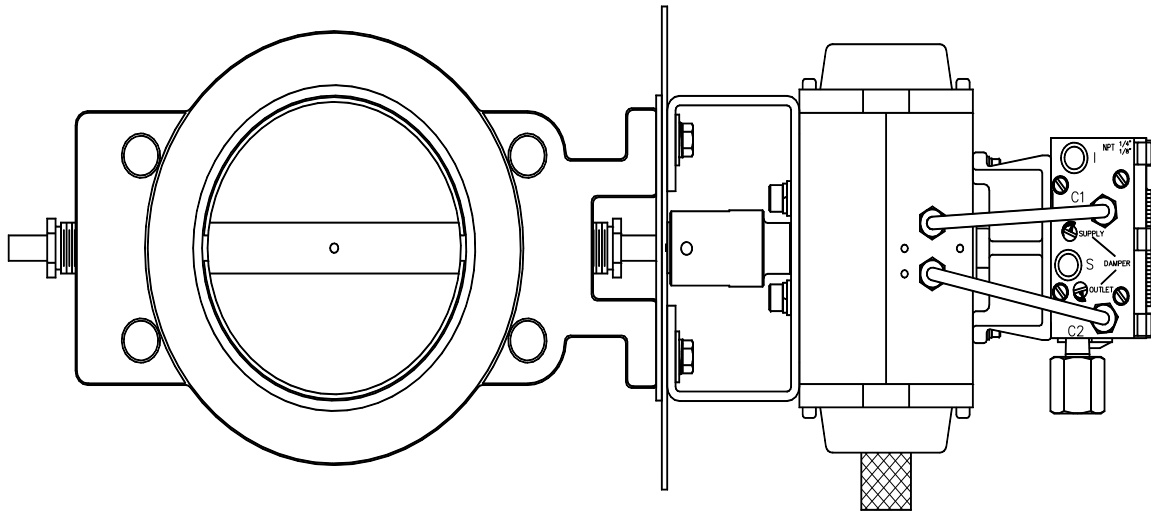


INSTALLATION, OPERATION AND MAINTENANCE FOR WASTE GATE BUTTERFLY VALVE ASSEMBLIES



PROCESS DEVELOPMENT & CONTROL LLC
1075 MONTOUR WEST INDUSTRIAL PARK
CORAOPOLIS, PENNSYLVANIA 15108
PHONE (724) 695-3440 ♦ FAX (724) 695-8635

PROCESS DEVELOPMENT & CONTROL LLC

1075 MONTOUR WEST INDUSTRIAL PARK
CORAOPOLIS, PENNSYLVANIA 15108

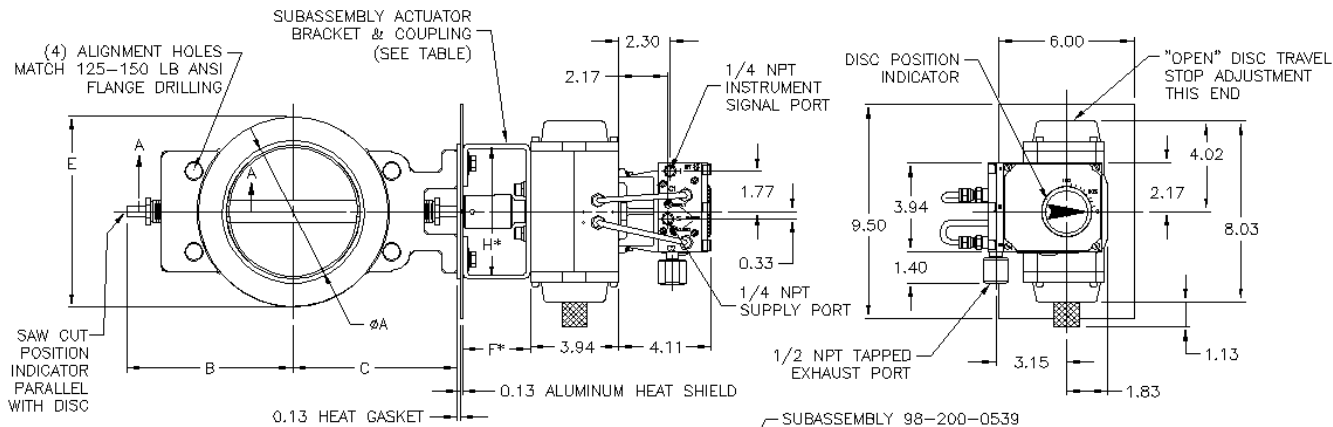
PHONE (724) 695-3440 ♦ FAX (724) 695-8635

INSTALLATION, OPERATION AND MAINTENANCE FOR 2"-6" WASTE GATE BUTTERFLY VALVE

RELEASED: 04/15/05	ID #	APPROVED BY:	DATE:
	EIB 1.1.2.21	SALES:	
		ENGINEERING:	

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DRAWING NUMBER (Standard)	101-014-627-17-40-00
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OPERATION & MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES	EIB 9.0
REPACKING PROCEDURE FOR SERIES 40 EXCEL 2"-14" BUTTERFLY VALVES (WASTE GATE)	EIB 10.4
ACTUATOR INSTRUCTIONS	RCI 400 SERIES PNEUMATIC ACTUATORS INSTALLATION & MAINTENANCE INSTRUCTIONS
POSITIONER INSTRUCTIONS	P5 / EP5 VALVE CONTROL SYSTEM



PDC 2"-6" BUTTERFLY VALVE WITH 150 LB FLANGE BOLTING FOR 1300° F OPERATING TEMPERATURE.

MATERIALS OF CONSTRUCTION

BODY ——— HI-TEMP IRON
 DISC ——— 316 S.S.
 SHAFT ——— INCOLOY 800 HT
 PINS ——— 316 S.S.
 SEAT ——— SWING-THRU
 BUSHING ——— METCAR
 PACKING ——— HI-TEMP
 PACKING NUT — STAINLESS STEEL
 HEAT SHIELD — ALUMINUM
 HEAT GASKET — GARLOCK 3000

ACTUATOR (WITH VITON SEALS)

ROTATION: 0°-90°

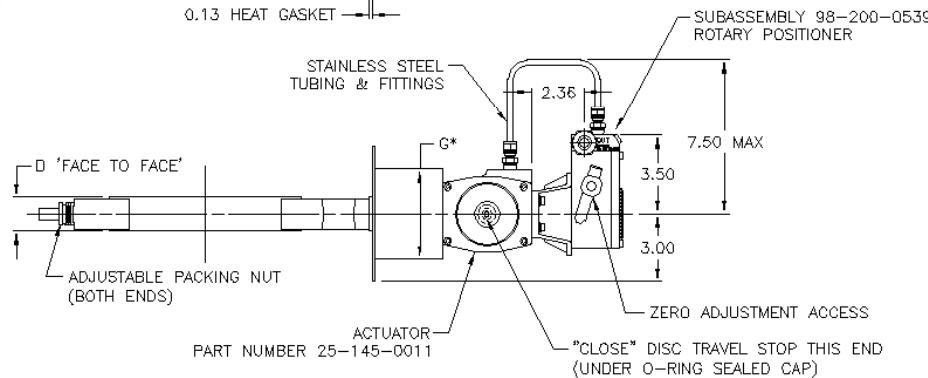
POSITIONER

SUPPLY: 60 PSIG MIN., 142 MAX.

SIGNAL: 3-15 PSIG (0°-90° ROT.)
 CCW ON INCREASING SIGNAL.

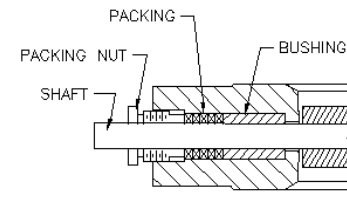
ACTUATOR BRACKET & COUPLING SUBASSEMBLY RELATED DIMENSIONS

SUBASSEMBLY NO.:	ZZ=	F*	G*	H*
98-041-3016	40	3.00	4.00	6.00
98-041-3020	46	4.00	6.00	7.00



VALVE RELATED DIMENSIONS

SIZE	ASSEMBLY NUMBER	A	B	C	D	E
2	101-014-627-17-40-00	2.00	5.38	5.38	1.50	3.88
3	101-034-627-17-40-00	3.00	5.88	5.88	1.50	5.13
4	101-044-627-17-40-00	4.00	6.38	6.38	1.50	6.38
5	101-054-627-17-40-00	5.00	6.88	6.88	1.50	7.50
6	101-064-627-17-40-00	6.00	7.38	7.38	1.50	8.50



SECTION A-A
 TYPICAL BOTH ENDS

NOTES:

1. WHEN VIEWED FROM TOP, OUTPUT SHAFT ROTATES CCW ON INCREASING SIGNAL.
2. MAXIMUM SAFE SUPPLY PRESSURE 142 PSI.
3. FOR DETAILED VALVE DIMENSION SEE DWG. 101-009-001.

ORDER RELATED INFORMATION

CUSTOMER NAME: _____
 P.O. NO.: _____
 PDC ORDER NO.: _____
 ASSEMBLY NO.: _____

TAG: _____

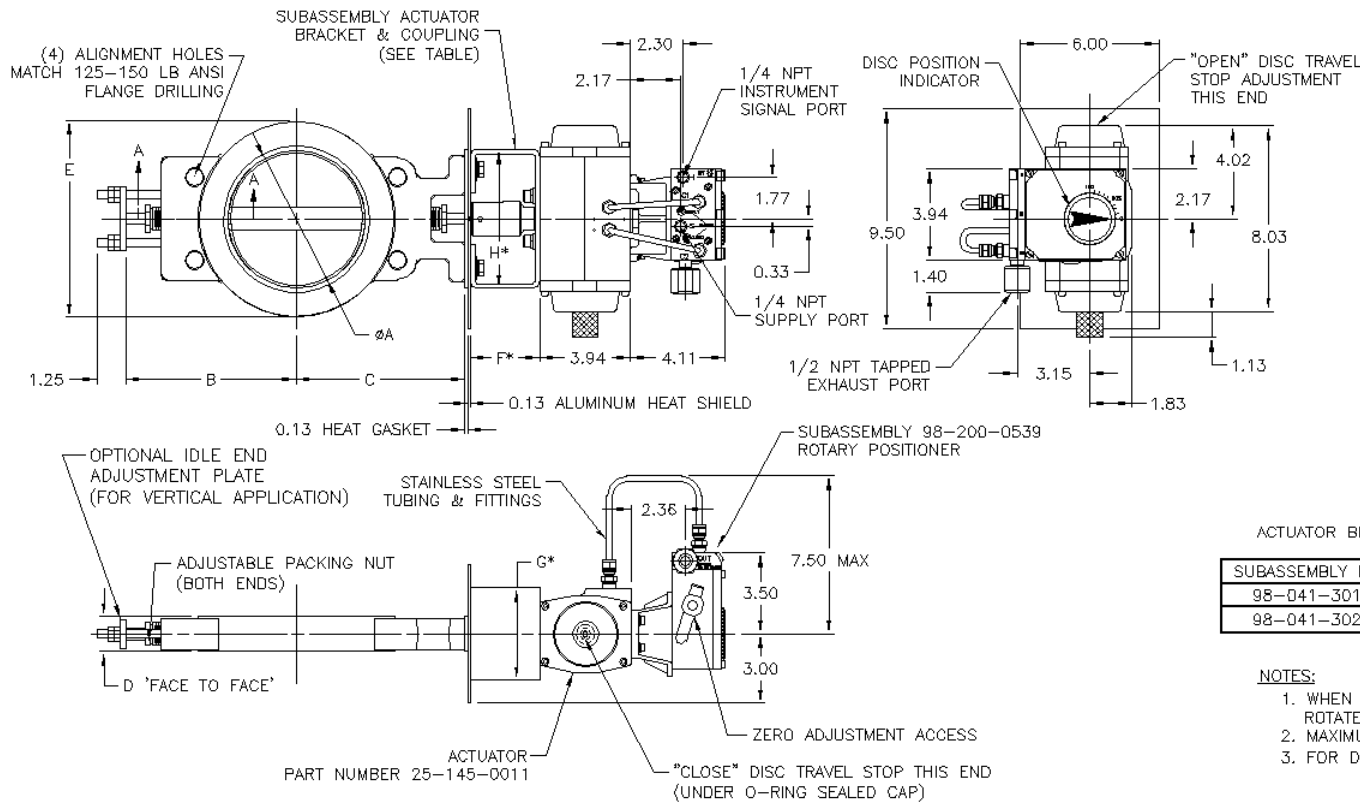
CERTIFIED BY: _____
 DATE: _____

PDC Process Development & Control, Inc. Imperial, PA	DR: SRT	DATE: 6/20/2003
	CHK: RNK	DATE: 8/20/2009
	APPR: _____	DATE: _____

SERIES 10 WASTE GATE SWING THRU BUTTERFLY VALVE WITH PNEUMATIC ACTUATOR & POSITIONER

SCALE: 1=5 DWG. NO.: 101-014-627-17-40-00 REV: A

REV.	DESCRIPTION	NO.	DATE	BY
A	TABLED ACT. BRKT & COUP	545	8/20/09	SRT
	RELEASED	532	3/1/05	SRT



PDC 2"-6" BUTTERFLY VALVE WITH 150 LB FLANGE BOLTING FOR 1300° F OPERATING TEMPERATURE.

MATERIALS OF CONSTRUCTION

BODY — HI-TEMP IRON
 DISC — 316 S.S.
 SHAFT — INCOLOY 800 HT
 PINS — 316 S.S.
 SEAT — SWING-THRU
 BUSHING — METCAR
 PACKING — HI-TEMP
 PACKING NUT — STAINLESS STEEL
 HEAT SHIELD — ALUMINUM
 HEAT GASKET — GARLOCK 3000

ACTUATOR (WITH VITON SEALS)
 ROTATION: 0°-90°
 POSITIONER

SUPPLY: 60 PSIG MIN., 142 MAX.
 SIGNAL: 3-15 PSIG (0°-90° ROT.)
 CCW ON INCREASING SIGNAL.

ACTUATOR BRACKET & COUPLING SUBASSEMBLY RELATED DIMENSIONS

SUBASSEMBLY NO.:	ZZ=	F*	G*	H*
98-041-3016	40	3.00	4.00	6.00
98-041-3020	46	4.00	6.00	7.00

- NOTES:**
1. WHEN VIEWED FROM TOP, OUTPUT SHAFT ROTATES CCW ON INCREASING SIGNAL.
 2. MAXIMUM SAFE SUPPLY PRESSURE 142 PSI.
 3. FOR DETAILED VALVE DIMENSION SEE DWG. 101-009-001.

ORDER RELATED INFORMATION

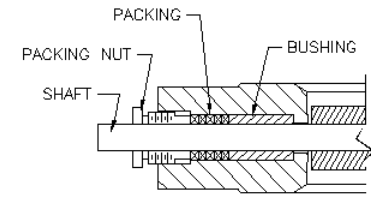
CUSTOMER NAME: _____
 P.O. NO.: _____
 PDC ORDER NO.: _____
 TAG: _____

ASSEMBLY NO.: _____

CERTIFIED BY: _____
 DATE: _____

VALVE RELATED DIMENSIONS

SIZE	ASSEMBLY NUMBER	A	B	C	D	E
2	101-014-627-17-ZZ-04	2.00	5.38	5.38	1.50	3.88
3	101-034-627-17-ZZ-04	3.00	5.88	5.88	1.50	5.13
4	101-044-627-17-ZZ-04	4.00	6.38	6.38	1.50	6.38
5	101-054-627-17-ZZ-04	5.00	6.88	6.88	1.50	7.50
6	101-064-627-17-ZZ-04	6.00	7.38	7.38	1.50	8.50



REV.	DESCRIPTION	NO.	DATE	BY
A	TABLED ACT. BRKT & COUP	545	8/20/09	SRT
	RELEASED	532	3/1/05	SRT

PDC
Process Development & Control, Inc.
Imperial, PA

DR: SRT DATE: 3/1/2005
 CHG: RNK DATE: 8/20/2009
 APPR: _____ DATE: _____

SERIES 10 WASTE GATE SWING THRU BUTTERFLY VALVE W/ PNEUMATIC ACT., POSITIONER & VERTICAL MOUNT

SCALE: 1=5 DWG. NO.: 101-014-627-17-40-04 REV: A

PROCESS DEVELOPMENT & CONTROL LLC

1075 MONTOUR WEST INDUSTRIAL PARK
CORAOPOLIS PENNSYLVANIA 15108
PHONE (724) 695-3440 ♦ FAX (724) 695-8635

STORAGE AND HANDLING OF VALVE ASSEMBLIES

RELEASED: 3/12/2003	ID #	APPROVED BY:	DATE:
REV.: Revised 11/5/12, added storage reqm'ts 3.1	EIB 12.1	SALES:	
		ENGINEERING: R.N. Koch	11/5/2012

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HANDLING PROCEDURE	Section 2,	Page 1
STORAGE PROCEDURE	Section 3,	Page 1

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB.: 12.1 ORIGINAL DATE: 3/12/2003 PAGE: 1 of 1 REVISION: Revised DATE: 11/5/12

TITLE: STORAGE AND HANDLING OF VALVE ASSEMBLIES

1. INSPECTION PROCEDURE

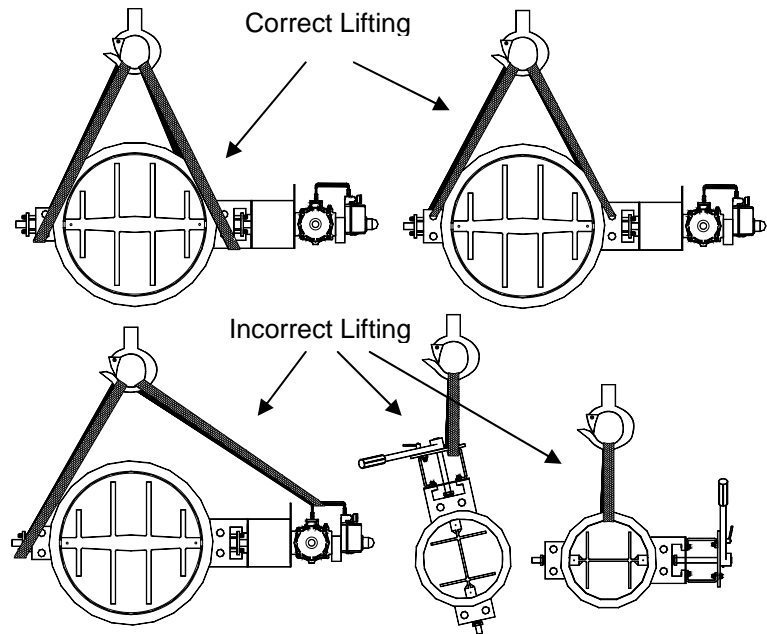
1.1 Valve assemblies should be inspected upon receiving and prior to installation. Carefully remove the valve assembly from its shipping crate or box. Valve and accessories should be inspected for damage. The valve sealing surfaces should be inspected for scratches.

2. HANDLING PROCEDURE

2.1 Never lift or move the valve assembly using the disc, valve seat (bore), shafts or packing follower / nut as a pressure point.

2.2 Never lift or move the valve assembly by using the actuator, positioner, tubing or other attached accessories.

2.3 It is recommended that lifting straps (instead of chains or hooks) be used around the valve stem neck and thru the flange bolt holes for pressure points.



3. STORAGE PROCEDURE

3.1 Valve assemblies should be kept in a clean, heated, weather tight (dry), well-ventilated, storage facility with flooring that seals against dust and dirt and will not be subject to flooding. **Climate controlled storage of cast iron or steel damper-valve assemblies is highly recommended due to the exposed bare metal sealing surfaces necessary for operation (gasket faces, disc to body seats, valve bores, etc.) and due to the electronics and controls many times included.** If outdoor storage is unavoidable for short periods of time, support the valve assembly off of the ground and protect with a watertight cover on all sides.

3.2 Valve assemblies should be stored off of the floor on suitable skids, pallets or racks and protected from dirt, debris and exposure to direct sunlight, particularly to elastomer sealing surfaces.

3.3 Valve assemblies should be protected from rodents, insects or other creatures which can cause damage.

3.4 The proper use of racks, pallets, and handling equipment shall be used. The assemblies should be arranged so as to prevent damage to protruding accessories during storage.

3.5 Valve assemblies with electrical components, pneumatic tubing, positioners, actuators, and other accessories should be protected from impact.

3.6 Rubber seated valves should be stored with the disc slightly opened, (about 5°), if practical.

PROCESS DEVELOPMENT & CONTROL LLC

1075 MONTOUR WEST INDUSTRIAL PARK

CORAOPOLIS, PENNSYLVANIA 15108

PHONE (724) 695-3440 ♦ FAX (724) 695-8635

**INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR WAFER
STYLE BUTTERFLY VALVES USED IN WASTE GATE APPLICATIONS**

RELEASED: 4/12/05	ID #	APPROVED BY:	DATE:
REV.: 2	EIB 9.7	SALES:	
		ENGINEERING:	

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GENERAL INFORMATION AND DESCRIPTION

..... PAGE 1

WAFER STYLE BUTTERFLY VALVE INSTALLATION INSTRUCTIONS

..... PAGES 1 & 2

OPERATION OF WAFER STYLE BUTTERFLY VALVES

..... PAGE 2

MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES

..... PAGE 3

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB.: 9.7

ORIGINAL DATE: 3/05/98

PAGE 1 OF 3

REVISION: 2

Date: 4/12/05

TITLE: INSTALLATION, OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES AS WASTE GATE APPLICATION.

GENERAL INFORMATION AND DESCRIPTION

- 9.7.1 The Waste Gate Assembly consists of three (3) basic components:
- a) A PDC EXCEL (Wastegate Style) series Butterfly Valve.
 - b) A custom sized and configured Double Acting Pneumatic Actuator.
 - c) A custom configured POSITIONER that accepts 3-15 psi signal and incorporates a tapped exhaust gas system.
- 9.7.2 All of the components, as well as the piping and mounting parts, have been designed or specifically selected for the high temperature, sour gas application for which the Waste Gate Assembly is intended.
- 9.7.3 BECAUSE OF THE SPECIAL FEATURES AND MODIFICATIONS OF THESE COMPONENTS, ALL REQUIREMENTS FOR SPARE PARTS OR QUESTIONS CONCERNING OPERATING FEATURES, SHOULD BE REFERRED TO **PROCESS DEVELOPMENT AND CONTROL, INC.**

INSTALLATION

- 9.7.4 Upon receipt, the Assembly should be visually checked for possible shipping damage, and to insure that mechanical linkages, couplings and fittings are tight and properly aligned.
- 9.7.5 The Butterfly Valves, which are designed to fit between 125/150 lb. flanges, have machined faces and will require gaskets for sealing. Valve shafts should be installed in the HORIZONTAL position, ideally with the Actuator and Positioner assembly oriented as far as possible from high temperature sources.
- 9.7.6 Install the valve between flanges, inserting bolts through the lower half of the pipe flanges to support the valve as it is installed. Appropriate gaskets should be applied, and then the remaining bolts inserted and tightened until the valve is loosely held in place.
- 9.7.7 Open and close the valve disc to insure that the valve is centered and that the disc swings freely, tighten bolts evenly.
- 9.7.8 **Vertical** shaft installation, although not recommended, may be necessary in some instances. Waste Gate Assemblies to be installed vertically should include the factory supplied optional thrust plate adjustment on the idle end shaft. After the valve is loosely held in place, open and close the valve disc to insure that the valve and disc are centered. The disc can be centered by adjusting the bolts of the thrust plate to the idle end shaft evenly.

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB.: 9.7

ORIGINAL DATE: 3/05/98

PAGE 2 OF 3

REVISION: 2

Date: 4/12/05

TITLE: INSTALLATION, OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES AS WASTE GATE APPLICATION.

INSTALLATION (CONTINUED)

- 9.7.9 The Assembly is furnished with the Positioner prepiped to the Pneumatic Actuator. When applying supply and signal piping to the Positioner (1/4" connections) note the following requirements:
- a) Use scale free, clean stainless steel tubing and fittings. All tubing should be deburred and blown out before connections are made to prevent dirt, chips, etc., from entering the Positioner.
 - b) Only dry, oil free, filtered air or gas should be supplied to the Positioner, and synthetic compressor lubricants should not be used. Any pipe sealant should be applied sparingly, and only to the male threads (a non-hardening sealant is recommended).
 - c) The maximum particle size in the air or gas stream at the Positioner should be no larger than 3 microns and the oil content, i.e., the maximum total oil or hydrocarbon content, exclusive of non-condensable, should not exceed 1ppm under normal operating conditions.
 - d) The dew point, at line pressure, should be at least 10° C (18° F) below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. Under no circumstances should the dew point, at line pressure, exceed 2° C (35.6° F).
 - e) Pressure in excess of 145 psig should not be applied to any connection.
- 9.7.10 The Positioner also incorporates a tapped exhaust (1/2" NPT fitting) to be piped to capture vented supply gas expelled as part of the operation of the Positioner. This exit path must be kept vented or recirculated (NOT PLUGGED) for proper operation.

OPERATION

- 9.7.11 The Waste Gate Assembly has been Factory set and calibrated for 0° (closed) to 90° (opened) operation, based upon a 3 to 15 psi signal to the Positioner.
- 9.7.12 Travel Stops are provided to allow a guaranteed minimum total actuator travel between 85° and 95°. This adjustability is beyond the 0° and 90° setting at which the Assemblies are furnished from the factory.
- 9.7.13 If a specific setting other than 0° to 90° is desired, adjust the travel stops located on the sides/ends of the actuator to achieve the new opened and closed position, and retighten the stop nuts.

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB.: 9.7

ORIGINAL DATE: 3/05/98

PAGE 3 OF 3

REVISION: 2

Date: 4/12/05

TITLE: INSTALLATION, OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES AS WASTE GATE APPLICATION.

OPERATION (CONTINUED)

9.7.14 If the Pneumatic Actuator is re-adjusted from the Factory stop setting of 0° to 90°, it will be desirable to re-calibrate the Positioner to match the input signal range. Should re-calibration be required for this reason or due to other circumstances, refer to the instructions of the Positioner.

MAINTENANCE

The Butterfly Valve

9.7.15 The Valve Packing Nuts have been Factory tightened one-quarter turn past finger tight. Excessive tightening of the packing nut should be avoided, as it will cause early wear of the packing and high valve torque.

9.7.16 However, as the valve is placed in service and "wears in" it will be necessary to check for leakage and tighten the Packing Nuts from time to time. Where valves are cycled frequently, or used in conditions subject to vibration, this check should be made weekly or more often as indicated.

9.7.17 Packing and Inboard Bushing life will depend upon the frequency of cycling and the corrosiveness of the environment in which the valves are operating. The Packing and Inboard Bushing should be replaced when routine maintenance checks indicate that leakage is occurring and which cannot be eliminated by tightening the Packing Nuts or when the operation of the valve becomes excessively stiff.

9.7.18 Refer to EIB 10.4 if repacking is required.

The Double Acting Pneumatic Actuator

9.7.19 The Double Acting Pneumatic Actuator is designed so that all load bearing members are stressed well below the yield point of the materials of which they are made. Because of this fact, minimum wear occurs in the actuator under normal operating conditions over the life of the Waste Gate Valve Assembly.

- a) A routine maintenance schedule to monitor performance of the actuator should be established as deemed necessary by the service in which the Waste Gate Assembly is placed. Rebuild / Refurbish parts, special high temperature seals, and other spare parts may be obtained by contacting Process Development & Control, Inc or a completely new Actuator Assembly can be easily added.

PROCESS DEVELOPMENT & CONTROL LLC

1075 MONTOUR WEST INDUSTRIAL PARK

CORAOPOLIS PENNSYLVANIA 15108

PHONE (724) 695-3440 ♦ FAX (724) 695-8635

OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVES

RELEASED: 11-1-94

ID #

APPROVED BY:

DATE:

REV.: A

CORRECTED TITLE 11-30-94

EIB 9.0

SALES:

ENGINEERING:

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OPERATION AND MAINTENANCE..... PAGES 1 & 2

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB NO.: 9.0 ORIGINAL DATE: 9/1/89 PAGE: 1 OF 2 REVISION: 2 DATE: 12/16/91

TITLE: OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVE ASSEMBLIES

2. OPERATION

2.1. **General**

- 2.1.1. PDC wafer style butterfly valves are designed to provide long, dependable service with minimum maintenance, requiring only the possible adjustment of the packing gland after the valve has been installed.
- 2.1.2. The packing list should be carefully examined to determine the maximum operation and service conditions of the butterfly valve.

2.2. **Determine Disc Position**

- 2.2.1. PDC offers several shaft drive configurations depending on type of lever or actuator furnished. If the end of the shaft is saw cut, the saw cut will be in line with the disc edge.
- 2.2.2. Flats of flatted drive shafts will be in line with the disc edge.
- 2.2.3. Hexed drive shafts will have the end of the shaft saw cut in line with the disc edge.
- 2.2.4. Keyways on keyed drive shafts will be in line with the disc edge. (When keyways are not in line with disc edge, the end of the shaft will be saw cut. In this case the saw cut will be in line with the disc edge.)
- 2.2.5. Plain round drive shafts will have the end of the shaft saw cut in line with the disc edge.

2.3. **Adjusting Packing Nut**

- 2.3.1. The packing nut or follower tube has been adjusted prior to shipping. However, it may be necessary to readjust it when a system is started up.
- 2.3.2. If it is necessary to adjust the packing nut or follower, tighten $\frac{1}{4}$ turn. Operate for 15 minutes. If leakage persists after 15 minutes continue to tighten $\frac{1}{4}$ turn and operate for 15 minutes. (Repeat this process until leakage stops.)

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB NO.: 9.0 ORIGINAL DATE: 9/1/89 PAGE: 2 OF 2 REVISION: 2 DATE: 12/16/91

TITLE: OPERATION AND MAINTENANCE OF WAFER STYLE BUTTERFLY VALVE ASSEMBLIES

2. MAINTENANCE

2.1. Lubrication

2.1.1. No routine lubrication of the standard PDC wafer style butterfly valve is required.

2.1.2. Valves that are furnished with lubrication fittings should be periodically lubricated as outlined in Table I and/or Table II.

TABLE I BUSHINGS, INBOARD

TEMPERATURE	ATMOSPHERE	GREASING INTERVAL
Up to 120° F	Clean	12 Months
Up to 210° F	Clean	6 months
Up to 150 ° F	Dirty	1 to 3 Months
Over 150° F	Dirty	Monthly
Any Temperature	Extreme Condition	Weekly

TABLE II BUSHINGS, OUTBOARD

SPEED	TEMPERATURE	ATMOSPHERE	GREASING INTERVAL
1-100 RPM	Up to 120° F	Clean	6 to 12 Months
500 RPM	Up to 150° F	Clean	2 to 6 months
1000 RPM	Up to 210 ° F	Clean	2 Weeks to 2 Months
1500 RPM	up to 210° F	Clean	Weekly
Any Speed	Up to 150° F	Dirty	1 Week to 1 Month
Any Speed	Over 150° F	Dirty	Daily to 2 Weeks
Any Speed	Any Temperature	Very Dirty	Daily to 2 Weeks

Grease: Use lithium based grease to a NLGI grade 2 consistency. This light viscosity, low torque grease is rust inhibited, water resistant, and has a temperature range of -30° F to +200° F with intermittent highs.

PROCESS DEVELOPMENT & CONTROL LLC

1075 MONTOUR WEST INDUSTRIAL PARK
CORAOPOLIS, PENNSYLVANIA 15108

PHONE (724) 695-3440 ♦ FAX (724) 695-8635

**REPACKING PROCEDURES FOR (50mm-350mm) 2" THRU 14",
EXCEL SERIES 40 OR WASTEGATE WAFER STYLE VALVES**

RELEASED: 2/27/84	ID #	APPROVED BY:	DATE:
REV.: 4 DATE: 5/12/94	EIB 10.4	SALES:	
		ENGINEERING:	

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REPACKING PROCEDURE

..... PAGES 1 & 2

PROCESS DEVELOPMENT & CONTROL LLC

ENGINEERING INSTRUCTION BULLETIN

EIB.: 10.4

ORIGINAL DATE: 2/27/84

PAGE: 1 OF 2

REVISION: 4

Date: 5/12/94

TITLE: REPACKING PROCEDURES FOR PDC EXCEL BUTTERFLY VALVES SERIES 40 2" THRU 14" VALVE SIZE

IMPORTANT: THERE ARE TWO STUFFING BOXES ON THE EXCEL SERIES 40 BUTTERFLY VALVE, THE STEPS BELOW SHOULD BE REPEATED FOR BOTH STUFFING BOXES.

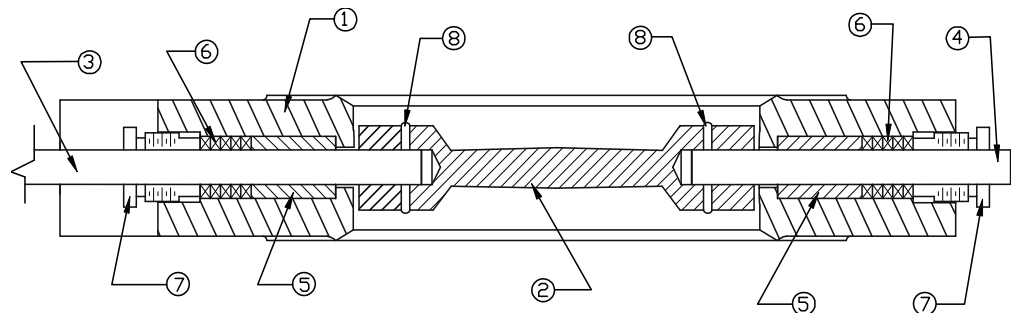
- 10.4.1 REMOVE PACKING NUT (ITEM #7) USING A COUNTER-CLOCKWISE ROTATION (SEE NOTE 1, BELOW). SLIDE PACKING NUT BACK TO GIVE ADEQUATE CLEARANCE.
- 10.4.2 REMOVE ALL RINGS OF PACKING (ITEM #6) WITH FLEXIBLE PACKING PICK (SEE NOTE 1. BELOW).
- 10.4.3 THOROUGHLY CLEAN OUT PACKING GLAND HOLE AND REMOVE ALL RESIDUE.
- 10.4.4 REPACK VALVE WITH NEW PACKING (ITEM #6) BY STAGGERING ALL RING ENDS 90° APART. PACKING MATERIAL SHOULD NOT EXTEND INTO THE THREADED PORTION OF THE STUFFING BOX, (SEE NOTE 2, BELOW).
- 10.4.5 REPLACE PACKING NUT (ITEM #7) BY HAND TIGHTENING (CLOCKWISE). ONCE THE PACKING NUT IS HAND TIGHT, USE THE PACKING NUT WRENCH TO TIGHTEN PACKING NUT AN ADDITIONAL ½ TURN. THIS ADDITIONAL ½ TURN PAST HAND TIGHT SEATS THE RINGS OF PACKING (SEE NOTE 3, BELOW).
CAUTION: DO NOT OVER TIGHTEN PACKING NUT.

NOTES:

1. A SPECIAL PDC REPACKING TOOL KIT CONSISTING OF A PACKING NUT WRENCH AND A FLEXIBLE PICK IS AVAILABLE FROM THE FACTORY. EMPLOYMENT OF THIS KIT WILL GREATLY FACILITATE THE REPACKING PROCEDURE AND ITS PURCHASE IS RECOMMENDED.
2. EACH REPACKING SET CONSISTS OF EXTRA RINGS OF PACKING. HOWEVER, IN MOST CASES, (5) FIVE RINGS OF PACKING SHOULD BE SUFFICIENT FOR EACH STUFFING BOX. (**DO NOT USE MORE RINGS THAN WERE REMOVED**).
3. IT MAY BE NECESSARY TO READJUST THE PACKING NUT WHEN THE SYSTEM IS STARTED UP. IF IT IS NECESSARY TO ADJUST THE PACKING NUT, TIGHTEN ¼ TURN. OPERATE FOR 15 MINUTES. IF LEAKAGE PERSISTS AFTER 15 MINUTES CONTINUE TO TIGHTEN ¼ TURN AND OPERATE FOR 15 MINUTES. (REPEAT THIS PROCESS UNTIL LEAKAGE STOPS). **CAUTION: DO NOT OVER TIGHTEN THE PACKING NUT.**

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1. VALVE BODY
2. DISC
3. POWERSHAFT
4. IDLESHAFT
5. INBOARD BUSHING
6. PACKING
7. PACKING NUT
8. PIN



ENGINEERING INSTRUCTION BULLETIN

EIB.: 10.4

ORIGINAL DATE: 2/27/84

PAGE: 2 OF 2

REVISION: 4

Date: 5/12/94

TITLE: REPACKING PROCEDURES FOR PDC EXCEL BUTTERFLY VALVES SERIES 40 2" THRU 14" VALVE SIZE

THE FOLLOWING PROCEDURES ARE INTENDED FOR USE WHEN IT IS DESIRED TO REPLACE ASSEMBLES WHICH INCLUDE A WIPER PACKING RING (DIRTY SERVICE OR WASTE GATE VALVE ASSEMBLIES)

- 10.4.6 BEFORE CLEANING PACKING GLAND HOLE AND REPACKING (10.4.3 & 10.4.4) FROM PREVIOUS PAGE, THE FOLLOWING SEQUENCE MUST BE COMPLETED.
- 10.4.7 REMOVE VALVE FROM PIPELINE. REMOVE THE TAPERED PINS (ITEM #8 FROM PREVIOUS PAGE), BY KNOCKING THEM OUT USING A HAMMER WITH A STARTER PUNCH.
- 10.4.8 REMOVE THE SHAFTS, POWERSHAFT AND IDLESHAFT (ITEMS #3 & 4), BY PULLING THEM THRU THE STUFFING BOX OPENING WHILE ALSO RELEASING AND REMOVING THE DISC.
- 10.4.9 REMOVE INBOARD BUSHING (ITEM #5) AND WIPER PACKING (ITEM #9) BY PUSHING THEM THROUGH THE STUFFING BOX CAVITY FROM THE BORE OF THE VALVE.
- 10.4.10 CLEAN PACKING GLAND AS IN PROCEDURE 10.4.3 FROM PREVIOUS PAGE.
- 10.4.11 REPLACE WITH A NEW WIPER RING (ITEM #9) AND NEW INBOARD BUSHING (ITEM #5) THEN CONTINUE WITH THE REPACKING PROCEDURE AS DESCRIBED IN 10.4.4 FROM THE PREVIOUS PAGE.

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1. VALVE BODY
3. POWERSHAFT
5. INBOARD BUSHING
6. PACKING
7. PACKING NUT
9. WIPER PACKING RING

