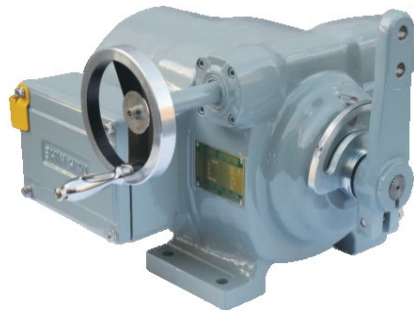


Damper-Actuator

Electric Control



製品案内

SHIN HWA ENG. CO., LTD.

■ 개 요

- **담파 액츄에이터**는 모-터, 감속장치, 리미트 스위치, 과부하토크 스위치, 전류발신기, 바란싱릴레이, 수동 핸들기구와 로칼 콘트롤 박스등 모든 구성품을 콤팩트하게 완전 일체화시킨 제품이며 보수 및 관리가 용이하고 신뢰성이 높아 공기조절용 담파구동이나 보일러, 소각로 및 연소용 버너의 제어구동용 또는 압력 제어용 담파, 밸브 콘트롤 등에 사용되는 전동구동기입니다.

■ 특 징

- **정밀 콘트롤 가능**
정밀하게 가공하여 백래쉬를 최소화한 구동기어 장치와 전자부품과의 결합으로 정밀한 콘트롤이 가능토록 제작되어 있습니다.
- **일체형 콤팩트**
모-터, 감속장치, 리미트스위치, 과부하토크 스위치, 전자부품등 모든 구성품을 콤팩트하게 완전 일체화시킨 제품입니다.
- **우수한 내구력**
구동기어는 헬리컬, 스퍼기어를 적용하여 구동 효율이 높으며 또한 내마모성이 우수한 재질을 사용하였으므로 빈번한 정, 역동작이나 장기간 운전이 가능한 경제적인 제품입니다.
- **분리구조**
내부구조는 기계부와 전기부가 분리구조로 되어 있고 이들은 완전하게 기밀이 유지되므로 전기부에 전혀 영향이 없도록 설계되어 있습니다.
- **과부하 보호장치**
기계적 과부하 보호장치인 토크 스위치가 내장되어 있어 정격출력보다 무리한 하중이 작용되면 전원이 차단 되어 제품의 손상을 방지할 수 있습니다.
- **수동 운전의 편리성**
유성기어장치와 차동기어장치가 복합된 구조로 별도의 클러치 조작이 필요없이 설치시나 비상시 또는 전동구동중이라도 즉시 수동조작이 가능한 제품입니다.

■ INTRODUCTION

- **Damper actuator** is unified product perfectly as compact components such as motor , reducer, limit s/w , overload torque s/w , current transmitter, balancing relay , manual handle device and total control box etc. and it's repairing and management are very easy, and also it has very high reliance, therefore it is a motor driving equipment used for air control driving item, boiler, incinerator, burner for combustion driving control or damper for pressure control and valve control etc.

■ FEATURES

- **Precise control is available**
It is manufactured so that it's precise control is available by connecting between electric part and backlash minimized driving gear apparatus by it's precise processing.
- **Unified type compact**
All components such as motor, reducer, limit s/w, overload torque s/w, etc. are unified as single compact type.
- **Excellent durability**
Helical, spur gear is applied for the driving gear, therefore it has very high driving efficiency, and also excellent materials are used for the product, therefore it is very economic products available for long term use and frequent operation.
- **Separation structure**
Internal structure is divided into two parts such as mechanical part and electric part, and it is design-ed without influence to electric part due to tight sealing maintenance.
- **Overload protection apparatus**
Since the torque s/w which is mechanical overload protection system is installed inside, when overload is applied on the unit more than regulated output, than the electric power source is cut to prevent damage of the product.
- **Convenient feature of manual operation**
Planetary and differential gear apparatus are compound for the structure, therefore manual operation is possible at anytime for the installation or emergency without separate clutch operation.

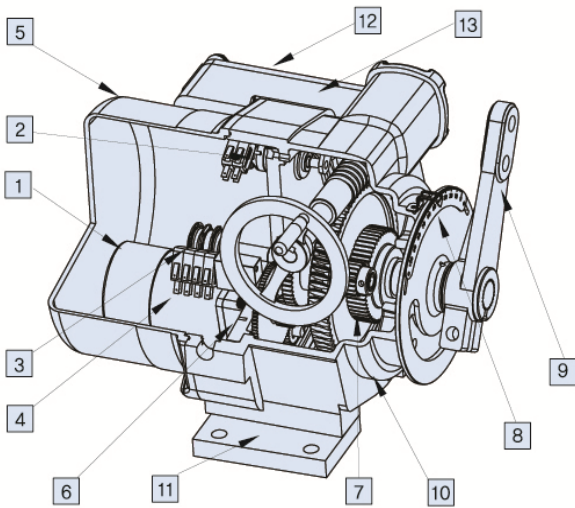
■ 구조

- 전기용 토크 스위치가 장착되어 있습니다.
- 리미트 스위치의 제로조정기구가 부착되어 있습니다.
- 컨트롤박스 일체형과 분리형으로 구분되어 있습니다.
- 전류(4~20mA), 또는 저항(Ω) 발신기를 장착하고 있습니다.
- 방진, 방수, 방적 구조입니다.(IP65)

■ CONSTRUCTION

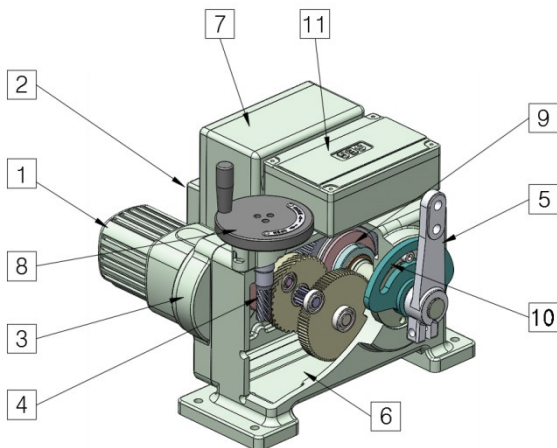
- Torque switches are fitted on all types.
- With zero adjustment mechanism for limit switches.
- Controlbox Unit & Partition of Separation.
- A current(4-20mA), or areistance transmitter is available on request.
- Dustproof and waterproof protected(IP65)

▶ CA



- | | |
|-----------------|-----------------|
| 1. 브레이크 | Brake |
| 2. 오버로드 리미트 스위치 | Over Load L/S |
| 3. 위치 리미트 스위치 | Position L/S |
| 4. 모터 | Motor |
| 5. 커버 | Cover |
| 6. 기어박스 커버 | G/B Cover |
| 7. 유성기어 | Planetary Gear |
| 8. 지시계 | Indicator |
| 9. 레버 암 | Lever Arm |
| 10. 기어케이스 | Gear Case |
| 11. 받침판 | Base Plate |
| 12. 로컬 박스 커버 | Local Box Cover |
| 13. 로컬 박스 | Local Box |

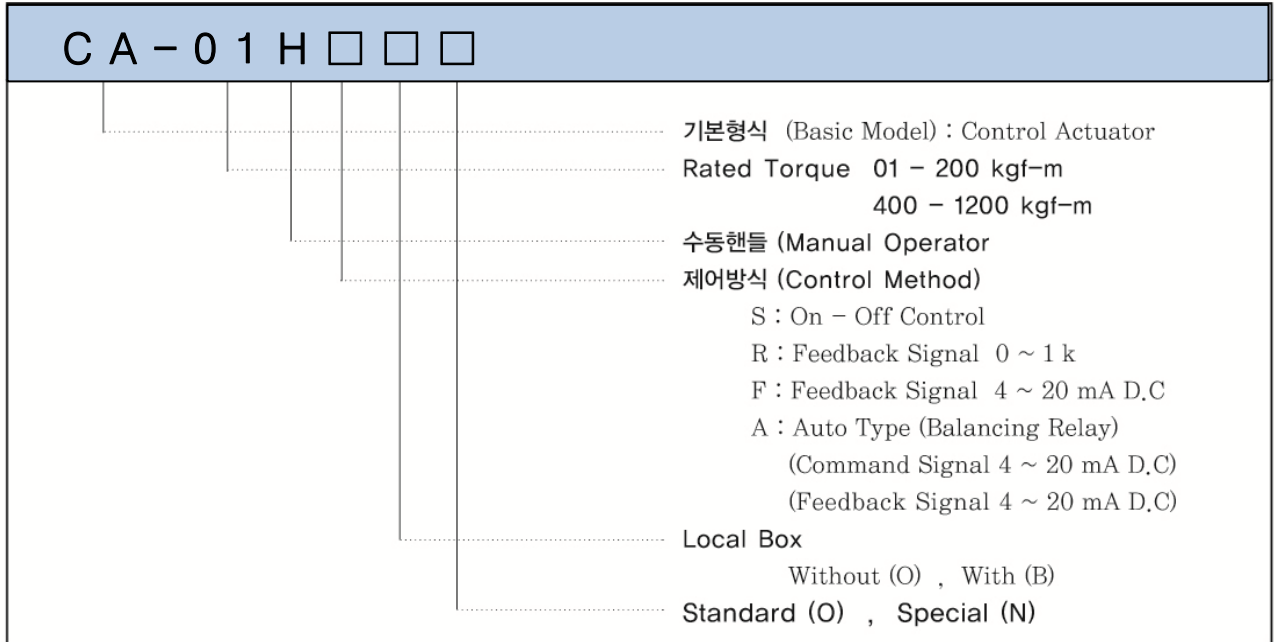
▶ CM



- | | |
|----------------|-------------------------|
| 1. 브레이크모터 | Brake Motor |
| 2. 위치 리미트 스위치 | Position L/S |
| 3. 커버 | Cover |
| 4. 매뉴얼 기어 | Manual Gear |
| 5. 레버 암 | Lever Arm |
| 6. 기어 케이스 | Gear Case |
| 7. 전장 케이스 | Electrical Case |
| 8. 매뉴얼 핸들 | Manual Handle |
| 9. 오버로드 토오크리미터 | Overload Torque Limiter |
| 10. 스톱퍼 | Stopper |
| 11. 터미널 박스 | Terminal Box |

■ 형식 기호(일반형)

■ NOMENCLATURE



■ 표준 사양

■ STANDARD SPECIFICATION

구 조 : 전폐옥외형
 운전각도 : 90°
 주위온도 : -20℃ ~ 60℃
 동작속도 : 30, 60 sec / 90°
 습 도 : 85% 이하
 표준도장색 : Munsell 7.5BG 6/1.5
 입력신호 : 접점신호
 전류신호 (4~20mA D.C)
 보호구조 : IP65

Construction : Totally Enclosed outdoor type
 Operating Angle : 90℃
 Ambient Temperature : -20℃ ~ 60℃
 Operating Speed : 30, 60 sec / 90°
 Relative humidity : below 85%
 Painted Color : Munsell 7.5 BG 6/1.5
 Input signal : Contact signal
 Current signal (4~20mA D.C)
 Protection Structure : IP65

■ 사양

■ Specifications

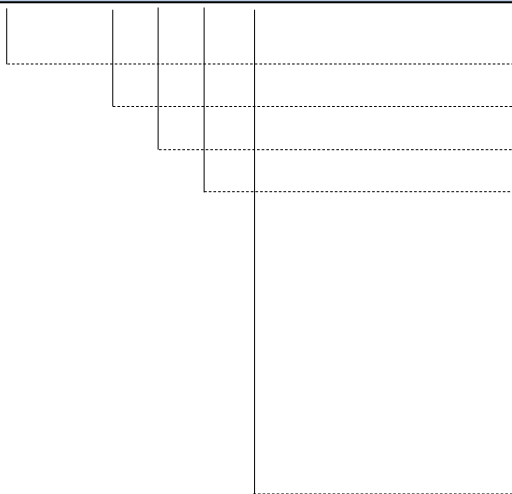
MODEL	Rated Torque (kgf-m)	Timing 50/60 Hz (sec/90°)	Motor Power (W) (Phase)	Rating (min)	Voltage (V)	Frequency (Hz)	Weight (kg)	Rev. of Manual Handle (turn/90°)	Handle Operating Force (kg)
CA - 01H	15	36 / 30	25 (Ø1/Ø3)	30	220V 440V	50/60	23	22	9
CA - 02H	25		25 (Ø1/Ø3)	30			28	22	13
CA - 05H	50		60 (Ø1/Ø3)	30			71	24	16
CA - 10H	100		90 (Ø1/Ø3)	30			87	72	13
CA - 20H	200		200 (Ø3)	30			110	236	8
CA - 40H	400	42 / 35	400 (Ø3)	30			200	260	15
CA - 80H	800		750 (Ø3)	30			230	236	17
CA - 120H	1200		1500 (Ø3)	30			280	303	19

* Motor - 3ph : 200V ~ 240V, 380V ~ 460V (As an option)

■ 형식 기호(정밀형)

■ NOMENCLATURE

CM - 01H □ □



기본형식 (Basic Model) : Control Actuator
 Rated Torque 15~80 kgf-m
 수동핸들 (Manual Operator)
 제어방식 (Control Method)
 S : On-Off Control
 R : Feedback Signal 0~1kΩ
 F : Feedback Signal 4~20mA
 A : Auto Type
 (Command Signal 4~20mA D.C)
 (Feedback Signal 4~20mA D.C)
 STANDARD (O), SPECIAL (N)

■ 표준 사양

■ STANDARD SPECIFICATION

구 조 : 전폐옥외형
 운전각도 : 90°
 주위온도 : -20℃ ~ 60℃
 동작속도 : 30, 60 sec / 90°
 습 도 : 85% 이하
 표준도장색 : Munsell N1.5(Black)
 입력신호 : 접점신호
 전류신호 (4~20mA D.C)
 보호구조 : IP65

Construction : Totally Enclosed outdoor type
 Operating Angle : 90℃
 Ambient Temperature : -20℃ ~ 60℃
 Operating Speed : 30, 60 sec / 90°
 Relative humidity : below 85%
 Painted Color : Munsell N1.5(Black)
 Input signal : Contact signal
 Current signal (4~20mA D.C)
 Protection Structure : IP65

■ 사양

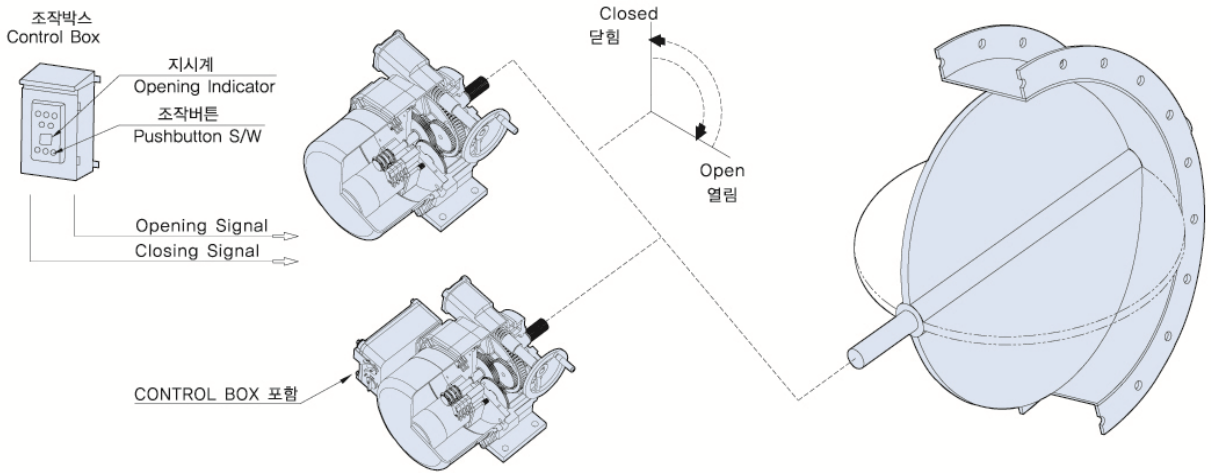
■ Specifications

MODEL	Rated Torque (kgf-m)	Timing 60 Hz (sec/90°)	Motor Power (W) (Phase)	Rating (min)	Voltage (V)	Freq uency (Hz)	Weight (kg)	Rev. of Manual Handle (turn/90°)	Handle Operating Force (kg)
CM - 01H	15	30	25 (Ø1/Ø3)	30	220V 440V	50/60	36	31	1.9
		60							
CM - 02H	25	30	25 (Ø1/Ø3)	30					
		60							
CM - 05H	50	30	60 (Ø1/Ø3)	30					
		60							
CM - 10H	80	30	60 (Ø1/Ø3)	30					
		60							

■ 제어방식

개도제어방식

콘트롤 액추에이터는 열림, 닫힘, 중간정지의 버튼 스위치를 조작하여 개도지시계를 보면서 임의의 개도로 정지시킬 수가 있다.



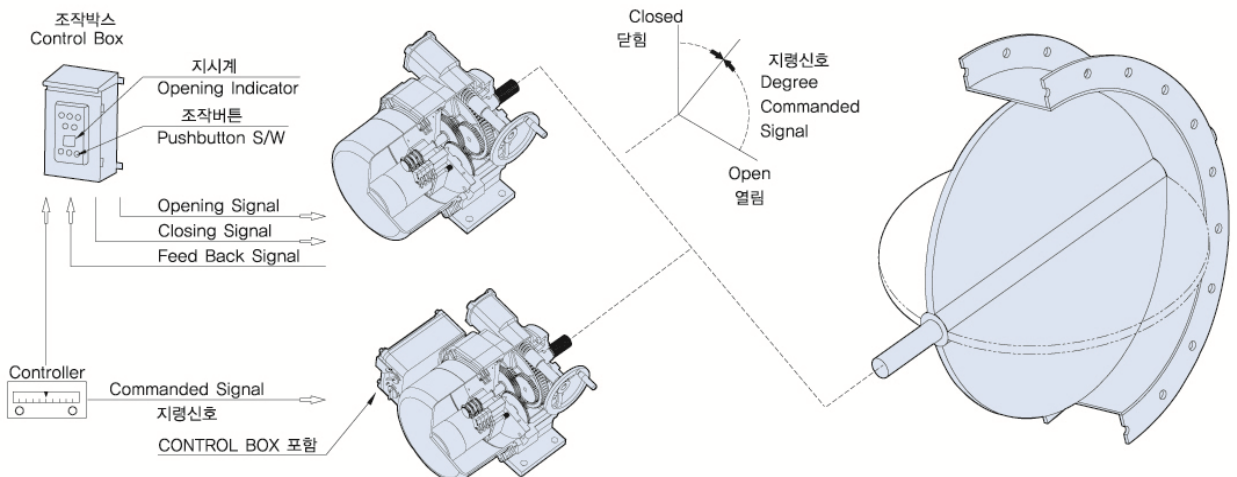
■ CONTROL METHOD

OPTIONAL-OPENING CONTROL

The Control Actuator is able to be stopped at an optional degree by operating the push buttons indicated open close or stop, while following at the opening indicator

비례제어 방식

콘트롤 액추에이터에 내장된 전류발신기 또는 저항은 답파의 개도에 상응하는 피드백 신호를 발신합니다. 이 피드백 신호는 콘트롤러에서 발신된 지령신호와 답파의 현재 위치를 비교하여 두 신호의 차이가 있을때 콘트롤 액추에이터의 양방향의 신호가 같아지도록 자동적으로 제어합니다.



PROPORTIONAL CONTROL

The built-in current transmitter or resistance transmitter in the Control Actuator sends out the feedback signal corresponding to the degree of the Damper Opening, the feedback signal is always compared with the commanding signal which is given by a controller, when there is a difference between these signals, the Control Actuator is controlled automatically matching exactly both the signals.

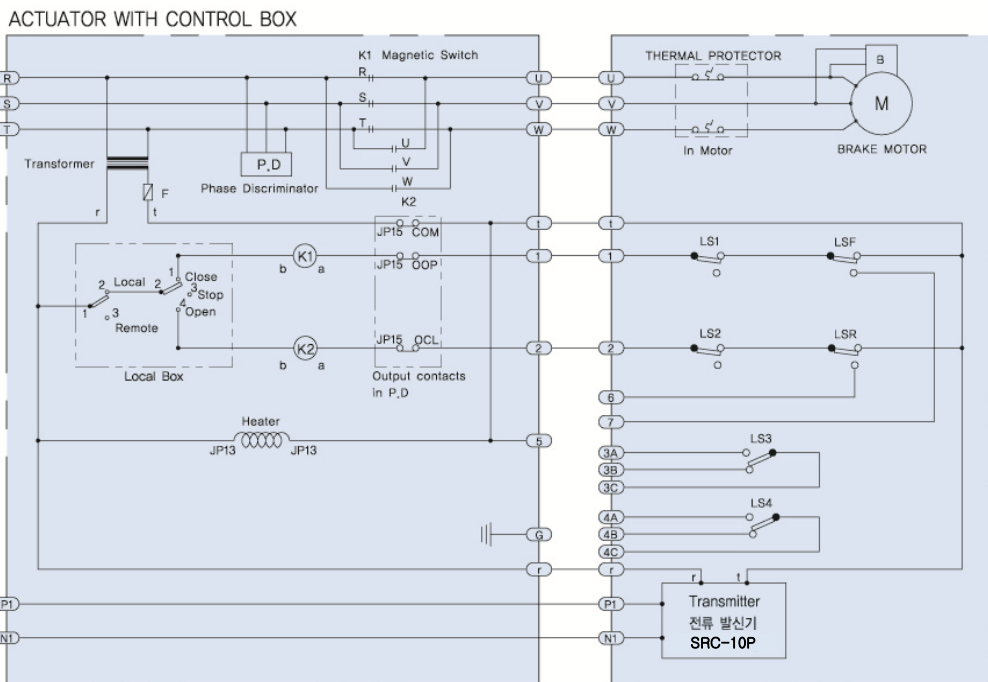
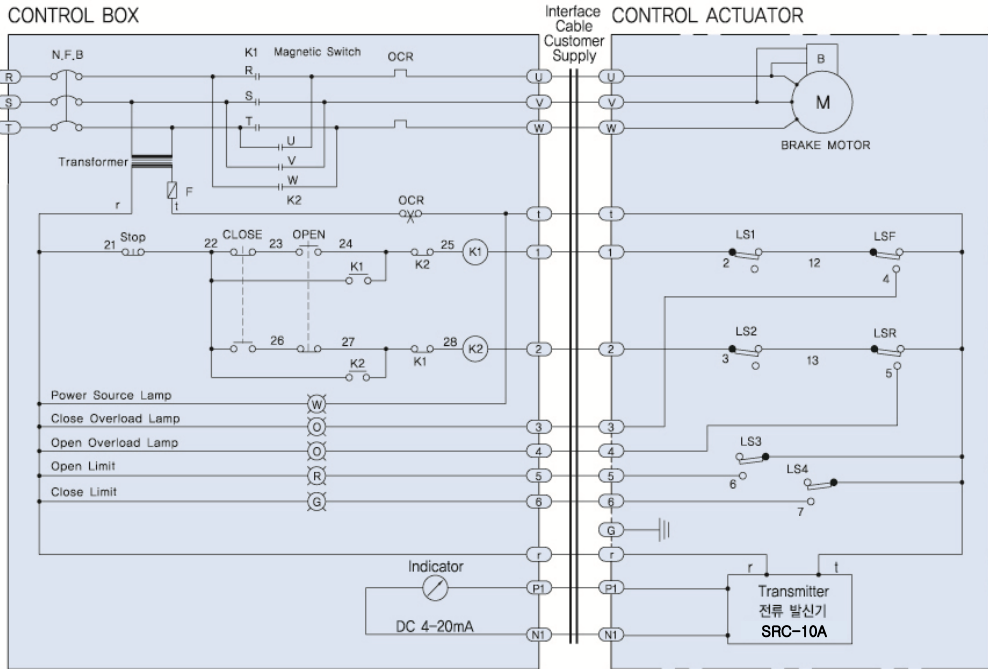
* Motor - 3ph : 200V ~ 240V, 380V ~ 460V (As an option)

■ 제어방식

■ CONTROL METHOD

• 개도제어 방식

• OPTIONAL - OPENING CONTROL

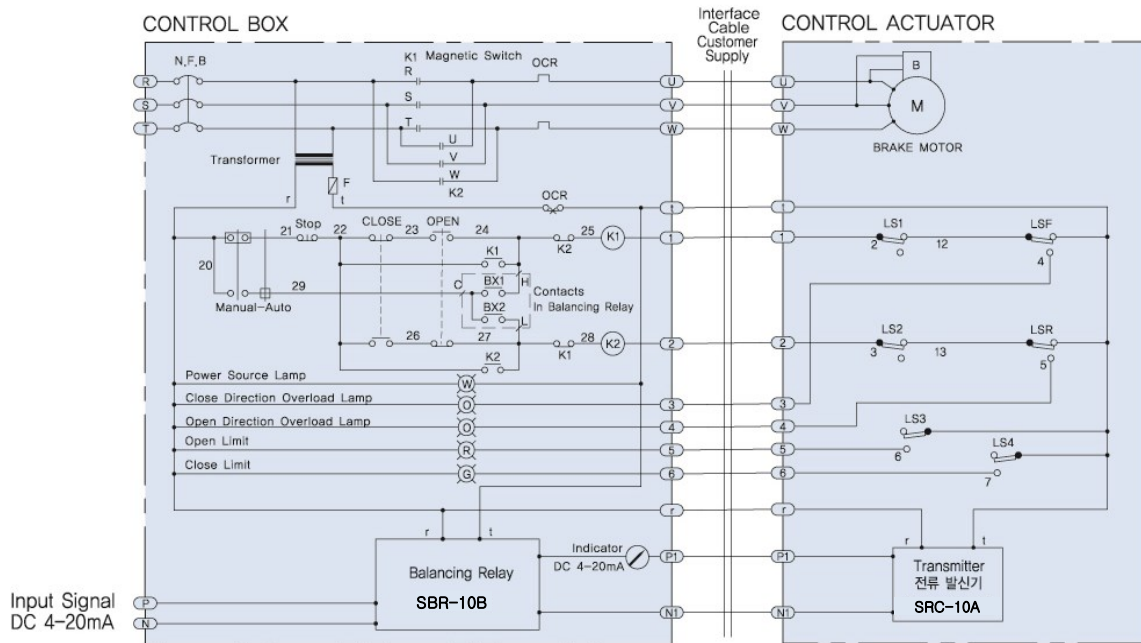


■ 제어방식

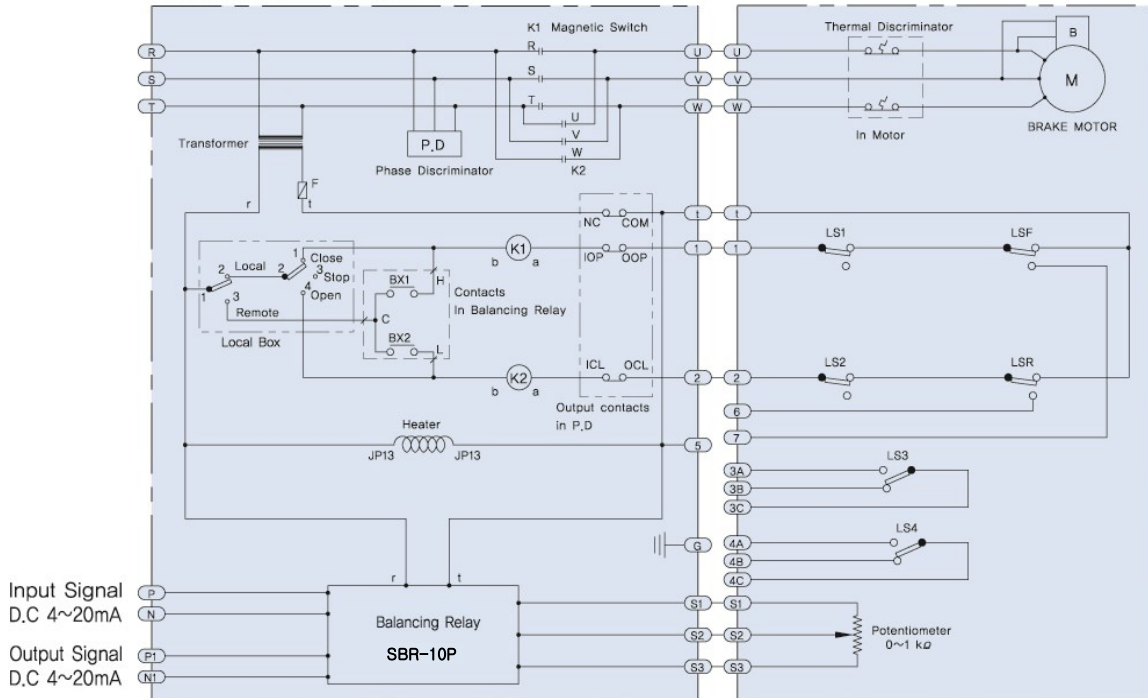
■ CONTROL METHOD

• 비례제어 방식

• PROPORTIONAL CONTROL


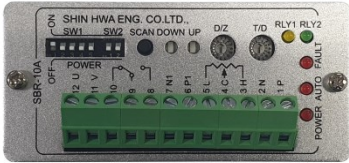

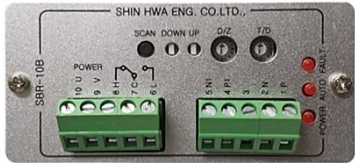

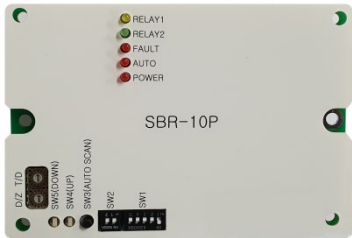


ACTUATOR WITH CONTROL BOX



■ 부속품

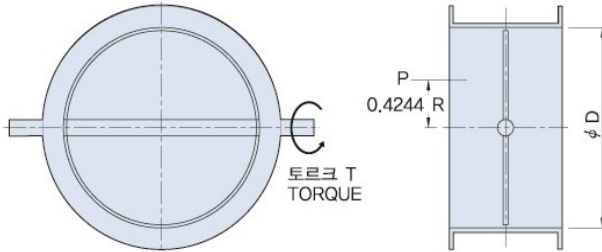
■ ACCESSORY

• CURRENT TRANSMITTER	• BALANCING RELAY
 <p>SHIN HWA ENG.CO.,LTD. SRC-10A POWER: U, V, S1, S2, S3, N, P, N, P OUT1, OUT2 MODE, ZERO, SET, SPAN</p>	 <p>SHIN HWA ENG. CO.LTD. SBR-10A POWER: 12V, 11V, 10V, 9V, 8V, 7V, 6V, 5V, 4V, 3V, 2V, 1V SW1, SW2, SCAN, DOWN, UP, DIZ, T/D, RLY1, RLY2 POWER, AUTO, FAULT</p>
<p>1. Model : SRC-10A 2. Input : Potentiometer (0~1kΩ) 3. Output Signal : 4~20mA DC</p>	<p>1. Model : SBR-10A 2. Input : Potentiometer (0~1kΩ) 3. Output Signal : 4~20mA DC</p>
 <p>SHIN HWA ENG.CO.,LTD. SRC-30A POTENTIOMETER POWER: N, P, S1, S2, S3 SPAN, ZERO, POWER</p>	 <p>SHIN HWA ENG. CO.LTD., SBR-10B POWER: 10V, 9V, 8V, 7V, 6V, 5V, 4V, 3V, 2V, 1V SCAN, DOWN, UP, DIZ, T/D, RLY1, RLY2 POWER, AUTO, FAULT</p>
<p>1. Model : SRC-30A 2. Input : Potentiometer (0~1kΩ) 3. Output Signal : 4~20mA DC, DC 24 VDC</p>	<p>1. Model : SBR-10B 2. Input : 4~20mA DC 3. Output Signal : 4~20mA DC</p>
 <p>SRC-10P MODE, ZERO, SET, SPAN DOWN LED, UP</p>	 <p>SBR-10P RELAY1, RELAY2, FAULT, AUTO, POWER DIZ, T/D, SW2(DOWN), SW2(UP), SW2(AUTO SCAN), SW2, SW1</p>
<p>1. Model : SRC-10P 2. Input : Potentiometer (0~1kΩ) 3. Output Signal : 4~20mA DC</p>	<p>1. Model : SBR-10P 2. Input : Potentiometer (0~1kΩ) 3. Output Signal : 4~20mA DC</p>

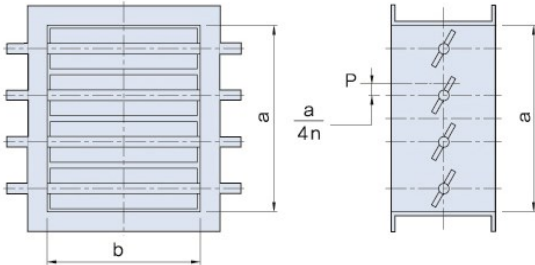
표준 토르크 계산

- 주) 1. 아래 계산식은 상온, 일반공기용의 담파 토르크를 계산하는 공식입니다.
 2. 고온의 분진가스에 사용하는 담파의 개폐토르크는 유체온도, 분진량등 그 외의 조건을 고려하여 계산하여야 합니다.

버터플라이 담파



루버 담파



TORQUE CALCULATION FOMULA

- Note 1. The nomogram is applicable for calculating the torque of air dampers used at atmospheric temperature.
 2. In the where the damper is used for the high temperature gas containing much dust, the dampers torque is decided in our factory by referring to the fluid temperature, inclusion rate of dust, etc.

Butterfly damper

P : 압 력 (mmAq)

D : 담파 직경 (mm)

T : 기준 토르크

$$T = x \frac{D^3 P}{12} \times 1.35 (\text{kg-m})$$

Louver damper

P : 압 력 (mmAq) n : 날개수

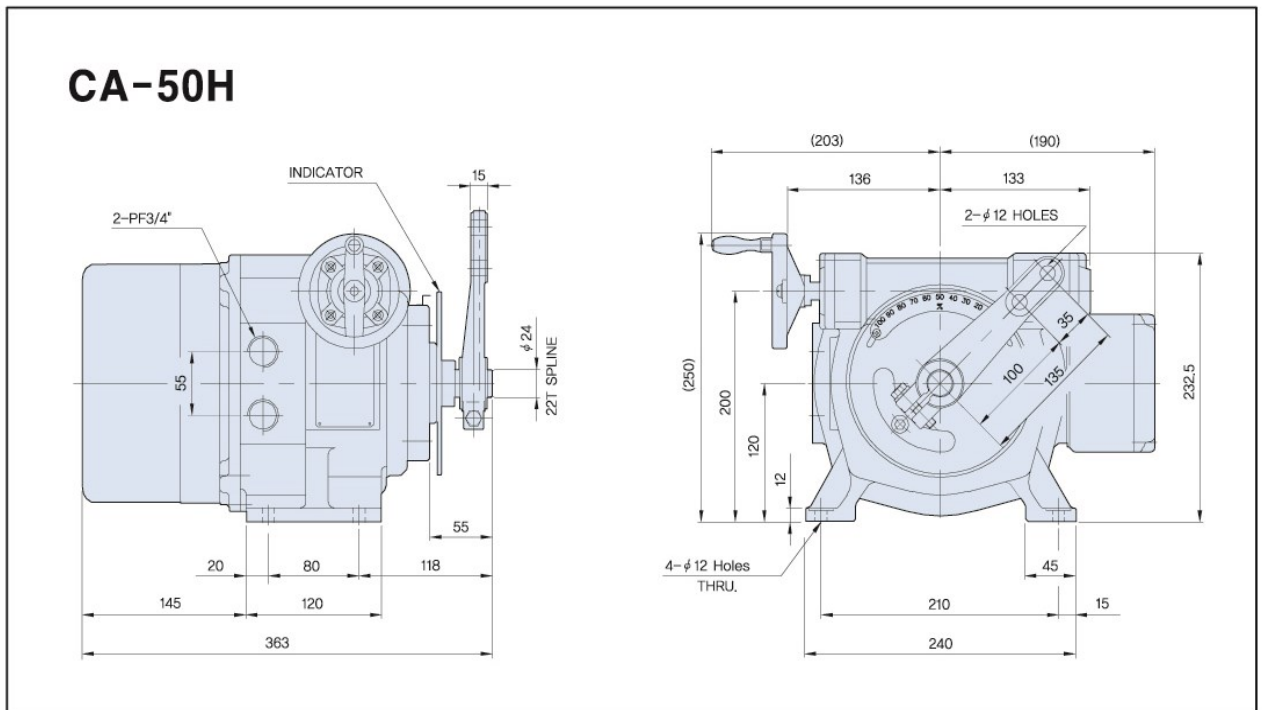
a : 가로길이 (mm) b : 세로길이 (mm)

T : 기준 토르크

$$T = x \frac{a^3 b P}{8n} \times 10^{-9} \times 1.35 (\text{kg-m})$$

치 수

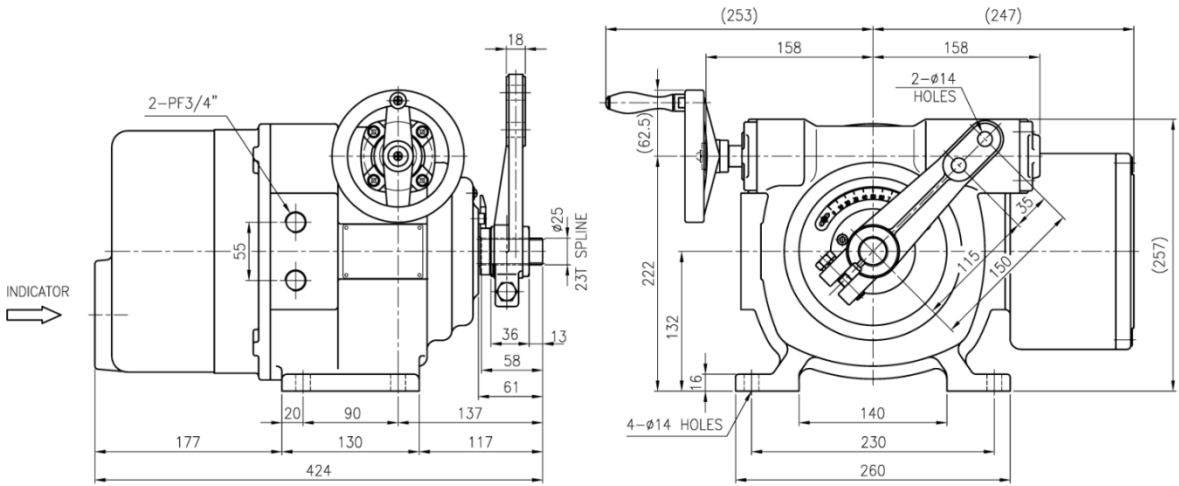
DIMENSION



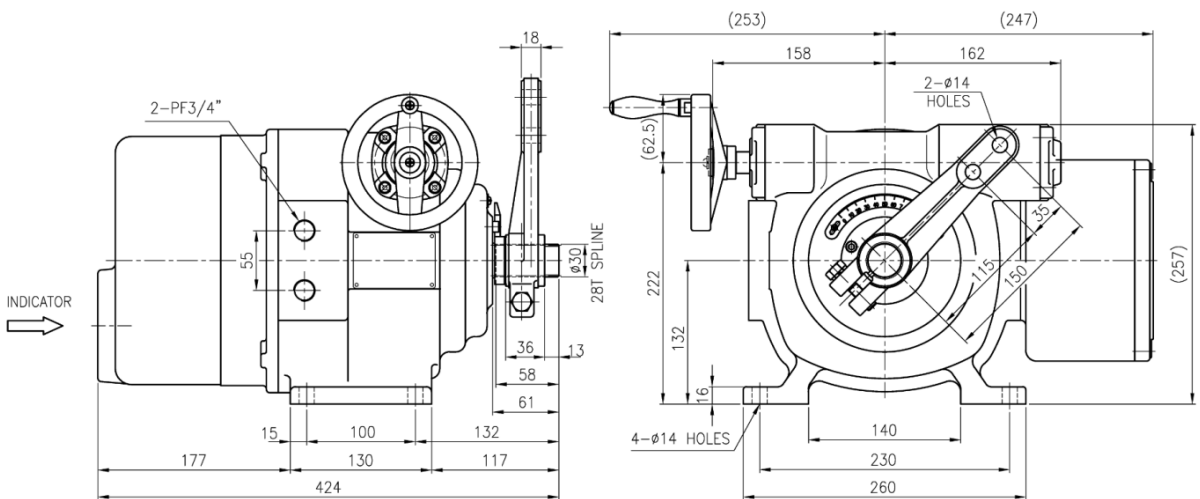
■ 치 수

■ DIMENSION

CA-01H



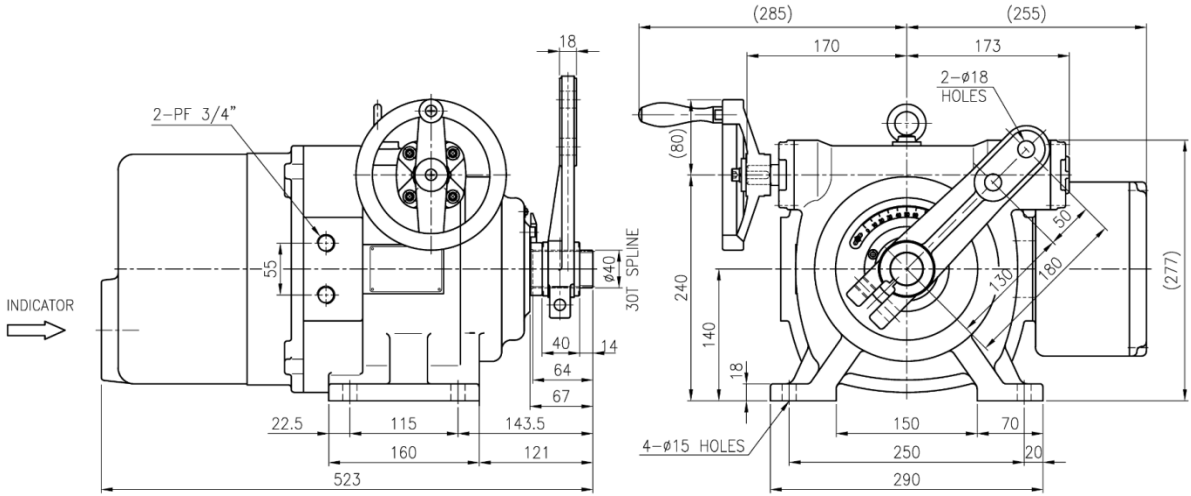
CA-02H



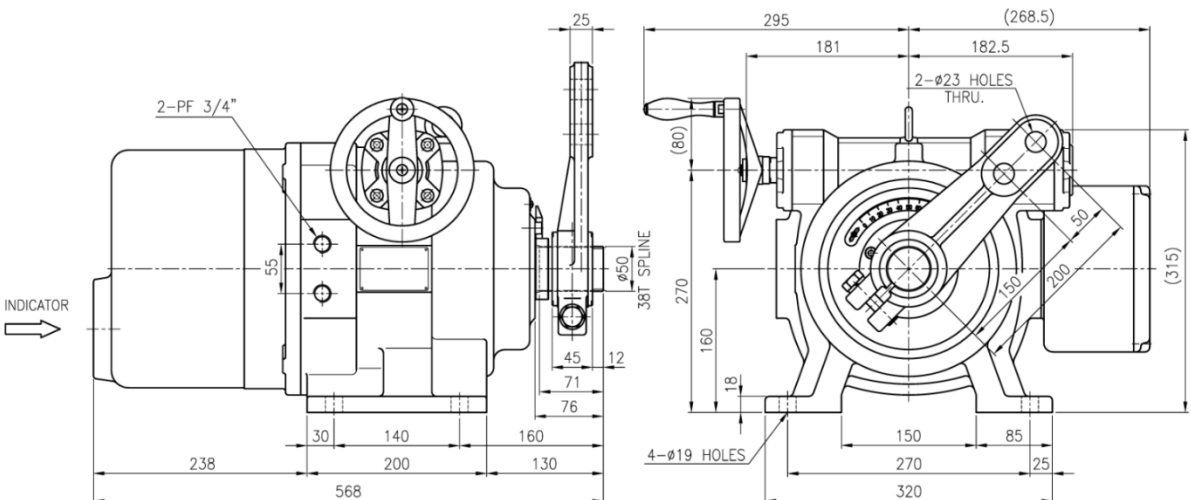
■ 치 수

■ DIMENSION

CA-05H



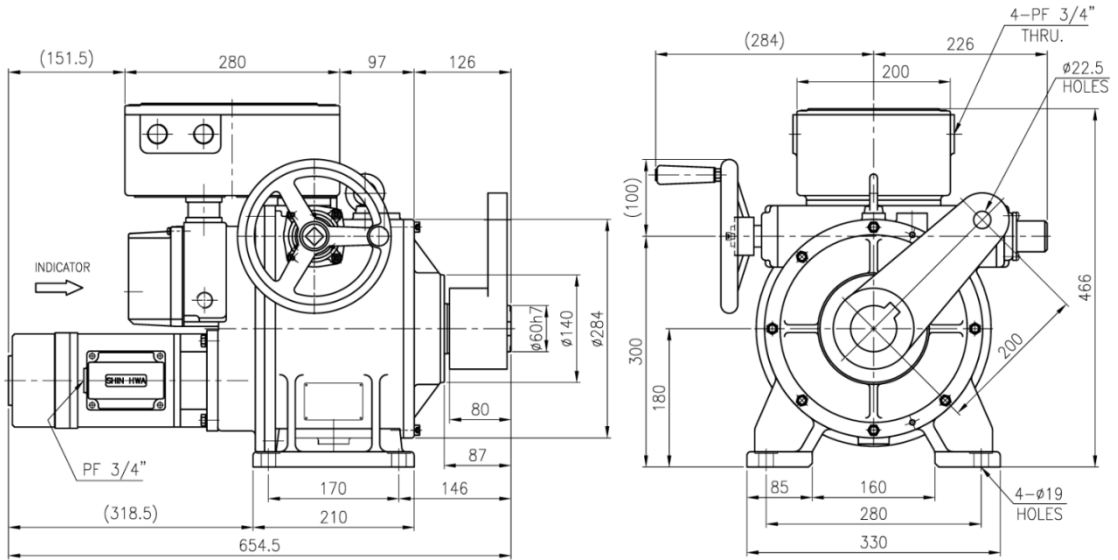
CA-10H



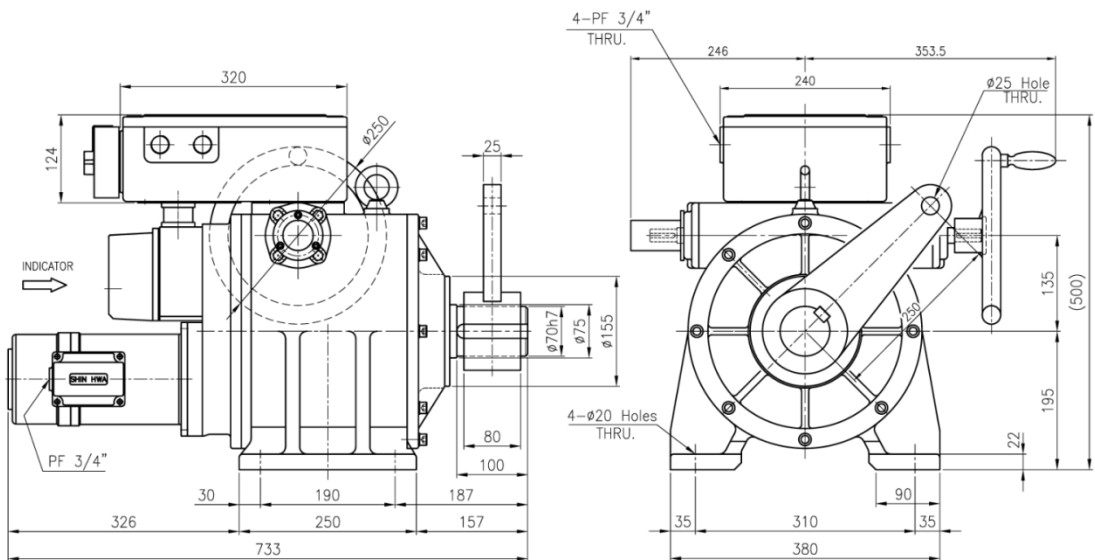
■ 치 수

■ DIMENSION

CA-20H



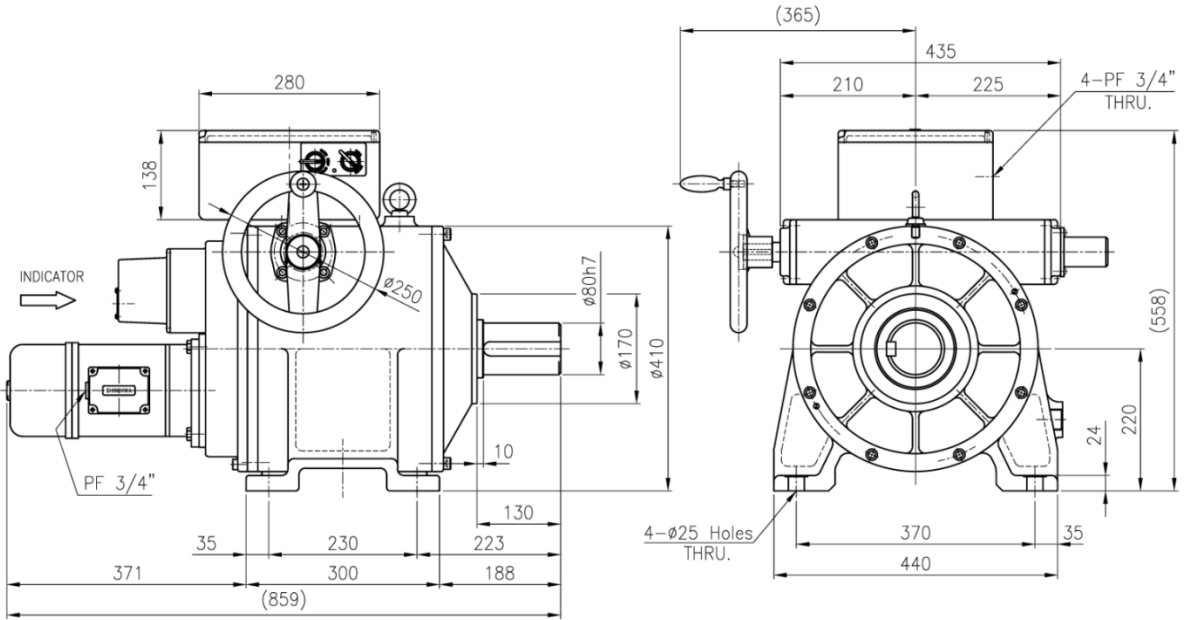
CA-40H



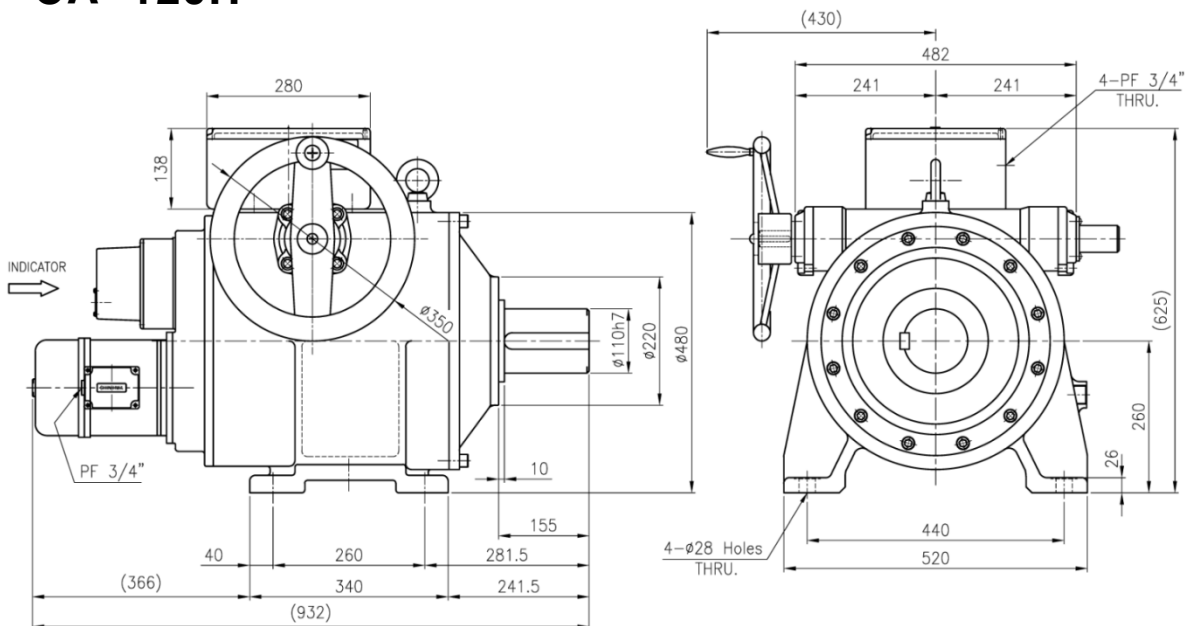
■ 치 수

■ DIMENSION

CA-80H



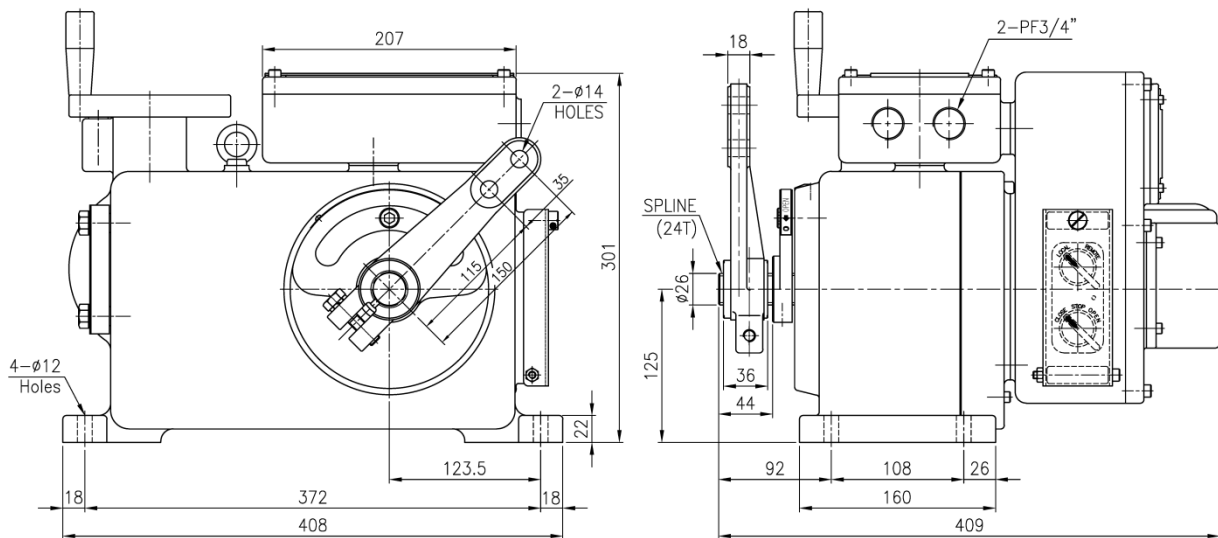
CA-120H



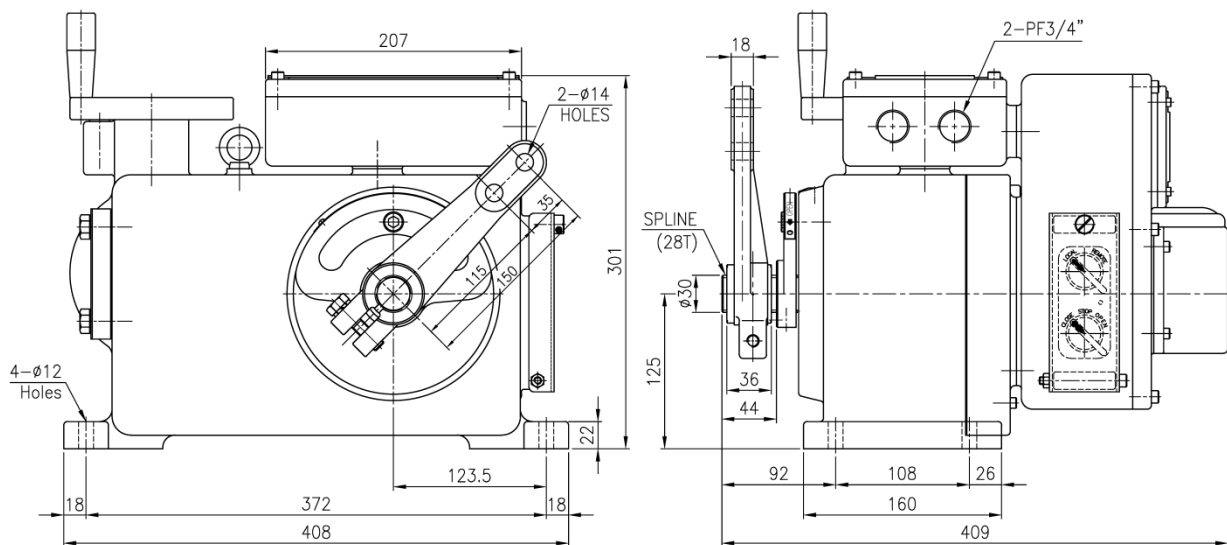
■ 치 수

■ DIMENSION

CM-01H



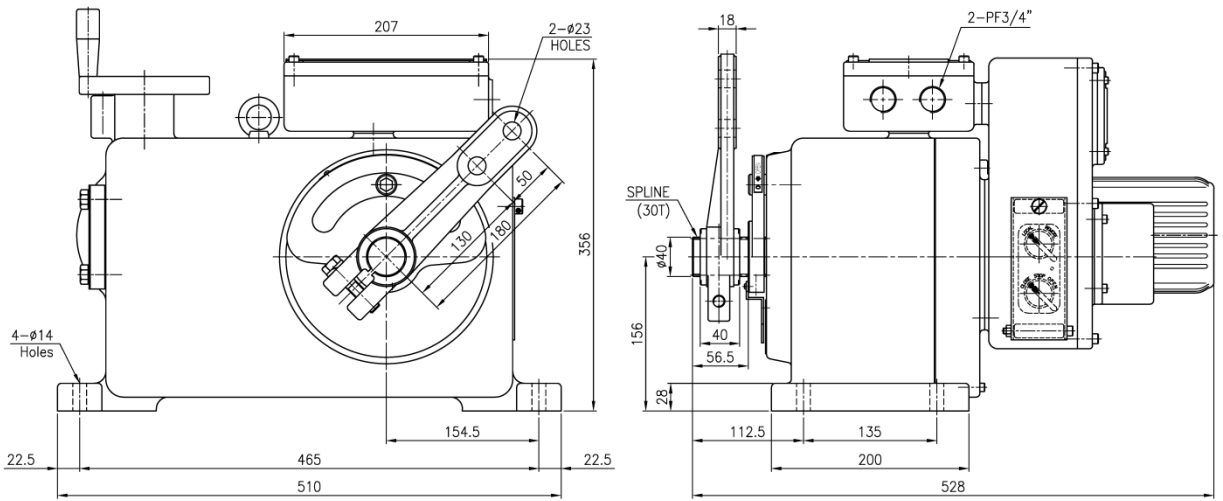
CM-02H



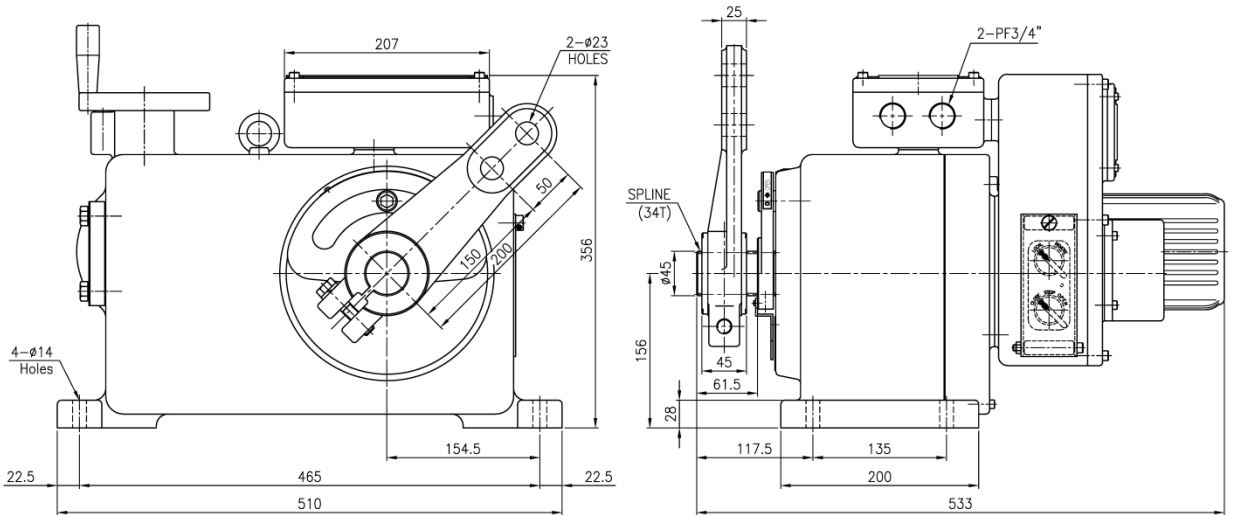
■ 치 수

■ DIMENSION

CM-05H



CM-10H



생산 품목

PRODUCT

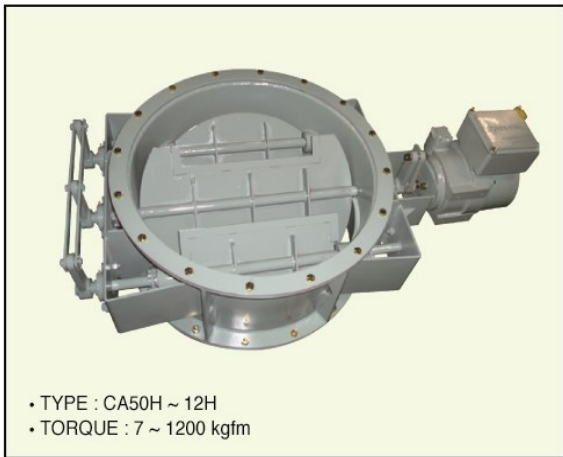
DAMPER ACTUATOR



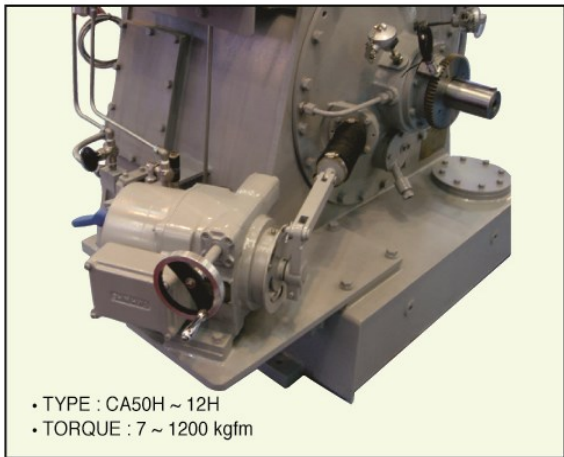
DAMPER ACTUATOR



DAMPER ACTUATOR



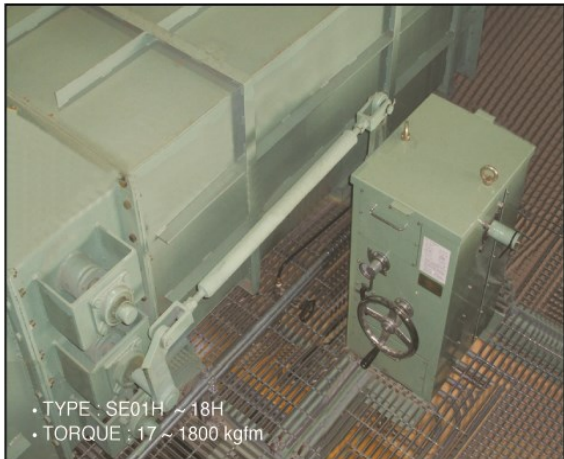
DAMPER ACTUATOR



PNEUMATIC ACTUATOR



PNEUMATIC ACTUATOR





SHIN HWA

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