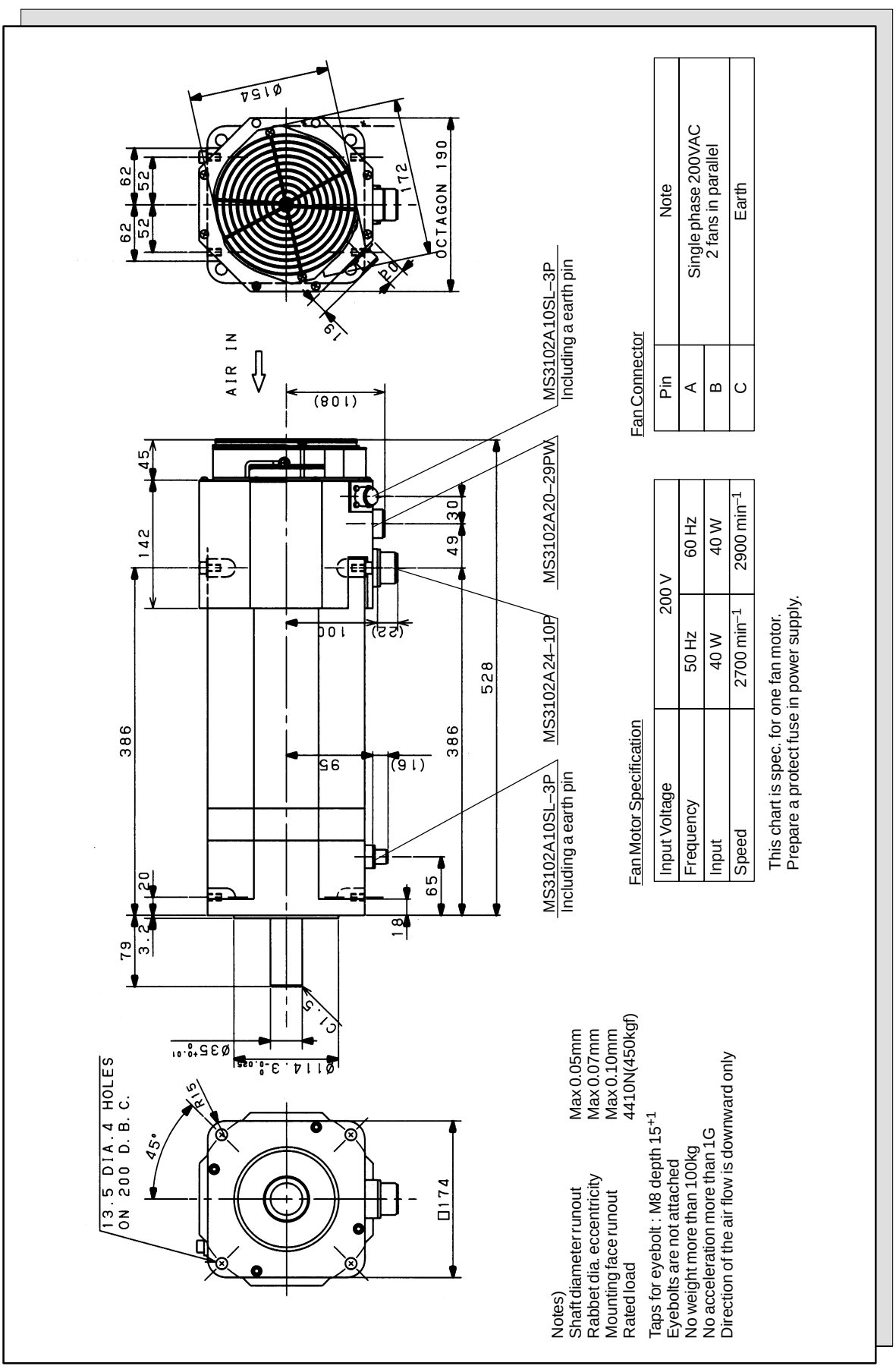
Input Voltage	200 V	
Frequency	50 Hz	60 Hz
Input	40 W	40 W
Speed	2700 min^{-1}	2900 min^{-1}

Fan Connector

Pin	Note	
A	Single phase 200VAC	
B		
C	Earth	

This chart is spec. for one fan motor.
Prepare a protect fuse in power supply.

Fig. 3.3 (m) Models αM40/3000 (with fan) (with the brake)



Fan Connector

Pin	Note
A	Single phase 200VAC 2 fans in parallel
B	
C	Earth

Fan Motor Specification

Input Voltage	200 V	
Frequency	50 Hz	60 Hz
Input	40 W	40 W
Speed	2700 min^{-1}	2900 min^{-1}

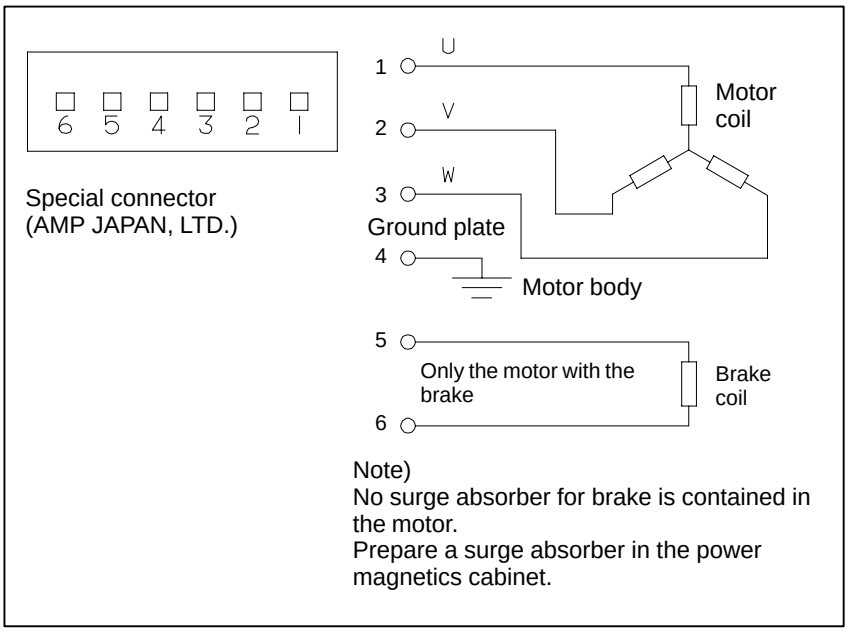
This chart is spec. for one fan motor.
Prepare a protect fuse in power supply.

Notes)
Shaft diameter runout Max 0.05mm
Rabbet dia. eccentricity Max 0.07mm
Mounting face runout Max 0.10mm
Rated load 4410N(450kgf)

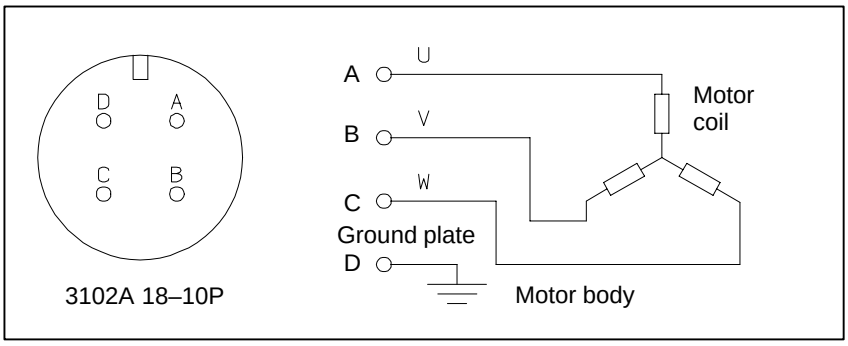
Taps for eyebolt : M8 depth 15^{+1}
Eyebolts are not attached
No weight more than 100kg
No acceleration more than 1G
Direction of the air flow is downward only

3.4 CONNECTION OF POWER LINE

Models αM2/3000, αM2.5/3000



Models αM6/3000, αM9/3000



Models αM22/3000, αM30/3000, αM40/3000, αM40/3000 (with fan)

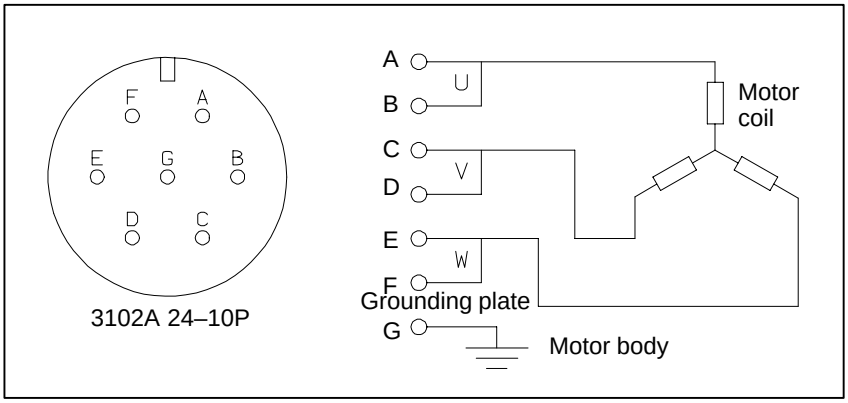


Fig. 3.3 *(b)* **Models αL6/3000 and αL9/3000 (with the brake)**

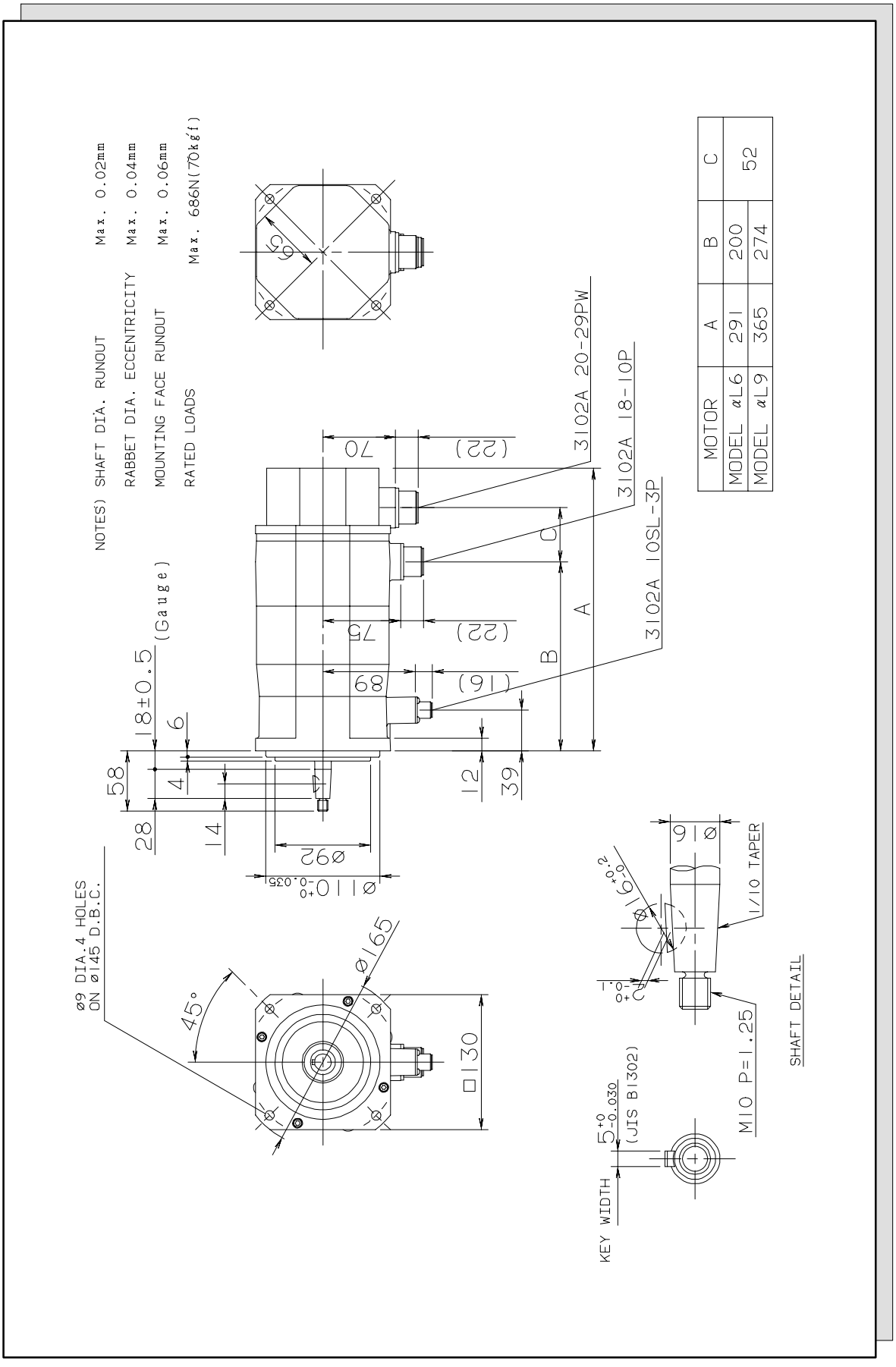
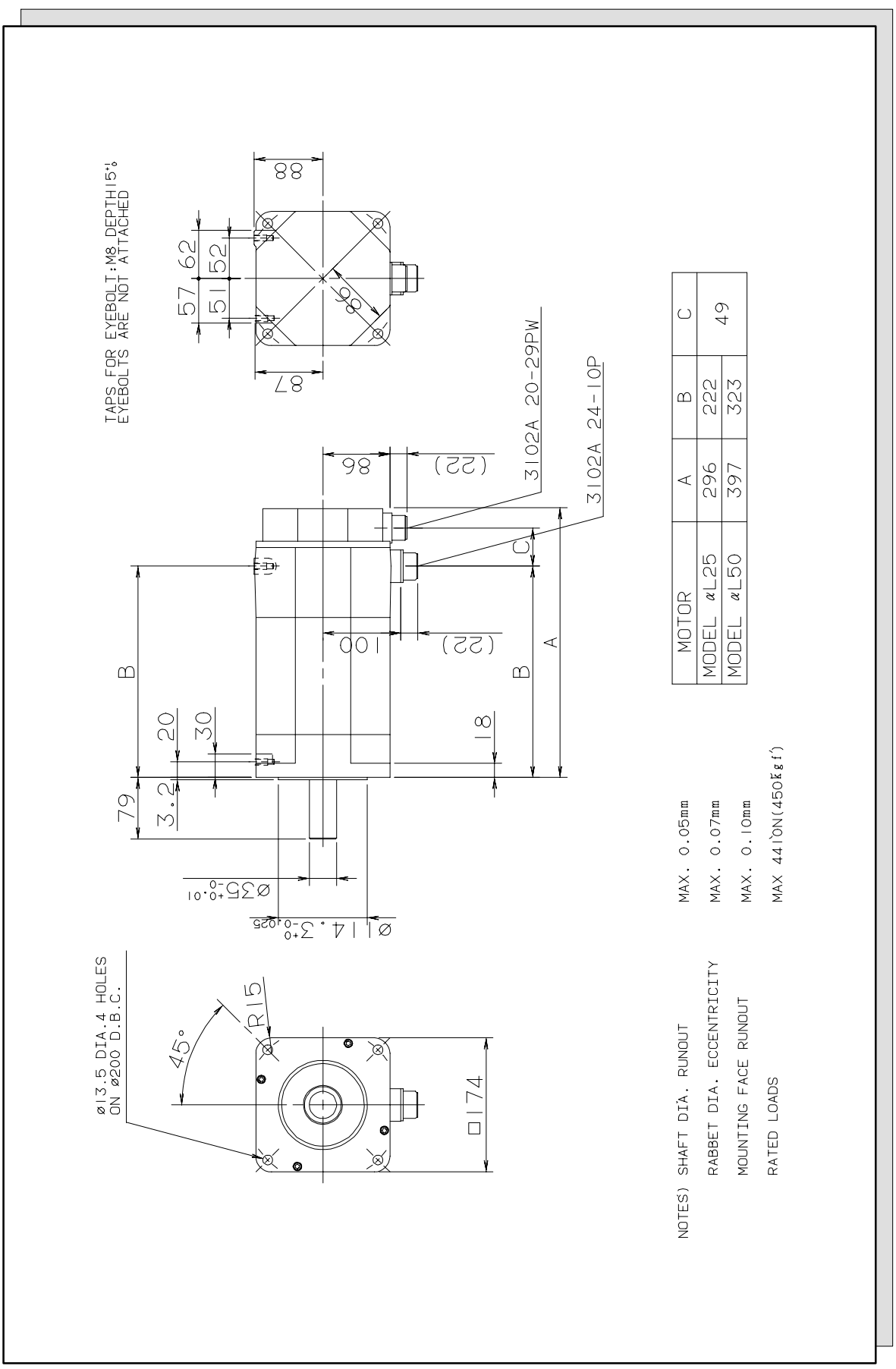
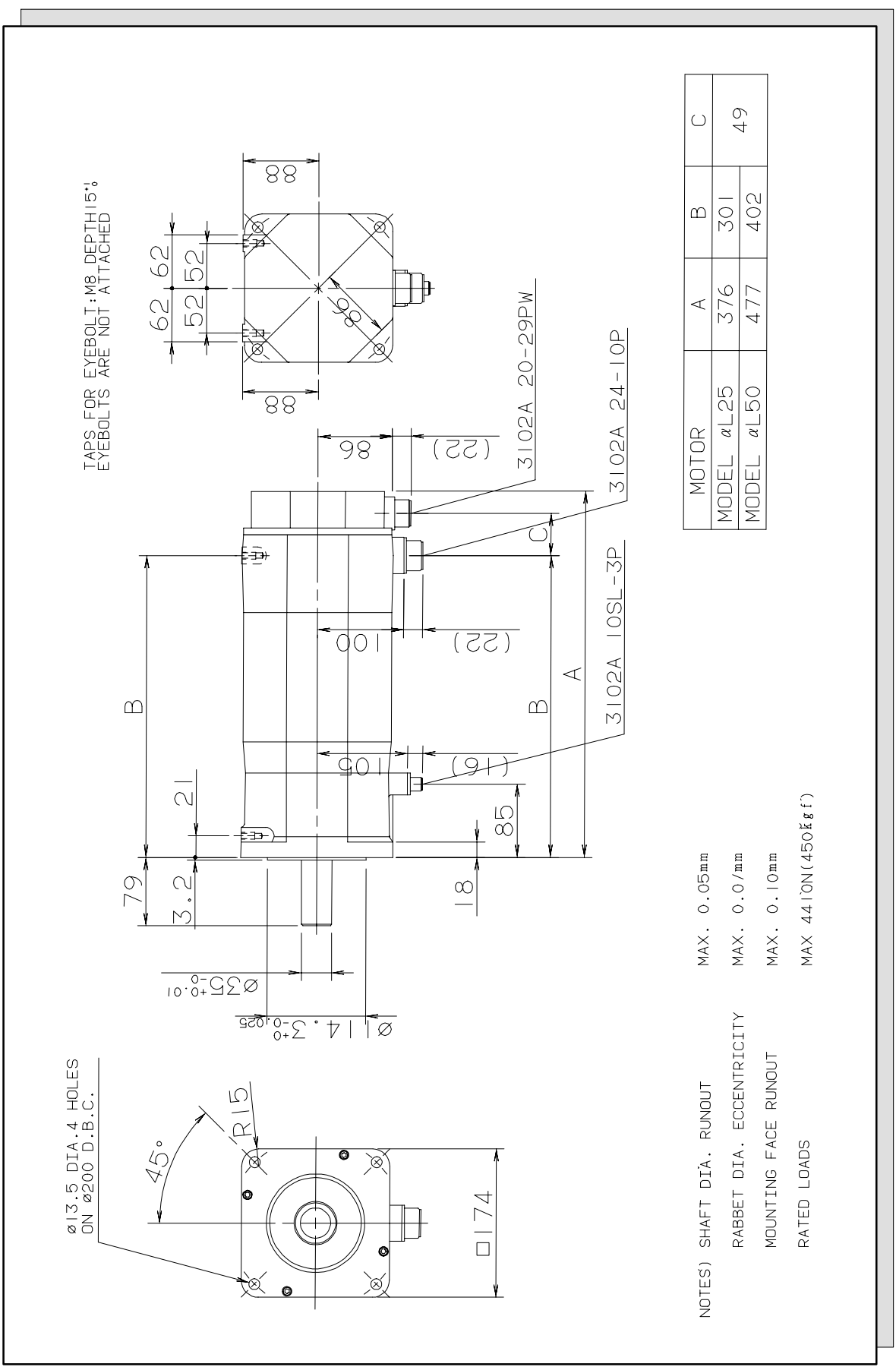


Fig. 3.3 (c) Models αL25/3000 and αL50/2000



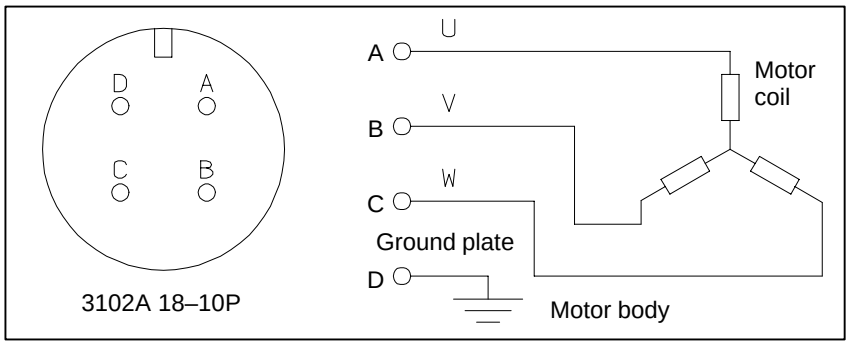
MOTOR	A	B	C
MODEL αL25	296	222	49
MODEL αL50	397	323	

Fig. 3.3 *(d)* **Models αL25/3000 and αL50/2000 (with the brake)**



3.4 CONNECTION OF POWER LINE

Models αL6/3000 and αL9/3000



Models αL25/3000 and αL50/2000

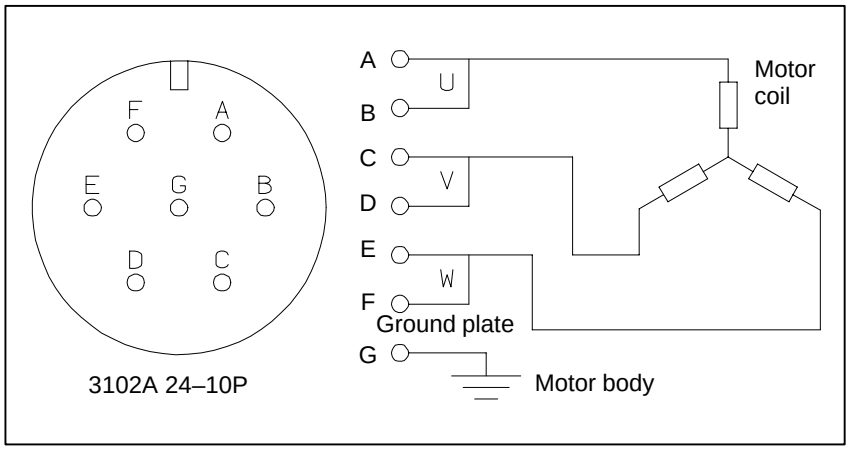


Fig. 3.3 (a) Models αC3/2000 and αC6/2000

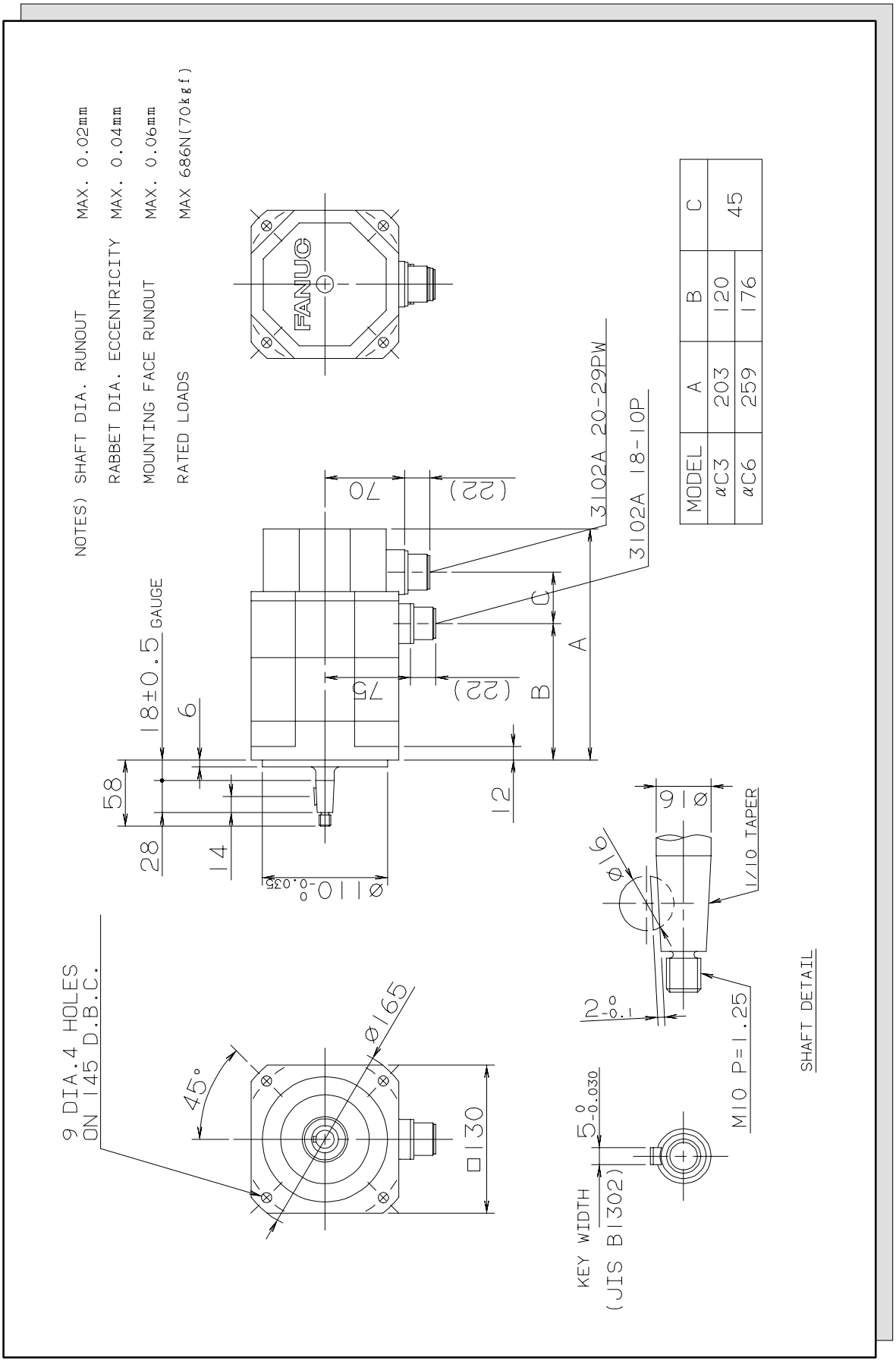


Fig. 3.3 *(d)* **Models αC12/2000 and αC22/1500**

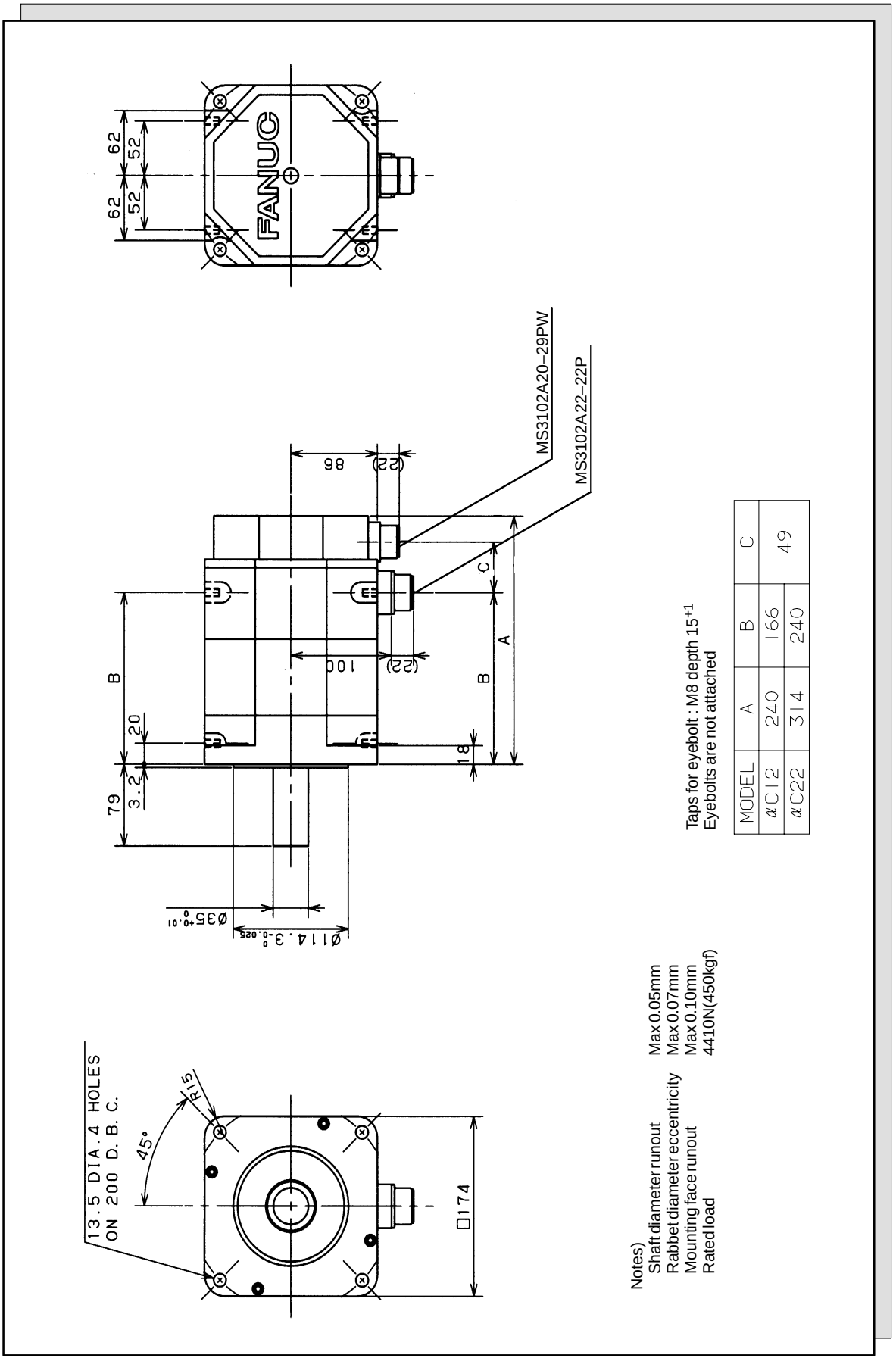
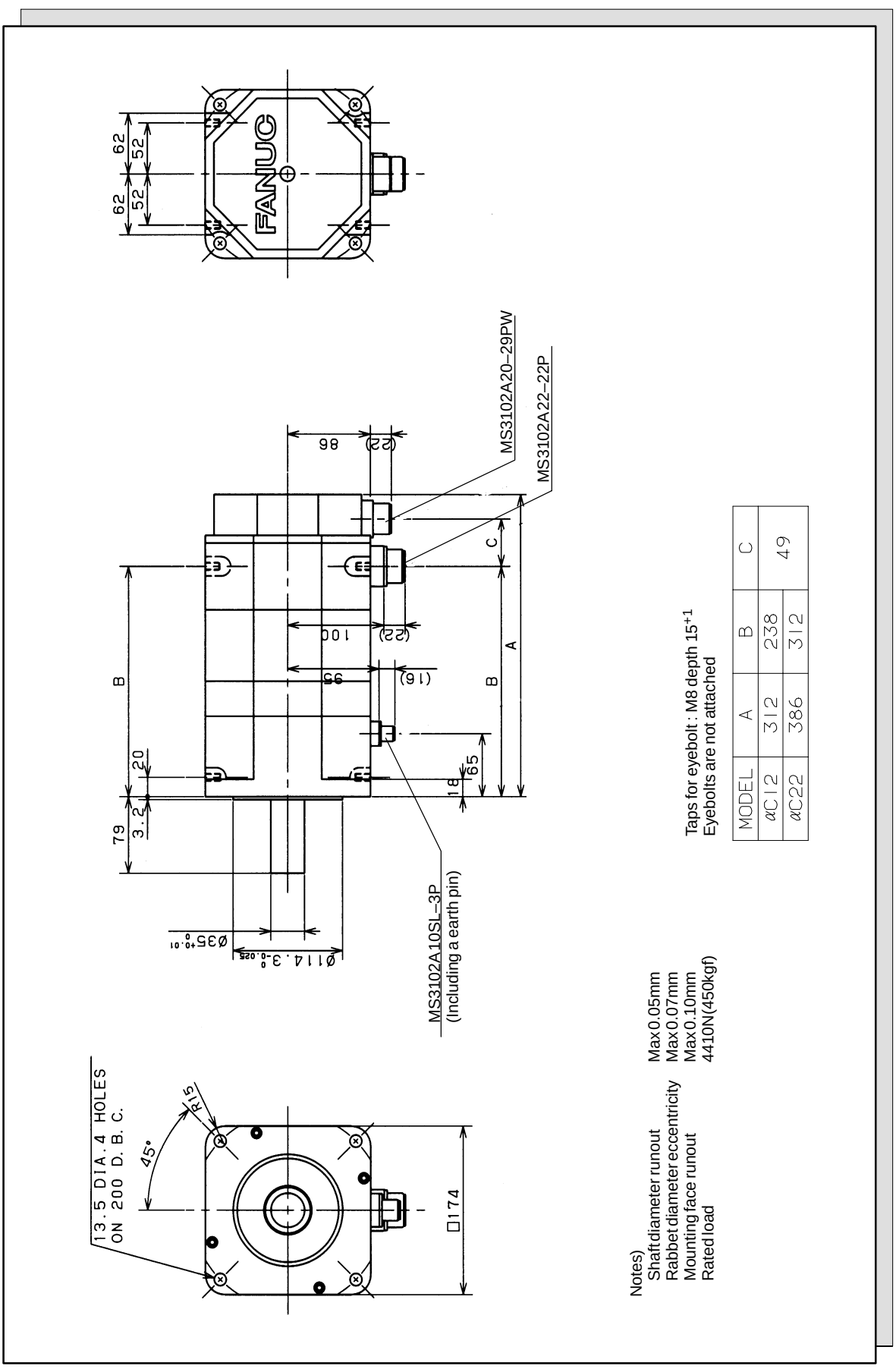
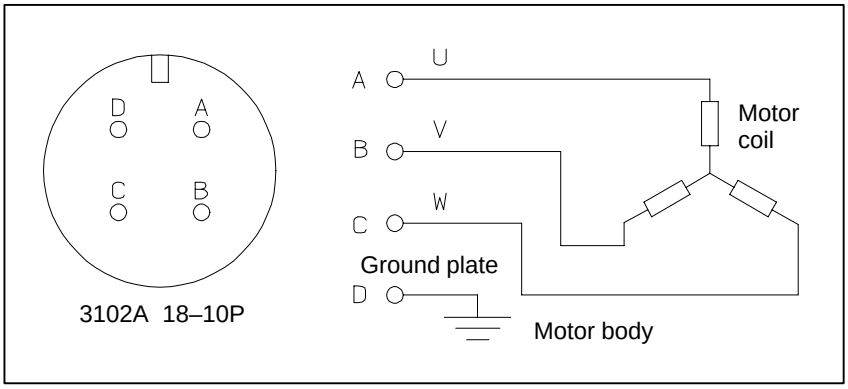


Fig. 3.3 (e) Models αC12/2000 and αC22/1500 (with the brake)

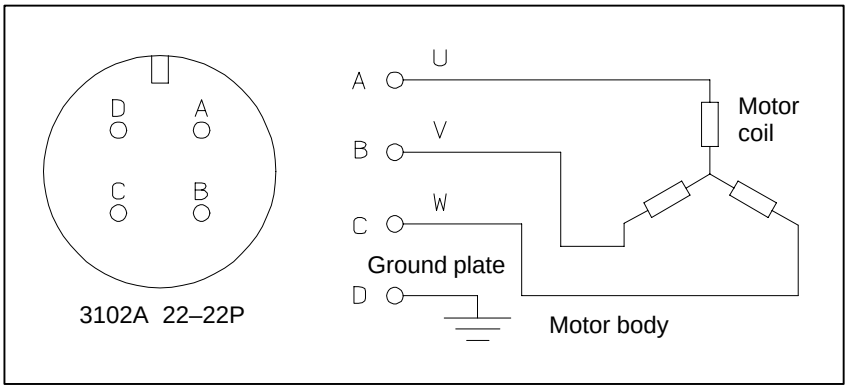


3.4 CONNECTION OF POWER LINE

Models αC3/2000 and αC6/2000



Models αC12/2000 and αC22/1500



CAUTION

1 The motors should be installed with their connector facing downward as long as possible. When it is impossible to install a motor in this position, allow slack in the cable to keep liquids such as a dielectric fluid from going along the cable into the cable or motor. If there is a possibility that the motors and connectors get wet, provide a cover to protect them.
2 If a motor is not connected to the earth ground through the machine (frame), connect the motor grounding point and the amplifier grounding point to absorb noise using a 1.25 mm^2 or larger conductor other than the grounding conductor in the power cable. Keep the grounding conductor as far from the power cable as possible.

Fig. 3.3 (a) Models α3/300HV and α6/300HV

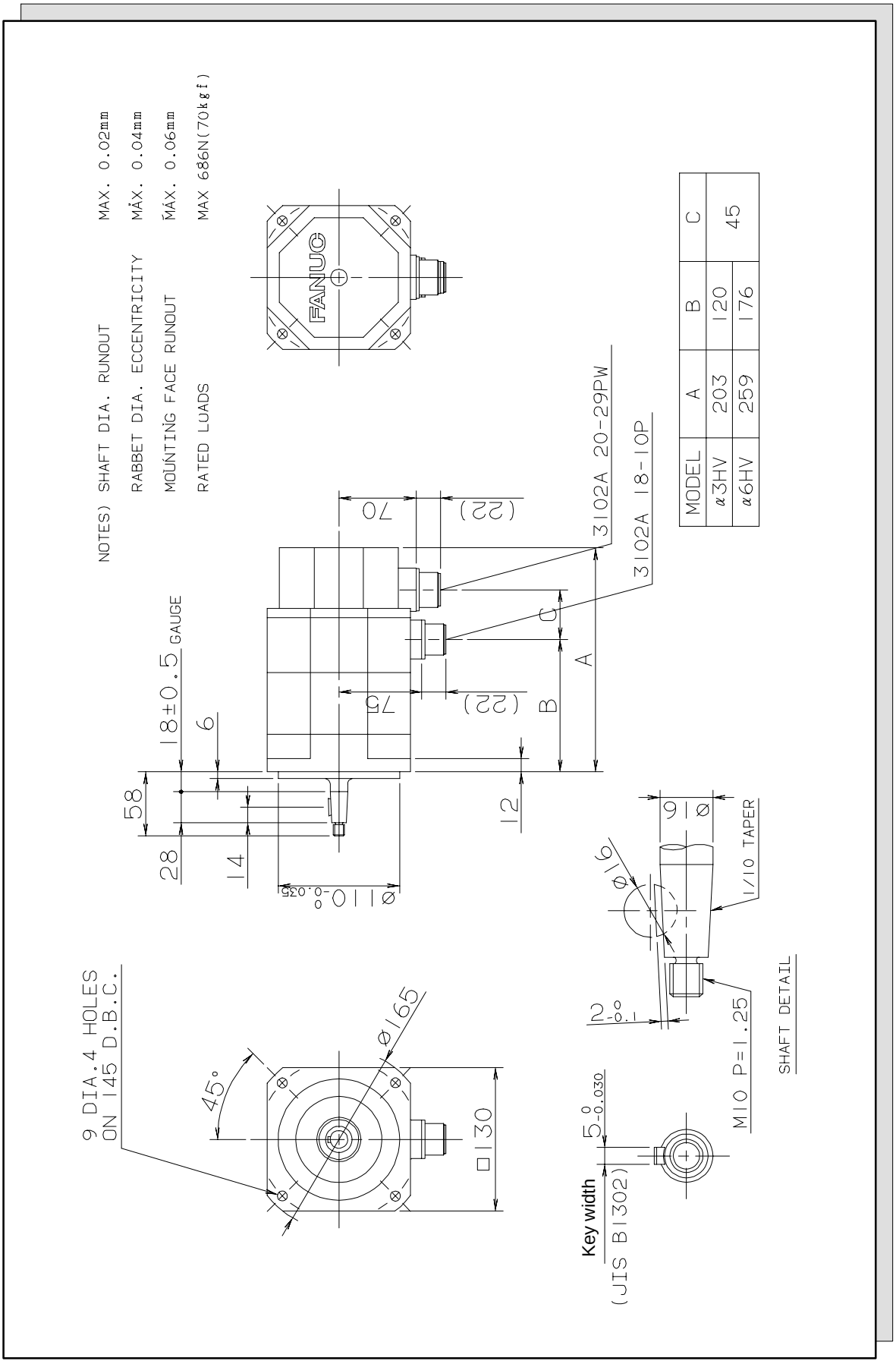


Fig. 3.3 *(b)* **Models α3/3000HV and α6/3000HV (with the brake)**

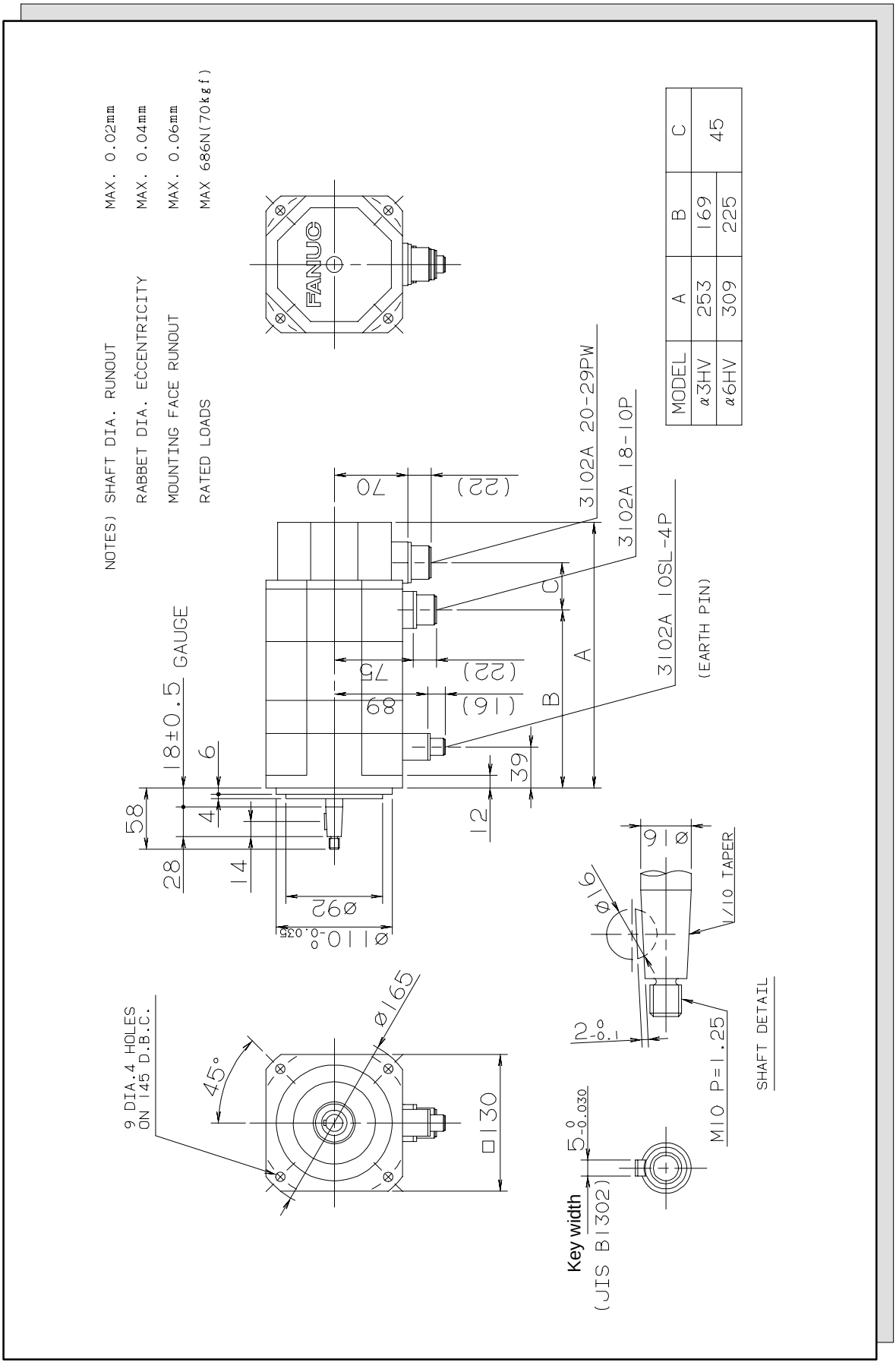
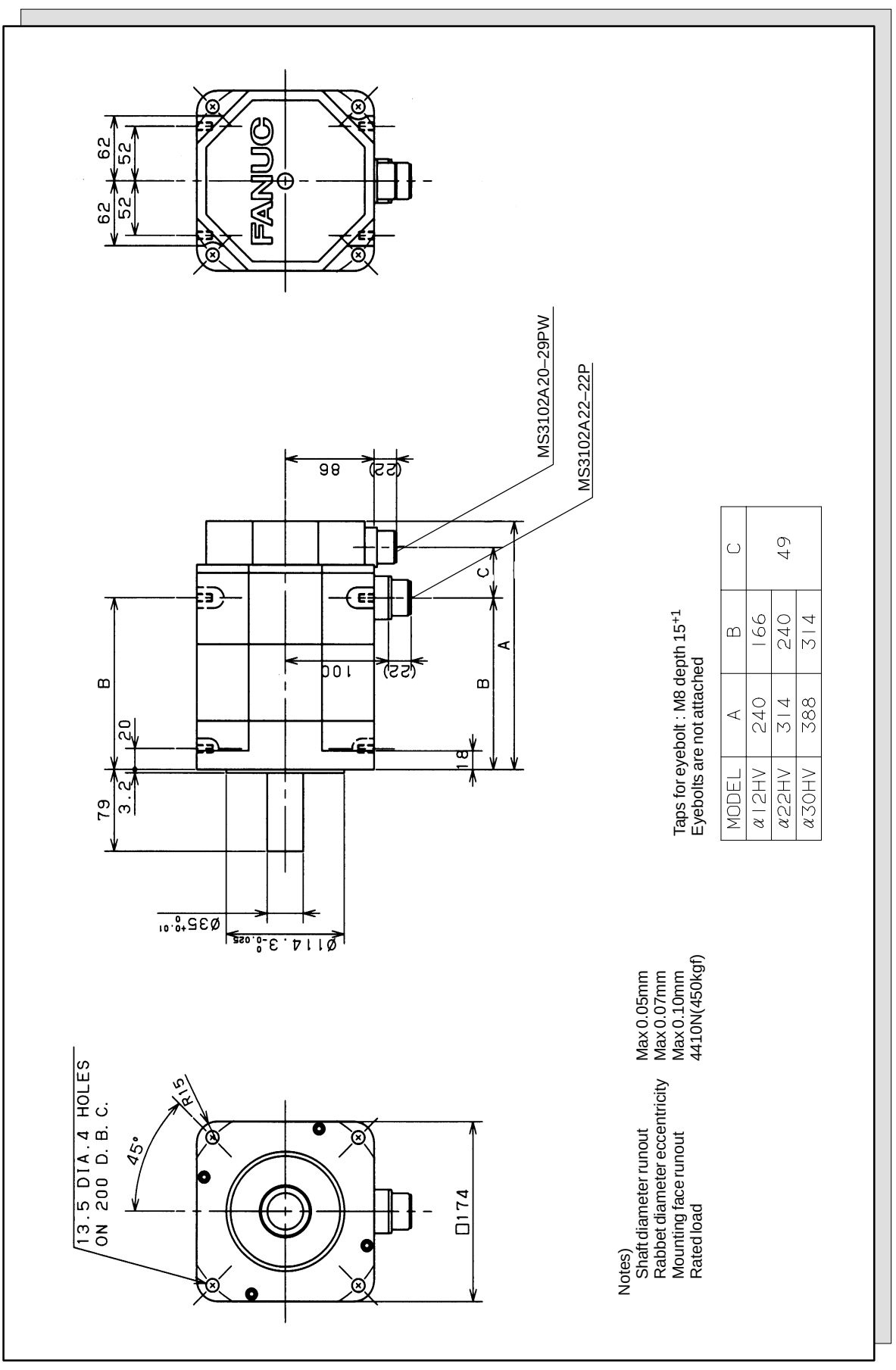


Fig. 3.3 *(d)* **Models α12/3000HV, α22/3000HV and α30/3000HV**



MODEL	A	B	C
α12HV	240	166	49
α22HV	314	240	
α30HV	388	314	

Fig. 3.3 (e) Models α12/3000HV, α22/3000HV and α30/3000HV (with the brake)

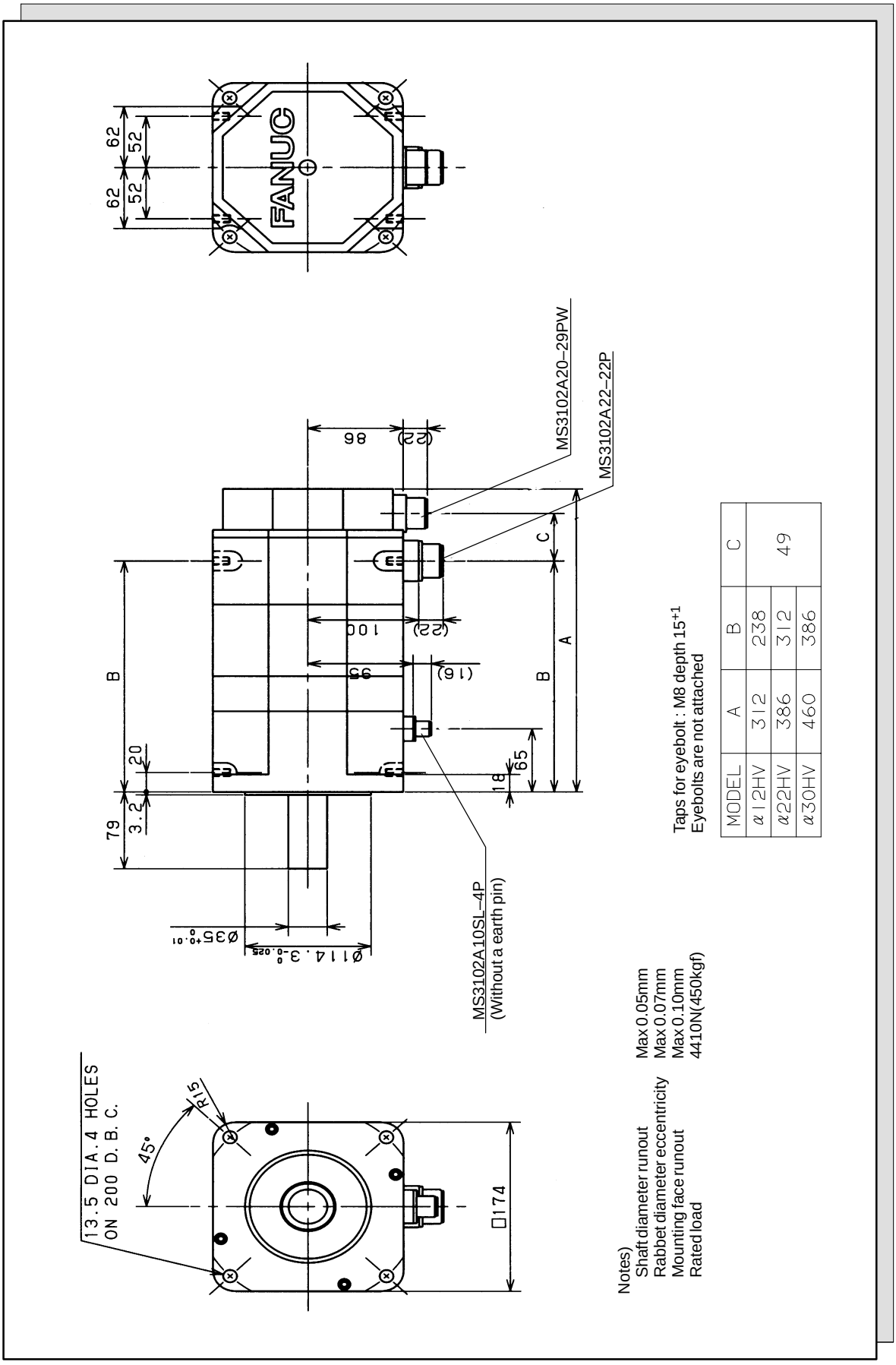


Fig. 3.3 (f) Models α12/3000HV, α22/3000HV and α30/3000HV (shaft option)

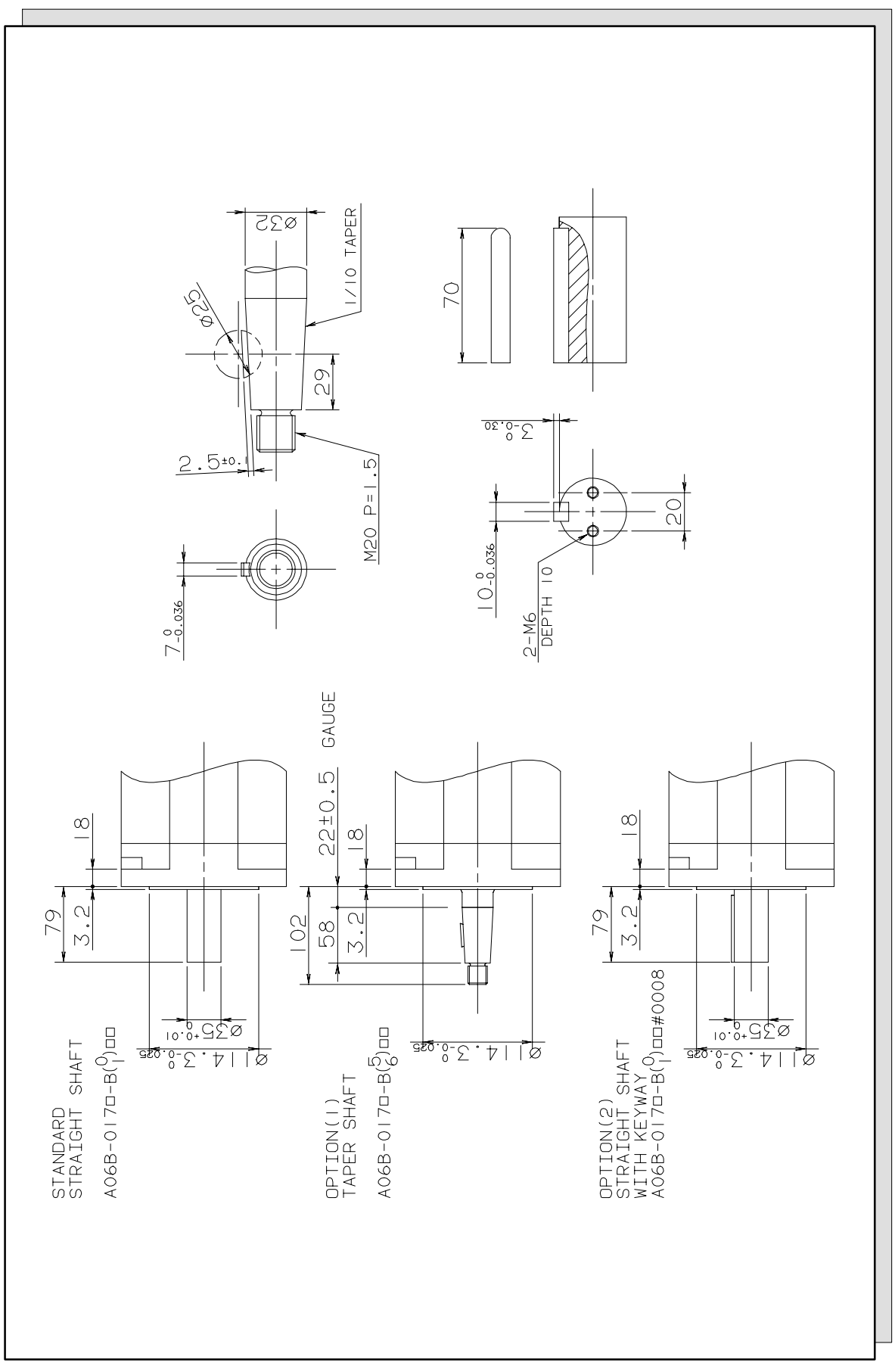


Fig. 3.3 (g) Model α40/2000HV

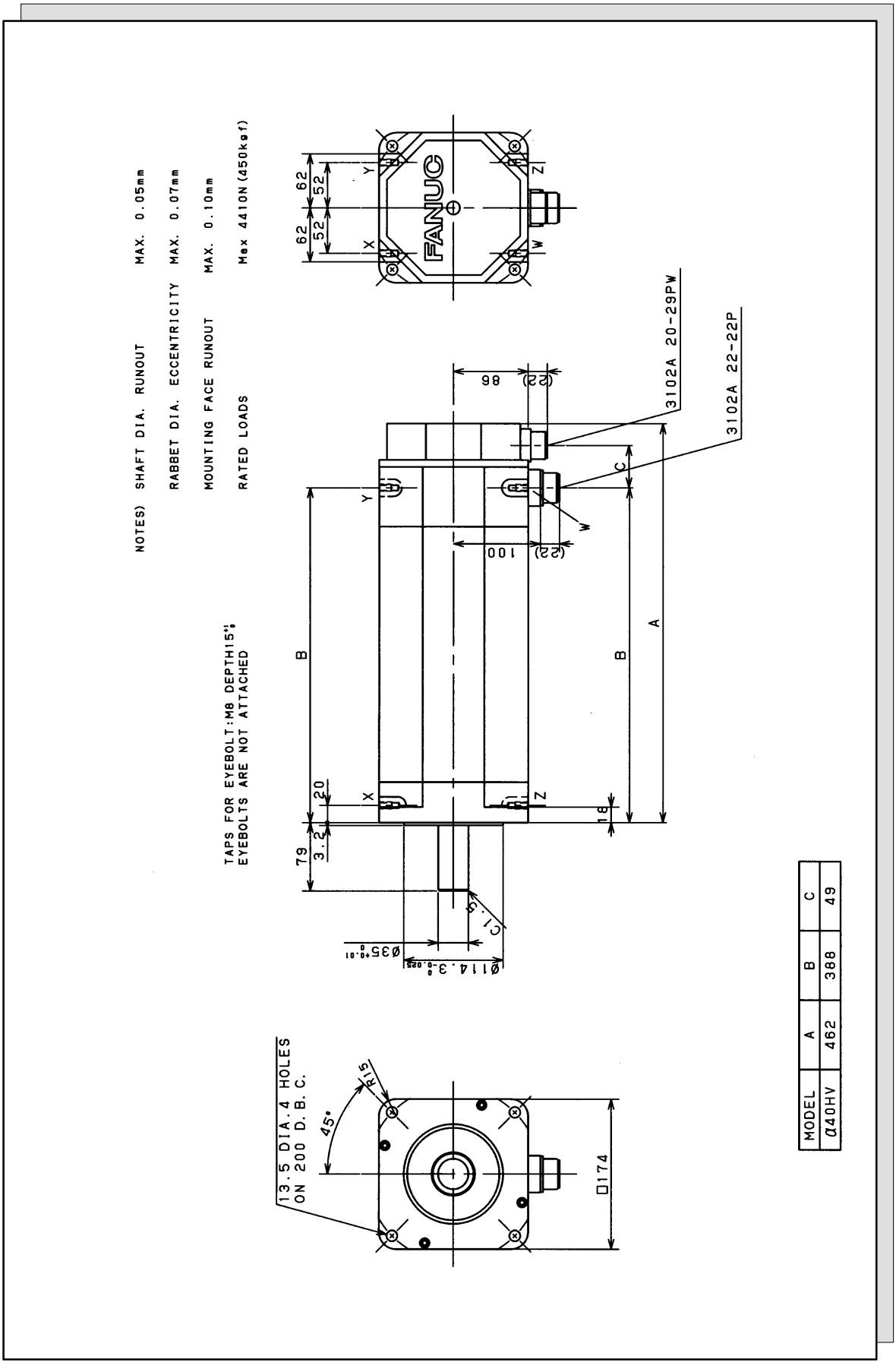


Fig. 3.3 *(h)* **Model α40/2000HV (with the brake)**

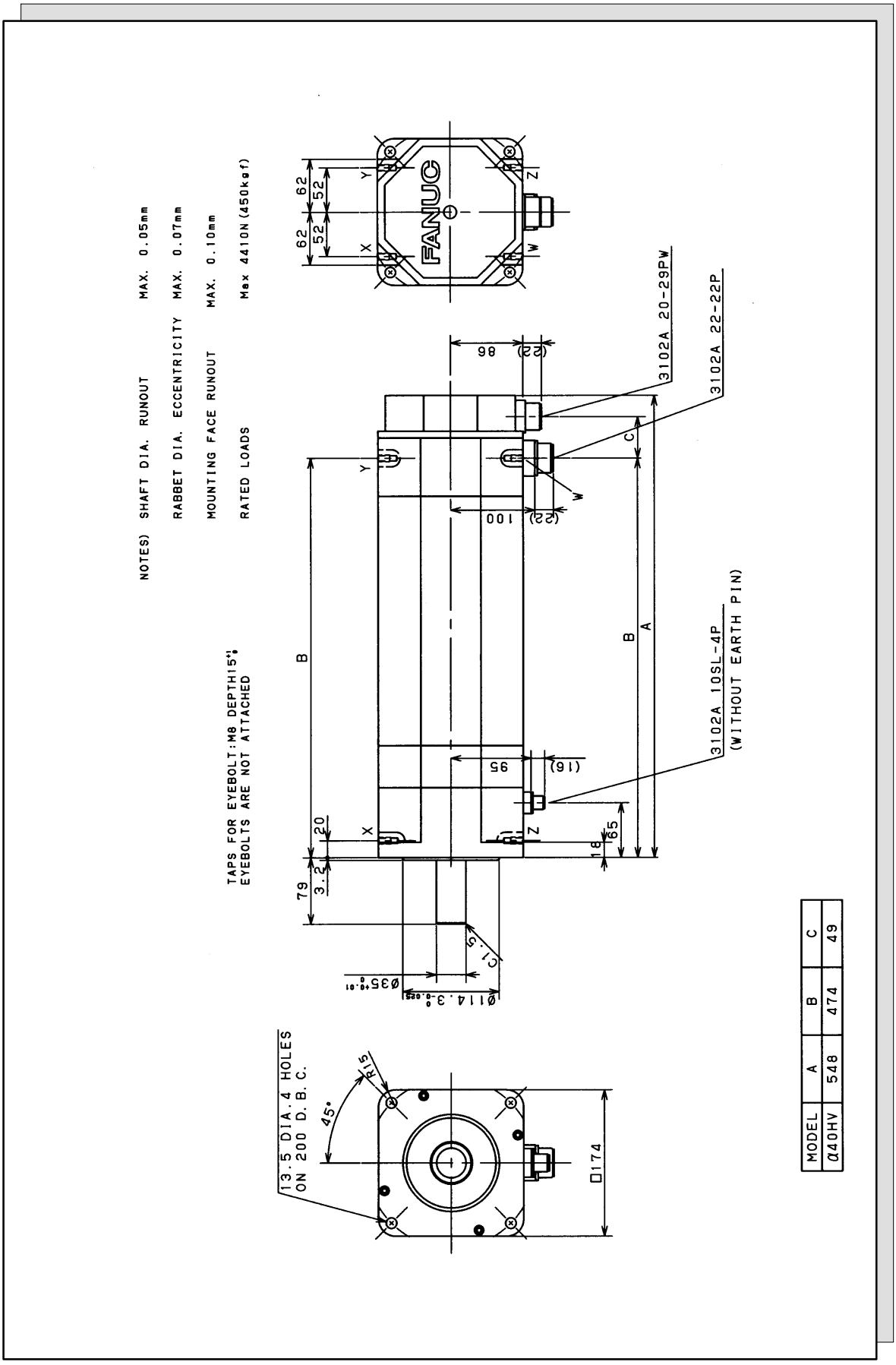
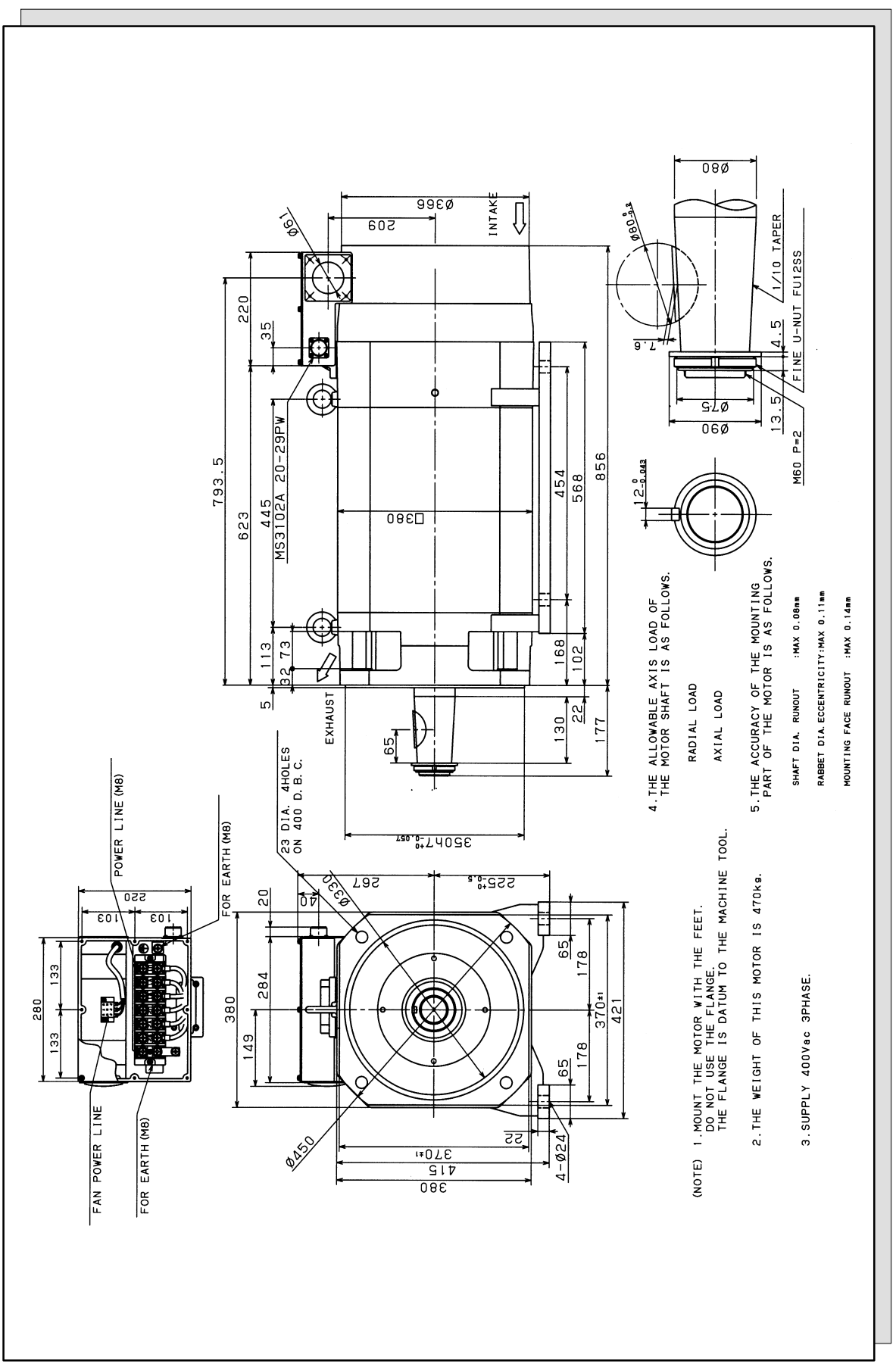
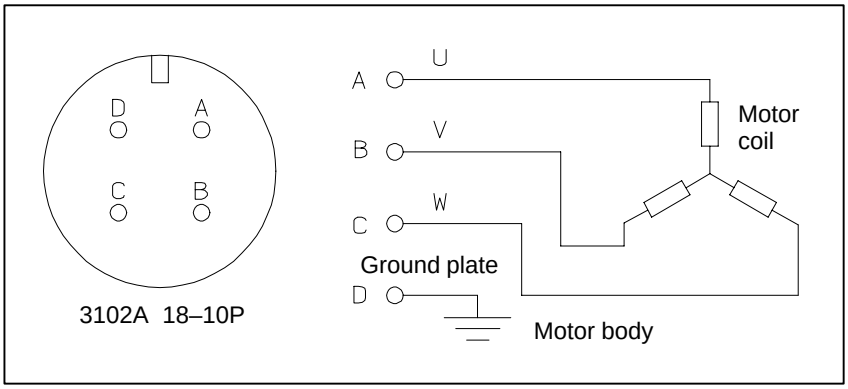


Fig. 3.3 (i) Model α1000/2000HV

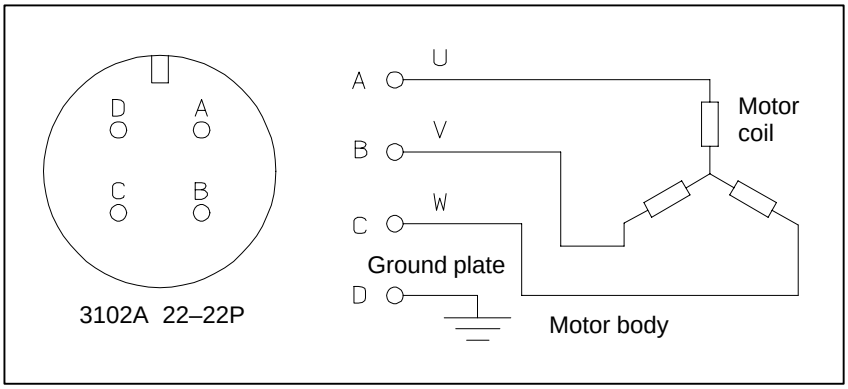


3.4 CONNECTION OF POWER LINE

Models α3/3000HV and α6/3000HV



Models α12/3000HV, α22/3000HV, α30/3000HV, and α40/3000HV



Models α1000/2000HV

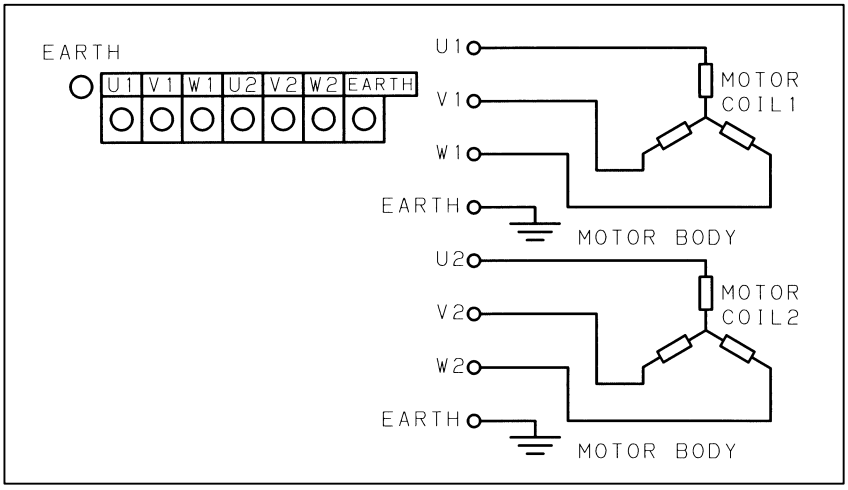


Fig. 3.3 (a) Models αM6/3000HV and αM9/3000HV (standard)

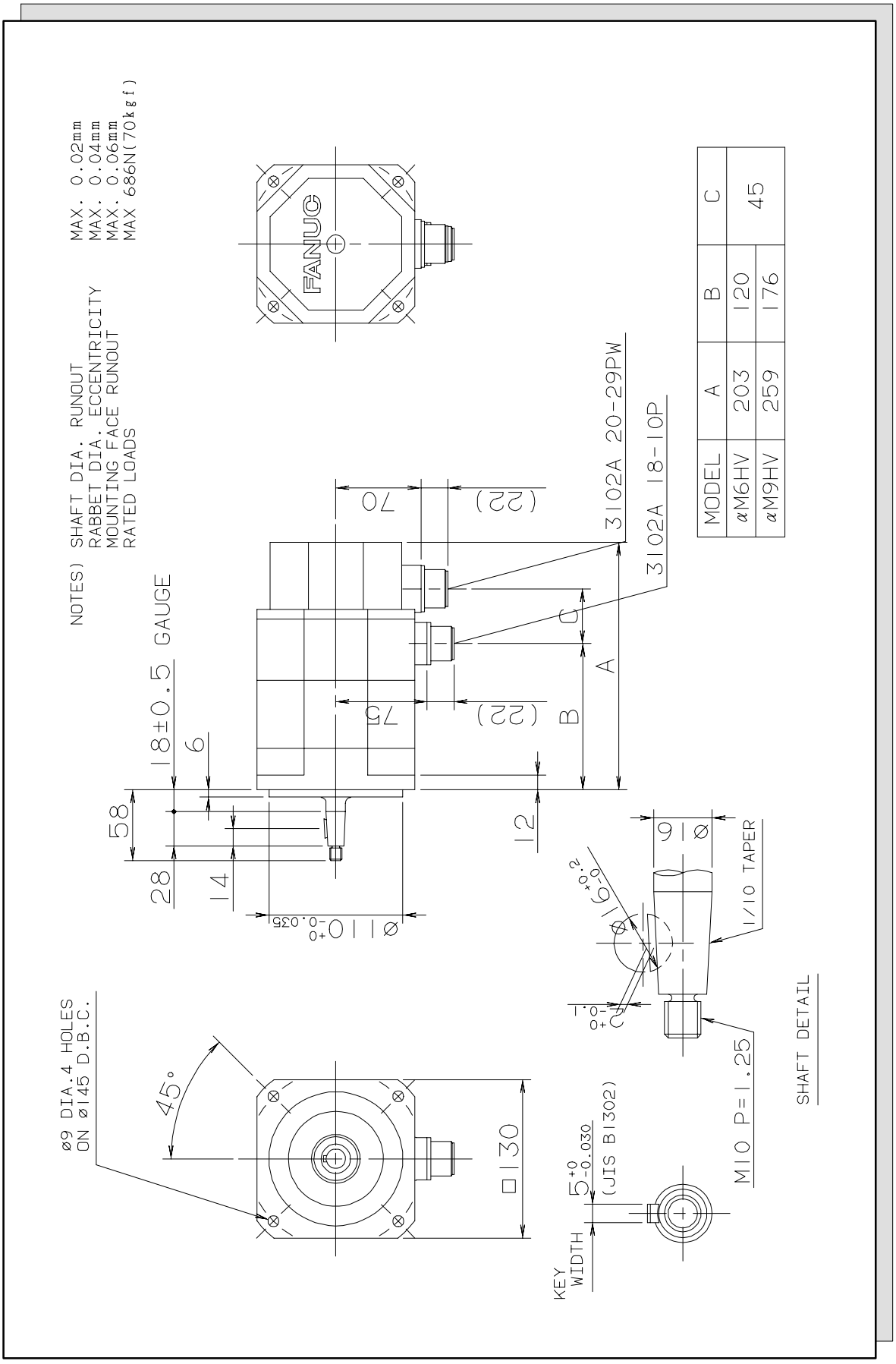


Fig. 3.3 *(b)* **Models αM6/3000HV and αM9/3000HV (with the brake)**

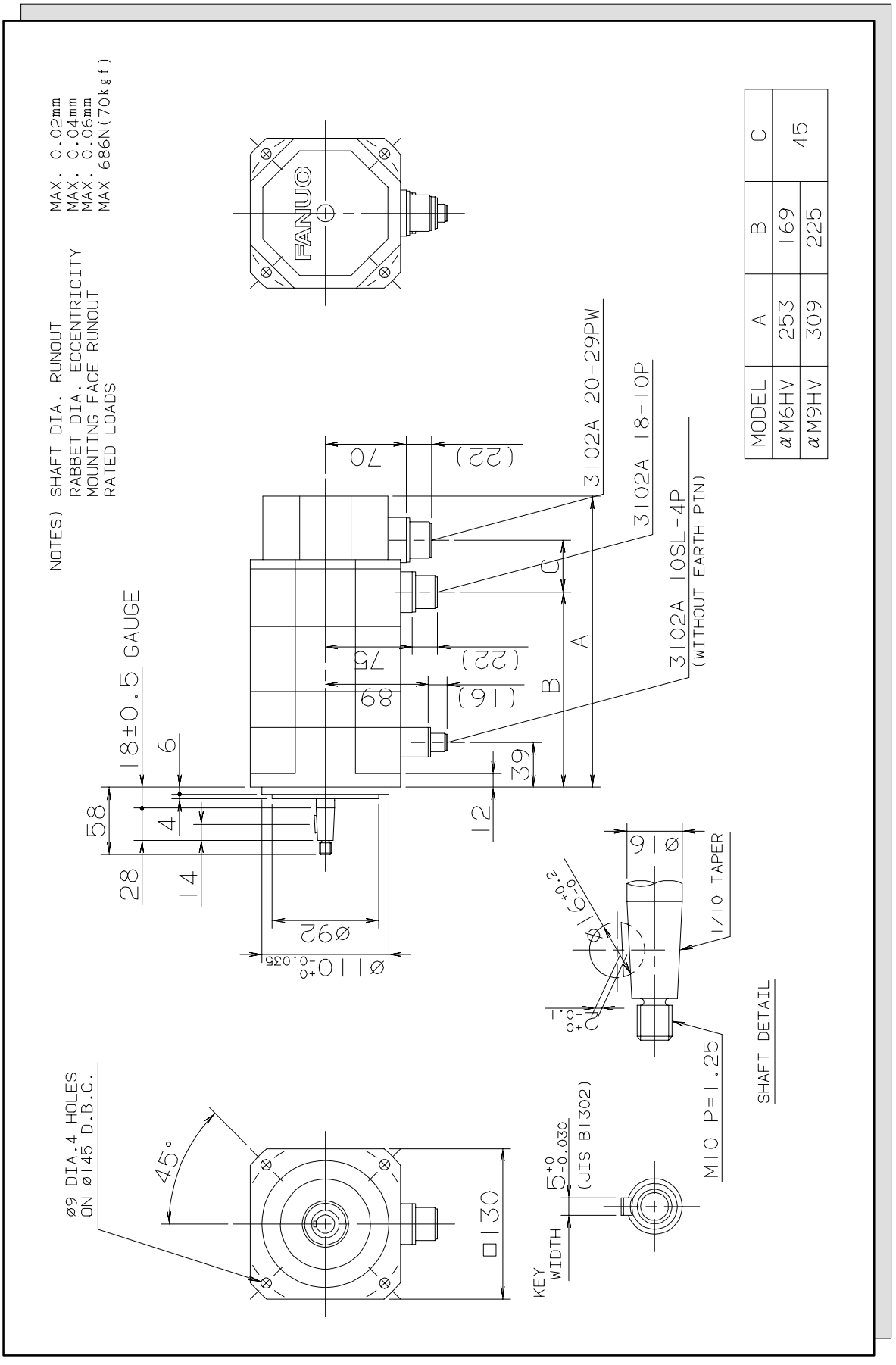
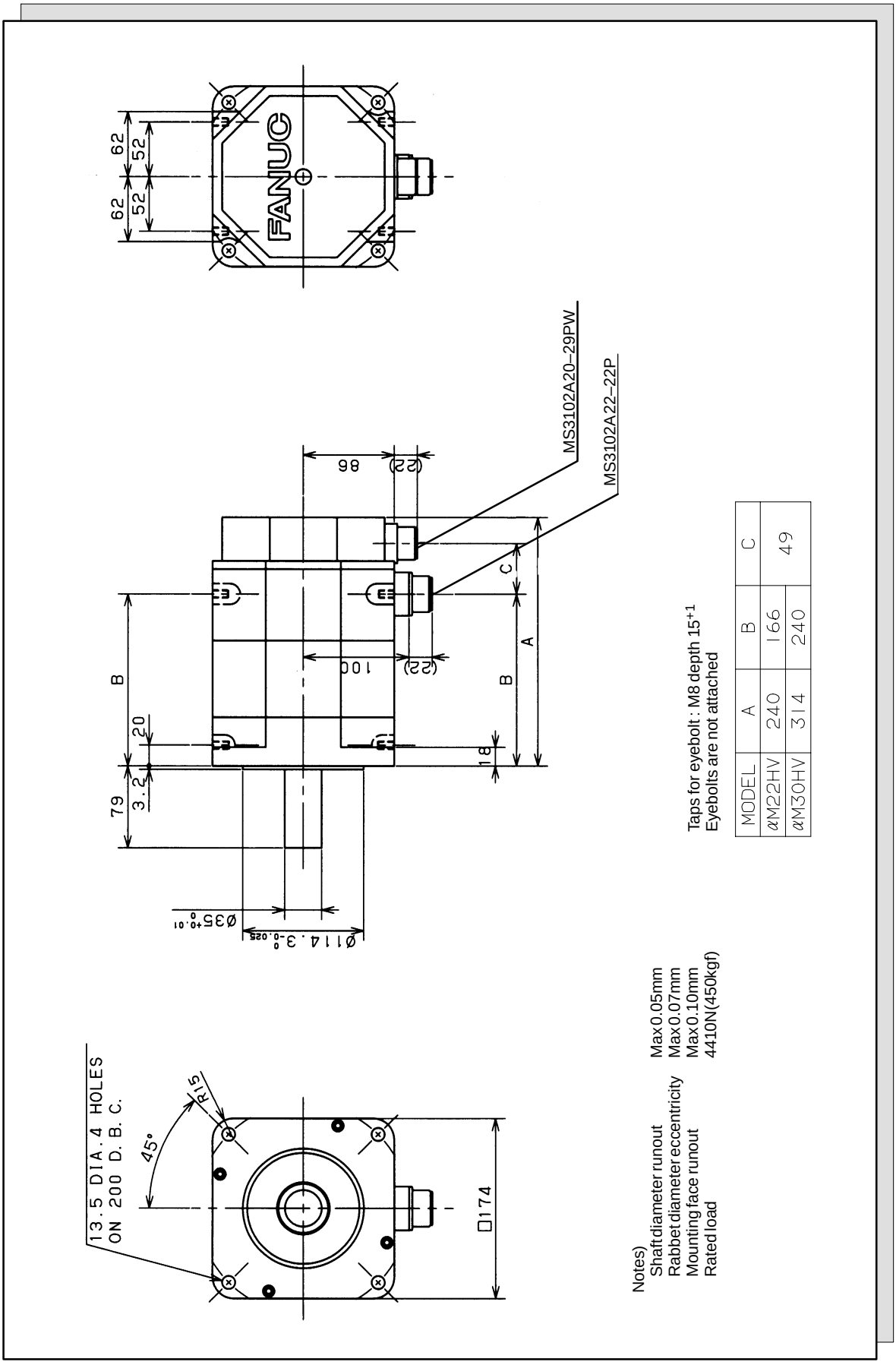


Fig. 3.3 (e) Models αM22/3000HV and αM30/3000HV (standard)



MODEL	A	B	C
αM22HV	240	166	49
αM30HV	314	240	

Fig. 3.3 (f) Models αM22/3000HV and αM30/3000HV (with the brake)

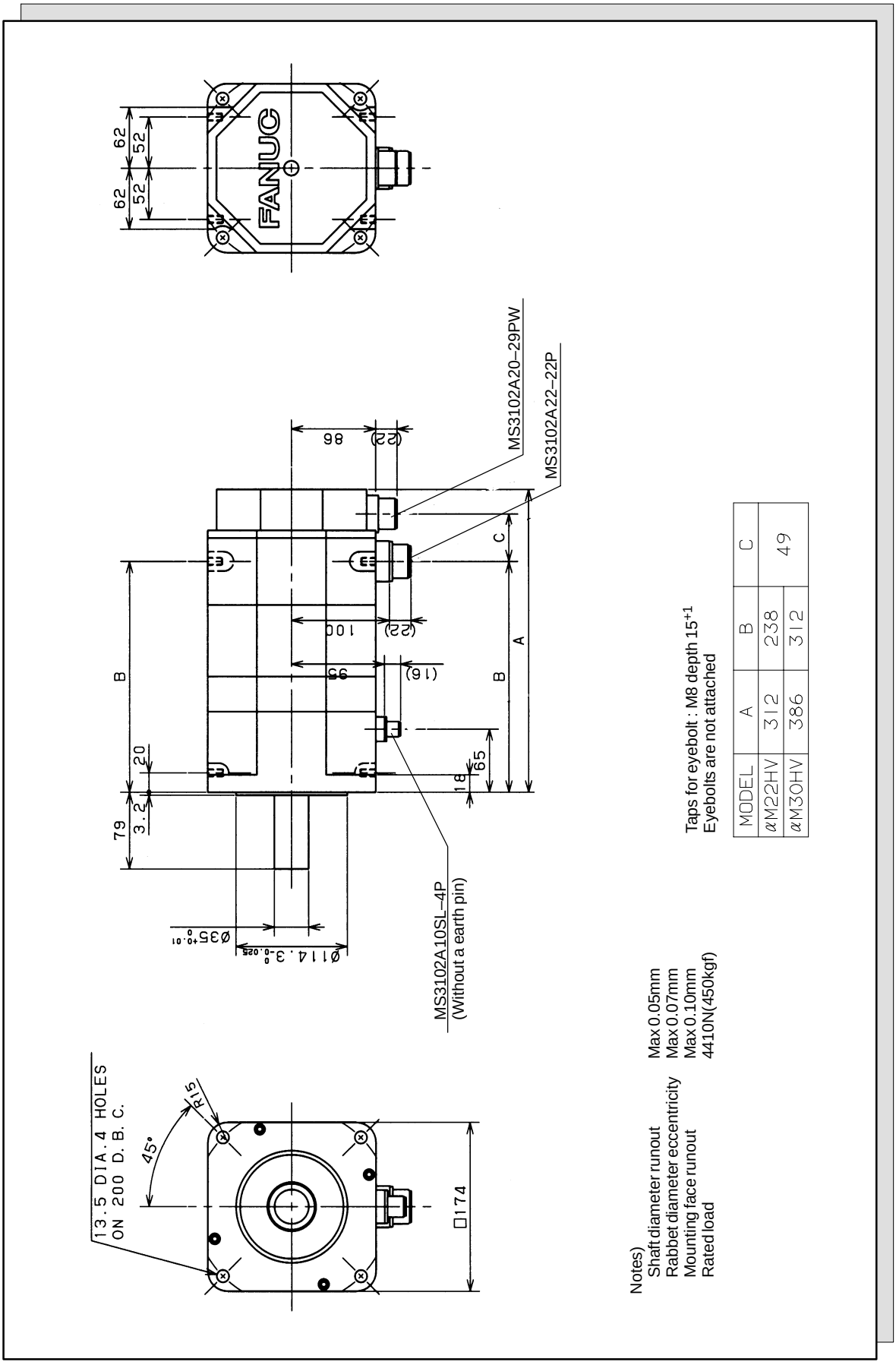


Fig. 3.3 *(h)* **Model αM40/2000HV (standard)**

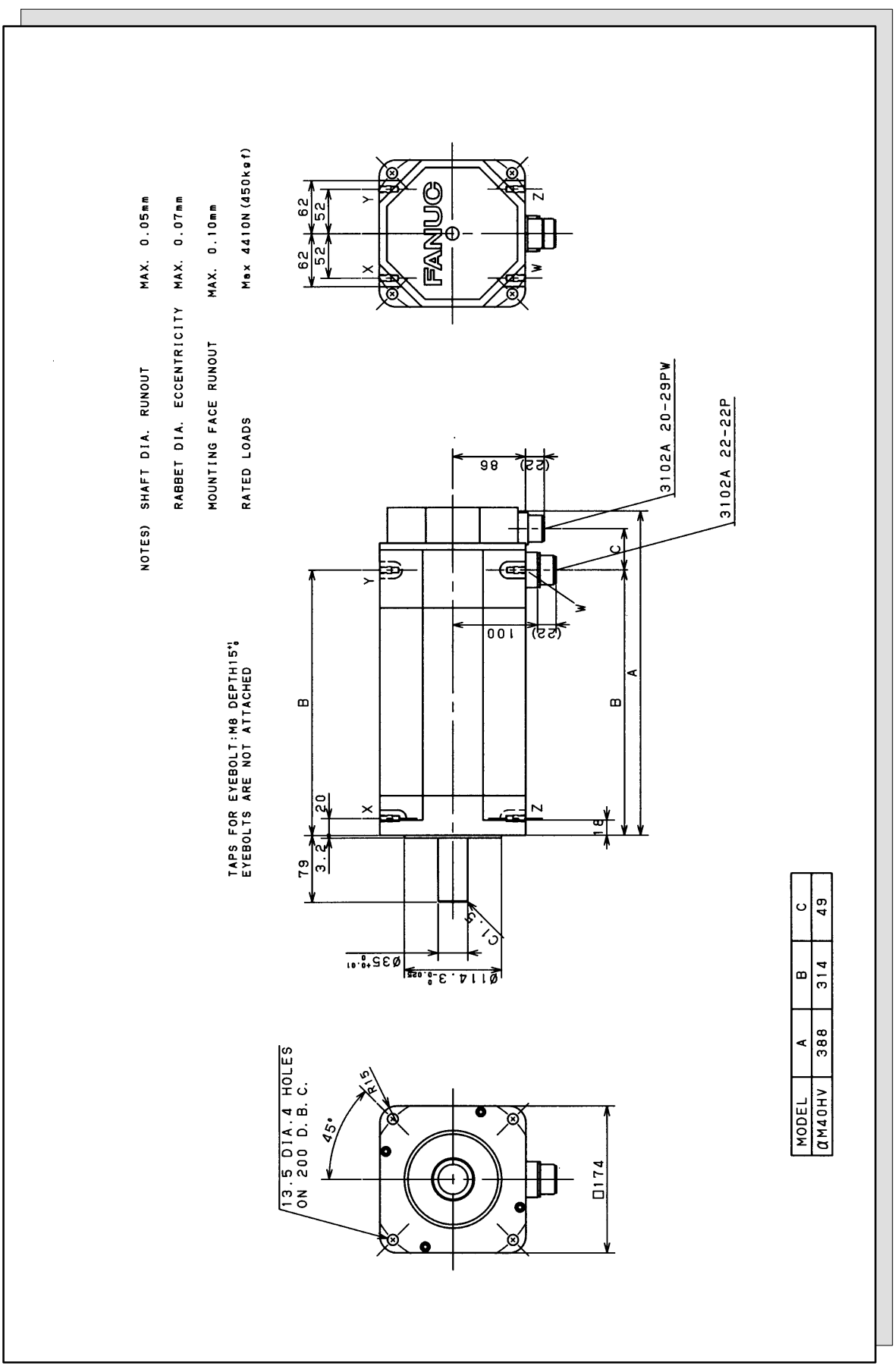
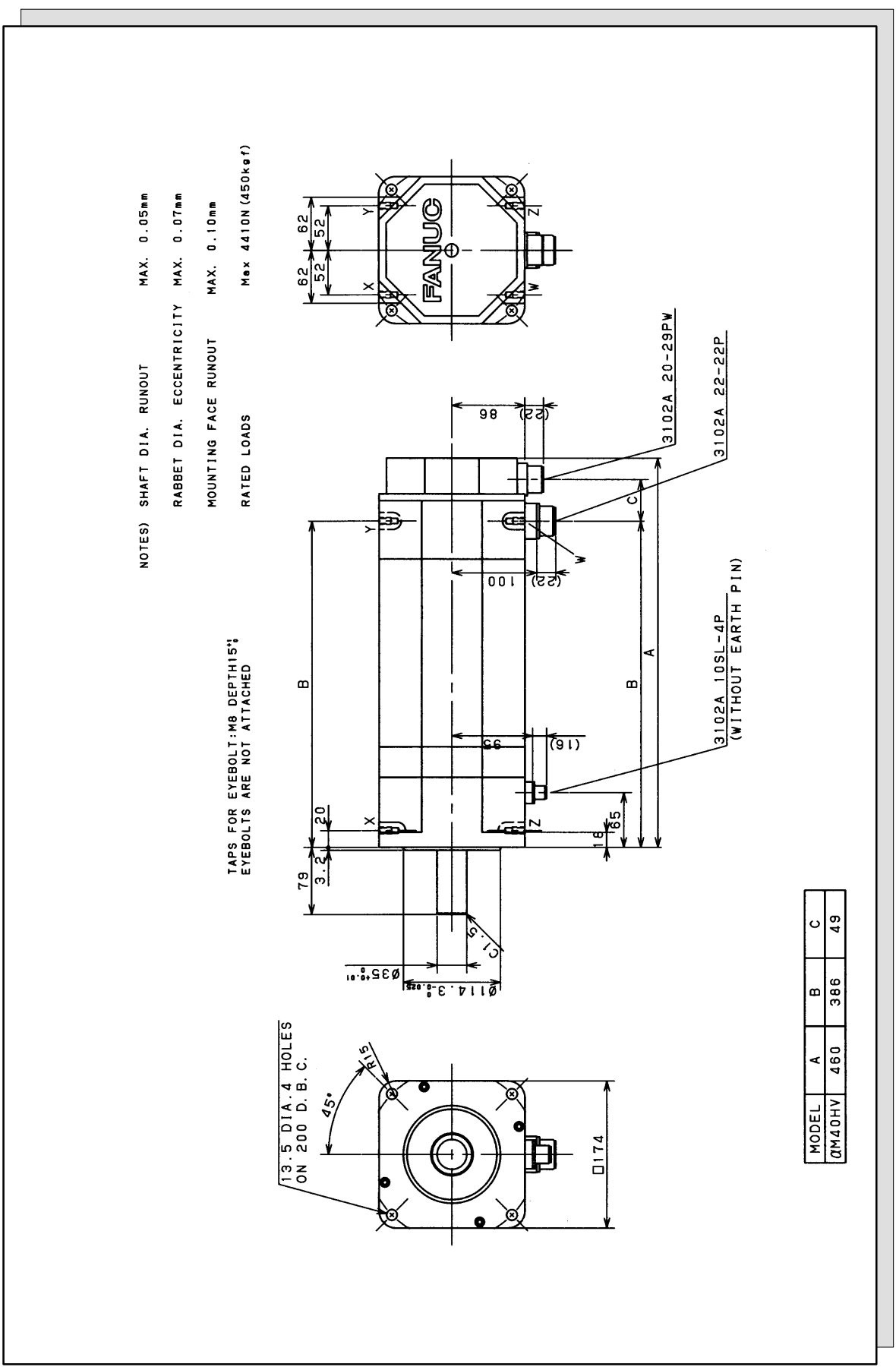
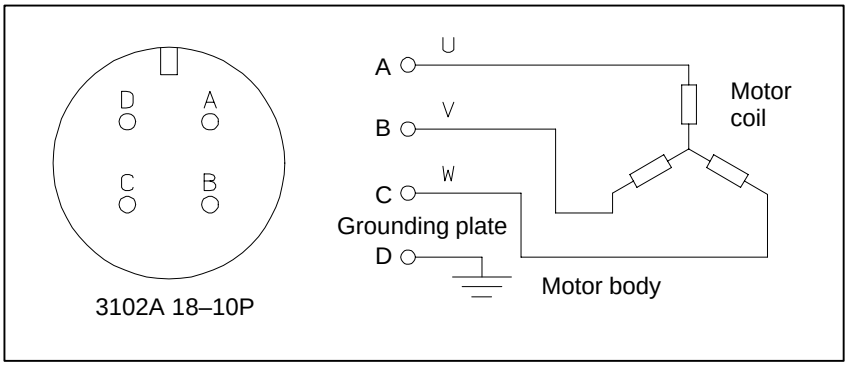


Fig. 3.3 (i) Model αM40/2000HV (with the brake)



3.4 CONNECTION OF POWER LINE

Models αM6/3000HV and αM9/3000HV



Models αM22/3000HV, αM30/3000HV, and αM40/3000HV