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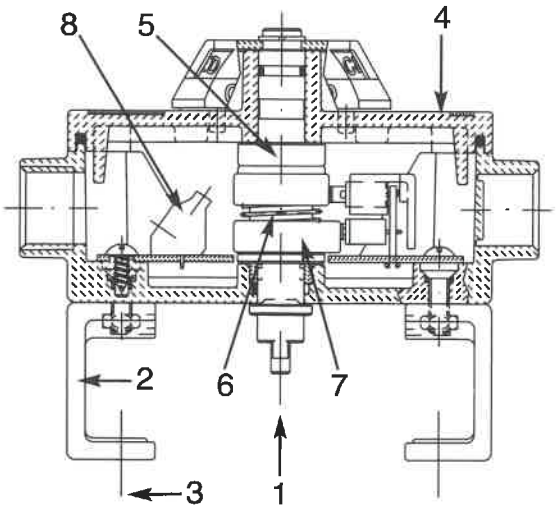
BOX FINE CORSA
DA USARE CON LE STAFFE INCLUSE

MANUALE DI INSTALLAZIONE E MANUTENZIONE

ATTENZIONE:
- **Il fine corsa previsto è quello fornito dal costruttore del box micro stesso.**
- **Prima di effettuare qualunque operazione e smontare il coperchio, assicurarsi che L'APPARECCHIO NON SIA SOTTO TENSIONE.**
- **I tappi di protezione dell'ingresso(i) cavo(i) fornito(i) a corredo servono come protezione durante il trasporto e non garantiscono il grado di protezione IP65. Va pertanto sostituito(i) in fase di installazione con pressacavi o tappi filettati che garantiscano il grado di protezione richiesto.**

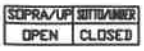


1 INSTALLAZIONE SULL'ATTUATORE
a. Verificare il corretto allineamento dell'albero del box micro (rif. 1) con la fresatura del pignone dell'attuatore e quindi inserirlo nella stessa.
b. Fissare le staffe (rif. 2) all'attuatore utilizzando le apposite viti e ranelle fornite a corredo.

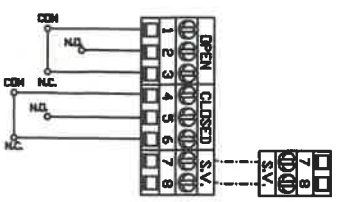
2 REGOLAZIONE DEI FINE CORSA
a. Svitare le 4 viti di fissaggio e rimuovere il coperchio (rif. 4).
b. Portare l'attuatore in posizione di apertura.
c. Premere verso il basso la camme superiore (rif. 5), camme open, e ruotarla fino al funzionamento del micro interruttore, quindi rilasciarla; grazie all'azione della molla presente tra le due camme (rif. 6) la camme si innesta nuovamente sull'albero.
(**Nota:** ogni scatto del multirighe corrisponde ad una regolazione di 2°).
d. Portare l'attuatore in posizione di chiusura.
e. Tirare verso l'alto la camme inferiore (rif. 7), camme closed, e ruotarla fino al funzionamento del micro interruttore, quindi rilasciarla; grazie all'azione della molla la camme si innesta di nuovo sull'albero.
f. Applicare il coperchio (rif. 4) e serrare le 4 viti di fissaggio.

3 CABLAGGIO ELETTRICO
a. Rimuovere il coperchio (rif. 4).
b. Rimuovere il tappo(i) di protezione e sostituirlo(i) con un pressacavo(i) che garantisca il livello di protezione desiderato, avendo cura di tenere bloccata la scatola con una chiave inserita nell'apposita scanalatura. Inoltre occorre **fare attenzione che il passacavo, nipplo od altro elemento di connessione abbia una filettatura di lunghezza tale da non sporgere nella parte interna della scatola.**
c. L'ingresso(i) è filettato M20x1,5 oppure 1/2" NPT.
AVVERTENZA: il grado di protezione IP65 dipende anche dalla connessione effettuata, pertanto utilizzando componenti non adeguati e/o installati in modo non corretto ne consegue il declassamento del box stesso.
d. Collegare i morsetti (rif. 8) utilizzando un cacciavite seguendo lo schema sotto riportato.
e. Applicare il coperchio (rif. 4) e serrare le 4 viti di fissaggio.

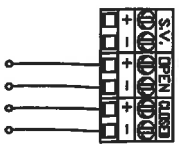
IMPORTANTE: Il Box Micro è costruito in materiale plastico (ignifugo con certificato UL 94 VO) e ha il doppio isolamento di protezione elettrico (certificato). Pertanto non è previsto il collegamento di massa a terra. Qualora per il fissaggio dei cavi fosse utilizzato un pressacavi, questo deve essere in materiale isolante.

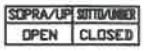


MECHANICAL SWITCHES
WIRING DIAGRAM

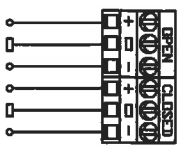


LSB 2 WIRES PROXIMITY
WIRING DIAGRAM





LSB 3 WIRES PROXIMITY
WIRING DIAGRAM



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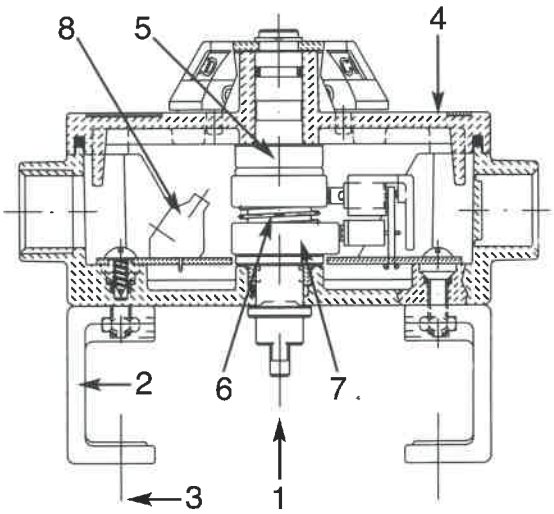
LIMIT SWITCH BOX
ONLY WITH THE INCLUDED BRACKETS

INSTALLATION & OPERATION INSTRUCTIONS

CAUTION - PLEASE READ CAREFULLY:
- The appropriate switches are those provided by the manufacturer.
- Before removing the cover and proceeding with any operations, it is essential that the LIMIT SWITCH BOX IS NOT ENERGIZED.
- The conduit caps supplied with the limit switch box are for transit purpose only and do not guarantee the IP65 protection. Therefore, it's necessary to replace them with connectors suitable for the required protection rating.



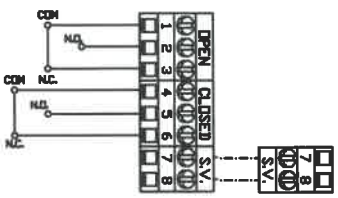
1 INSTALLATION
a. Align the SB shaft (ref. 1) to the actuator pinion and engage with it.
b. Using the provided screws (ref. 3) and washers, tighten the brackets (ref. 2) to the actuator.

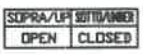
2 SWITCH ADJUSTMENT
a. Remove the four screws and remove the cover (ref. 4).
b. Turn the actuator until to the open position.
c. Push the upper cam down (ref. 5) - cam open - turn until the switch is activated and then release; the spring between the 2 cams (ref. 6) will ensure the cam re-engagement onto the shaft.
(**Note:** on the shaft there is a spline and each line adjusts 2°).
d. Turn the actuator until to the closed position.
e. Pull the lower cam up (ref. 7) - cam closed - turn until the switch is activated and then release; the spring between the 2 cams (ref. 6) will ensure the cam re-engagement onto the shaft.
f. Reassemble the cover (ref. 4) and tighten the screws.

3 ELECTRICAL WIRING
a. Remove the cover (ref. 4).
b. Remove the protection cap(s) and substitute it(them) with the plug(s) that ensures the desired protection, inserting a wrench onto the flats of each conduit and then tighten. Be careful that the thread of the connector does not protrude inside the box.
c. Conduits are threaded M20x1,5 or 1/2" NPT.
WARNING: the IP65 protection depends also on the wiring, so the use of inadequate and/or not properly installed components downgrades the limit switch box.
d. Using a screw driver, wire the terminal strips (ref. 8) according to the diagram.
e. Reassemble the cover (ref. 4) and tighten the four screws.

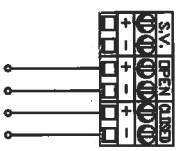
ATTENTION: the Limit Switch Box is constructed of techno-polymer (fire-proof material, certificate UL94V0) and has been approved as double insulated, therefore, it is not necessary for the SB to be grounded. However, if a connector is used, this must be made of insulating material.

MECHANICAL SWITCHES
WIRING DIAGRAM

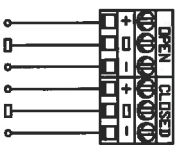




LSB 2 WIRES PROXIMITY
WIRING DIAGRAM



LSB 3 WIRES PROXIMITY
WIRING DIAGRAM



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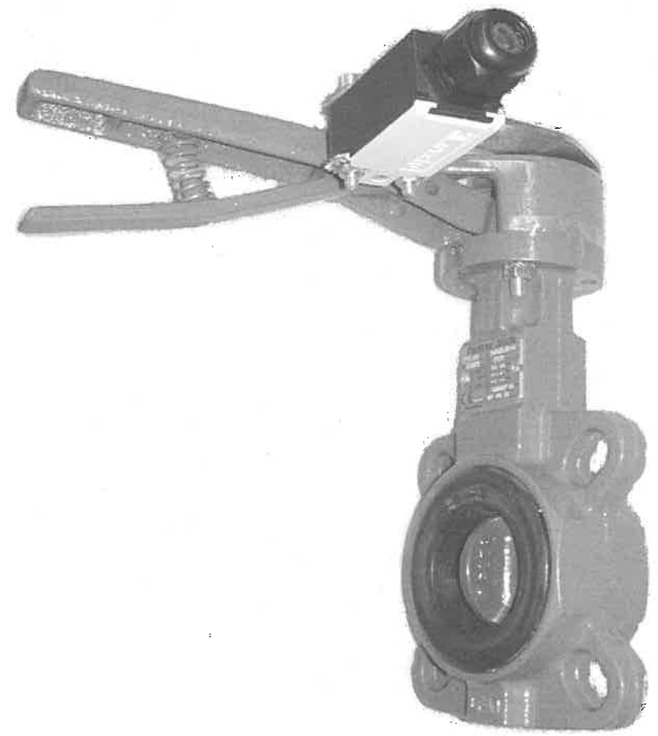
SISTEMA MONITORAGGIO VALVOLA – EN12845
VALVE'S MONITORING SYSTEM – EN12845
SÄÄTÖVENTTIILI – EN 12845
SISTEMA DE MONITORAÇÃO DA VÁLVULA – EN12845

Istruzioni d'installazione
Installation instructions
Asennus- ja äyttöohjeet
Instruções de instalação



ATTENZIONE
Le operazioni di installazione devono essere eseguite da personale qualificato.
Prima di intervenire sul gruppo verificare che non vi siano componenti idraulici in pressione.

WARNING
All installation operations must be performed by qualified personnel.
Before servicing the set, make sure there is no pressure in the hydraulic components.

VAROITUS
Ainoastaan ammattitaitoinen henkilö saa suorittaa asennustyöt.
Tarkista, ettei hydrauliosissa ole painetta ennen toimenpiteitä.

ATENÇÃO
As operações de instalação devem ser realizadas por pessoal qualificado.
Antes de intervir na grupo verificar que não haja componentes hidráulicos sob pressão.

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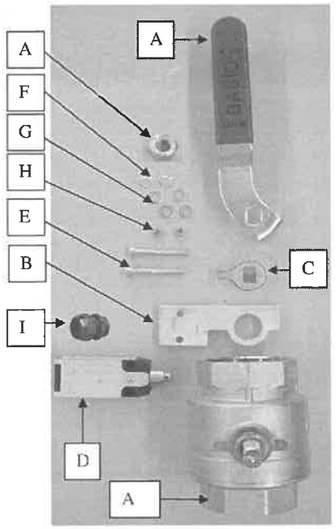
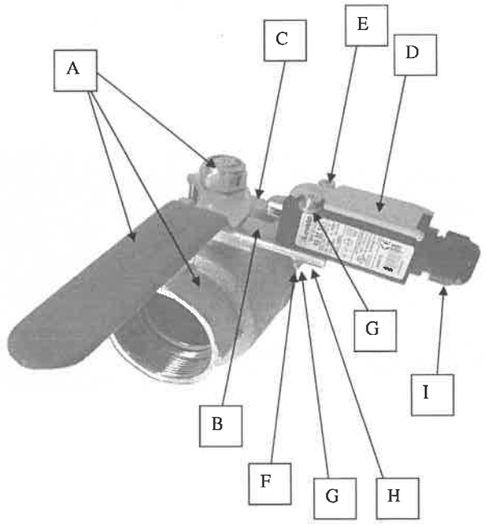
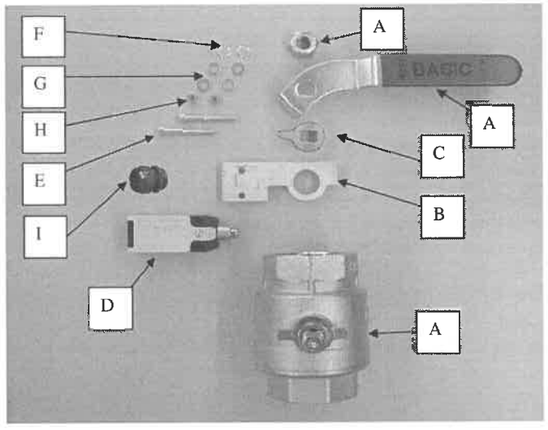
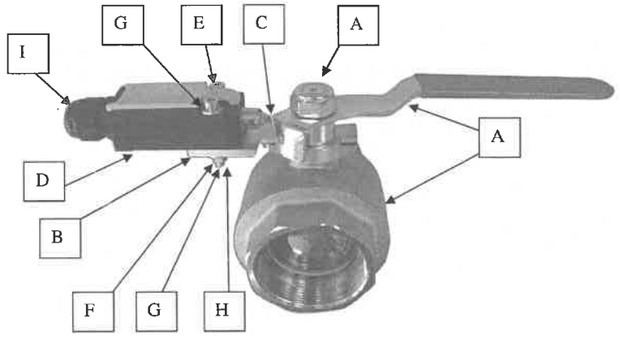
SISTEMA MONITORAGGIO VALVOLA A SFERA APERTA – EN12845
OPENED BALL VALVE'S MONITORING SYSTEM – EN12845
VALVOTTAVA SULKUVENTTIILI PÄÄLLÄ – EN 12845
SISTEMA DE MONITORAÇÃO DA VÁLVULA ABERTA – EN12845





SISTEMA MONITORAGGIO VALVOLA A SFERA CHIUSA – EN12845
CLOSED BALL VALVE'S MONITORING SYSTEM – EN12845
VALVOTTAVA SULKUVENTTIILI POIS PÄÄLTÄ – EN 12845
SISTEMA DE MONITORAÇÃO DA VÁLVULA FECHADA – EN12845





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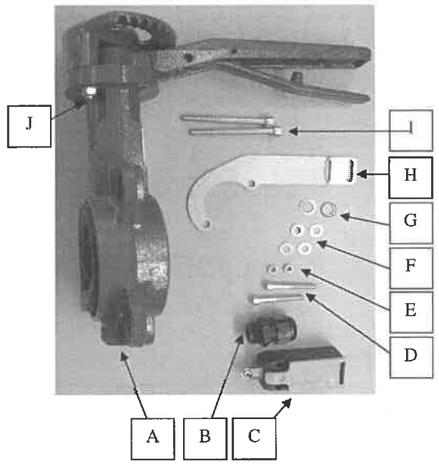
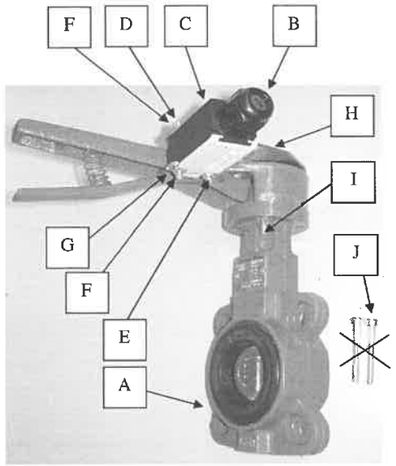
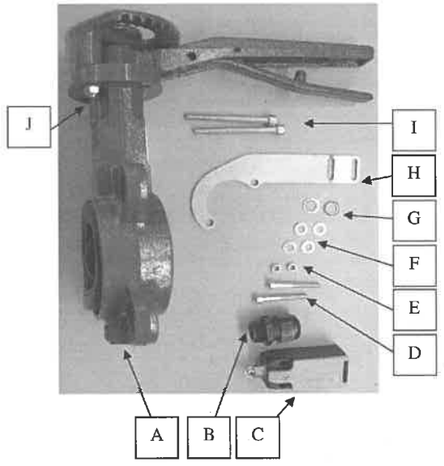
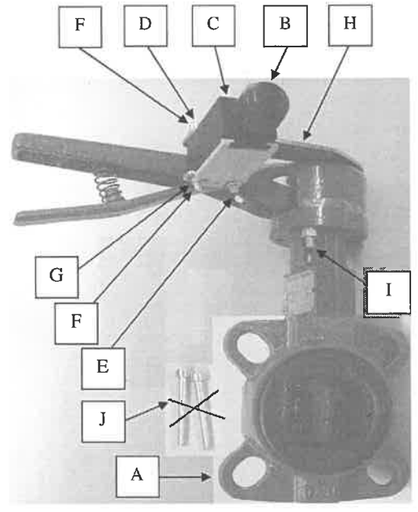
SISTEMA MONITORAGGIO VALVOLA A FARFALLA APERTA – EN12845
OPENED BUTTERFLY VALVE'S MONITORING SYSTEM – EN12845
VALVOTTAVA SULKUVENTTIILI PÄÄLLÄ – EN 12845
SISTEMA DE MONITORAÇÃO DA VÁLVULA ABERTA – EN12845





SISTEMA MONITORAGGIO VALVOLA A FARFALLA CHIUSA – EN12845
CLOSED BUTTERFLY VALVE'S MONITORING SYSTEM – EN12845
VALVOTTAVA SULKUVENTTIILI POIS PÄÄLTÄ – EN 12845
SISTEMA DE MONITORAÇÃO DA VÁLVULA FECHADA – EN12845





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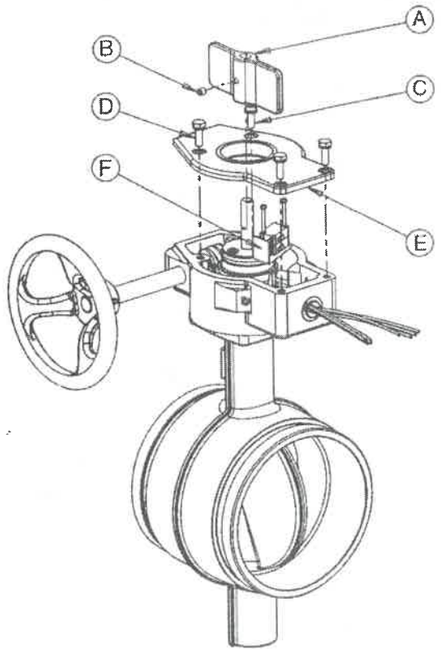
Factory Installed Supervisory Switch Replacement

UL/FM Butterfly Valves 2" - 10"

Tools required:
1/8" Allen wrench
5/32" Socket Pin Head Wrench (2" - 8")
3/16" Socket Pin Head Wrench (10" - 12")
9/16" Socket Wrench (2" - 8")
3/4" Socket Wrench (10" - 12")
3/16" Standard Screwdriver

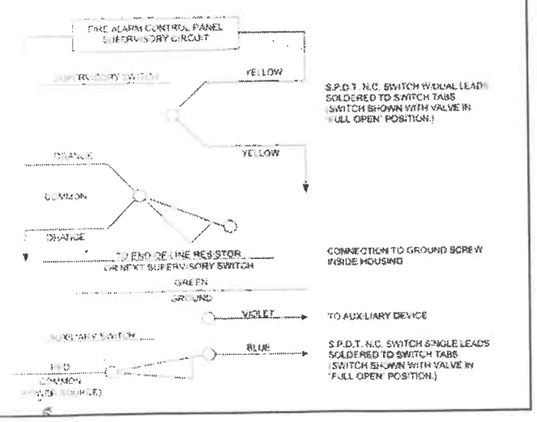


1. Remove flag (A) by backing out (approximately 2 turns) hex socket set screw (B).
2. Remove one socket pin head screw (C), three socket head bolts (D) and gear operator cover (E).
3. Remove two screws holding switch assembly into housing, and one screw holding ground wire to housing and remove switch assembly.
4. Feed electrical wires of new switch assembly through hole in rear of housing. Put new switch assembly (F) into gear case with actuating arms against quadrant gear. Reinstall hold down screws and ground wire to housing.

* Before installing cover plate, a continuity test should be performed to assure that switches are properly set.

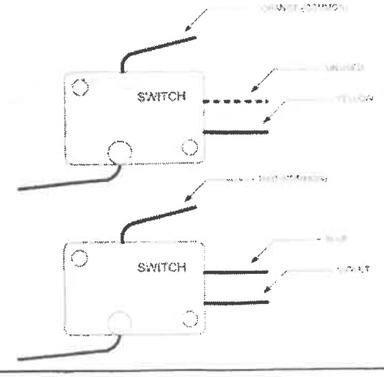
5. Reinstall cover plate.
6. Reinstall flag.
7. Use and connection of auxiliary switch to be reviewed and accepted by local authority having jurisdicition.

Wiring Diagram



Switch Rating

V7-1B1708-022 Micro switch (Honeywell)
1/2A 125 vDC, 1/4 A 250 vDC
15.1A1/2HP 125, 250 vAC
5A 125 vAC "L"



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Key to Butterfly Valve Figure Number System*

L	D	-	2	0	0		0	-	0

Body Type	Body Material	Pressure Rating	Seat Material	Disc Material	Stem & Bushing Combinations: Stem	Upper & Lower	Collar	Operating Mechanism
L-Lug	D-Ductile Iron	L-Actuated	0-EPDM	0-Aluminum Bronze	0-416SS	Copper Alloy	Brass	0-Bare Stem
W-Wafer	C-Cast Iron	1-150 psi	1-Buna-N (Nitrile)	1-Ductile Iron[1]	1-416SS	316SS	Brass	1-Infinite Position Plate and Lock
G-Grooved		2-200 psi	2-Fluoroelastomer	2-CF8M	2-17-4PH[3]	316SS[3]	316SS	3-Lever Lock (std)
F-Flanged		3-250 psi	5-UL/FM	6-EPDM Coated Ductile Iron[2]	5-416SS	TFE/Bronze	_	5-Gear
		4-300 psi	7-Polymid	7-Buna-N Coated Brass or Ductile Iron[2]	7-416SS	TFE	_	
		5-285 psi		8-Nylon Coated Ductile Iron	8-316SS			
		6-350 psi			9-17-4PH			
		7-232 psi						

**This key is a guide only, it is not intended to infer that all combinations can or will be produced*
[1] Electro Nickel Plated [2] Grooved and flanged end only
[3] Lug style 14" and larger are 316SS stem with bronze bushings

INSTALLATION GUIDELINES

The NIBCO series 1000/2000/3000/4000/5000 Butterfly Valves are bi-directional and may be installed with flow in either direction. The following valves are UL listed and/or FM approved: WD3510-4 and -8, GD4765-4N and -8N, GD1765-4N and -8N, GD6765-8N.

NIBCO Butterfly Valves are designed and suitable for installation between ANSI class 125 or 150 flanges. Refer to page two for compatible minimum diameters and schedule numbers for lug, wafer and grooved end valves. Cast iron flat face, steel raised face both slip on and weld neck, bronze or plastic flanges may also be used. Because of the unique seat design, NIBCO 2" - 24" Butterfly Valves do not require the use of flange gaskets and can be used for dead end service without a downstream flange.

The valve can be installed in any position either horizontal or verti al. If a choice of stem positions exists, the valves should be installed with the stem in the horizontal position; this will minimize seat wear by distributing the stem and disc weight evenly. Also, if the media is abrasive, the horizontal stem position is highly preferred.

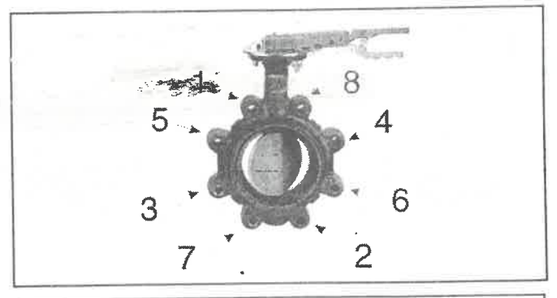
These valves have been designed so that the disc, in the open position, will clear the inside diameter of schedule 40 or 80 steel pipe. Care should be taken when installing a butterfly valve adjacent to lined pipe, as cast fittings or schedule 40 and 80 pipe. In some cases, the disc in the opened position will interfere with the adjacent component.

Butterfly valves should be installed a minimum of six (6) pipe diameters from other line components. This is not always practical, but it is important to design in as much distance as possible. Interference may occur when valves are installed directly to the outlet flange of a swing check, silent check or reducing flange. Check valve and butterfly valve combinations are very popular: Normally a short spool piece is required between valves.

INSTALLATION PROCEDURE

Always position the connecting pipe flanges accurately in line, following sufficient space between the flanges for the valve. Make sure the pipe flange faces are clean of any foreign material such as scale, metal shavings or welding slag. Insert the valve carefully between the pipe flanges, taking care not to damage the seat faces. Do not apply lubricant to the seat faces as this may damage the seat material. Line the valve up, centering it between the flanges using cap screws for lug style and either stud bolts or machine bolts and nuts for wafer style. Secure the valve between the flanges, snug up the bolts, but do not tighten. Carefully open the disc, making sure the disc clears the adjacent pipe or other line components. After proper operation has been verified, tighten all bolts using the crossover method. Recommended tightening torques and tightening pattern are listed below.

Recommended Tightening Pattern



Flange Size	Recommended Minimum Torque
2" - 4"	20 - 30 ft. lbs.
5" - 8"	33 - 80 ft. lbs.
10"	53 - 75 ft. lbs.
12"	80 - 110 ft. lbs.

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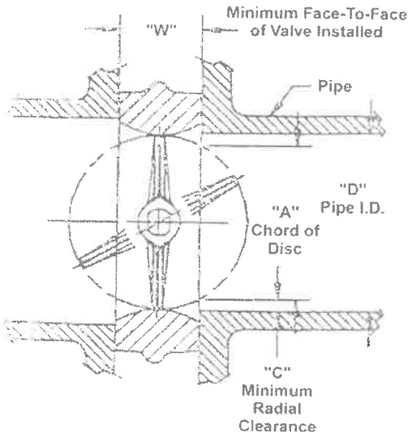
Capscrew and Bolt Data

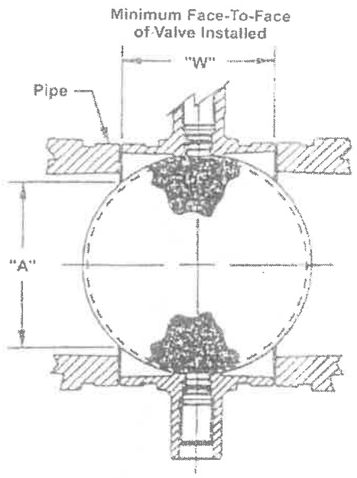
Valve Size (In.)	All Bolting		Wafer Type	Lug Type		Recommended Min. Bolt Torque
	Dia. End Threaded	Number				
		Machine & Stud	Cap Screw	Machine Bolts Length	Stud Bolts Length	Cap Screw Length	
2	.625-11 UNC	4	8	4.00	5.00	1.25	20 - 30 ft. lbs.
2.5	.625-11 UNC	4	8	4.25	5.25	1.50	20 - 30 ft. lbs.
3	.625-11 UNC	4	8	4.50	5.25	1.50	20 - 30 ft. lbs.
4	.625-11 UNC	8	16	5.00	6.00	1.75	20 - 30 ft. lbs.
5	.750-10 UNC	8	16	5.50	6.50	1.75	20 - 30 ft. lbs.
6	.750-10 UNC	8	16	5.50	6.75	2.00	33 - 50 ft. lbs.
8	.750-10 UNC	8	16	6.00	7.00	2.25	33 - 75 ft. lbs.
10	.875-9 UNC	12	24	6.75	8.00	2.25	52 - 75 ft. lbs.
12	.875-9 UNC	12	24	7.00	8.25	2.50	80 - 110 ft. lbs.

Disc to Pipe Minimum Clearance Typical Concentric Type Construction

Lug and Wafer Valves					
Valve Size (In.)	A	As Per MSS-SP-67 C	Compatible Min. Pipe I.D. D	Max. Pipe Schedule	W
2	1.38	.06	2.00	40	1.683
2.5	2.00	.06	2.37	40	1.808
3	2.55	.06	2.67	80	1.808
4	2.58	.06	3.75	80	2.057
5	4.64	.06	4.77	80	2.183
6	5.75	.06	5.87	40	2.183
8	7.77	.12	8.02	40	2.370
10	9.77	.12	10.02	40	2.683
12	11.75	.12	12.00	30	2.995

Grooved End Valves			
Valve Size (In.)	A	Max. Pipe Schedule	W
2	0.00	160	3.30
2.5	0.00	160	3.82
3	0.00	160	3.82
4	0.00	160	4.53
5	0.00	160	5.98
6	0.667	160	5.83
8	5.862	160	5.23
10	7.409	160	6.26
12	9.688	160	6.49





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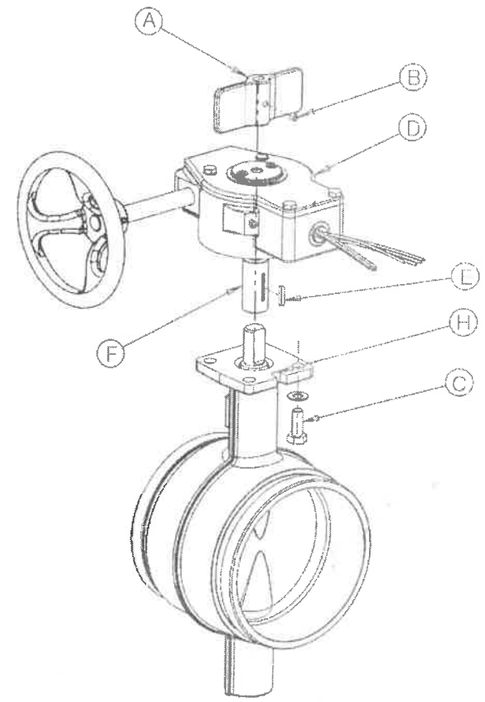
KEY DRIVE REPLACEMENT INSTRUCTIONS 2" -12" BUTTERFLY VALVES

Drive Key (section of weakness) will shear if excessive torque is applied to the input of the gear operator while the disc is blocked partially open.

1. Loosen the set screw (B) that secures the flag (A) to the stem. Remove the flag.
2. Remove the four (4) hex head cap screws (C) that fasten the gear operator (D) to the valve. The wrench sizes are 9/16" for 2" - 8" valves and 3/4" for the 10" - 12" valves.
3. Lift the gear operator straight up from the valve. In most cases the adapter bushing (F) will stay in the segment quadrant gear because the broken key causes interference between the gear and adapter bushing.
4. Pull the adapter bushing from the gear. Some force may be required.
5. After removing the adapter bushing, remove the broken key.
6. Place new key in keyway of adapter bushing.
7. With drive bushing and key in place within gear operator, carefully slide the gear operator over stem until it rests flush on the valve operator mounting flange. The handwheel may need to be turned in order to align bolt holes and the orientation pin.
8. Secure gear operator with four (4) hex head screws, replace flag on stem and tighten set screw on flag.
9. Check operation of valve by turning handwheel from fully open to fully closed position.



***Instructions are same regardless of valve end connections.**

NOTE BEFORE ASSEMBLY; All replacement parts must be obtained from the manufacture to assure proper operation of the valve. Parts are available from your NIBCO distributor

NOTE: Key drive material and size is specifically designed to meet performance requirements of UL and FM. Failure to use the properly sized replacement parts may void the UL and FM ratings on all NIBCO UL/FM valves.

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