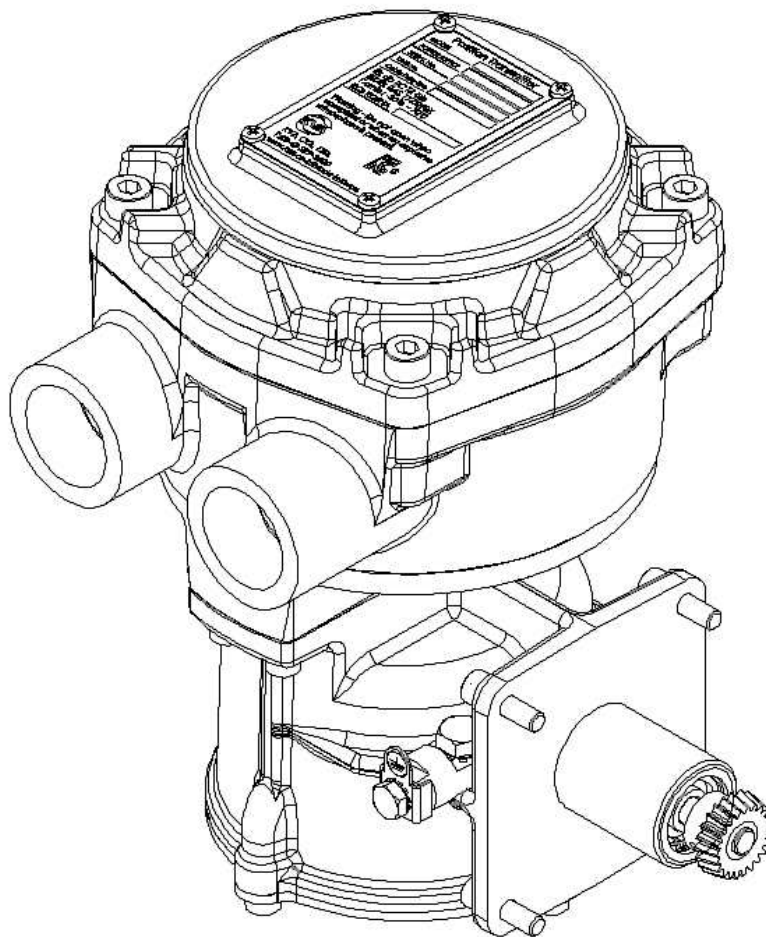


PT USER MANUAL



◆ CONTENTS ◆

1. Precautions Before Use	-----	1
2. Product Description	-----	2
2-1. PT Composition		
2-2. Name Plate		
3. DESCRIPTION	-----	3
3-1. Overview		
3-2. Features		
3-3. Explosion-Proof Certification		
4. Exploded View		
5. Wiring and Setting	-----	4
5-1. CABLE ENTRY & WIRING		
5-2. Setting		
6. Maintenance	-----	9
6-1. Inspection Instruction		
6-2. Lubrication		
6-3. Types of Lubricants		
7. Failure · Repair	-----	10
8. Model		

◆ Change Notice ◆

[illegible]

1. Precautions Before Use

Here is a brief overview of this product, the names and operation of each part. Please read this manual before using it.

Regarding “Mark” in this manual

There are “Danger” and “Warning” signs in this User’s Manual

 Danger ... In the event of a mishandling. The user is expected to be injured, etc.

 Caution ... In case of Mishandling, physical damage is expected.

 Danger

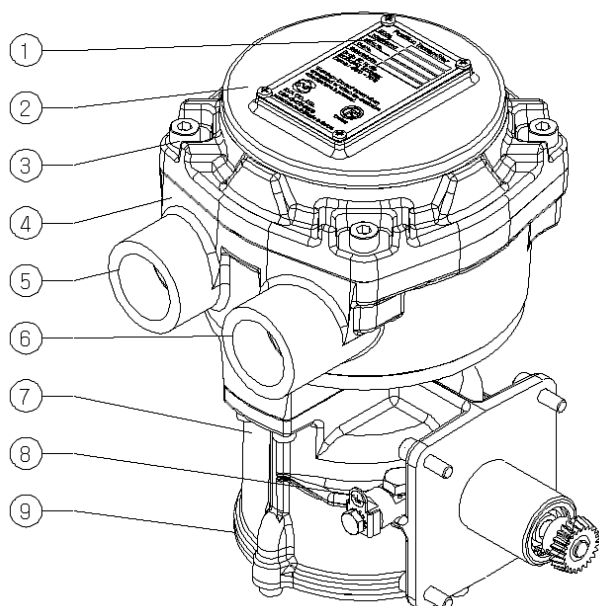
- Be sure to disconnect the power before opening the cover of the Position Transmitter.
 - Do not open the cover if there is an explosive atmosphere.
Users and operators should ensure that safe working methods are used at all times and that they meet local or national standards applicable to specific sites.
 - Make sure that all cable entries are finished according to KCs
Temporary plugs must be removed and unused cable entries must be fastened in an approved manner. See Cable Entry Type and Size on the Name Plate.
 - The gaps in the explosion-proof joints are smaller than those allowed by IEC60079-1 and should not be enlarged during use.
-

 Caution

- To set the Position Transmitter, the PT Cover must be disassembled.
Refer to [Pic. 2-2]
 - Disassembling any cover other than the PT Cover will void the warranty. Exposure of parts to an environment where internal parts are damaged will void the warranty.
 - PT COVER is sealed with O-Ring, and the cable entry part where the cable enters is made of a plastic plug to protect internal equipment until the wire is connected. If it is not possible to install the actuator immediately, it is recommended to store it in a dry and clean place where there is not much temperature change.
 - The Cable Entry Plug has a plastic plug installed for transportation purposes only and cannot be used for permanent sealing.
-

2. Product Description

2-1 PT Composition



No	PART NAME	REMARK
1	PT Name Plate	
2	PT Cover	
3	Wrench Bolt	
4	PT Housing	
5	Cable Entry No.1	
6	Cable Entry No.2	
7	PT Base	
8	Earth Plate	
9	PT Base Plate	

[Pic. 2-1] STRUCTURE OF PT

2-2 Name Plate

The nameplate of the PT is located on the top of the PT and contains the following information.
The name plate is fixed with M3*5 round head bolts (Loctite 222 applied).

Position Transmitter	
MODEL	
POWER SUPPLY	
SERIAL No.	
TAG No.	
Cable Entry Size	
IECEX BAS 17.0090X	
Ex d IIC T6 Ta -30°C ~ 70°C	
안전인증 번호	
인증일자	
한국산업안전 보건공단	
Warning - Do not open when energised or when an explosive atmosphere is present.	
 	
KVA CO., LTD.	
T.82-43-279-3600	
www.kva.co.kr/Made In Korea.	

3. DESCRIPTION

3-1 Overview

Position Transmitter is a device that attaches to an AOV or a valve and transmits an electrical signal to the outside.

3-2 Features

- ① The contact point is maintained mechanically even during Air Fail.
- ② Maintenance and component compatibility are good by uniting internal components.
- ③ It has a separate structure and can be used independently.

3-3 Explosion-Proof Certification

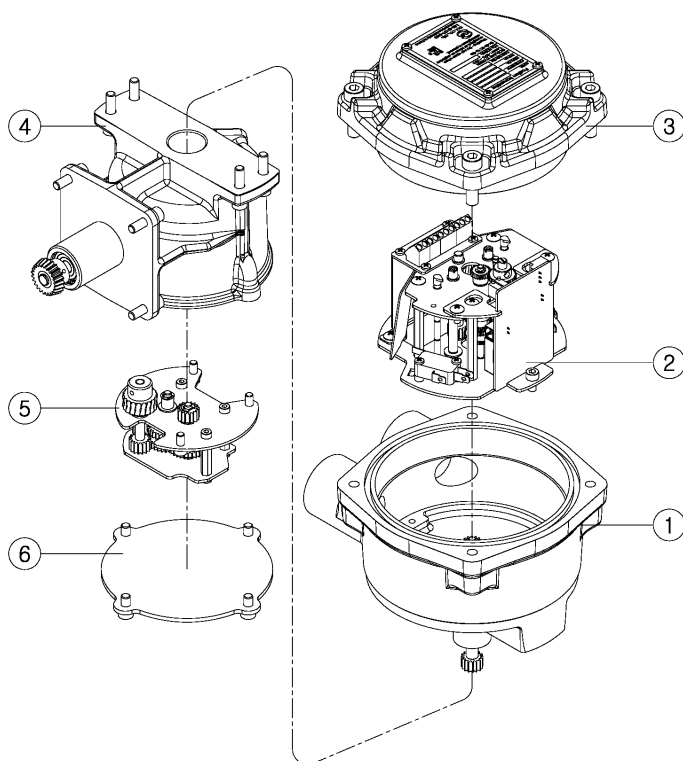
1) IECEx (IEC 60079-0 : 2011, IEC 60079-1 : 2014.06)

- ① Explosion-proof grade : Ex db IIC T6 Gb
- ② Ambient temperature : $-30^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$
- ③ Certification : SGS Baseefa
- ④ Certification number : IECEx BAS 17.0090X

2) KCs (Ministry of Employment and Labor Notice No. 2016-54)

- ① Explosion-proof grade : Ex d IIC T6
- ② Ambient temperature : $-30^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$
- ③ Certification : Kosha
- ④ Certification number : 18-AV2BO-0285X

4. Exploded View



No	PART NAME
1	PT HOUSING ASSEMBLY - PT HOUSING, PT OP SHAFT - PT OP SHAFT DOG FLANGE - O-RING – G135
2	PT ELECTRIC PART ASSEMBLY - CHANGE GEAR SETS - POT' REDUCTION GEAR SETS - TERMINAL BLOCK - LIMIT SWITCH - R/I CONVERTER
3	PT COVER ASSEMBLY - PT COVER, WRENCH BOLT - PT NAME PLATE
4	PT BASE ASSEMBLY - PT BASE, WRENCH BOLT - REDUCTION GEAR SETS
5	PT INPUT GEAR CASE ASSEMBLY - GEAR CASE, REDUCTION GEAR SETS
6	PT BASE PLATE

[Pic. 4-1] PART NAME OF Position Transmitter

5. Wiring and Setting

5-1 CABLE ENTRY & WIRING

Danger

- ① This device is an explosion-proof product of Ex d IIC T6 grade, and the cable entry part where the cable enters must use a product that has obtained Ex d IIC T4 grade KCs explosion-proof certification.
- ② Users and operators should ensure that safe working methods are used at all times and that they meet local or national standards applicable to specific sites.
- ③ Before wiring, make sure that the power is turned off before wiring. There is a risk of electric shock.
- ④ The unused cable entry inlet must be fully fastened with a plug that has obtained Ex d IIC T4 grade explosion-proof certification.

Caution

- ① The specifications and depth of tightening of cable entries shall be in accordance with [5-1].
- ② The thickness of the wire must be at least 1.2SQ using a stranded wire.
- ③ Do not connect outdoors in the rain.
- ④ Type 3 grounding is applied, and the thickness of the grounding wire should be 1.6mm or more.

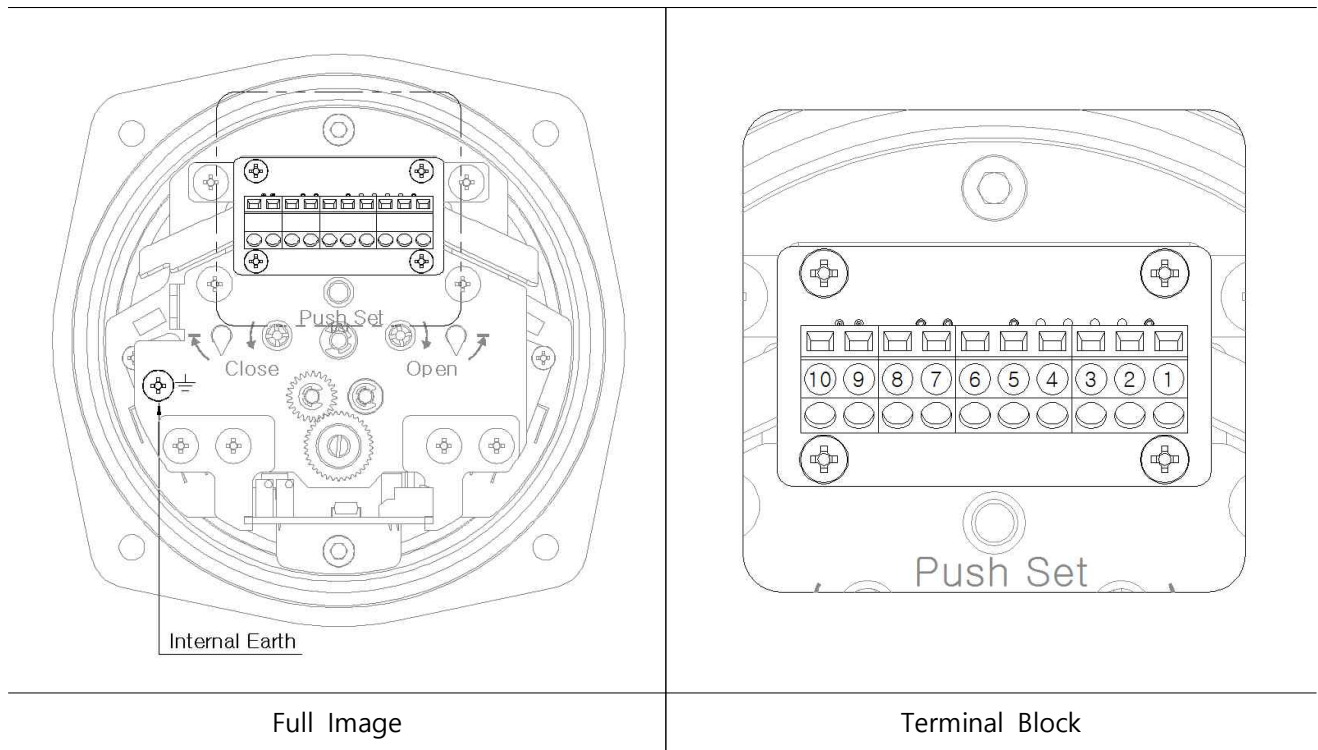
1) CABLE ENTRY SIZE & MARKING ([Pic. 2-1] see paragraphs 5&6)

ENTRY NO \ TYPE		TYPE1	TYPE2	REMARK
1	TAP SIZE	M25xP1.5	1"NPT	
	Assembly Depth	Min 15mm	Min 17mm	
2	TAP SIZE	M25xP1.5	1"NPT	
	Assembly Depth	Min 15mm	Min 17mm	
MARKING		M	N	

2) WIRING

- ① Separate the PT Cover from the PT Housing.
- ② Refer to the circuit diagram attached inside and connect to the terminal block. In case of incorrect wiring, abnormal output may occur. (If the circuit diagram is damaged or missing, refer to the table below.)
- ③ When wiring is completed, make sure to seal the cable entry.
- ④ After completing wiring and setting, clean the fastening surface of the PT Cover and tighten the bolts.

3) Terminal Block



4) Terminal Block Number or Number Naming

TB No	(Limit & 4~20mA)	Remark
1	Input AC100~240V R	
2	Input AC100~240V T	
3	CLS1 COM	
4	CLS1 "A" Contact	
5	CLS1 "B" Contact	
6	OLS1 COM	
7	OLS1 "A" Contact	
8	OLS1 "B" Contact	
9	(+) 4~20mA Output	
10	(-) 4~20mA Output	

5-2. Setting

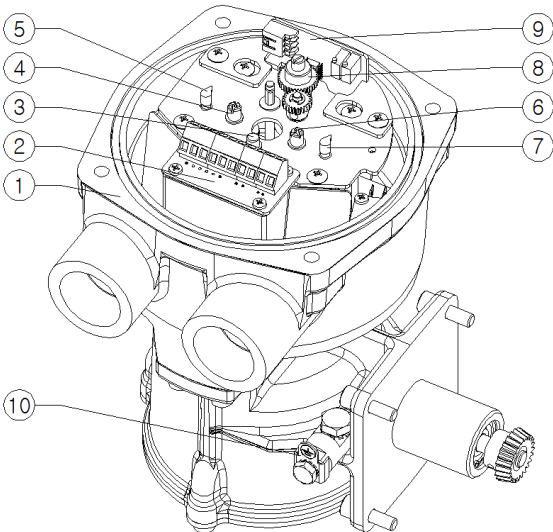
1) Preparation

- ① Fully close the valve.
- ② Disassemble the PT Cover with a 6mm L wrench tool.

※ Before setting, work after understanding the location and name of parts in [5-1] and [5-2].

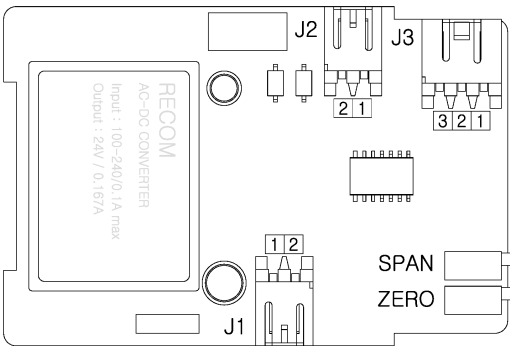
! Caution

- ① AOV installation and test should be done before operating
- ② Check the order details and the name plate details of the actuator.
- ③ Setting must be performed in the Full Close state.



TB No	Description
1	PT Housing
2	Terminal Block
3	Setting Shaft
4	Close Set Shaft
5	Close Pointer
6	Open Set Shaft
7	Open Pointer
8	Potentiometer Gear
9	R/I Converter
10	Earth Bolt & Name Plate

[Pic. 5-1] Position Transmitter Part Names

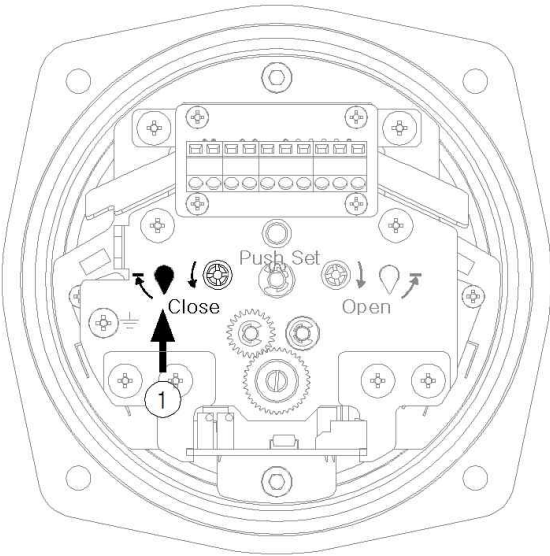
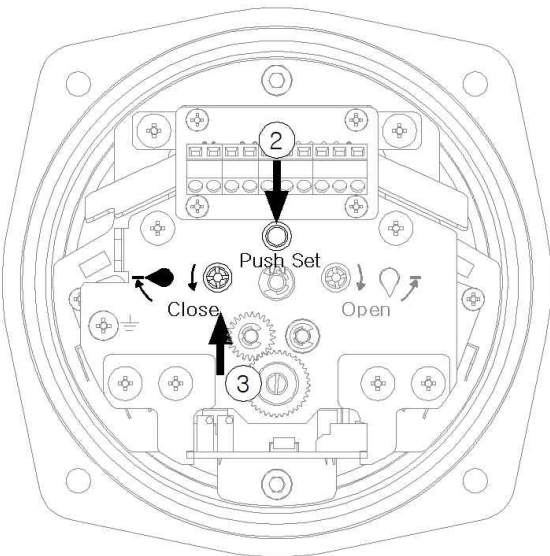


J1	Input Power(AC100V~AC240V)
J2	4~20mA Output
J3	Resistance Input
ZERO	4mA Fine Adjustment
SPAN	20mA Fine Adjustment

[Pic. 5-2] Structure of R/I Converter and name of each part

3) Close Limit Setting

- ① Check if the Close Pointer status is On or Off.
 - ② Keep the setting shaft pressed by hand or tool.
 - ③ Rotate the Close Set Shaft in the direction of the arrow to turn on the Close Pointer, then release the Setting Shaft after about 1/8 of a turn in the direction of the arrow.
- ※ If the switch is on, turn the Close Set Shaft clockwise to turn off the switch and then carry out step ③.

① Close Pointer status is On or Off	② Press and hold the setting shaft ③ Close Set Shaft counterclockwise rotation
	
* Current status is Switch Off	* Stop rotating immediately when Switch On

- ④ After opening (Close Pointer off) about 1 to 2 turns of the valve, close it again (Close Pointer on) to check if the Close Pointer status turns Off → On.
- ⑤ Check if the Close signal is normally output from TB3, TB5.
- ⑥ Repeat the above steps 1 or 2 times.

4) Open Limit Setting (refer to 3) Close Limit Setting)

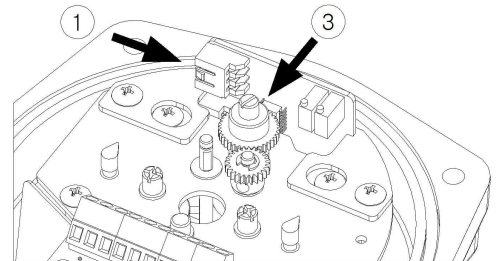
- ① Full Open the valve with AOV.
 - ② Check if the Open Pointer status is On or Off.
 - ③ Keep the setting shaft pressed by hand or tool.
 - ④ Rotate the Open Set Shaft in the direction of the arrow to turn on the Open Pointer, then release the Setting Shaft after about 1/8 of a turn in the direction of the arrow.
- ※ If the switch is on, turn the Open Set Shaft counterclockwise to turn off the switch, and then carry out step ④.
- ⑤ After Closing (Open Pointer off) about 1 to 2 turns of the valve, open it again (Open Pointer on) to check if the Open Pointer status turns Off → On.
 - ⑥ Check if the Open signal is normally output from TB6, TB8.
 - ⑦ Repeat the above steps 1 or 2 times.

5) Resistance Value Setting

! Caution

Setting must be performed in the Full Close state.

- ① Take out the J3 Connector from the R/I Converter.
- ② Check if the resistance value is 30~50Ω.
(CONNECTOR 2,3terminals)
- ③ If the resistance value is out of the range above, loosen the gear fixing set screw and turn the potentiometer shaft to adjust the resistance value to a value between 30-50Ω.
- ④ Assemble the J3 Connector.



6) 4mA Setting

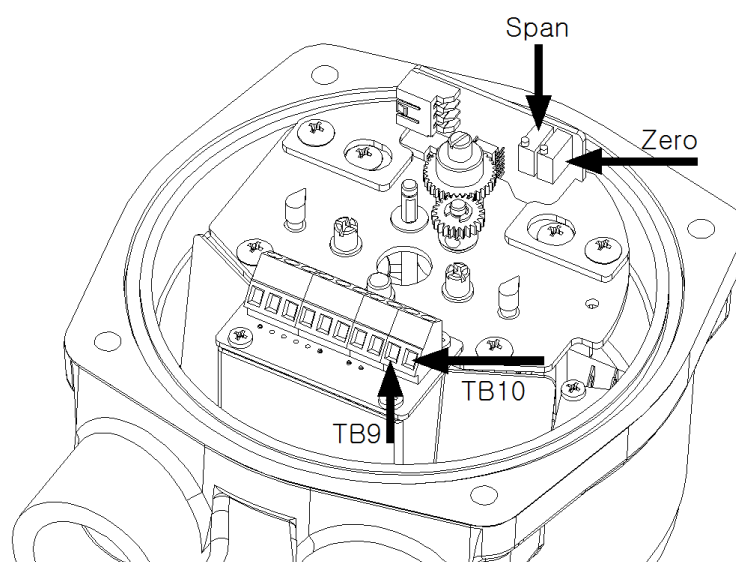
- ① Loosen the TB9 wire.
- ② Check if 3.4~4.6mA is output from the TB9, TB10 terminals of the terminal block.
- ③ Rotate the Zero of the R/I Converter to adjust 4mA.
- ④ Open and close the valve 10-20% and check if 4mA is output.
- ⑤ Repeat the above steps 1 or 2 times.

※ When adjusting Zero or Span, clockwise turns to + and counterclockwise changes to -.

7) 20mA Setting (Perform in Full Open state.)

- ① Check if 19.4~20.6mA is output from the 9th and 10th terminals of the terminal block.
- ② Rotate the span of R/I Converter to set 20mA.
- ③ Close the valve position to 80~90% and open it to 100%, then check if 20mA is output.
- ④ Repeat the above steps 1 or 2 times.
- ⑤ Connect the TB9 wire.

- 8) After completing the wiring and setting, clean the cover and the surface, then tighten the bolts.



[Pic. 5-3] 4~20mA fine setting

6. Maintenance

6-1. Inspection Instruction

- 1) Regularly check for looseness of the mounting table and bolts.
- 2) Check regularly for leakage around the PT Base Plate.
- 3) It is recommended to conduct regular inspections every three years.

6-2. Lubrication

- 1) Our product is sufficiently infused with semi-permanent lithium-based grease (LITHIUM SOAP GREASE), so you do not need to inject or exchange grease separately during normal operation.
- 2) When disassembling or assembling for regular inspection or repair, inject 70-80% of the inner chamber into lithium-based grease. (0.35kg)
- 3) Even if the product name is different, it can be used as a homogeneous lithium-based grease, but it should not be mixed with different types of grease.

6-3. Types of Lubricants

- 1) Grease applied to gear part

No.	Company	Grease	Remark
1	GS-CALTEX	Golden Pearl EP0	-
2	GS-CALTEX	Multifak EP	-
3	Mobil	Beacon325	-
4	UEO USA	WEG-800	-

- 2) Grease applied to PT explosion-proof mating surfaces

No.	Company	Grease	Remark
1	UEO USA	NEO SCG-570	
2	DOW Corning	Molykote 111 Compound	

- 3) Grease applied to external fastening bolts

No.	Company	Grease	Remark
1	UEO USA	NEO CPG-250	
2	DOW Corning	Molykote 111 Compound	
3	Nambang CNA	N-500()	

7. Failure · Repair

Failure	Possible Cause	Repair
No Output	• Power is off or disconnected • Bad limit switch setting • Bad limit switch • No output of 4~20mA • Bad R/I Converter	☞ Incoming power check ☞ Readjustment ☞ Exchange → Contact KVA ☞ Check the wiring ☞ Exchange → Contact KVA
Changed Output Value	• 4 to 20 mA values do not match for each action	☞ Potentiometer and Gear Replace
leakage	• Internal seal breakage	☞ Replace Seal Part

8. Model

PT - 01 - △

SERIES Name : PT → Position Transmitter

Model Number : 01 → Model

CABLE ENTRY
 △ → CABLE ENTRY TYPE
 N : 2-NPT1"
 M : 2-M25xP1.5



Head Office

468-18, Simogoecheon-ro, Nami-myeon, Seowon-gu, Cheongju-si, Chungcheongbuk-do,
Republic of Korea

Tel. 82-43-279-3600 / Fax. 82-43-269-2666

Daesan Office

152, Myeongji 1-ro, Daesan-eup, Seosan-si, Chungcheongnam-do,
Republic of Korea

Tel. 82-41-663-2693

Ulsan Office

19-14, Sangnam 2-gil, Cheongnyang-eup, Ulju-gun, Ulsan, Republic of Korea

Tel. 82-52-227-3601 Fax. 82-52-277-8002

2018.04.26

REV 0A