

11-3

쿼터턴 조작기 GQ - 010 ~ 300



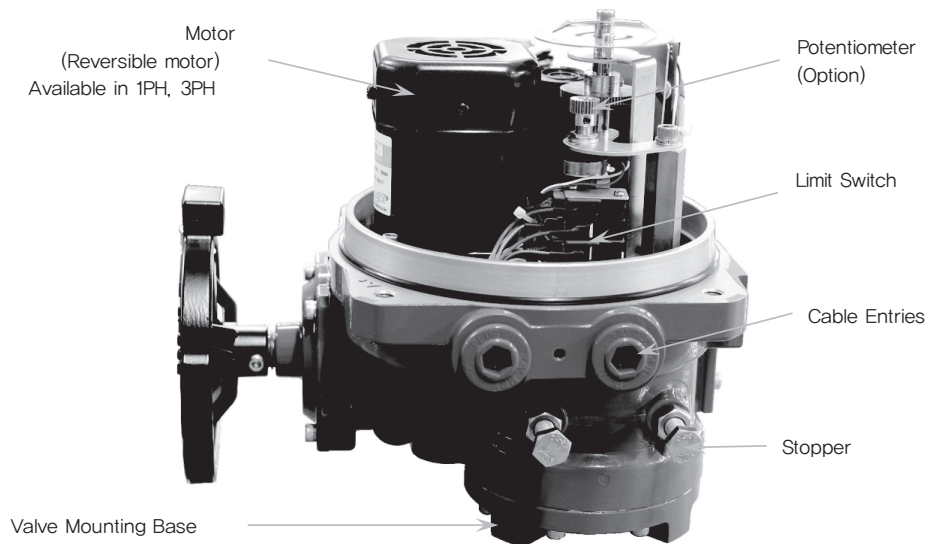
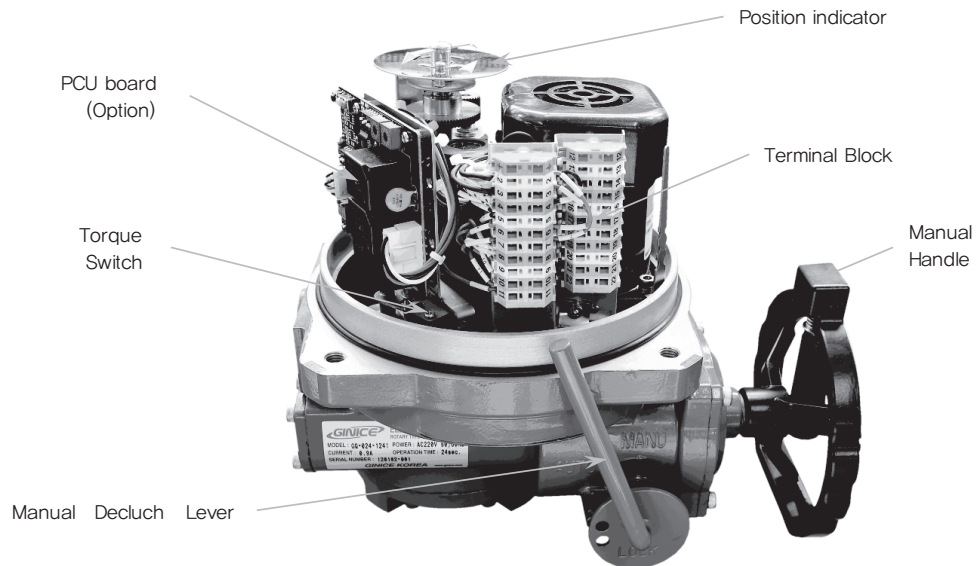
개요 | Summary

GQ series electric actuator is specially.
Designed for quarter turn operating.
Applications for such as Ball, Butterfly, Plug Valves, Dampers and similar usages.

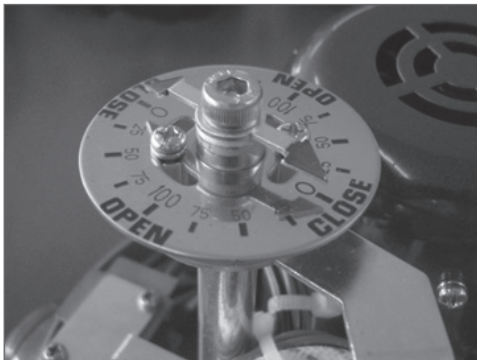
특징 | Features

- Compact and not heavy due to high grade Aluminum alloyed housing.
- Hard anodizing for High corrosion resistance on inside & outside.
- Various output torque from 100Nm to 3000Nm.
- Wide range of Voltage.
- Self locking function in the transmission.
- Manual operation Hand-Wheel engaged by Manual / Auto lever arranged for power drive folding Handle.(Space-Saving & Protection from impact)
- Standard Mounting.(ISO 5211)
- Standard 4 limit switches. (2 for operation, 2 for extra (Dry contacts))
- Torque switches. (GQ-016~300)
- Space heater with thermostat for preventing overheat.
- Removable drive bushing with under hung for easy machining and tight connection.

구조 | Construction



표준구성 | Standard Configuration |



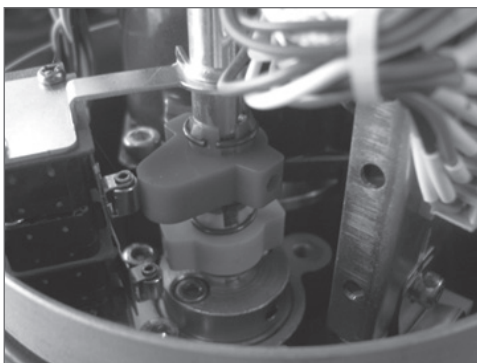
▶ Indicator

- Visual indicator
- Simple & easy setting by adjustment of bolt on the top



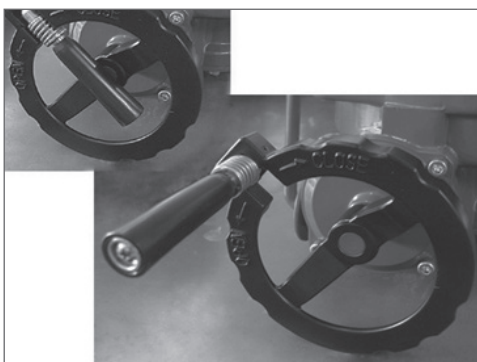
▶ Terminal Block

- Spring loaded push type terminal for tight wiring
- Rated voltage/current : 300V / 10A
- Solid and stranded wire : 16~28 AWG
- Wire strip length : 8~10mm
- Insulating with stand voltage : 6KV



▶ Limit Switch

- Manual setting
- Easy "Setting" by "L-Wrench" & Small screw-driver
- 8-SPDT Switch (GQ-016~300)
- 4-SPDT switch



▶ Manual Handle

- Foldable Handle
- Space-Saving & Protection from impact

표준 밸브 선정표 | Standard Selection Guide Of Available Valves |

Actuator \ Valve	Butterfly valve 10K, ANSI 150#	2-Way ball valve 10K, ANSI 150#	3-Way ball valve 10K, ANSI 150#
GQ-006	40A(1 1/2")~65A(2 1/2")	40A(1 1/2")	25A(1")
GQ-008	80A(3")	40A(1 1/2"), 50A	32A(1 1/4")
GQ-010	100A(4")	50A(2")	40A(1 1/2")
GQ-016	125A(5"), 150A(6")	50A(2"), 65A(2 1/2")	50A(2")
GQ-024	200A(8")	80A(3")	65A(2 1/2")
GQ-035	250A(10")	100A(4")	80A(3")
GQ-050	300A(12")	125A(5")	100A(4")
GQ-080	350A(14")	150A(6")	125A(5")
GQ-110	400A(16")	200A(8")	150A(6")
GQ-200	400A(18"), 500A(20")	250A(10")	200A(8")
GQ-300	600A(24")	300A(12")	250A(10"), 300A(12")

참조) 밸브 제작사마다 토크가 차이가 있으므로 위의 선정표가 다를 수도 있습니다.
The above specification can be changed as difference torque per

주문 코드 시스템 | Order Coding System |

GQ-XXX-X

010 : 10Kg.m

016 : 16Kg.m

024 : 24Kg.m

035 : 35Kg.m

050 : 50Kg.m

080 : 80Kg.m

110 : 110Kg.m

200 : 200Kg.m

300 : 300Kg.m

X

X

X

1. 90°
2. 120°
3. 135°
4. 180°
5. 270°

1. Standard(on-off)
2. PU(Potentiometer Unit)
3. PTM(Position Transmitter)
4. PCU(Proportional Control Unit)
5. ALS(Additional Limit Switches)
6. ATS(Additional Torque Switches) GQ-010 제외
7. LCU(Local Control Unit, LED + On/Off) GQ-010제외
8. LCU(Local Control Unit, LED + PCU) GQ-010제외
9. LCU(Local Control Unit, LED + PTM) GQ-010제외

0. 24V AC/DC (GQ-010~035 Only, PCU제외)

1. 110V AC / 1Ph

2. 220V AC / 1Ph

3. 220V AC / 3Ph (GQ-010제외)

4. 380V AC / 3Ph (GQ-010제외)

5. 440V AC / 3Ph (GQ-010제외)

6. 460V AC / 3Ph (GQ-010제외)

7. 24V AC / 1Ph (GQ-010 Only) 삭제

8. 24V DC (GQ-080이상 제외, LCU대응 불가)

9. 24V DC INNER Contact (GQ-050이상 제외, LCU대응 불가)

1. IP 67

2. IP 68

3. Exd II B T4

기술 사양 Technical Data

Model	Maximum Output torque	Operating Time(sec.) 60/50Hz	Rated current(A) 60/50 Hz					Duty Cycle IEC 34-1	Number of Handel turn	Weight
			1 Phase		3 Phase		DC			
	Kg.m	90°	110V	220V	380V	440V	24V	S4(%)	N	Kg
GO-010	10	18/21	1.10/0.98	0.58/0.52	—	—	3.5 A	30	10	7
GQ-016	16	21/25	1.70/1.60	0.90/0.85	0.30/0.35	0.32/0.50	2.7 A	50	12	15
GQ-024	24	21/25	1.72/1.62	0.90/0.87	0.32/0.37	0.35/0.57	2.7 A	50	12	15
GQ-035	35	26/31	1.80/1.72	0.95/0.92	0.32/0.37	0.32/0.50	4.0 A	50	14	20
GQ-050	50	26/31	3.90/3.60	1.60/1.50	0.56/0.52	0.58/0.55	4.0 A	50	14	20
GQ-080	80	32/39	4.20/3.90	2.20/2.05	0.88/0.82	0.88/0.82	—	30	17	25
GQ-110	110	32/39	4.20/3.90	2.30/2.15	0.90/0.84	0.88/0.84	—	30	17	25
GQ-200	200	50/59	—	3.15/2.95	1.80/1.50	2.20/2.30	—	30	23	70
GQ-300	300	50/59	—	3.85/3.75	2.00/1.60	2.40/2.50	—	30	23	70

표준 사양 Standard Specification

Enclosure	Weatherproof enclosure IP67 (IP68 OPTIONAL)
Power supply	110/220V AC 1 Phase 50/60Hz, 380/440V AC 3 Phase 50/60Hz, ±10%
Control power supply	110/220V AC 1 Phase 50/60Hz, ±10%
Duty cycle (on-off)	S2, Max 30Min
Duty cycle (modulating)	S4, 30~50% Max 300~1,600 start/hour
Motor	Induction motor (Reversible motor)
Limit switches	Open / close, SPDT, 250V AC 16A rating
Additional limit switches	Open / close, SPDT, 250V AC 16A rating
Torque switches	Open / close, SPDT, 250V AC 16A rating (Except for GQ-010)
Stall protection/operating temp.	Built-on thermal protection, open 150℃±5℃ / close 97℃ ± 15℃
Travel angle	90°±5° (0~100°)
Indicator	Continuous mechanical indicator with arrow
Manual override	Declutching mechanism
Self locking	Provided by double worm gearing
Mechanical stopper	2 each external adjustable screws
Space heater	10W(110/220V AC) anti-condensation
Cable entries	Three PF ¾" tap
Lubrication	Grease Moly (EP type)
Terminal block	Spring loaded lever push type
Materials	Aluminum alloy, Steel, Al bronze, polycarbonate
Ambient temperature	-20℃ ~ + 70℃ (except option electronic board)
Ambient humidity	90% RH Max. (non-condensing)

전기 사양 | Electric Data

적용모델	위상	전압[v]	주파수[Hz]	소비전력[VA]
GQ - 010	1PH	24	50	90.72
			60	90.96
		110	50	126.5
			60	126.5
		220	50	121
			60	114.4
GQ - 016 GQ - 024	1PH	110	50	155.1
			60	161.7
		220	50	189.2
			60	180.4
		240	50	199.2
			60	175.2
	3PH	220	50	68.2
			60	59.4
		380	50	68.4
			60	53.2
		440	50	74.8
			60	61.6
GQ - 035 GQ - 050	1PH	110	50	196.9
			60	188.1
		220	50	200.2
			60	200.2
	3PH	220	50	88
			60	74.8
		380	50	87.4
			60	76
		440	50	92.4
			60	79.2
GQ - 080 GQ - 110	1PH	110	50	500.5
			60	517
		220	50	525.8
			60	510.4
	3PH	220	50	321.2
			60	270.6
		380	50	319.2
			60	269.8
		440	50	321.2
			60	268.4
GQ - 200 GQ - 300	1PH	100	50	80
			60	73
		120	60	700.8
			50	1056
	3PH	220	60	1012
			50	440
		380	60	374
			50	448.4
		440	60	372.4
			50	-
			60	-
				-

※ 위 사양표는 참조용입니다

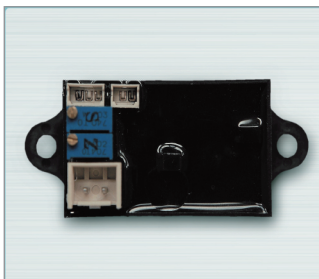
◀ 선택 사양 | Option Specification

WE	Watertight enclose actuator. (IP 68, 10m 100hour)
PU	Potentiometer unit. (1K Ω)
PTM	Position transmitter. (Output 4~20mA)
PCU	Proportional control unit. (Input / Output 4~20mA or 0~10VDC or 1~5VDC)
ALS	Additional limit switches. (SPDT X 2EA 250V AC 10A Rating)
ATS	Additional torque switches.
LCU	Local Control Unit. (Remote / Local, Open / Stop / Close Selector Switch with Lamps)
EX	Extension 120 $\circ$, 135 $\circ$, 180 $\circ$, 270 $\circ$ turn.
EXD	Explosion proof (Ex d II B T4)
APD	Auto Phase Discriminator



▶ Potentiometer Unit

- Compact size
- Range : 0~1k Ω
- Metal gear



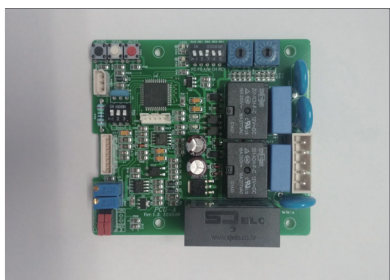
▶ Position Transmitter

- Compact and reliable performance
- Input: AC/DC 24V, AC 110/220V
- Output : 4~20mA
- Zero, span setting



▶ Auto Phase Discriminator

- Simple auto phase controller
- Reverse-phase protection
- Open-phase protection
- In case of reverse connection, phase is switched automatically.
- Fault indicator



▶ Proportional Control Unit

- Power : 85~280VAC $\pm$ 10%, 50/60Hz $\pm$ 2% / 24VDC
4VA Max-Changeable by DIP switch
- Input signal : 4~20mA, 1~5V DC, 2~10V DC, 0~5V DC, 0~10V DC
- Output signal: 4~20mA, 1~5V DC, 2~10V DC, 0~5V DC, 0~10V DC
- Auto setting, dead band, delay time etc.

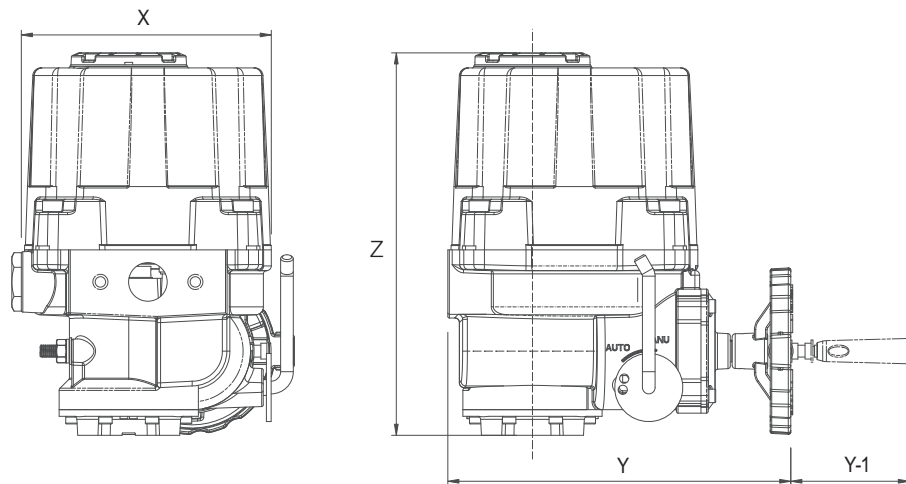


▶ LCU(Local Control Unit)

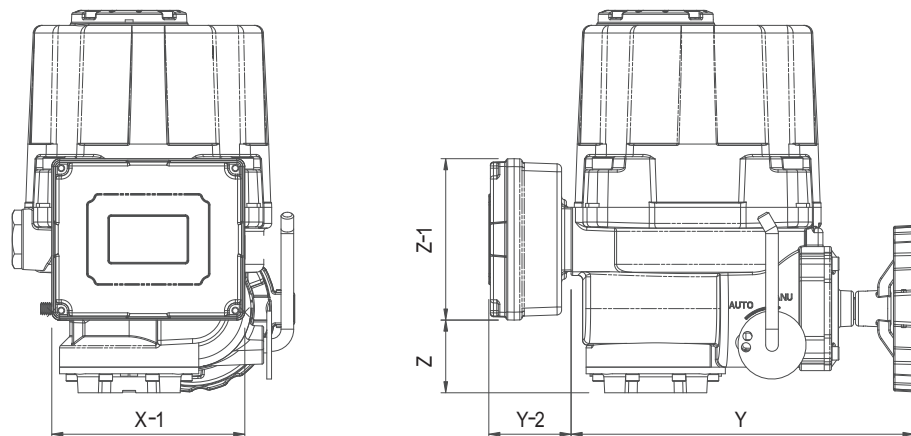
- Compact unit that is mounted to the actuator to operate the valve at local.
- Local/Remote switch
- Open/Stop/Close selector switches with lamps
- Auto-Phase Discriminator

외형치수 (GQ-010) | Shape Dimension |

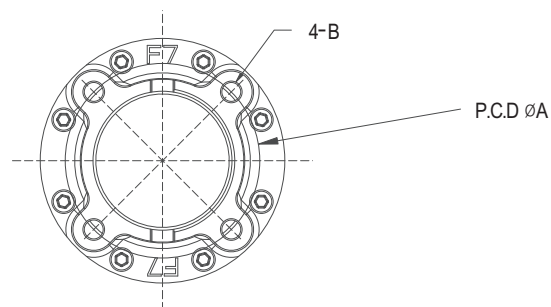
▶ On-Off



▶ Modulating (with PCU)



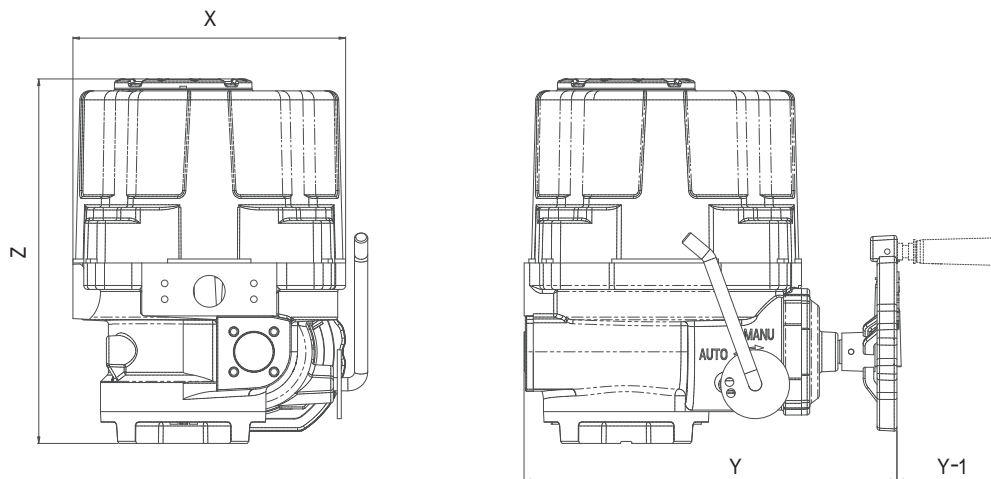
▶ Valve Mounting (Base ISO 5211)



Model	ØA	B	X	X - 1	Y	Y - 1	Y - 2	Z	Z'	Z - 1
GQ-010	70	M8 / 15	158	122	217	75	52	242	46	102

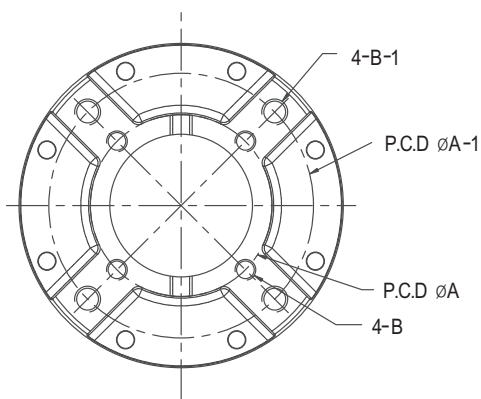
외형치수 (GQ-016~300) | Shape Dimension

▶ On/Off, Modulating (with PCU)

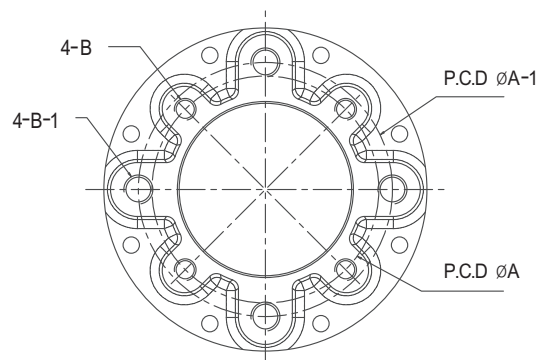


▶ Valve Mounting (Base ISO 5211)

GQ - 016 ~ 050



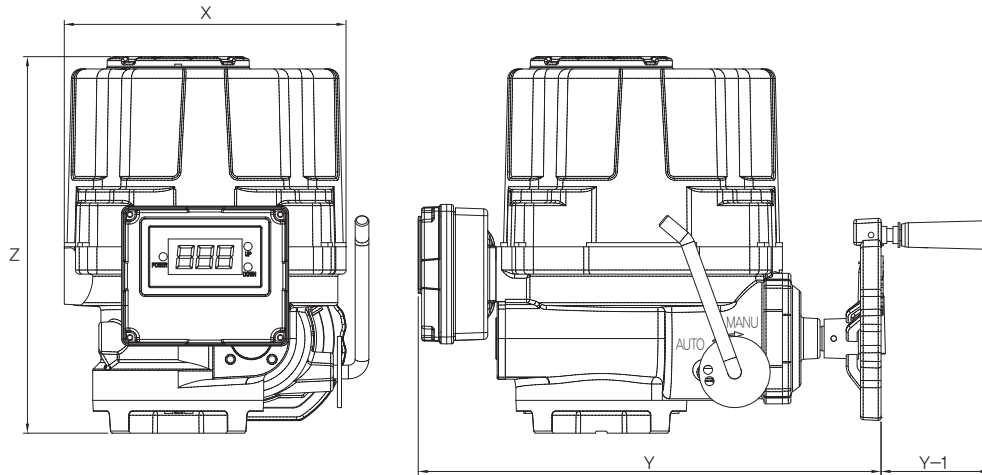
GQ - 080 ~ 300



Model	ØA	ØA - 1	B	B - 1	X	Y	Y - 1	Z
GQ-016	70	102	M8 / 12	M10 / 15	206	282	80	276
GQ-024	70	102	M8 / 12	M10 / 15	206	282	80	276
GQ-035	102	125	M10 / 15	M12 / 18	222	295.5	80	294
GQ-050	102	125	M10 / 15	M12 / 18	222	295.5	80	294
GQ-080	125	140	M12 / 18	M16 / 24	239	310	80	326
GQ-110	125	140	M12 / 18	M16 / 24	239	310	80	326
GQ-200	-	165	-	M20 / 30	307	401	100	394
GQ-300	-	165	-	M20 / 30	307	401	100	394

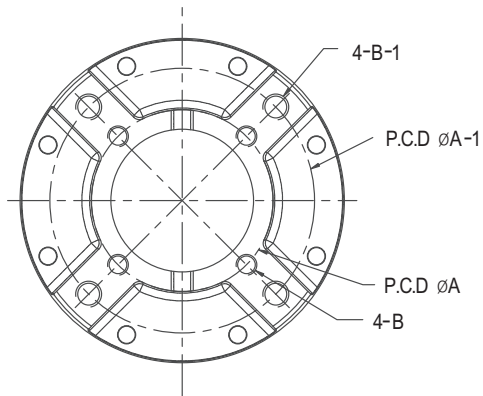
외형치수 (GQ-016~300) | Shape Dimension

▶ Modulating (with PCU) – 디스플레이 타입

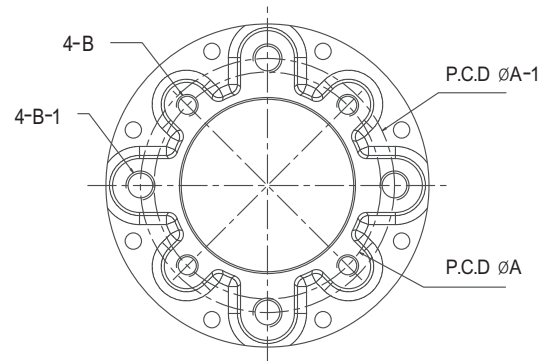


▶ Valve Mounting (Base ISO 5211)

GQ - 016 ~ 050



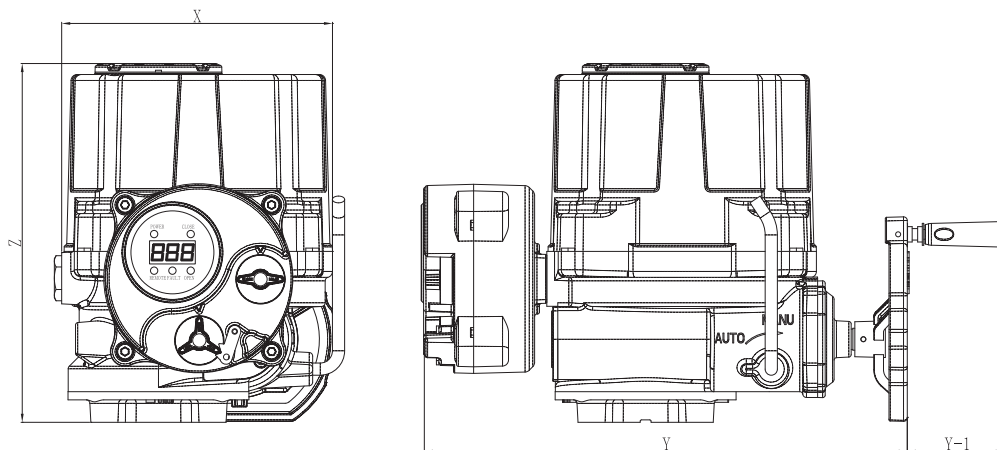
GQ - 080 ~ 300



Model	ØA	ØA - 1	B	B - 1	X	Y	Y - 1	Z
GQ-016	70	102	M8 / 12	M10 / 15	206	334	80	276
GQ-024	70	102	M8 / 12	M10 / 15	206	334	80	276
GQ-035	102	125	M10 / 15	M12 / 18	222	347,5	80	294
GQ-050	102	125	M10 / 15	M12 / 18	222	347,5	80	294
GQ-080	125	140	M12 / 18	M16 / 24	239	362	80	326
GQ-110	125	140	M12 / 18	M16 / 24	239	362	80	326
GQ-200	–	165	–	M20 / 30	307	453	100	394
GQ-300	–	165	–	M20 / 30	307	453	100	394

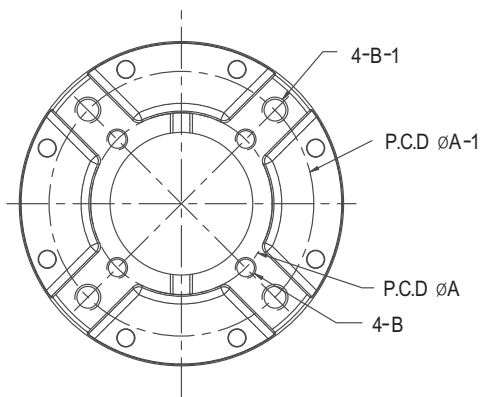
◀◀ 외형치수 (GQ-016~300) | Shape Dimension |

▶ 1PH Integral, Modulating (with LCU)

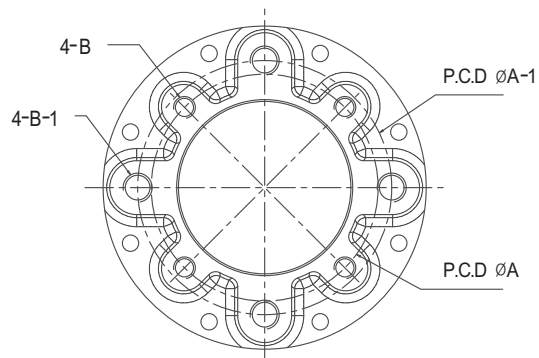


▶ Valve Mounting (Base ISO 5211)

GQ - 016 ~ 050



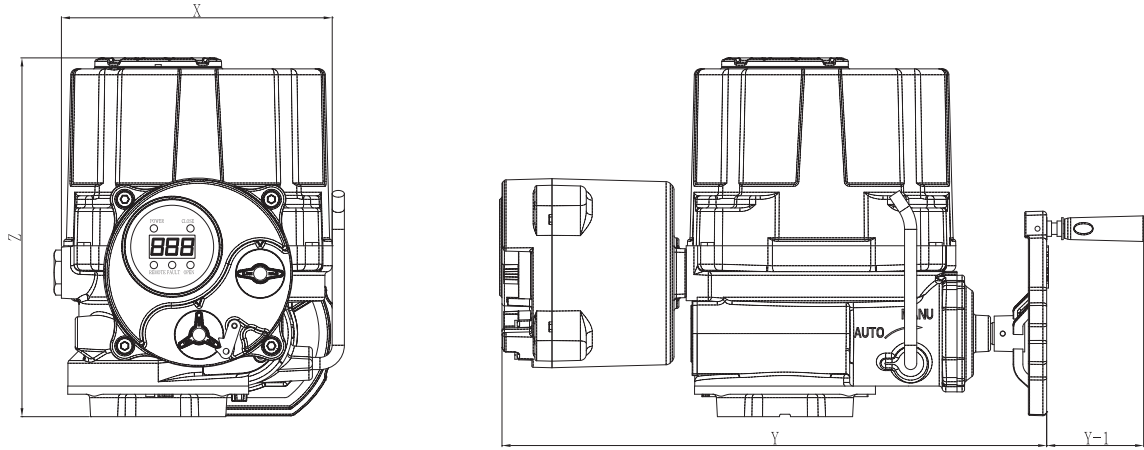
GQ - 080 ~ 300



Model	ØA	ØA - 1	B	B - 1	X	Y	Y - 1	Z
GQ-016	70	102	M8 / 12	M10 / 15	206	385	80	276
GQ-024	70	102	M8 / 12	M10 / 15	206	385	80	276
GQ-035	102	125	M10 / 15	M12 / 18	222	398,5	80	294
GQ-050	102	125	M10 / 15	M12 / 18	222	398,5	80	294
GQ-080	125	140	M12 / 18	M16 / 24	239	413	80	326
GQ-110	125	140	M12 / 18	M16 / 24	239	413	80	326
GQ-200	-	165	-	M20 / 30	307	504	100	394
GQ-300	-	165	-	M20 / 30	307	504	100	394

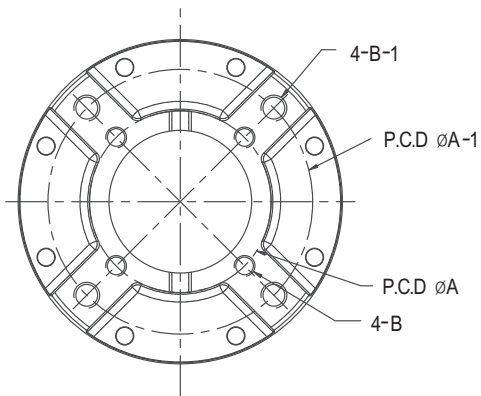
외형치수 (GQ-016~300) | Shape Dimension

▶ 3PH Integral, Modulating (with LCU)

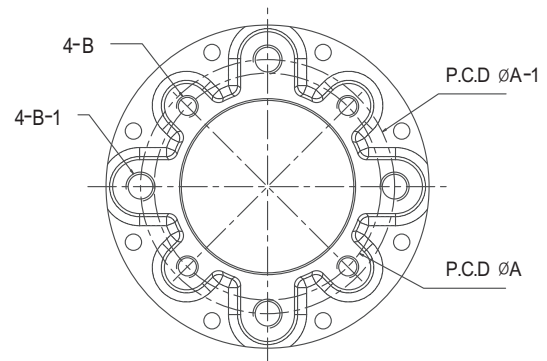


▶ Valve Mounting (Base ISO 5211)

GQ - 016 ~ 050



GQ - 080 ~ 300



Model	ØA	ØA - 1	B	B - 1	X	Y	Y - 1	Z
GQ-016	70	102	M8 / 12	M10 / 15	206	435	80	276
GQ-024	70	102	M8 / 12	M10 / 15	206	435	80	276
GQ-035	102	125	M10 / 15	M12 / 18	222	448,5	80	294
GQ-050	102	125	M10 / 15	M12 / 18	222	448,5	80	294
GQ-080	125	140	M12 / 18	M16 / 24	239	463	80	326
GQ-110	125	140	M12 / 18	M16 / 24	239	463	80	326
GQ-200	-	165	-	M20 / 30	307	554	100	394
GQ-300	-	165	-	M20 / 30	307	554	100	394

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INCOMING POWER
DC (V)

PROPOSED CUSTOMER'S WIRING

ACTUATOR WIRING

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

CR OR CR OR

TP

M

HEATER

C O OPEN STOP CLOSE

AUX. CONTACT
2 EXTRA SWITCHES
MAX. 250VAC 16A

CLS OLS

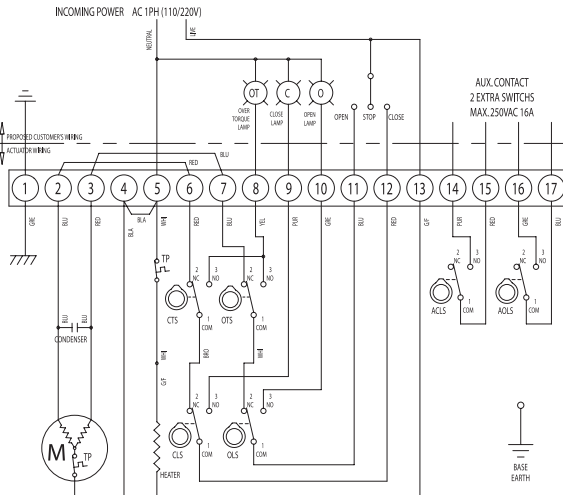
CLS OLS

BASE EARTH

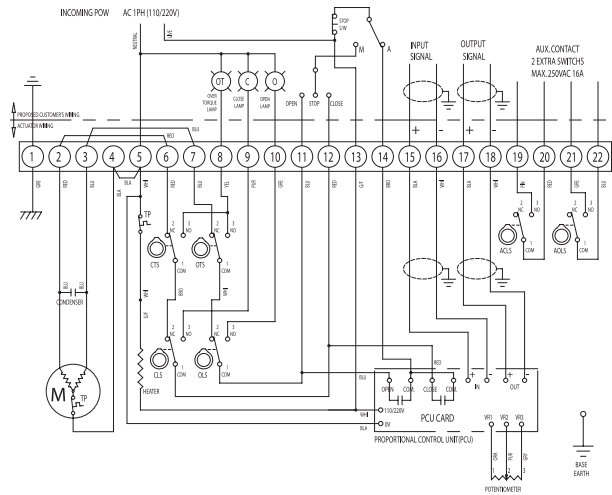
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결선 방법 (GQ-016~300) | Typical Wiring |

▶ 1H/110V/220VAC 50/60Hz (On/Off)



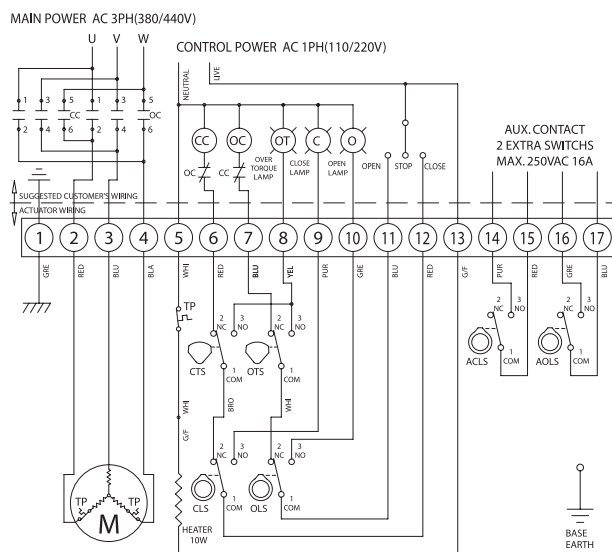
▶ 1H/110V/220VAC 50/60Hz (PCU)



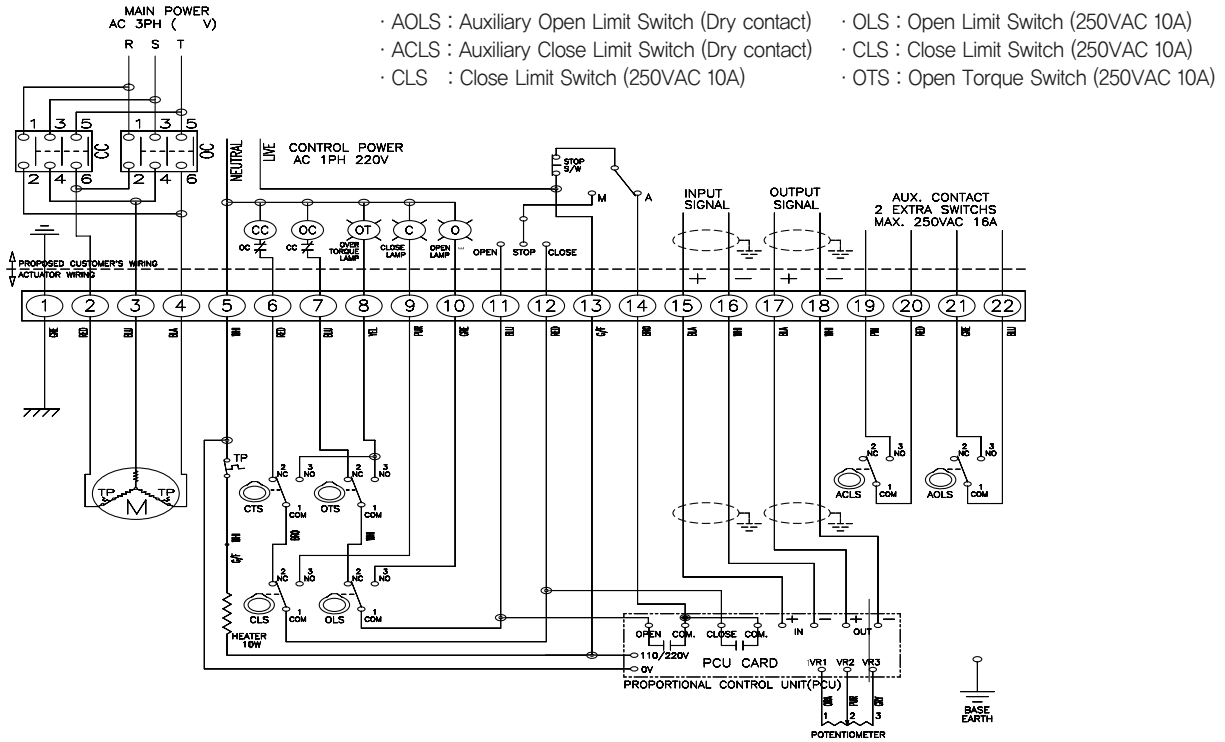
▶ Torque and Limit Switches Operation

SWITCH	CLOSE ← INTERMEDIATE → OPEN
CLS 1-2	
CLS 1-3	
OLS 1-2	
OLS 1-3	
ACLS 1-2	
ACLS 1-3	
AOLS 1-2	
AOLS 1-3	
CTS 1-3	* CLOSING TORQUE SWITCH INTERRUPTS CONTROL IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE
OTS 1-3	* OPENING TORQUE SWITCH INTERRUPTS CONTROL IF MECHANICAL OVERLOAD OCCURS DURING CLOSING CYCLE

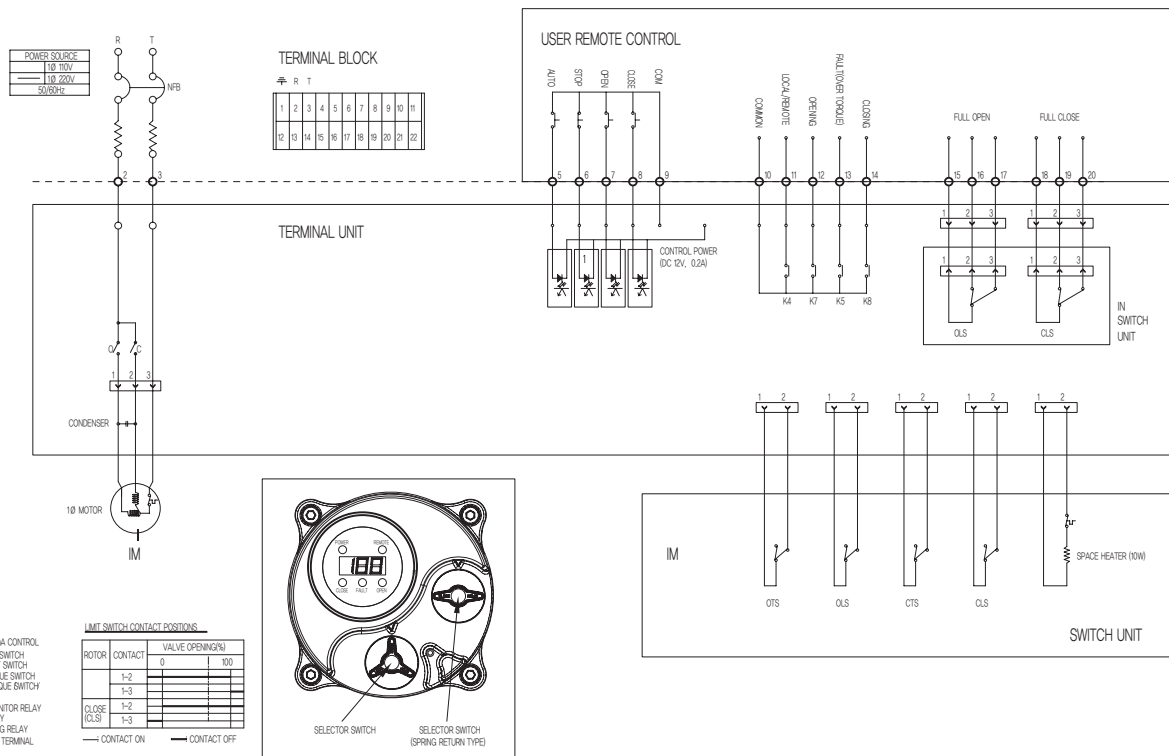
▶ 3PH/380V/440VAC 50/60Hz (On/Off)



▶ 3PH/380V/440VAC 50/60Hz (PCU)

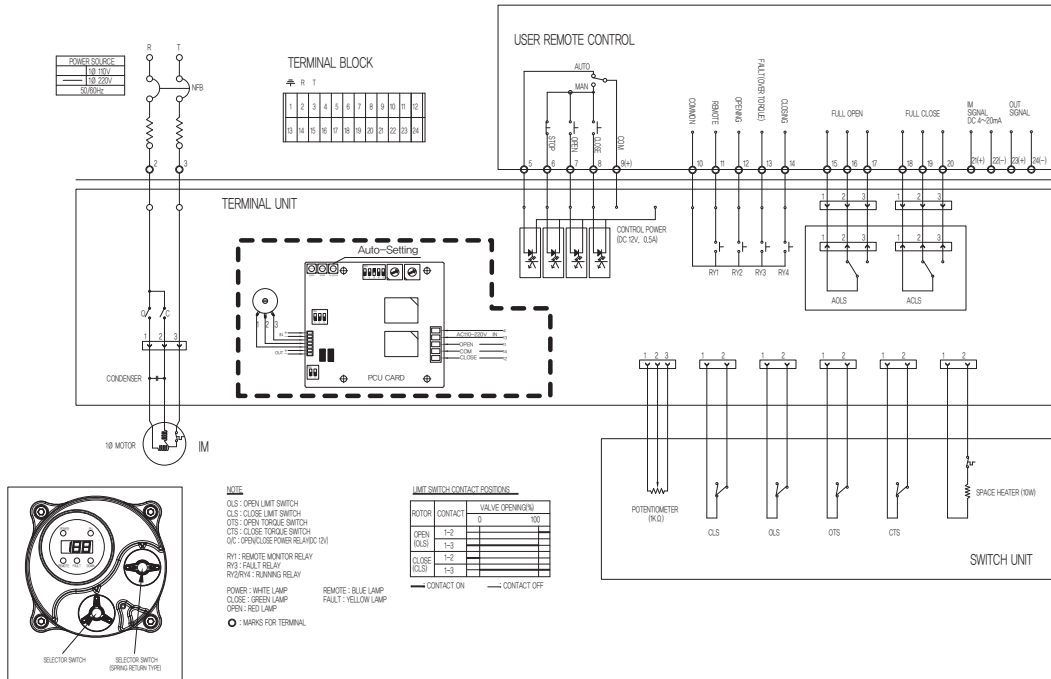


▶ 1PH/110V/220VAC 50/60Hz (LCU)

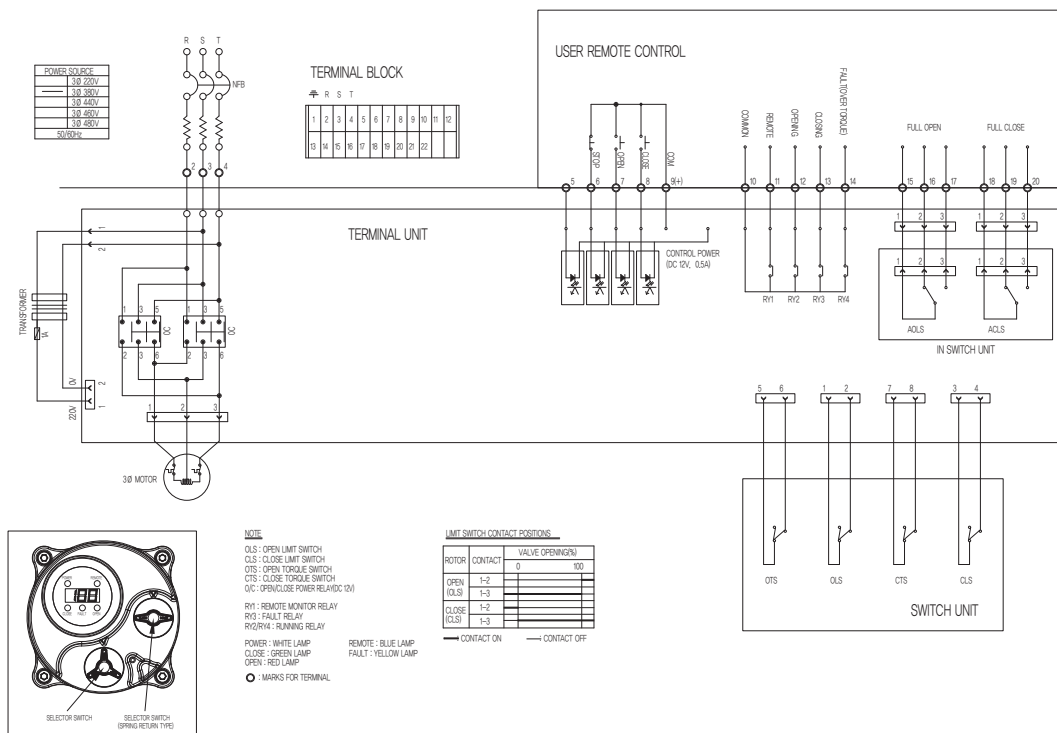


결선 방법 (GQ-016~300) | Typical Wiring

▶ 1PH/110V/220VAC 50/60Hz (LCU+PCU)



▶ 3PH/380V/440VAC 50/60Hz (LCU)



POWER SOURCE

30 200V
30 300V
30 450V
30 600V
50/60Hz

TERMINAL BLOCK

1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24

TERMINAL UNIT

Auto-Setting

PCU CARD

30 MOTOR

USER REMOTE CONTROL

AUTO, MAX, STOP, RESET, RUN

LIMIT SWITCH CONTACT POSITIONS

ROTOR	CONTACT	0	100
OPEN (O.S.)	1-2		
CLOSE (C.S.)	1-2		
OPEN (O.S.)	1-2		
CLOSE (C.S.)	1-2		

NOTE

O.S.: OPEN LIMIT SWITCH
 C.S.: CLOSE LIMIT SWITCH
 OTS: OPEN TORQUE SWITCH
 CTS: CLOSE TORQUE SWITCH
 OTC: OPEN CLOSE TORQUE RELAY (ON)
 RY1: REMOTE MONITOR RELAY
 RY3: FAULT RELAY
 RY2/RY4: RUNNING RELAY

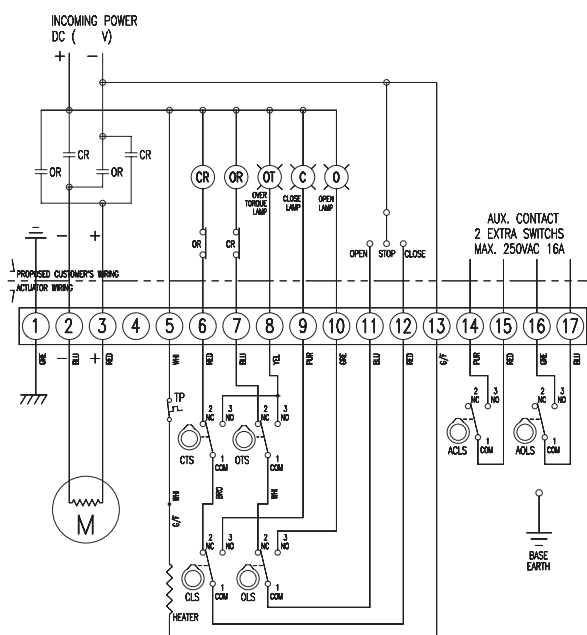
POWER: WHITE LAMP
 CLOSE: GREEN LAMP
 OPEN: RED LAMP

REMOTE: BLUE LAMP
 FAULT: YELLOW LAMP

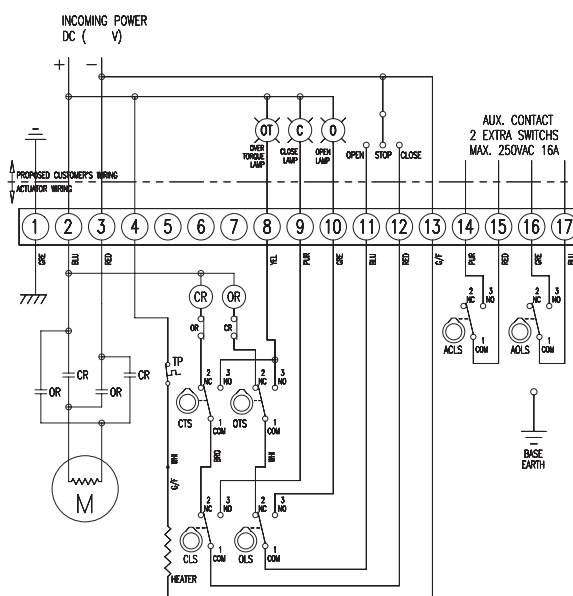
○: MARKS FOR TERMINAL

SELECTOR SWITCH
SELECTOR SWITCH (SPRING RETURN TYPE)

► 24VDC (On-Off)

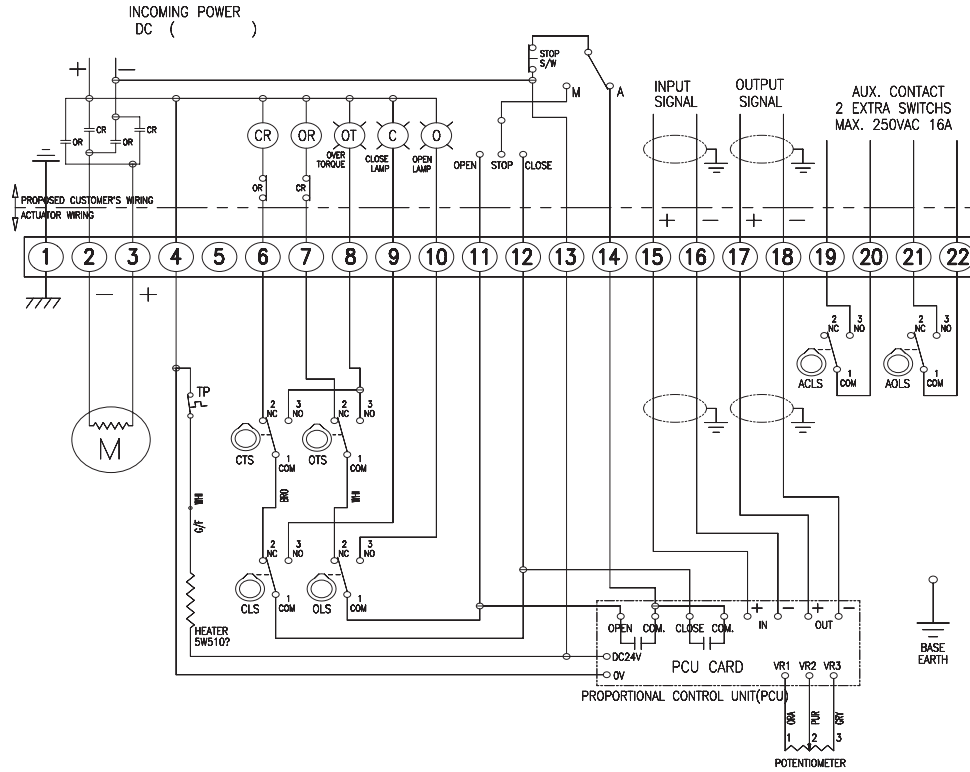


► 24VDC (On-Off Inner)



결선 방법 (GQ-016~050) | Typical Wiring |

▶ 24VDC (PCU)



▶ 24VDC (PCU Inner)

