# Snap acting relay
# YT-520 / 525 / 530 / 535 Series

**PRODUCT MANUAL**

**YT-520S** **YT-520D**

**YT-525S** **YT-525D**

**YT-530S** **YT-530D**

**YT-535S** **YT-535D**

rotork®

Rotork YTC Limited

# Contents

# 1 Introduction

## 1.1 General Information for the users

Thank you for purchasing Rotork YTC Limited products. Each product has been fully inspected after its production to offer you the highest quality and reliable performance. Please read the product manual carefully prior to installing and commissioning the product.

- Installation, commissioning, and maintenance of the product may only be performed by trained specialist personnel who have been authorized by the plant operator accordingly.
- The manual should be provided to the end-user.
- The manual can be altered or revised without any prior notice. Any changes in product's specification, design, and/or any components may not be printed immediately but until the following revision of the manual.
- The manual should not be duplicated or reproduced for any purpose without prior approval from Rotork YTC Limited Gimpo-si, South Korea.
- In case of any other problems that are not stated in this manual, please make immediate contact Rotork YTC Limited.

## 1.2 Manufacturer Warranty

- For the safety, it is important to follow the instructions in the manual. Manufacturer will not be responsible for any damages caused by user's negligence.
- Any modifications or repairs to the product may only be performed if expressed in this manual. Injuries and physical damages caused by customer's modifying or repairing the product without a prior consultation with Rotork YTC Limited will not be compensated. If any alterations or modifications are necessary, please contact Rotork YTC Limited directly.
- Standard type with NBR rubber (ambient temperature range option 1) is subject to damage by ozone. If you suspect that ozone may be present at the site or if supplied air is likely to contain ozone, select a high temperature version (ambient temperature range option 2) or a low temperature version (ambient temperature range option 3) with SILICONE rubber.
- The warranty period of the product is (18) months from the date of shipment unless stated otherwise. Date of shipment can be checked by providing the LOT NO. or SERIAL NO. to us.
- Manufacturer warranty will not cover products that have been subjected to abuse, accidents, alterations, modifications, tampering, negligence, misuse, faulty installation, lack of reasonable care, repair or service in any way that is not contemplated in the documentation for the product, or if the model or serial number has been altered, tampered with, defaced or removed; damages that occurs in shipment, due to act of God, failure due to power surge, or cosmetic damage. Improper or incorrectly performed maintenance will void this limited warranty.
- For detailed warranty information, please contact the corresponding local Rotork YTC Limited office or main office in South Korea.

# 2 Product Description

## 2.1 General

Snap Acting Relay is a device that receives its main pneumatic pressure from the plant as signal pressure and changes the direction of pneumatic flow by changing the direction of the flow path inside the product when the signal pressure drops below the set pressure. For general use, it is installed on the control valve, and when the main pneumatic pressure from the compressor is lower than the required pressure due to power failure or pipe breakage, it senses the drop and flows the pressure from the air tank which is connected to the Snap Acting Relay to the actuator of the control valve and moves the valve to the safe position.

## 2.2 Main Features and Functions

- It can be installed using only piping without a separate bracket.
- Hysteresis is below 0.01 MPa.
- Built-in 80 mesh screen prevents foreign matter from entering and prevents malfunction.
- Highly corrosion-resistant polyester powder coated aluminum body or stainless steel body for high durability in various environments.

## 2.3 Label Description

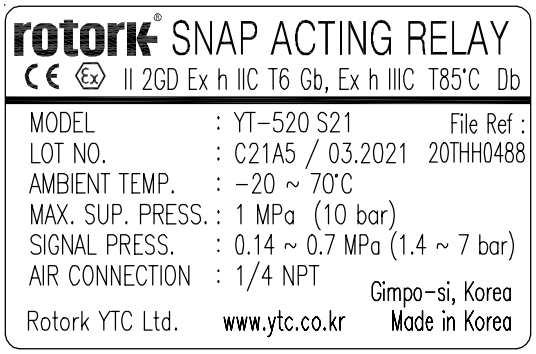



Fig. L-1: YT-520 (ATEX)


Fig. L-2: YT-520 (EAC)

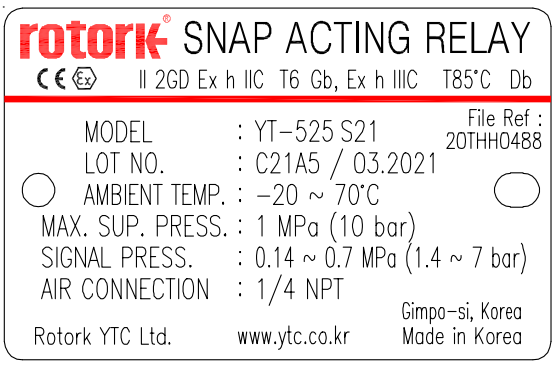



Fig. L-3: YT-525 (ATEX)


Fig. L-4: YT-525 (EAC)

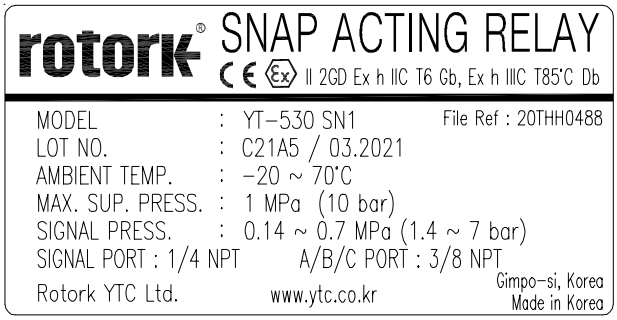



Fig. L-5: YT-530 (ATEX)


Fig. L-6: YT-530 (EAC)

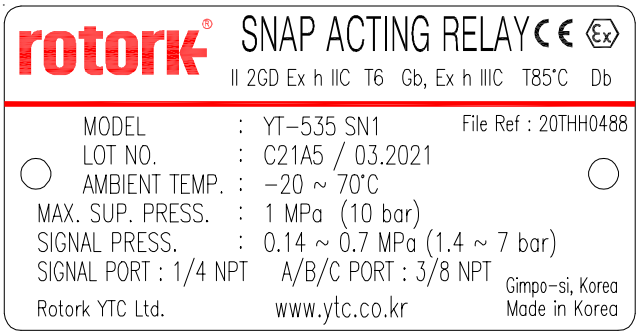



Fig. L-7: YT-535 (ATEX)


Fig. L-8: YT-535 (EAC)

- MODEL : Indicates the model number and additional symbols.
- LOT NO. : Indicates unique lot number.
- MONTH.YEAR : Indicates manufactured month and year.
- AMBIENT TEMP. : Indicates the allowable ambient temperature.
- MAX. SUPPLY : Indicates max. supply air pressure level.
- SIGNAL PRESSURE : Indicates the signal pressure range.
- AIR CONNECTION : Indicates connection thread type.

※ Precautions

Be careful not to apply volatile solvent (hardener of instant adhesive, acetone, WD-40, etc.) to the sticker nameplate. Printed contents may be erased.

## 2.4 Product Code

**YT-520 / 525 / 530 / 535 [1] [2] [3]**

| | | |
|---|---|---|
| [1] | Acting type | S : Single acting<br>D : Double acting |
| [2] | Air Connection type | 2 : NPT |
| [3] | Ambient Temperature | 1 : -20 ~ 70 °C (-4 ~ 158 °F) : N/A for EAC<br>2 : -20 ~ 120 °C (-4 ~ 248 °F) : N/A for EAC<br>3 : -40 ~ 70 °C (-40 ~ 158 °F)<br>4 : -50 ~ 70 °C (-58 ~ 158 °F) : only EAC |

In case of EAC, put “EAC” in a purchase order.

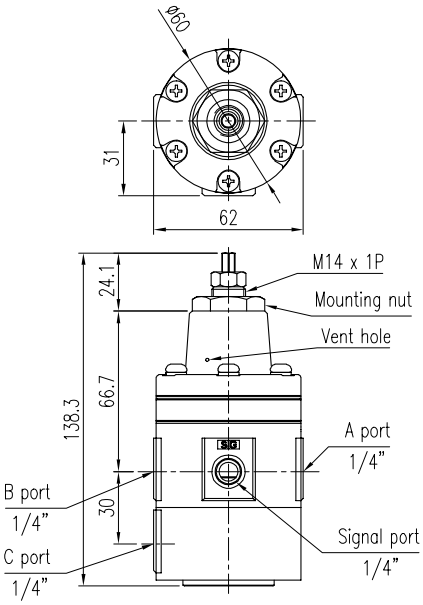
## 2.5 Product Specification

| **Model** | | **YT-520** | **YT-525** | **YT-530** | **YT-535** |
|---|---|---|---|---|---|
| **Max. Supply Pressure** | | Max. 1 MPa (10 bar) | | | |
| **Signal Pressure Setting Range** | | 0.14 ~ 0.7 MPa (1.4 ~ 7 bar) | | | |
| **Hysteresis** | | Below 0.01 MPa (0.1 bar) | | | |
| **Flow Capacity (CV)** | | 0.9 | | 1.8 | |
| **A, B, C port Connection** | | 1/4 NPT | | 3/8 NPT | |
| **Signal Connection** | | 1/4 NPT | | 1/4 NPT | |
| **Ambient Temperature** | **Standard** | -20 ~ 70 °C (-4 ~ 158 °F) | | | |
| | **High** | -20 ~ 120 °C (-4 ~ 248 °F) | | | |
| | **Low** | -40 ~ 70 °C (-40 ~ 158 °F) | | | |
| | **Arctic** | -50 ~ 70 °C (-58 ~ 158 °F) | | | |
| **Housing Material** | | Aluminum | Stainless Steel 316 | Aluminum | Stainless Steel 316 |
| **Weight** | **Single** | 0.71 kg (1.6 lb) | 1.7 kg (3.8 lb) | 1.5 kg (3.3 lb) | 3.3 kg (7.3 lb) |
| | **Double** | 1.3 kg (2.9 lb) | 3.1 kg (6.9 lb) | 2.7 kg (6 lb) | 5.8 kg (12.8 lb) |

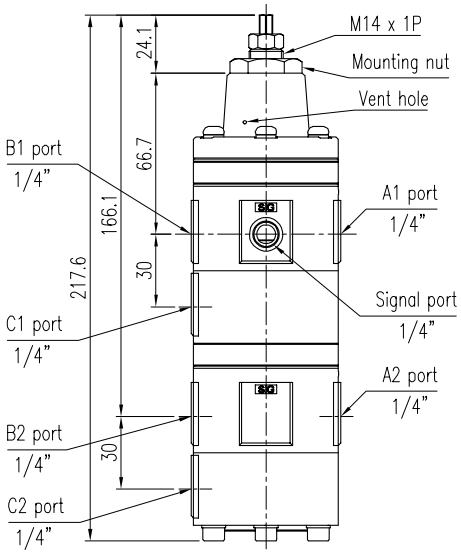
⚠ Tested under ambient temperature of 20 °C, absolute pressure of 760 mmHg, and humidity of 65 %.
Please contact Rotork YTC Limited for detailed testing specification.

## 2.6 Product Dimension

### 2.6.1 YT-520 / 525

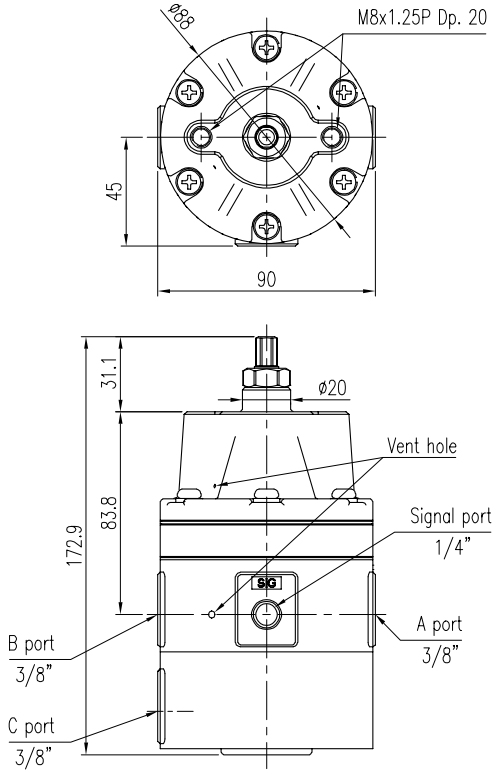



Single

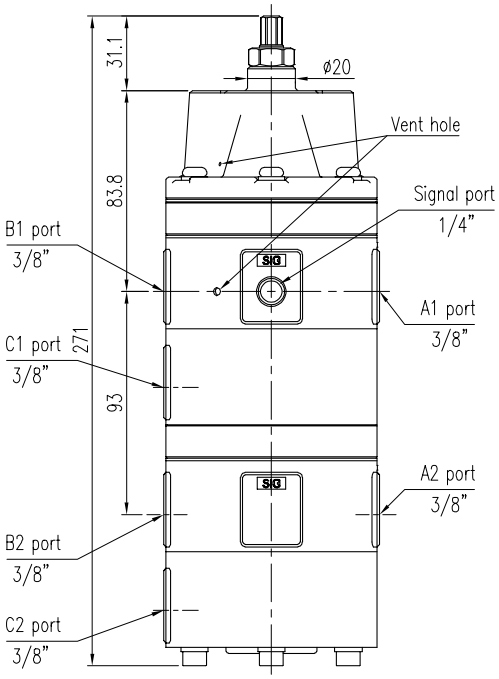



Double

### 2.6.2 YT-530 / 535

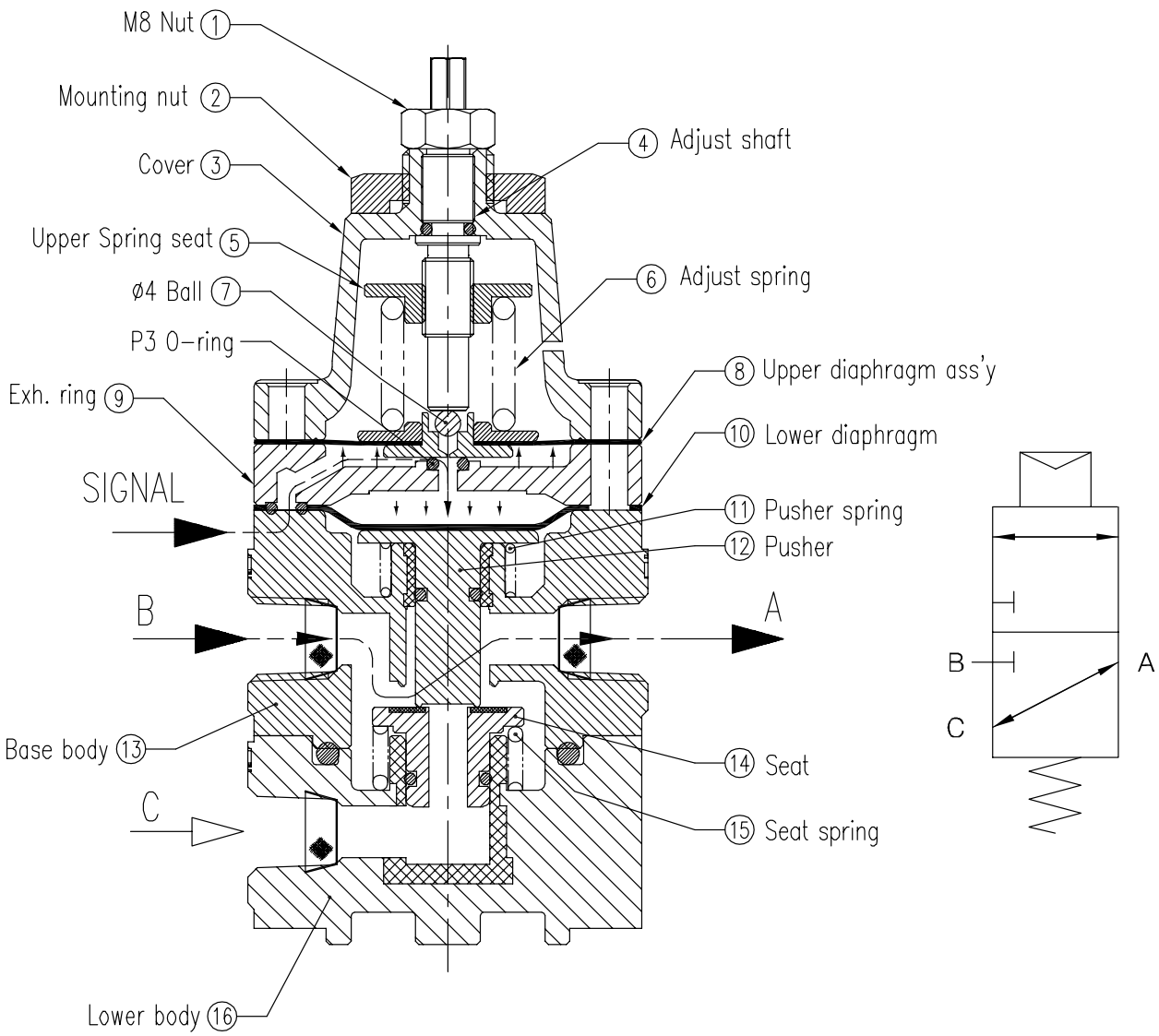



Single




Double

## 2.7 Operation Logic



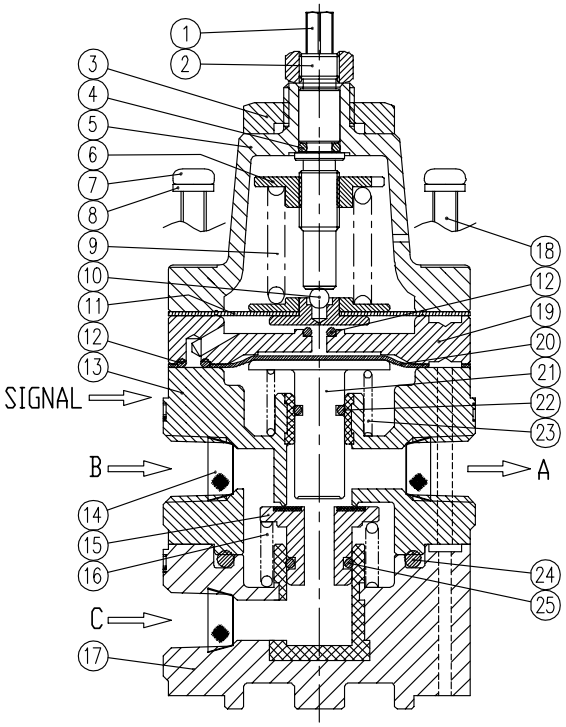

If the signal pressure is larger than the setting pressure (⑥adjustment spring force), the signal pressure is boosted to the ⑧upper diaphragm assembly. Through the middle hole, the signal pressure pushes the ⑩lower diaphragm and moves down the ⑫pusher and the ⑭seat. As a result, the B port is connected to the A port.

On the contrary, if the signal pressure is smaller than the set pressure (⑥adjustment spring force), the ⑧upper diaphragm assembly will come down and the signal pressure will not go to the lower diaphragm and the ⑦4-pie ball will drop from the upper diaphragm assembly. As a result, the air that has pressed the lower diaphragm down will be exhausted through the ⑦4-pie ball, and the ⑮seat spring will lift the ⑭seat and the ⑪pusher spring will lift the ⑫pusher. As a result, the B port is blocked and the C port is connected to the A port.

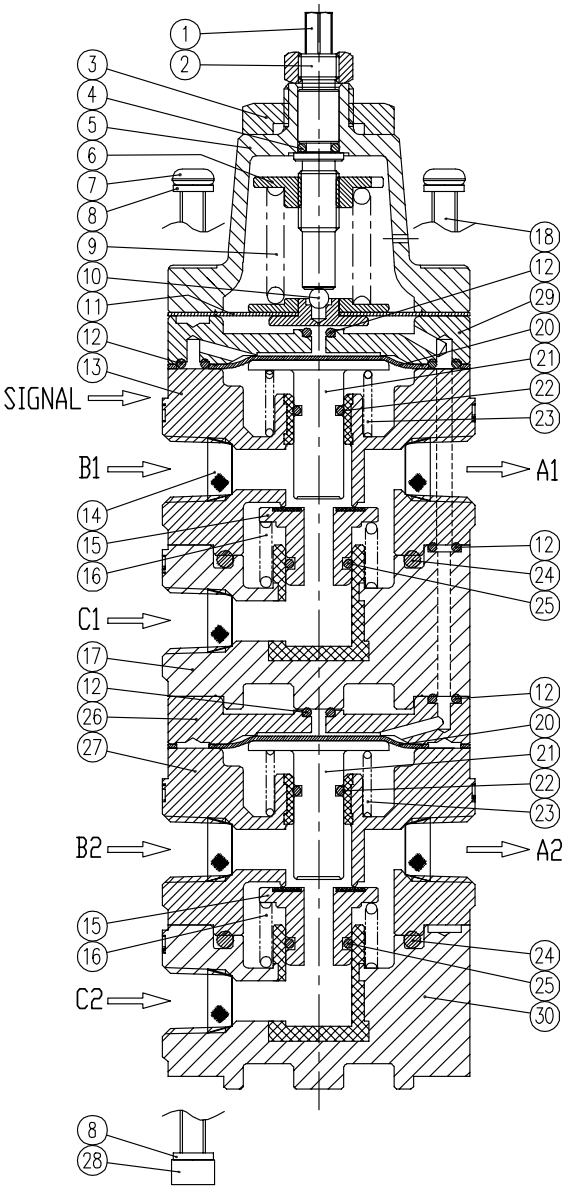
## 2.8 Section drawings

### 2.8.1 YT-520 / 525

Single




Double



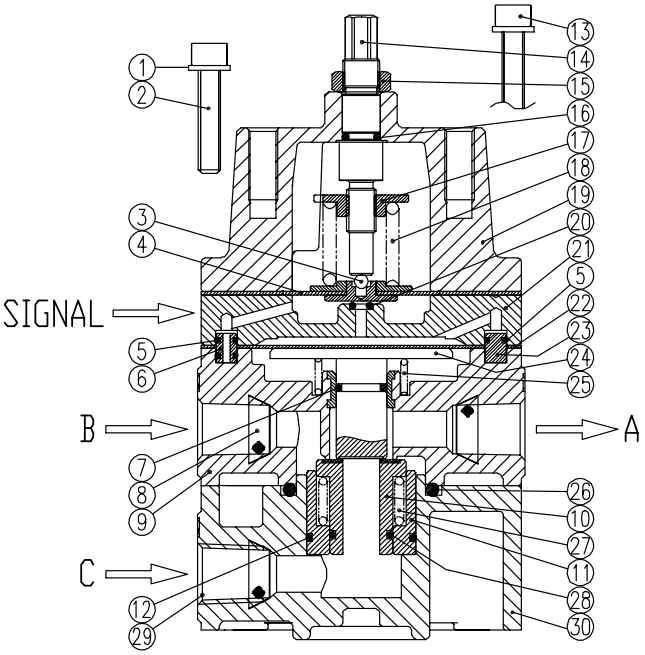

| NO. | PART NAME |
|---|---|
| 1 | ADJUST SHAFT |
| 2 | NUT (M8*1P) |
| 3 | MOUNTING NUT |
| 4 | O-RING (P5) |
| 5 | BASE COVER |
| 6 | UPPER SPRING SEAT |
| 7 | BOLT (M5*70, RH, 후가공) |
| 8 | SPRING WASHER (M5) |
| 9 | ADJUST SPRING |
| 10 | BALL(ø4) |

| NO. | PART NAME |
|---|---|
| 11 | UPPER DIAPHRAGM ASS'Y |
| 12 | O-RING(P3) |
| 13 | BASE BODY |
| 14 | SCREEN (80MESH, 1/4") |
| 15 | SEAT |
| 16 | SEAT SPRING |
| 17 | LOWER BODY |
| 18 | BOLT(M5*30, RH, W/S) |
| 19 | EXHAUST RING |
| 20 | LOWER DIAPHRAGM |

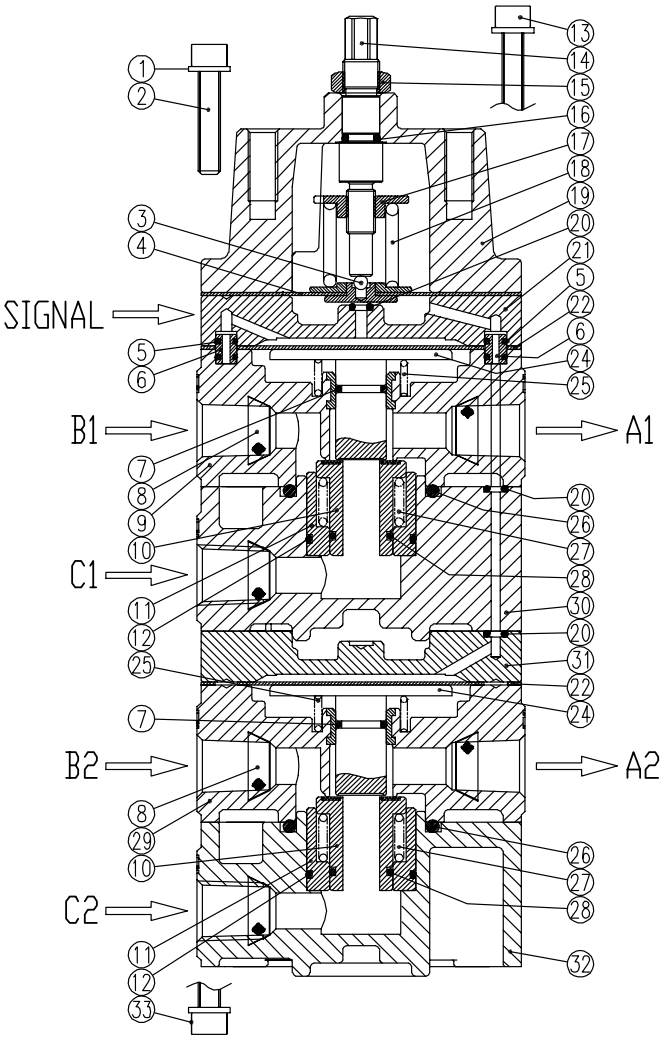
| NO. | PART NAME |
|---|---|
| 21 | PUSHER |
| 22 | O-RING (P7) |
| 23 | PUSHER SPRING |
| 24 | O-RING (P34) |
| 25 | O-RING (P10) |
| 26 | EXHAUST RING-D-2 |
| 27 | BASE BODY-DOUBLE |
| 28 | BOLT (M5*90, WH) |
| 29 | EXHAUST RING-D-1 |
| 30 | LOWER BODY-DOUBLE |

2.8.2 YT-530 / 535

Single




Double




| NO. | PART NAME |
|---|---|
| 1 | SPRING WASHER (M6) |
| 2 | BOLT (M6*30, WH) |
| 3 | BALL(ø4) |
| 4 | UPPER DIAPHRAGM ASS'Y |
| 5 | O-RING (S4) |
| 6 | SIGNAL TUBE-1 |
| 7 | O-RING (P10) |
| 8 | SCREEN |
| 9 | BASE BODY-1 |
| 10 | SEAT |
| 11 | LOWER BODY INSERT |

| NO. | PART NAME |
|---|---|
| 12 | O-RING (S26) |
| 13 | BOLT (M6*70, WH) |
| 14 | ADJUST SHAFT |
| 15 | LOCK NUT |
| 16 | O-RING (P7) |
| 17 | UPPER SPRING SEAT |
| 18 | ADJUST SPRING |
| 19 | BASE COVER |
| 20 | O-RING (P3) |
| 21 | EXHAUST RING-1 |
| 22 | LOWER DIAPHRAGM |

| NO. | PART NAME |
|---|---|
| 23 | SIGNAL TUBE-2 |
| 24 | PUSHER |
| 25 | PUSHER SPRING |
| 26 | O-RING(P36) |
| 27 | SEAT SPRING |
| 28 | O-RING(AN015) |
| 29 | BASE BODY-2 |
| 30 | LOWER BODY-1 |
| 31 | EXHAUST RING-2 |
| 32 | LOWER BODY-2 |
| 33 | BOLT (M6*110, WH) |