CSM-0029-A

SM 2304

INSTRUCTION MANUAL

FOR

REGULATOR
MODEL NO. 2304

Please read this operation manual carefully before using this product, particularly the section describing safety.

Retain this operation manual with the product for further consultation whenever necessary.

CKD Corporation

For Safety Use

To use this product safely, basic knowledge of pneumatic equipment, including materials, piping, electrical system and mechanism, is required (to the level pursuant to JIS B 8370 Pneumatic System Rules).

We do not bear any responsibility for accidents caused by any person without such knowledge or arising from improper operation.

Our customers use this product for a very wide range of applications, and we cannot keep track of all of them. Depending on operating conditions, the product may fail to operate to maximum performance, or cause an accident. Thus, before placing an order, examine whether the product meets your application, requirements, and how to use it.

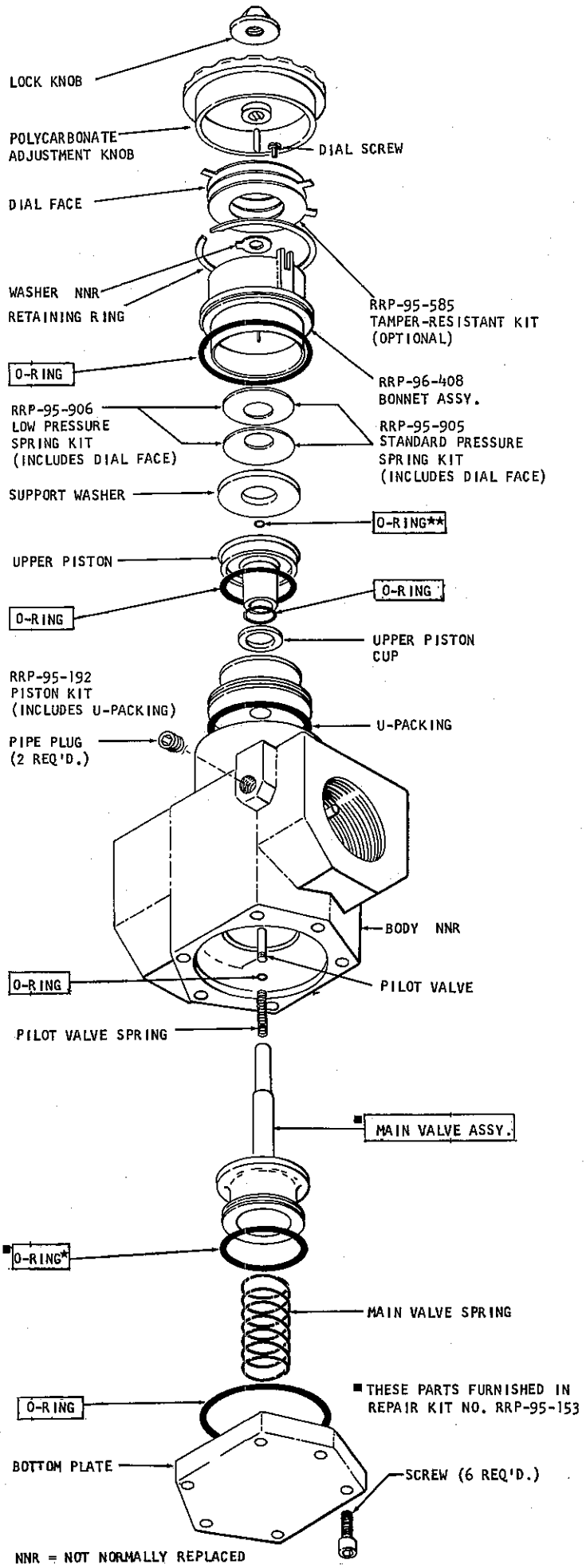
This product incorporates many functions and mechanisms to ensure safety. However, improper operation could result in an accident. To prevent such accidents, read this instruction manual carefully for proper operation.

INSTALLATION

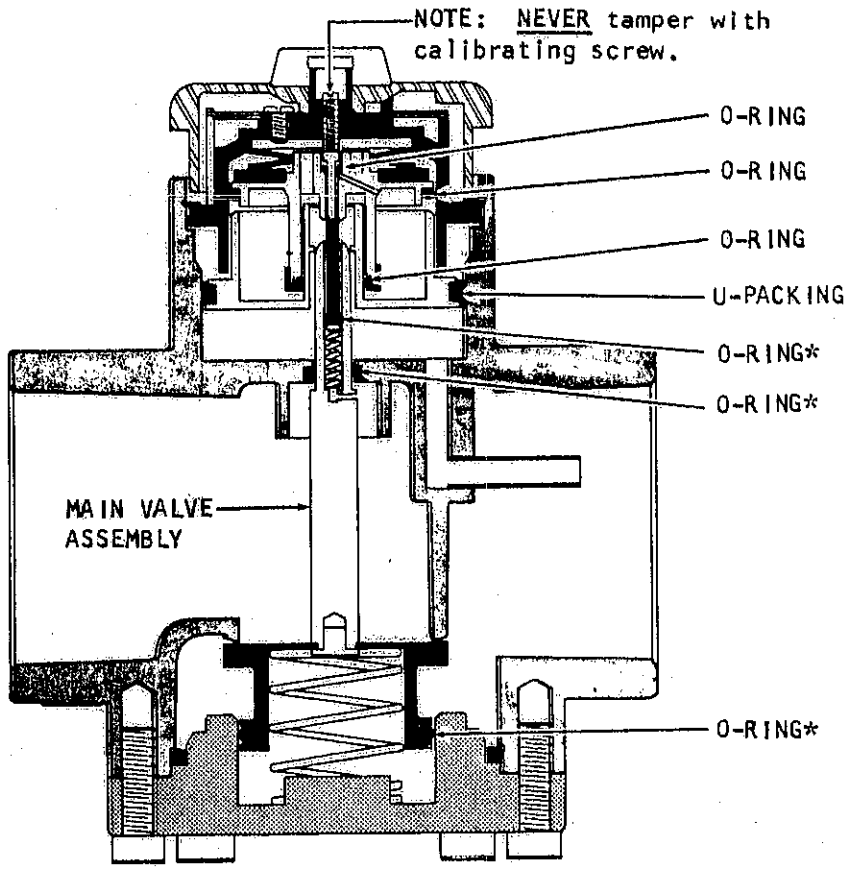
1. Refer to above "CAUTION."
2. Maximum inlet pressure is 2.06 MPa and 65°C. Maximum operating air and ambient temperature is 175° F (79,4° C).
3. Install as close as possible to where regulated air is needed.
4. Install the unit with the air flowing through the body in the direction indicated by the arrow.
5. Install the same pipe size unit as the pipe line in use. Avoid using fittings, couplings, etc., that restrict the airflow, unless maximum flow is not needed.
6. Regulator may be installed in any position. The pressure scale can be turned 360° to read in any position by firmly turning the adjustment knob hard, counterclockwise, through the "OFF" position. This can be done only when the unit is not under pressure. (See other side for details on how to adjust regulator.)
7. A pressure gauge is not required; however, a gauge may be attached to one of the 1/4" NPT female cross ports by removing one of the plugs. These ports may also be used as regulated air outlets.
8. Install a Wilkerson air filter before the regulator. Filter must be sized so that it will adequately handle flow of air to device whose pressure is being regulated.

MAINTENANCE

1. Occasionally remove bottom plate and clean plate, body, valve seat, and main valve. Relubricate o-ring* with Dow Corning 55M Silicone Grease whenever regulator is cleaned. (See other side for lubrication instructions.)
2. TO DISASSEMBLE: Shut off air supply and vent air lines on both sides of the regulator. Remove lock knob, adjustment knob, and retaining ring. Leave dial screw in position. It is not necessary to remove this screw to service unit. Lift bonnet assembly out of the body and remove pistons, support washer, and Belleville spring. Remove the bottom plate and pull out the main valve and pilot valve. (See "4" and "5" below.)
3. TO ASSEMBLE: Relubricate all seals and sealing surfaces with Dow Corning 55M Silicone Grease. Assemble main valve, pilot valve spring, pilot valve, main valve spring, and bottom plate. Lay bottom piston, with flat surface down, on assembly table. Slip upper piston assembly on bottom piston. Add support washer and two Belleville springs with inside diameters contacting. Place bonnet on assembled pistons and press down firmly. Place o-ring** in body. Place assembled bonnet and pistons in body and install retaining ring. Turn on the air supply to regulator, then turn plastic coupling (See other side.) until the keyway in coupling faces the location on the scale which corresponds with the outlet pressure from the regulator. Install the adjustment knob and then the lock knob. (See other side for details on how to adjust regulator.)
4. IF UNIT WILL NOT REGULATE TO PRESSURE NEEDED, OR IF PRESSURE DROP BECOMES EXCESSIVE: Remove bottom plate, main valve, and pilot valve. Clean and check o-rings, valves, and valve seats for wear or damage. Relubricate o-rings with Dow Corning 55M Silicone Grease. If pilot valve or mating main valve is worn or damaged, return unit to factory for repair and recalibration.
5. IF UNIT LEAKS UNDER ADJUSTMENT KNOB: The cause may be a dirty or worn main valve seat. Install Repair Kit No. RRP-95-153. A small, constant bleed is permissible.


LOCK KNOB
POLYCARBONATE ADJUSTMENT KNOB
DIAL SCREW
DIAL FACE
WASHER NNR
RETAINING RING
RRP-95-585 TAMPER-RESISTANT KIT (OPTIONAL)
O-RING
RRP-96-408 BONNET ASSY.
RRP-95-906 LOW PRESSURE SPRING KIT (INCLUDES DIAL FACE)
RRP-95-905 STANDARD PRESSURE SPRING KIT (INCLUDES DIAL FACE)
SUPPORT WASHER
O-RING**
UPPER PISTON
O-RING
O-RING
UPPER PISTON CUP
RRP-95-192 PISTON KIT (INCLUDES U-PACKING)
U-PACKING
PIPE PLUG (2 REQ'D.)
BODY NNR
O-RING
PILOT VALVE
PILOT VALVE SPRING
■ MAIN VALVE ASSY.
■ O-RING*
MAIN VALVE SPRING
O-RING
■ THESE PARTS FURNISHED IN REPAIR KIT NO. RRP-95-153
BOTTOM PLATE
SCREW (6 REQ'D.)
NNR = NOT NORMALLY REPLACED

LUBRICATION INSTRUCTIONS



The factory packs all moving seals with a heavy lubricating grease. Under normal conditions this will last through millions of cycles. However, under conditions of wet air, unusually high flows, or if light oil from a lubricator somewhere in the circuit gets into the Dial-Air™ regulator, the original lubricant can be washed out in a relatively short time.

Proper lubrication in our Dial-Air™ series regulators is absolutely essential.

Symptoms of a dry regulator:

1. Excessive leaking through the relief vent.
2. Loss of calibration.
3. Regulator cannot attain high secondary pressures.
4. Erratic secondary pressures.
5. Excessive hysteresis.

Remedy:

Disassemble regulator and lubricate o-rings with Dow Corning 55M Silicone Grease. Those rings indicated with an asterisk are usually the first to go dry, and many times the problems can be remedied by relubricating only these rings, which are easily accessible by removing the bottom plug and the main valve assembly.

FIG. 1.

TO SET ADJUSTMENT TO A MAXIMUM PRESSURE STOP: An adjustment tab is provided so regulator adjustment cannot be turned past a preset maximum pressure. To preset this tab, remove adjusting knob by first removing lock knob. Loosen dial screw and rotate tab stop to the desired pressure limit. Set groove of white plastic coupling anywhere between zero and the tab stop. Line up the inner key on the clear plastic adjustment knob with the groove and drop in place. Outer key on the adjustment knob must now be to the left of the tab stop. Tighten screw and replace knobs. Now adjustment knob can be rotated only between zero and the tab stop.

FIG. 2.

TO SET ADJUSTMENT TO A MINIMUM PRESSURE STOP: Repeat above process, but set the groove of the white plastic coupling anywhere between the pressure desired and the maximum pressure number, "160." When adjustment knob is replaced, its outer key should be to the right of the tab stop. Adjustment can now be made only between tab and maximum pressure.

FIG. 3.

ADJUSTMENT CAN BE FIXED AT A SET PRESSURE by purchasing Tamper-Resistant Kit No. RRP-95-585. This is just an additional tab stop ring. Remove the dial screw and the white dial face, place the additional ring on top of the original ring and replace the white dial face and dial screw. Set one of the tab stops on one side of the pressure desired; set the other to the opposite side of the pressure figure, as shown, leaving about 1/8-inch between the stops, and tighten dial screw. Set groove of white plastic coupling in line with desired pressure number, and replace adjustment knob so the key on inside of the outer edge of the clear plastic knob is located between the two tabs. Replace lock knob. The locked adjustment is now also tamper proof, because the operator would have to remove both knobs to change it.

FIG. 4.

TO LOCATE TABS SO ADJUSTMENT CAN BE MADE ONLY BETWEEN A PREDETERMINED MINIMUM AND MAXIMUM PRESSURE: follow the same procedure as in Fig. 3 above, but spread the tabs further apart to the minimum and maximum pressures desired. Locate outer key of adjustment knob between the two tabs.

WARNING: IF DIAL SCREW AND WASHER HAVE BEEN REMOVED, DO NOT ROTATE KEYWAY OF PLASTIC COUPLING THROUGH THE "OFF" POSITION ON THE SCALE OF THE DIAL FACE. THIS CAN OFFSET THE CALIBRATION SO THAT THE READING ON THE DIAL WOULD NOT MATCH A PRESSURE GAUGE.

VARIOUS ADJUSTMENTS MADE WITH AIR PRESSURE ON OR OFF