# Integra<sup>®</sup> Manually Operated Diaphragm Valves

<sup>1</sup>/<sub>2</sub>" Orifice, 2-Way, Manual Design (<sup>1</sup>/<sub>4</sub>-Turn Actuator Version)

### **REPAIR INSTRUCTIONS**

#### For models:

201-33, 201-34, 201-35, 201-36, 201-37, 201-36-SI, 201-36-SO, 201-37-SI, 201-37-SO, 201-33-01, 201-34-01, 201-35-01, 201-36-01, 201-37-01, 201-36-SI-01, 201-36-SO-01, 201-37-SI-01, 201-37-SO-01

## **REPAIR PROCEDURE – DISASSEMBLY**

- 1. Begin disassembly by referring to Fig. 1. Remove the screw (P2) and discard.
- Remove the handle (P3) by pulling up on it.
- 3. Remove half-nut (P11) by turning counterclockwise.
- Turn the adjustment nut (P4) counterclockwise two turns with the 1" open-end wrench (S5).
- Remove the outer cap (P5) with the outer cap wrench (T1) by turning it slowly in a counterclockwise direction.
- Remove the inner cap (P6), washer (P7), and upper stem (P8).



Figure 1. \*Repair kit parts.



- 7. Remove the retainer nut (P9) with the alignment tool (T2) by inserting the end with the external hex into the retainer nut (P9). Turn the other external hex on the tool counterclockwise with an adjustable wrench (S6), Figure 2.
- Remove the diaphragm/retainer assembly (P1) by holding the lower cam with a pliers (S3) and pulling it up out of the body (P10).
- 9. Discard the diaphragm/retainer assembly (P1).

# **REPAIR PROCEDURE – ASSEMBLY**

- Before beginning assembly, clean the internal body surfaces (P10) and the parts not supplied in the kit with isopropyl alcohol (S4).
- Begin assembly by making sure the O-ring between the diaphragm and retainer is evenly in place, Figure 3. Apply lubricant (S1) to second O-ring and then drop the diaphragm/ retainer assembly (P1) into the body (P10), Figure 2.
- 3. Thread the retainer nut (P9) into the body (P10) with the alignment tool (T2) by turning the external hex on the the alignment tool by hand in a clockwise position. Tighten the retainer nut (P9) until it just contacts the retainer.
- 4. With the alignment tool (T2) on the retainer nut (P9), rotate the alignment tool handle counterclockwise two times, ending up with the pin of the alignment tool parallel to the body ports, Figure 2.
- 5. While holding the alignment tool handle (T2), tighten the hex portion of it to 50 in•lb (5.65 N•m) torque with the torque wrench (S2) and a 1<sup>1</sup>/<sub>8</sub>" crow's foot (S7). While tightening, keep the alignment tool pin parallel to the body parts.
- 6. Apply lubricant (S1) to the lower stem, Figure 3.

- 7. Place the upper stem (P8) on the lower stem of the diaphragm/retainer assembly (P1). Apply lubricant to top of upper stem, Figure 1.
- Place the washer (P7) onto the upper stem (P8). Apply lubricant to top of washer.
- 9. Place the inner cap (P6) onto the body (P10) so that the wide groove on the inner cap lines up with the wide boss on the body.
- While holding the inner cap (P6) securely on the bosses of the body (P10), install the outer cap (P5). Torque to 120 in•lb (13.5 N•m) with the outer cap wrench (T1) and torque wrench (S2).
- 11. Assemble half-nut (P11) onto inner cap (P6). Turn clockwise until half nut is approximately half way down inner cap.
- 12. Turn the adjustment nut (P4) in the inner cap (P6) clockwise two turns.
- 13. Install the handle (P3).
- 14. Install the screw (P2) being careful to just bring it against the handle (P3) so as not to twist the head off.
- 15. Adjust the outlet to inlet seal in the following way:
  - a. Close the valve and connect 80 psi (552 kPa) air pressure to the valve outlet port.
  - b. Apply pressure to the outlet port and turn the adjustment nut (P4) clockwise until leakage stops from the inlet. Then turn the adjustment nut (P4) an additional ¼ turn.
- 16. Assembly is now complete. See testing procedures.



Figure 2. T2 alignment tool.



Figure 3. P1 diaphragm/retainer assembly.

#### **Repair Parts Kit**

ITEM	DESCRIPTION	QUANTITY
P1	Diaphragm/ retainer assembly	1
P2	Screw	1

#### Repair Tool Kit (Ordering Number 213-103)

ITEM	DESCRIPTION
T1	Outer cap wrench
T2	Alignment tool

#### **Customer Supplied Items**

ITEM	DESCRIPTION
S1	Lubricant and brush for applying
S2	Torque wrench, ½″ drive 200 in•lb scale (22 N•m)
S3	Pliers
S4	lsopropyl alcohol
S5	1" open-end wrench
S6	Adjustable wrench 1½" (38 mm)
S7	11/8" crows foot, 1/2" drive

#### **Repair Parts Kits**

Repair Parts Kit Ordering Number 201-73 is for all the following valves:

201-33	201-33-01
201-34	201-34-01
201-35	201-35-01
201-36	201-36-01
201-37	201-37-01
201-36-SI	201-36-SI-01
201-36-SO	201-36-SO-01
201-37-SI	201-37-SI-01
201-37-SO	201-37-SO-01

## TESTING

The valve must be tested in the following ways:

#### **Outlet to Inlet Leakage**

With 80 psi (552 kPa) air pressure applied to the outlet, no leakage at the inlet should be seen when the inlet port is submerged in water. If leakage occurs, turn the adjustment nut (P4) an additional <sup>1</sup>/<sub>8</sub> turn. Repeat submerging the inlet while 80 psi (552 kPa) is applied to the outlet.

#### External Media Leakage

With the inlet plugged with a taped pipe plug or Flaretek® fitting cap, apply 80 psi (552 kPa) air pressure to the outlet. No leakage should be observed from around the outer cap.

#### FOR MORE INFORMATION

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