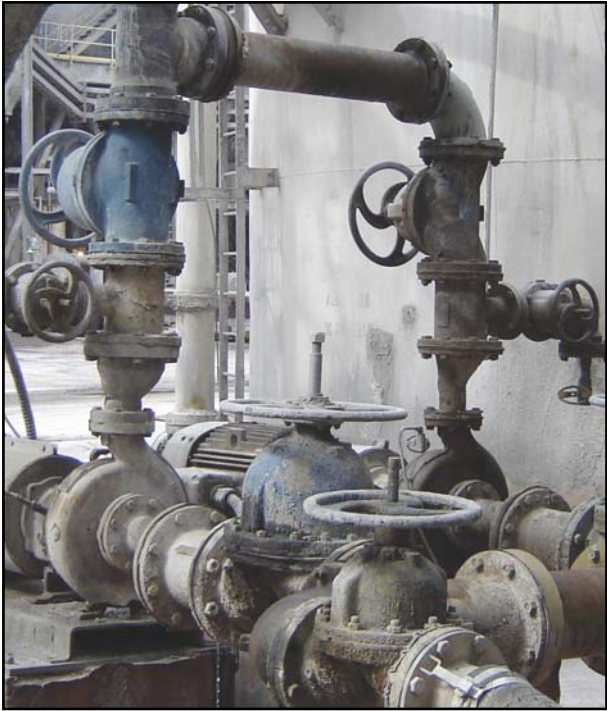




ITT

Dia-Flo[®]
Diaphragm Valves

Other Information



Contained in this section:

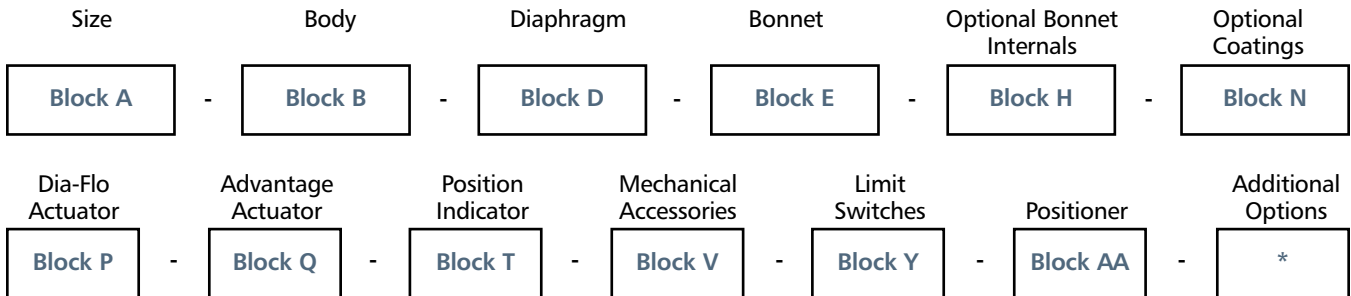
- How To Order
- Maintenance Instructions
- Flange Gasket and Storage Recommendations
- Actuator Diaphragm Identification
- Facts and Recommended Guidelines
- Terms and Conditions

6. OTHER INFORMATION

Engineered for life

Ordering Information

Dia-Flo Figure Number Block Sequence for Weir Valves



The above blocks are the most commonly used. For a complete listing see the Other Blocks listed on pg 4

Constructing Figure Numbers

Below are examples for constructing a manual and actuated valve figure number.

Manual Valve Example

Figure Number: 1-2401-TM-903

Detailed description:

1: 1 inch size
 2401: Cast Iron, Screwed end valve
 TM: Modified PTFE Diaphragm (FDA)
 903: Cast Iron Handwheel Operated Bonnet Assembly, Indicating w/Travel Stop

Actuated Valve Example

Figure Number: 3-2521-T-34-3125

Detailed description:

3: 3 inch size
 2521: Cast Iron, Flanged End Valve, Lined with Hard Rubber No. 10
 T: Neoprene Diaphragm
 34: Ductile Iron Actuated Bonnet
 3125: #25 Fail Open (air to close - spring to open) Actuator

Block A - Size

Code	Description
.50	.50 Inch
.75	.75 Inch
1	1 Inch
1.25	1.25 Inch
1.5	1.5 Inch
2	2 Inch
2.5	2.5 Inch
3	3 Inch
4	4 Inch
6	6 Inch
8	8 Inch
10	10 Inch
12	12 Inch

Ordering Information

Block B – Body
Weir Bodies, Unlined

Code	Body Material	Size
NO BODY SUPPLIED		
2000	No Body (Bonnet Only)	1/2-12"

SCREWED

Code	Body Material	Size
2401	Iron	1/2-3"
2402	Bronze	1/2-3"
2403	Stainless Steel (316)	1/2-3"
2405	Cast Steel	1-3"
2406	Solid PVC	1/2-2"
2407	CN7M	1/2-3"
2408	Monel	1/2-3"
2410	Hastelloy	1/2-3"
2412	Ductile iron	1-3"
2414	Solid PP (FDA)	1/2-2"
2416	CPVC	1/2-2"
2417	PVDF* (FDA)	1/2-2"

FLANGED

Code	Body Material	Size
2431	Cast Iron	1/2-12"
2432	Bronze	1/2-6"
2433R	Stainless Steel (316)	1/2-8"
2434R	Stainless Steel (316L)	1/2-8"
2435R	Cast Steel	1/2-8"
2436	Solid PVC	1/2-4"
2437R	CN7M	1/2-8"
2438R	Monel	1/2-8"
2440R	Hastelloy	1/2-8"
2441	Ductile Iron	1/2-8"
2442	Solid CPVC	1/2-2"
2444	Solid PP (FDA)	1/2-4"
2447	Solid PVDF* (FDA)	1/2-4"

SOCKET SOLDER

Code	Body Material	Size
2456	Bronze	1/2-2"

SOCKETWELD

Code	Body Material	Size
2424	Solid PP (FDA)	1/2-2"
2427	Solid PVDF* (FDA)	1/2-2"
2451	Solid PVC	1/2-2"
2463	Solid CPVC	1/2-2"
2470	Stainless Steel (316L)	1/2-3"
2472	Cast Steel	1/2-3"
2474	CN7M	1/2-3"

BUTTWELD (316L)

Code	Body Material	Size
2464	Stainless Steel Sch. 5	1/2-8"
2465	Stainless Steel Sch. 10	1/2-8"
2466	Stainless Steel Sch. 40	1/2-8"

SPIGOT WELD

Code	Body Material	Size
2443	CPVC (IPS)	1/2-2"
2484	Solid PP (FDA, DIN)	1/2-4"
2486	PVC (IPS)	1/2-4"
2487	Solid PVDF* (FDA, DIN)	1/2-4"

Weir Bodies, Lined

Code	Lining Material	Size
FLANGED CAST IRON		
2501	Neoprene No. 7	1/2-12"
2511	Glass Lined (FDA)	1/2-8"
2516	Soft Rubber No. 5	1/2-12"
2521	Hard Rubber No. 10	1/2-12"
2522	Butyl Lined	1/2-12"
2523	Hypalon Lined	1/2-12"
2536	PVC Lined	3/4-8"
2538	PP Lined (FDA)	3/4-8"
2539	PP* Lined (FDA)	3/4-8"
2529	Tefzel Lined	3/4-8"
2575	PVDF* Lined (FDA)	3/4-8"

Weir Bodies, Lined (con't)

Code	Lining Material	Size
FLANGED DUCTILE IRON		
2544	Glass Lined (FDA)	1/2-8"
2550	Neoprene No. 7	1/2-8"
2551	Soft Rubber No. 5	1/2-8"
2552	Hard Rubber No. 10	1/2-8"
2555	PVDF* Lined (FDA)	3/4-8"
2556	PFA Lined (FDA)	1"-6"
2558	PP Lined (FDA)	3/4-8"
2559	Tefzel Lined	3/4-8"

FLANGED CAST STEEL

Code	Lining Material	Size
2545	Tefzel Lined	3/4-8"
2546	PP Lined (FDA)	3/4-8"
2548	PVDF* Lined (FDA)	3/4-8"
2561	Neoprene No. 7	1/2-8"
2563	Hard Rubber No. 10	1/2-8"

FLANGED STAINLESS STEEL

Code	Lining Material	Size
2549	Tefzel Lined	3/4-8"

ANSI FACE-TO-FACE BODIES

Code	Lining Material	Size
2540A	CF8M Stainless Steel PFA Lined	1"-2"
2556A	A395 Ductile Iron PFA Lined	1"-2"
2433A	CF8M Stainless Steel Unlined	1"-2"

Block D – Diaphragms
WEIR TYPE

Code	Material	Size
B	Black Butyl (FDA)	1/2-12"
C	Hypalon	1/2-12"
M	EPDM	1/2-12"
17	EPDM (FDA)	1/2-8"
P	BUNA - N (FDA)	1/2-12"
S	Natural Rubber	1/2-8"
T	Neoprene	1/2-12"
W1	White Butyl (FDA)	1/2-6"
DP	Buna N Direct Loaded (FDA)	1/2-3"
V	Viton	1/2-6"
TM	Modified PTFE (FDA)	1/2-6"
R2	PTFE (FDA)	8", 10"
EN	Elastomer Not Supplied	1/2-12"
PN	PTFE Not Supplied	1/2-10"

Block E – Bonnet
Bonnets, Handwheel

Code	Bonnet Description	Size
CAST IRON		
902	Indicating	6-12"
902S	Indicating - Sealed	6-12"
903	Indicating w/Travel Stop	1/2-12"
903S	Indicating w/Travel Stop - Sealed	1/2-12"

STAINLESS STEEL (316)

Code	Bonnet Description	Size
912	Indicating	6-12"
912S	Indicating - Sealed	6-12"

STAINLESS STEEL (316)

Code	Bonnet Description	Size
913	Indicating w/Travel Stop	1/2-12"
913S	Indicating w/Travel Stop - Sealed	1/2-12"

POLYPROPYLENE

Code	Bonnet Description	Size
923	Indicating w/Travel Stop	1/2-4"

Bonnets, Handwheel (con't)

Code	Bonnet Description	Size
BRONZE		
932	Indicating	6-12"
932S	Indicating - Sealed	6-12"
933	Indicating w/Travel Stop	1/2-4"
933S	Indicating w/Travel Stop - Sealed	1/2-4"

DUCTILE IRON

Code	Bonnet Description	Size
942	Indicating	6-8"
942S	Indicating - Sealed	6-8"
943	Indicating w/Travel Stop	1/2-8"
943S	Indicating w/Travel Stop - Sealed	1/2-8"

PLASTIC PAS

Code	Bonnet Description	Size
963	Indicating w/Travel Stop	1/2- 4"
963S	Indicating w/Travel Stop - Sealed	1/2- 4"

Bonnets, Chainwheel

Code	Bonnet Description	Size
CAST IRON		
905	Indicating w/Travel Stop	1/2-12"
905S	Indicating w/Travel Stop - Sealed	1/2-12"

STAINLESS STEEL (316)

Code	Bonnet Description	Size
915	Indicating w/Travel Stop	1/2-12"
915S	Indicating w/Travel Stop - Sealed	1/2-12"

BRONZE

Code	Bonnet Description	Size
935	Indicating w/Travel Stop	1/2- 4"
935S	Indicating w/Travel Stop - Sealed	1/2- 4"

DUCTILE IRON

Code	Bonnet Description	Size
945	Indicating w/Travel Stop	1/2- 6"
945S	Indicating w/Travel Stop - Sealed	1/2- 6"

Actuated Bonnets

Code	Bonnet Description	Size
STAINLESS STEEL		
31	Actuated	1/2- 6"
31S	Actuated - Sealed	1/2- 6"

BRONZE

Code	Bonnet Description	Size
33	Actuated	1/2- 6"
33S	Actuated - Sealed	1/2- 6"

DUCTILE IRON (34 is std. – Dia-Flo Actuator)

Code	Bonnet Description	Size
34	Actuated	1/2- 10"
34S	Actuated - Sealed	1/2- 10"
84	Dual Range	1- 6"
84S	Dual Range Sealed	1- 6"

PLASTIC PAS

Code	Bonnet Description	Size
(36 is std. - Advantage Actuator)		
36	Actuated	1/2- 4"
36S	Actuated - Sealed	1/2- 4"

CAST IRON

Code	Bonnet Description	Size
40	Direct Load	1/2- 3"

*unpigmented

Ordering Information

Block H – Optional Bonnet Internals

Code	Description
M2	Sanitary Internals
M5	Stainless Steel Stem
M6	Cast Iron Compressor
M7	Bronze Compressor
M8	PVDF Coated Cast Iron Compressor
M9	Stainless Steel Bushing
M10	Stainless Steel Tube Nut
M11	316 Stainless Steel Stem
M14	Clear Cap

Block N – Optional Coating

Code	Description
C1	PVDF Coated Topworks
C2	PVDF Coated Body
C3	PVDF Coated Body & Topworks
C4	White Epoxy Coated Topworks
C5	White Epoxy Coated Body
C6	White Epoxy Coated Body & Topworks
C7	Nylon Coated Topworks (Bonnet for 3" & 4" Advantage only)

Adapted for but less ITT Actuation (Block P2)

Code	Description
Y	Adapted for but less ITT Engineered Valves Air Motor

Block P – Dia-Flo Actuator

Fail Open Actuators (Spring to Open - Air to Close)

Code	Actuator Size
3112	#12
3125	#25
3150	#50
31101	#101
31130	#130
31250	#250

Fail Closed Actuators (Air to Open - Spring to Close)

Code	Actuator Size
3212	#12
3225	#25
3250	#50
3275	#75
32101	#101
32130	#130
32250	#250

Code	Spring Description
SIZE #12	
3213	88 Spring
3214	88 & 89 Springs
3215	88 & Raymond Springs
3216	89 Spring
SIZE #25	
3226	101 Spring
3227	101 & 102A Springs
3228	102A Spring

Fail Closed Actuators (con't) (Air to Open - Spring to Close)

Code	Spring Description
SIZE #50	
3251	101 Spring
3252	101 & 102A Springs
3253	97 Spring
3254	96 Spring
3255	96 & 97 Springs
3256	102A Spring
SIZE #75	
3274	96 Spring
3276	96 & 97 Springs
3277	97 & 98 Springs
3278	96 & 98 Springs
3279	96, 97 & 98 Springs
SIZE #101	
32102	96 Spring
32103	98 Spring
32104	96 & 97 Springs
32105	96 & 98 Springs
32106	97 & 98 Springs
32107	96, 97, & 98 Springs
32108	130 Spring
32109	97 Spring
SIZE #130	
32131	97 Spring
32132	96 Spring
32133	98 Spring
32134	96 & 97 Springs
32135	96 & 98 Springs
32136	97 & 98 Springs
32137	96, 97, & 98 Springs
32138	130 Spring

Code	Actuator Size
SIZE #250	
32251	129 & 130 Springs
32252	129 Spring
32253	130 Spring

Double Acting Actuators (Air to Open - Air to Close)

Code	Actuator Size
3312	#12
3325	#25
3350	#50
3375	#75
33101	#101
33130	#130
33250	#250

Optional Air Motor Covers (Block P1)

Code	Description
DICVR	Ductile Iron

Block Q – Advantage Actuator

Fail Open

Code	Actuator Series
A105	# 5
A108	# 8
A116	# 16
A133	# 33
A147	# 47

Fail Closed

Code	Actuator Series
A205	# 5
A206	# 5
A208	# 8
A209	# 8
A215	# 16
A216	# 16
A217	# 16
A232	# 33
A233	# 33
A234	# 33
A235	# 33
A247	# 47
A248	# 47

Double Acting

Code	Actuator Series
A305	# 5
A308	# 8
A316	# 16
A333	# 33
A347	# 47

Block T – Position Indicator

Code	Description
P1	Position Indicator

Block V – Mechanical Accessories

Code	Description
AO	Adjustable Opening Stop
ATS	Adjustable Travel Stop
WO	Wrench Opening Device
HWO	Handwheel Opening Device
TOHO	Adjustable Opening Stop and Handwheel Opening Device
TOWO	Adjustable Opening Stop and Wrench Opening Device
HWC	Handwheel Closing Device
TO	Adjustable Opening Stop and Adjustable Travel Stop
THC	Adjustable Opening, Adjustable Travel Stop and Handwheel Closing Device (#25 AM and larger)
TOHC	Adjustable Opening, Adjustable Travel Stop and Handwheel Closing Device (#12 AM only)

Block Y – Limit Switches

Code	Description
LS1	Micro BZE6 - 2RN
LS2	Micro BAF1 - 2RN
LS3	Micro DTE6 - 2RN
LS4	Micro DTF2 - 2RN
LS5	Micro EXQ
LS6	Micro EXDQ
LS7	Micro LSA1A
LS8	Westlock 3479 Model 3
LS9	GO 74-13528-A2
LS10	Namco EA700-80100
LS11	Westlock E3479 Model 3
LS12	Namco EA170-34100 / 35100
LS16	Westlock 9881
LS17	Westlock E9881

Ordering Information

Optional Limit Switch Position (Block Y1)

Code	Description
LSO	Limit Switch – Open Only
LSC	Limit Switch – Closed Only

Block AA – Positioner*

Code	Description	Size
PR1 ¹	Conoflow Model 31	1 1/2-12"
PR2 ²	Conoflow Model 33	1 1/2-12"
PR3 ¹	Moore 73N12F	1/2-6"
PR4 ²	Moore 73 NB	1/2-6"
PR5	Moore 73 NFR	1/2-6"
PR6 ³	Conoflow P50	1 1/2-12"
PR7 ³	Conoflow P51	1 1/2-12"
PR8 ³	Conoflow P52	1 1/2-12"

Note: Only Codes PR3-PR5 are available for Advantage Actuators

¹ Fail Open & Double Acting Actuators Only

² Fail Closed Actuators Only

³ Requires yoke mounted actuator

⁴ Fail Open Actuators Only

⁵ Direct Acting Actuators Only

Other Blocks

Bonnet Seal Materials (Block F)

Code	Seal Material
S1	EPDM
S2	FKM

Optional Bolting (Block G)

Code	Description
B1	Stainless Steel
B316	Stainless Steel (316)
BTFE	XYLAN 1014 Coated B7
B72H	B7 Bolt / 2H Nut
B88	B8 Bolt / 8 Nut
BA20	Alloy 20

Yoke (Block K)

Code	Description
Y	Yoke Supplied

Locking Device (Block L)

Code	Description
LD	Locking Device

Extended Stem (Block M)

Code	Description
EXTSTEM	Extended Stem

Non EV Actuation (Block R & S)

Code	Description
POF	Non-EV Customer Supplied Actuator (mounted)
POA	Adapted For But Less Customer Supplied Actuator
POM	Non-EV Actuator Supplied and Mounted by Engineered Valves

Actuator Hardware Options (Block U)

Code	Description
HW1	SS Airmotor Bolts
HW2	SS Accessory Brackets
HW3	316 SS Tubing and Fittings
HW4	Plastic Tubing / Brass Fittings
HW5	PVC Coated Tubing / Brass Fittings
HW6	PVC Coated Tubing / SS Fittings

Solenoid Valve (Block W)

Code	Description
SV1	Asco 8320G184, 3-way
SV2	Asco EF8320G184, 3-way
SV3	Asco 8345G1, 4-way
SV4	Asco EF8345G1, 4-way
SV7	Asco 8320G202, 3-way
SV8	Asco EF8320G202, 3-way
SV9	Asco EF8320G45, 3-way
SV10	Asco EF8320G174, 3-way
SV13	Asco 8320G174, 3-way
SV14	Burkert 6012 Series (Recommended for Advantage)
SV15	Burkert 6014 Series (Recommended for Advantage)

Solenoid Voltage (Block X)

Code	Description
V1	120V / 60HZ
V2	24VDC
V3	240V / 60HZ

Adv. Switch Pack SP-2 (Block Z)

Code	Description	Size
SP2S	Silver Contacts	1/2-4"
SP2G	Gold Contacts	1/2-4"
SP2Z	2-Wire Prox.	1/2-4"
SP2N	NAMUR Prox.	1/2-4"
SP2P	3-Wire PNP Prox.	1/2-4"
SP2NP	3 Wire NPN Prox.	1/2-4"

Adv. Switch Pack SP-3 (Block Z3)

Code	Description	Size
SP3S48	Silver Contacts 48V	1/2-2"
SP3S110	Silver Contacts 110V	1/2-2"
SP3G30	Gold Contacts 30V	1/2-2"
SP3Z	2-Wire Proximity	1/2-2"
SP3N	NAMUR Proximity	1/2-2"
SP3P	3-Wire PNP Proximity	1/2-2"
SP3NP	3 Wire NPN Proximity	1/2-2"

Signal Ranges (Block AB)

Code	Description
SR1	3-15 PSI
SR2	6-30 PSI
SR3	3-9 PSI
SR4	9-15 PSI

Filter Regulators (Block AC)

Code	Description
FR1	Conoflow FR95ASKEX1G
FR2	Fisher 67CFR

Transducer (Block AD)*

Code	Description
TR1	Conoflow GT2108ED
TRWS	Watson & Smith 53-4904-3XR

Speed Controllers (Block AE)

Code	Description
SC	Schrader 337-1001

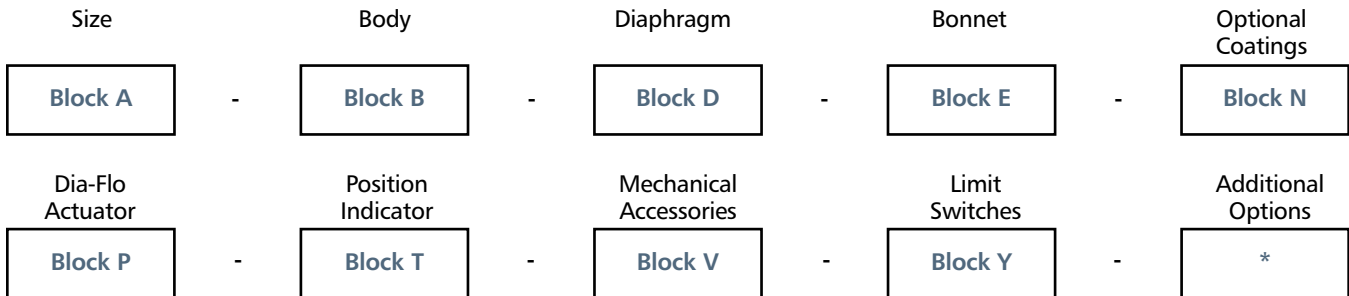
Special Service/Preparation (Block SPSEPV)

Code	Description
SPEC	Special Service per Customer Specification
VAC	Vacuum
OXY	Oxygen
TOB	Tobacco
WCL2	Wet Chlorine
SIFREE	Silicone-Free
B311	ASME B31.1
B1634	ANSI B16.34
SP88CATB	MSS SP-88 CAT. B

*The options listed are for 3-15 psi. For other optional instrument signals, contact factory.

Ordering Information

Dia-Flo Figure Number Block Sequence for Straightway Valves



The above blocks are the most commonly used. For a complete listing see the Other Blocks listed on pg 7

Manual Valve Example

Figure Number: 3-2834-SS-902

Detailed description:

3: 3 inch size

2834: Cast Iron Body Flanged Ends with No. 10 Hard Rubber Lining

SS: Natural Rubber Diaphragm

902: Cast Iron Handwheel Operated Bonnet Assembly, Indicating

Actuated Valve Example

Figure Number: 2-2801-ST-34-3325

Detailed description:

2: 2 inch size

2801: Iron Body Screwed End ITT Straightway Body

ST: Neoprene Diaphragm

34: Ductile Iron Actuated Bonnet

3325: #25 Double Acting (air to open - air to close) Actuator

Block A - Size

Code	Description
1	1 Inch
1.5	1.5 Inch
2	2 Inch
2.5	2.5 Inch
3	3 Inch
4	4 Inch
6	6 Inch
8	8 Inch
10	10 Inch
12	12 Inch

Ordering Information

Block B
Straightway Bodies, Unlined

Code	Body Material	Size
2800	No Body (Bonnet Assembly Only)	1/2-12"

FLANGED *

2811	Cast Iron	1-12"
2812	Ductile Iron	1-12"
2813R	Stainless Steel (316)	1/2-8"
2815R	Cast Steel	1/2-8"

Straightway Bodies, Lined

Code	Lining Material	Size
FLANGED CAST IRON		
2829	Tefzel	1-8"
2831	Neoprene No.7	1-12"
2833	Soft Rubber No. 5	1-12"
2834	Hard Rubber No.10	1-12"
2835	Hypalon No. 9	1-12"
2836	Butyl No. 16	1-12"
2838	Polypropylene (FDA)	1-8"

FLANGED CAST STEEL

2863	Hard Rubber No. 10	1-6"
------	--------------------	------

FLANGED DUCTILE IRON

2840	Neoprene No. 7	1-12"
2841	Soft Rubber No. 5	1-12"
2842	Hard Rubber No 10	1-12"
2859	Tefzel	1-8"

* R - Raised Face

Block D – Diaphragms
STRAIGHTWAY TYPE

Code	Material	Size
SB	Black Butyl (FDA)	1-4"
SS	Natural Rubber	1-12"
ST	Neoprene	1-12"
SE	EPDM (FDA)	1-12"
SC	Hypalon	1-4"
SP	BUNA - N (FDA)	1-2,3-6"
EN	Not Supplied	1-12"

Block E – Bonnet
Bonnets, Handwheel

Code	Bonnet Description
CAST IRON	
902	Indicating
902S	Indicating - Sealed
903	Indicating w/Travel Stop
903S	Indicating w/Travel Stop - Sealed

DUCTILE IRON

942	Indicating
942S	Indicating - Sealed
943	Indicating w/Travel Stop
943S	Indicating w/Travel Stop – Sealed

Bonnets, Chainwheel

Code	Bonnet Description
CAST IRON	
905	Indicating with Travel Stop
905S	Indicating with Travel Stop – Sealed

Bonnets, Actuated

Code	Bonnet Description
DUCTILE IRON	
34	Actuated
34S	Actuated – Sealed

Block N – Optional Coatings

Code	Description
C1	PVDF Coated Topworks
C2	PVDF Coated Body
C3	PVDF Coated Body & Topworks
C4	White Epoxy Coated Topworks
C5	White Epoxy Coated Body
C6	White Epoxy Coated Body & Topworks

Adapted for but less ITT Actuation
(Block P2)

Code	Description
Y	Valve adapted for but less Engineered Valves Air Motor

Block P – Dia-Flo Actuator
Fail Open Actuators
(Spring to Open - Air to Close)

Code	Actuator Size
3125	#25
3150	#50
31101	#101
31130	#130
31250	#250

Fail Closed Actuators
(Air to Open - Spring to Close)

Code	Actuator Size
3225	#25
3250	#50
3275	#75
32101	#101
32130	#130
32250	#250

Code **Spring Description**

SIZE #25	
3226	101 Spring
3227	101 & 102A Springs
3228	102A Spring

SIZE #50	
3251	101 Spring
3252	101 & 102A Springs
3253	97 Spring
3254	96 Spring
3255	96 & 97 Springs
3256	102A Spring

SIZE #75	
3273	98 Spring
3274	96 Spring
3276	96 & 97 Springs
3277	97 & 98 Springs
3278	96 & 98 Springs
3279	96, 97 & 98 Springs

SIZE #101	
32102	96 Spring
32103	98 Spring
32104	96 & 97 Springs
32105	96 & 98 Springs
32106	97 & 98 Springs
32107	96, 97, & 98 Springs

Fail Closed Actuators (con't)
(Air to Open - Spring to Close)

Code	Spring Description
SIZE #101 continued	
32108	130 Spring
32109	97 Spring

SIZE #130	
32131	97 Spring
32132	96 Spring
32133	98 Spring
32134	96 & 97 Springs
32135	96 & 98 Springs
32136	97 & 98 Springs
32137	96, 97, & 98 Springs
32138	130 Spring

SIZE #250	
32251	129 & 130 Springs
32252	129 Spring
32253	130 Spring

Double Acting Actuators
(Air to Open - Air to Close)

Code	Actuator Size
3325	#25
3350	#50
3375	#75
33101	#101
33130	#130
33250	#250

Optional Air Motor Covers
(Block P1)

Code	Description
DICVR	Ductile Iron

Block T – Position Indicator

Code	Description
P1	Position Indicator

Block V – Mechanical Accessories

Code	Description
AO	Adjustable Opening Stop
ATS	Adjustable Travel Stop
HWO	Handwheel Opening Device
WO	Wrench Opening Device
TOHO	Adjustable Opening Stop and Handwheel Opening Device
TOWO	Adjustable Opening Stop and Wrench Opening Device
HWC	Handwheel Closing Device
TO	Adjustable Opening Stop and Adjustable Travel Stop
THC	Adjustable Opening, Adjustable Travel Stop and Handwheel Closing Device (#25 AM and larger)

Block Y – Limit Switches

Code	Description
LS1	Micro BZE6 - 2RN
LS2	Micro BAF1 - 2RN
LS3	Micro DTE6 - 2RN
LS4	Micro DTF2 - 2RN
LS5	Micro EXQ
LS6	Micro EXDQ
LS7	Micro LSA1A
LS8	Westlock 3479 Model 3
LS9	GO 74-13528-A2
LS10	Namco EA700-80100
LS12	Namco EA170-34100 / 35100

Ordering Information

Optional Limit Switch Position (Block Y1)

Code	Description
LSO	Limit Switch – Open Only
LSC	Limit Switch – Closed Only

Other Blocks

Optional Bonnet Seal Material (Block F)

Code	Seal Material
S1	EPDM
S2	Viton

Optional Bonnet Internals (Block H)

Code	Description
M5	Stainless Steel Stem
M8	PVDF Coated Cast Iron Compressor
M9	Stainless Steel Bushing
M11	316 Stainless Steel Stem

Optional Bolting (Block G)

Code	Description
B1	Stainless Steel
B316	Stainless Steel (316)
B88	B8 Bolt/ 8 Nut

Yoke (Block K)

Code	Description
Y	Yoke Supplied

Locking Device (Block L)

Code	Description
LD	Locking Device

Extended Stem (Block M)

Code	Description
EXTSTEM	Extended Stem

Non ITT Actuation (Block R)

Code	Description
POF	Non-EV Customer Supplied Actuator (mounted)
POA	Adapted For But Less Customer Supplied Actuator
POM	Non-EV Actuator Supplied and Mounted by Engineered Valves

Actuator Hardware Options (Block U)

Code	Description
HW1	SS Airmotor Bolts
HW2	SS Accessory Brackets
HW3	316 SS Tubing and Fittings
HW4	Plastic Tubing / Brass Fittings
HW5	PVC Coated Tubing / Brass Fittings
HW6	PVC Coated Tubing / SS Fittings

Solenoid Valve (Block W)

Code	Description
SV1	Asco 8320G184
SV2	Asco EF8320G184
SV3	Asco 8345G1
SV4	Asco EF8345G1

Solenoid Voltage (Block X)

Code	Description
V1	120V / 60HZ
V2	24VDC
V3	240V / 60HZ

Filter Regulator (Block AC)

Code	Description
FR1	Conoflow FR95ASKEX1G
FR2	Fisher 67CFR

Speed Control (Block AE)

Code	Description
SC	Schrader 337-1001

Ordering Information

Cross Reference Chart – Bodies, Bonnets, and Actuators

Only those figure numbers that have changed are listed below.

Bodies		Dia-Flo Actuators		Dia-Flo Actuators (con't)	
Old	New	Old (spring#)	New	Old (spring#)	New
4250	2464	3112	3112	32130 (98)	32133
4260	2465	3212 (88)	3213	32130 (96&97)	32134
4270	2466	3212 (88&89)	3214	32130 (96&98)	32135
		3212 (88&Raymond)	3215	32130 (97&98)	32136
		3212 (89)	3216	32130 (96, 97&98)	32137
		3312	3312	32130 (130)	32138
		3125	3125	33130	33130
		3225 (101)	3226	31250	31250
		3225 (101&102A)	3227	32250 (129&130)	32251
		3225 (102A)	3228	32250 (129)	32252
		3325	3325	32250 (130)	32253
		3150	3150	33250	33250
		3250 (101)	3251		
		3250 (101&102A)	3252		
		3250 (97)	3253		
		3250 (96)	3254		
		3250 (96&97)	3255		
		3250 (102A)	3256		
		3350	3350		
		3275 (96)	3274		
		3275 (96&97)	3276		
		3275 (97&98)	3277		
		3275 (96&98)	3278		
		3275 (96, 97&98)	3279		
		3375	3375		
		31101	31101		
		32101 (96)	32102		
		32101 (98)	32103		
		32101 (96&97)	32104		
		32101 (96&98)	32105		
		32101 (97&98)	32106		
		32101 (96, 97&98)	32107		
		32101 (130)	32108		
		32101 (97)	32109		
		33101	33101		
		31130	31130		
		32130 (97)	32131		
		32130 (96)	32132		

Switches	
Old	New
R – Open/Closed	LS1-LS10
S – Closed Only	
T – Open Only	

Description	Old Code	NEW CODE (#12)		NEW CODE (#25-#250)	
		Fail Open & Double Acting 3100 & 3300	Fail Closed 3200	Fail Open & Double Acting 3100 & 3300	Fail Closed 3200
Position Indicator	Z	P1	P1	P1	P1
Adjustable Travel Stop	X	ATS	ATS	ATS	Standard
Adjustable Opening Stop	W	TOHC	TOWO	AO	AO
Adjustable Opening & Travel Stop	Q	TOHC	TOWO	TO	AO
Handwheel Closing Device	V	TOHC	Not Available	HWC	Not Available
Handwheel Opening Device	JH	Not Available	HWO	Not Available	HWO
Adjustable Opening & Travel Stop + Handwheel Closing Device	JW	Not Available	WO	Not Available	WO
Adjustable Travel Stop + Handwheel Closing Device	Q + V	TOHC	Not Available	THC	Not Available
Adjustable Opening Stop + Handwheel Closing Device	X + V	TOHC	Not Available	THC	Not Available
Adjustable Opening Stop + Handwheel Closing Device	W + V	TOHC	Not Available	HWC	Not Available
Adjustable Opening Stop + Handwheel Opening Device	W + JH	Not Available	TOHO	Not Available	TOHO
Adjustable Opening Stop + Handwheel Opening Device	W + JW	Not Available	TOWO	Not Available	TOWO

Maintenance Instructions

Installation

In vertical lines, Dia-Flo diaphragm valves may be installed in any position.

In horizontal lines, where drainability is critical, Dia-Flo valves should be installed with the drain dot or hash mark, located on the end connection close to the body-bonnet flange, at 12 o'clock. This angle is unique to each valve size. Contact the factory if a drain dot or hash mark is not present.

In horizontal lines, where drainability is a concern but not critical (typically processes other than pharmaceutical, bioprocessing, food or beverage), the valve should be positioned with the stem at 90 degrees from vertical.

In all lines, the bonnet assembly should be positioned with the weep hole (a small hole in the side of the bonnet used as a diaphragm leak detection port) facing down.

Diaphragm Replacement for Handwheel Operated Weir Valve

1. Remove pressure from line containing valve. Rotate handwheel clockwise to just close valve.
2. Remove bonnet nuts.
3. Lift off bonnet and unscrew diaphragm from compressor by turning counterclockwise.
4. Replacement diaphragm should be identical size and grade as original diaphragm. See diaphragm identification drawing below for location of size and grade marking. Thread new diaphragm into compressor handtight, then back off until bolt holes in diaphragm register with bolt holes in bonnet flange.

NOTE: For PTFE plastic diaphragms, remove elastomer backing cushion included with plastic diaphragm. Replace elastomer backing cushion each time the PTFE diaphragm is changed. PTFE diaphragms are molded in the closed position, but should be inverted to the open position prior to installation to ensure complete (correct) thread engagement. To invert, press with thumbs at center bottom of diaphragm while retaining with fingers at the diaphragm edge.

5. Rotate handwheel counterclockwise just enough to permit flange area of diaphragm to rest flat against flange area of bonnet.
6. Replace valve bonnet on body and tighten bonnet nuts handtight.
7. Close valve fully by rotating handwheel clockwise; then back off one-half to one full turn of handwheel. Tighten bonnet nuts evenly with a

wrench (per instructions below).

8. Open valve and check bonnet nuts to ensure they are evenly tightened.
9. If diaphragm leaks at body/bonnet joint after reaching temperature and pressure, depressurize system and retighten bonnet nuts (see instructions below).



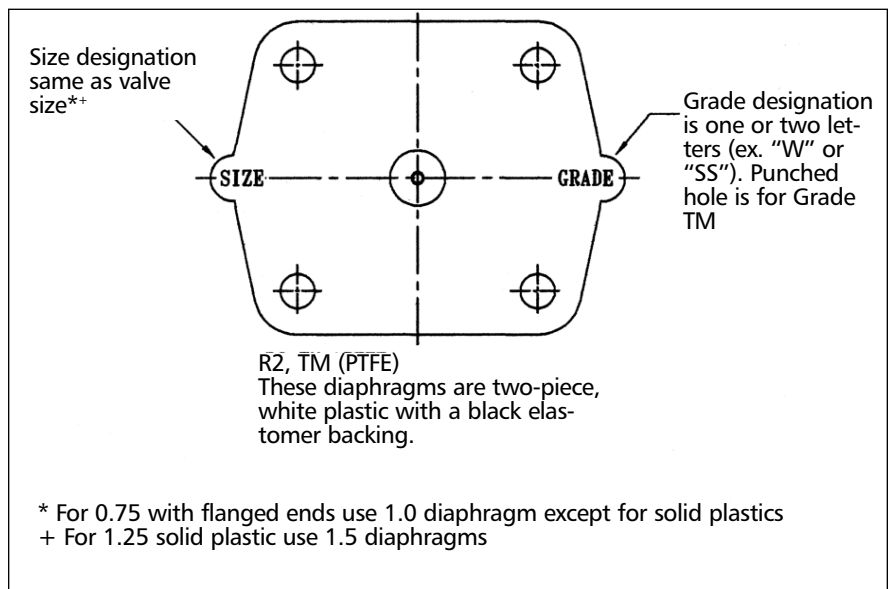
To Tighten Bonnet Nuts:

Prior to pressurization (with the valve open), tighten the bonnet nuts in a crisscross pattern in accordance with Table 1. Retightening 24 hours after the system reaches operating temperature and pressure is recommended. If leakage occurs at the body/diaphragm seating area, immediately depressurize system and tighten bonnet nuts as noted above. If leakage continues, diaphragm replacement is required.

Diaphragm Identification

Elastomer - 1 piece, made of rubber, with molded-in stud. (see tabs)

Note: For Diaphragm Replacement of Actuated Valves see current version of DFAMM on our web site.



Maintenance Instructions

Diaphragm Replacement for Handwheel Operated Straightway Valve

Perform steps 1-6 as for Weir Valve.

7. Open valve 2 to 3 turns and tighten bonnet nuts evenly with a wrench (see instructions below).
8. If diaphragm leaks at body/bonnet joint after reaching temperature and pressure, depressurize system and retighten bonnet nuts (see instructions below).

To Tighten Bonnet Nuts:

Prior to pressurization (with the valve open), tighten the bonnet nuts in a crisscross pattern in accordance with Table 1. Retightening 24 hours after the system reaches operating temperature and pressure is recommended. If leakage occurs at the body/diaphragm seating area, immediately depressurize system and tighten bonnet nuts as noted above. If leakage continues, diaphragm replacement is required.



Bonnet Fastener Torques in Inch-Pounds

Bonnett		Metal				Plastic
Body		All Weir & Straightway (Except Glass Lined Weir)		Glass Lined, Weir		All
Diaphragm		Elastomer	PTFE	Elastomer	PTFE	All
Size						
IN.	DN.					
1/2	15	40	80	40	40	18
3/4*	20	48	80	48	80	18
1	25	48	100	48	80	25
1 1/4,	32,	48	220	48	110	75
1 1/2	40					
2	50	96	275	96	170	100
2 1/2	60	192	575	192	200	—
3	80	300	1000	300	300	420
4	100	192	575	192	360	180
6	150	480	1200	480	600	—
8	200	480	1200	480	600	—
10	250	480	1200	480	—	—
12	300	480	1200	480	—	—

NOTES:

1. Torque may be exceeded by up to 10%.
2. Bolt tension developed using torque wrenches can vary widely depending on fastener condition, wrench accuracy, degree of lubrication and technique. If fastener yielding or galling is apparent, reduce torque accordingly and replace fasteners.
3. Stainless steel studs/bolts with stainless steel nuts have Carbowax® 3350 applied at the factory. Subsequent field lubricant is not necessary.
- * For 3/4" w/flanged ends, use 1" data except solid plastic.

Note: For Diaphragm Replacement of Actuated Valves see current version of DFAMM on our website.

Flange Gasket and Storage Recommendations Actuator Diaphragm Identification

Flange Gasket Recommendations

The use of a flange gasket is advisable when installing flanged diaphragm valves in a conventional piping system. Flange surfaces are best sealed with elastomeric type gaskets. However, the elastomeric gasket material must be chemically compatible with the service media, and must meet the applicable temperature and pressure requirements.

Plastic lined valves can be installed without a gasket when connecting to plastic lined piping. Installing a plastic lined valve to unlined piping must be avoided due to potential damage to the lining at the flange face, resulting in leakage.

Do not tighten each bolt in consecutive order either in a clockwise or counterclockwise direction. Use the criss-cross method when tightening flange bolts. Consult your piping supplier or piping engineer for the correct torque values to use.

Storage Recommendations Lined Valves

Lined piping and valves should be stored, between delivery and use, away from direct sunlight, heat or outdoor seasonal weathering. Products with flexible type linings may be stored outdoors, providing the components are covered with protective tarpaulins and are not subjected to extreme temperature conditions.

Equipment lined with semi hard and especially bone hard materials must be protected and stored, preferably indoors, and should never be subjected to extreme cold climatic conditions because thermal stress and expansion may introduce cracking.

Diaphragm Shelf Life and Storage Recommendations

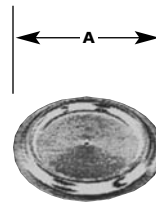
Diaphragm Material	Diaphragm Grade	Diaphragm Shelf Life
Buna N	DP & P	6 Years
Butyl	B & W1	10 Years
EPDM	M, M1 & 17	6 Years
Hypalon	C	8 Years
Natural Rubber	S	4 Years
Neoprene	T	6 Years
Polurethane	-	5 Years
Viton	V	10 Years
PTFE	TM, R2	14 Years

Storage Instructions:

Until the diaphragms are to be installed, they should be kept in a covered, adequately ventilated and dry location, preferably in their original containers. Storage temperatures should not cycle rapidly and should be maintained between 40° and 120° F.

Actuator Diaphragm Identification

Actuator Diaphragms							
Size	#12	#25	#50	#75	#101	#130	#250
A	6 ⁵ / ₈ "	9 ⁷ / ₈ "	13 ⁵ / ₁₆ "	14"	15 ¹ / ₁₆ "	14 ⁹ / ₁₆ "	21 ⁷ / ₁₆ "
Bolt Holes	12	18	← NONE →				
maximum recommended air pressure: 85 psi							



Facts and Recommended Guidelines

Dia-Flo Diaphragm Valve Facts you should be aware of...

All .75" flanged valves (except solid plastic) are identical to 1" valves except the body end flanges accommodate .75" flange dimensions. Therefore, bonnet assemblies and diaphragms for such bodies use 1" bonnet assemblies and diaphragms.

Similarly, 1.25" valves (flanged or unflanged) use 1.5" bonnet assemblies and diaphragms.

Diaphragm material properties become weaker with increasing temperature. Therefore, diaphragms operating at elevated temperatures are not to be used at maximum pressures. See pressure/temperature charts.

Cast iron, ductile iron and carbon steel should not be used below -20°F (-29°C) per ANSI standards.

Dia-Flo Diaphragm Airmotor actuators are designed to operate with air pressures up to 85 psi. The maximum pressure differential between upper and lower chambers is also 85 psi.

Maximum operating line pressure for valves equipped with dualrange bonnet assemblies is 100 psi.

Dualrange bonnet assemblies are only available on weir type valves, 1" through 6" size.

Straightway valves are not ideal for throttling service due to poor control capability.

Straightway valves are not recommended for vacuum service.

Actuated DiaFlo valves used on vacuum service applications will require an additional amount of actuation pressure in order to open the valve. The total amount applied will be higher than that found in the applicable sizing chart, in order to compensate for the effect of the vacuum.

Large fail close (#25 and above) actuators are supplied as standard with travel stops..

Fail open and double acting valves are not normally supplied with travel stops, so if the available supply pressure exceeds the required pressure to close the valve, then the actuator should be ordered with a travel stop option or the supply pressure should be reduced using a regulator.

A minimum of 20 psi line pressure is required to utilize the direct loaded bonnet assembly. Direct loaded bonnets are always provided with diaphragms in the "molded closed" position.

When you specify a double-acting actuator with a top-mounted, single-acting positioner, the standard arrangement is that the bottom chamber is supplied with a cushion regulator. This will result in a fail open valve.

Recommended Guidelines for Weir and Straightway Valves

Maximum Velocity: 15 - 20 ft/sec for clear liquids
8 - 10 ft/sec for slurries

Maximum Solids percentages: Weir Valves – not to exceed 15%
Straightway Valves* – up to 30%

* For solids between 30% and 50%, consult factory
50% and above - Not Recommended

Maximum allowable pressure drop across weir valve: 25% of P_{inlet} absolute

Terms and Conditions

CONDITIONS and TERMS of SALE of ITT Industrial & BioPharm GROUP (IBG)(hereinafter referred to as Company)

WARRANTY - Company warrants title to the product(s) and, except as noted with respect to items not of Company's manufacturer, also warrants the product(s) on date of shipment to Purchaser, to be of the kind and quality described herein, and free of defects in workmanship and material. This warranty is expressly in lieu of all other warranties, including but not limited to implied warranties of merchantability and fitness, and constitutes the only warranty of the company with respect to the product(s).

If within one year from date of initial operation, but not more than eighteen months from date of shipment by Company of any item of product(s), Purchaser discovers that such item was not as warranted above and promptly notifies Company in writing thereof. Company shall remedy such nonconformance by, at Company's option, adjustment or repair or replacement of the item and any affected part of the product(s). Purchaser shall assume all responsibility and expense for removal, reinstallation, and freight in connection with the foregoing remedies. The same obligations and conditions shall extend to replacement parts furnished by Company hereunder. Company shall have the right of disposal of parts replaced by it. Purchaser agrees to notify Company, in writing, of any apparent defects in design, material or workmanship, prior to performing any corrective action back chargeable to the Company. Purchaser shall provide a detailed estimate of the material, labor costs associated with proposed remedy for expeditious review and approval by the Company.

Seller neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of its engineering designs or products. This warranty shall not apply to any products or parts of products which (a) have been repaired or altered outside of Seller's factories or authorized service centers, in any manner; or (b) have been subjected to misuse, negligence or accidents; or (c) have been used in a manner contrary to Seller's instructions or recommendations. Seller shall not be responsible for design errors due to inaccurate or incomplete information supplied by Buyer or its representatives.

Any separately listed item of the product(s) which is not manufactured by the company is not warranted by the company and shall be covered only by the express warranty, if any, of the manufacturer thereof.

This states purchaser's exclusive remedy against company and its suppliers relating to the product(s), whether in contract or in tort or under any other legal theory, and whether arising out of warranties, representations, instructions, installations or defects from any cause. Company and its suppliers shall have no obligation as to any product which has been improperly stored or handled, or which has not been operated or maintained according to instructions in Company or supplier furnished manuals.

LIMITATION OF LIABILITY - Neither Company nor its suppliers shall be liable, whether in contract or in tort or under any other legal theory, for loss of use, revenue or profit, or for cost of capital or of substitute use or performance, or for incidental, indirect, or special or consequential damages, or for any other loss or cost of similar type, or for claims by Purchaser for damages of Purchaser's customers. Likewise, Company shall not, under any circumstances, be liable for the fault, negligence, or wrongful acts of Purchaser or Purchaser's employees, or Purchaser's other contractors or suppliers.

In no event shall company be liable in excess of the sales price of the part(s) or product found defective.

GENERAL - (a) Company will comply with all laws applicable to Company. Compliance with OSHA or similar federal, state or local laws during any operation or use of the product(s) is the sole responsibility of Purchaser. (b) The laws of the State of New York shall govern the validity, interpretation and enforcement of any contract of which these provisions are a part, without giving effect to any rules governing the conflict of laws. (c) This document and any other documents specifically referred to as being a part hereof, constitute the entire contract on the subject matter, and it shall not be modified except in writing signed by both parties, Unless otherwise specified, any reference to Purchaser's order is for identification only. Assignment may be made only with written consent of both parties.

ACCEPTANCE - The determination of compliance with performance guarantees will be based on results of factory tests under controlled conditions with calibrated instruments and tested per standards of the Hydraulic Institute, ISO standards, API standards, or other nationally recognized accreditation standards mutually acceptable to Company and Purchaser.

SHIPMENT - The term "shipment" means delivery to the initial carrier in accordance with the delivery terms of this order. Company may make partial shipments. Company shall select method of transportation and route, unless terms are f.o.b. point of shipment and Purchaser specifies the method and route and is to pay the freight costs in addition to the price, When terms are f.o.b. destination or freight allowed to destination, "destination" means common carrier delivery point (within the continental United States, excluding Alaska) nearest the destination. For movement outside the United States, company shall arrange for inland carriage to port of exit and shall cooperate with Purchaser's agents in making necessary arrangements for overseas carriage and preparing necessary documents.

SPECIAL SHIPPING DEVICES - On shipments to a destination in the continental United States or Canada, Company has the right to add to the invoice, as a separate item, the value of any special shipping device (barrel, reel, tarpaulin, cradle, crib and the like) used to contain or protect the product(s) invoiced, while in transit. Full credit will be given on the return to Company of the device in a reusable condition, f.o.b. destination, freight prepaid.

DELAYS - If Company suffers delay in performance due to any cause beyond its control, including but not limited to act of God, war, act or failure to act of government, act or omission of Purchaser, fire, flood, strike or labor troubles, sabotage, or delay in obtaining from others suitable services, materials, components, equipment or transportation, the time of performance shall be extended a period of time equal to the period of the delay and its consequences. Company will give to Purchaser notice in writing within a reasonable time after Company becomes aware of any such delay.

NONCANCELLATION - Purchaser may not cancel or terminate for convenience, or direct suspension of manufacture, except on mutually acceptable terms.

STORAGE - Any item of the product(s) on which manufacture or shipment is delayed by causes within Purchaser's control, or by causes which affect Purchaser's ability to receive the product(s), may be placed in storage by Company for Purchaser's account and risk.

TITLE AND INSURANCE - Title to the product(s) and risk of loss or damage shall pass to Purchaser at the f.o.b. point, except that a security interest in the product(s) and proceeds and any replacement shall remain in Company, regardless of mode of attachment to realty or other property, until the full price has been paid in cash. Purchaser agrees to do all acts necessary to perfect and maintain said security interest, and to

Terms and Conditions

protect Company's interest by adequately insuring the product(s) against loss or damage from any external cause with Company named as insured or co-insured.

INSPECTIONS / EXPEDITING - The Company wishes to clarify that it will have to restrict access to agreed upon reasonable times and only for the purpose of conducting those inspections agreed upon. We request 72 hours notice prior to each visit. We request notification prior to visits to our subcontractors and require that we accompany inspectors/expeditors on their visit(s).

TERMS OF PAYMENT - Unless otherwise stated all payments shall be Letter of Credit or Net Thirty (30) Days and in United States dollars, and a pro rata payment shall become due as each shipment is made. If shipment is delayed by Purchaser, date of readiness for shipment shall be deemed to be date of shipment for payment purposes. If at any time in Company's judgment Purchaser may be or may become unable or unwilling to meet the terms specified, Company may require satisfactory assurances or full or partial payment as a condition to commencing or continuing manufacture or making shipment; and may, if shipment has been made, recover the product(s) from the carrier, pending receipt of such assurances.

TAXES - Any applicable duties or sales, use, excise, value added or similar taxes will be added to the price and invoiced separately (unless acceptable exemption certificate is furnished).

PRODUCT RETURN - Products can be returned for credit only after receiving Company's authorization and shipping instructions. Consignor's name and address must be plainly written on the shipping tag.

PATENTS - Company shall pay costs and damages finally awarded in any suit against Purchaser or its vendees to the extent based upon a finding that the design or construction of the product(s) as furnished infringes a United States patent (except infringement occurring as a result of incorporating a design or modification at Purchaser's request) provided that Purchaser promptly notifies Company of any charge of such infringement, and Company is given the right at its expense to settle such charge and to defend or control the defense of any suit based upon such charge. This paragraph sets forth Company's exclusive liability with respect to patents.

BUYER DATA - Timely performance is contingent upon the Purchaser supplying to the Company, when needed, all required technical information, including drawing approval, and all required commercial documentation.

NUCLEAR - Purchaser represents and warrants that the product(s) covered by this contract shall not be used in or in connection with a nuclear facility or application.

PRICES - The prices stated herein will remain firm for the period up to the stated date of shipment providing the shipment is not delayed by the customer. If shipment is delayed by the customer beyond the shipment date quoted herein, the prices will be based on the prices in effect at time of shipment, including storage and material handling costs. In no event shall the adjusted price be less than the original order price, including change orders. Prices are F.O.B. Shipping Point, unless otherwise specified. When price includes transportation and other charges pertaining to the shipment of goods, any increase in transportation rates and other charges will be for the account of the purchaser. There will be an extra charge for any test other than that which may be normally run by the Company, or for any test performed to suit the convenience of the purchaser.

CONTROLLING PROVISIONS - These terms and conditions shall control with respect to any purchase order or sale of the Company's products. No waiver, alteration or modification of

these terms and conditions whether on Purchaser's purchase order or otherwise shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of the Company.

EXPORT - If this transaction involves export, the following additional terms and conditions shall apply:

- Compliance is required for all applicable US export laws, and the export laws of the country from where the product is exported.
- **PACKING** - when packing is in IBG scope of supply, equipment will be packed, boxed or crated in accordance with the Company's standard commercial practice, for under deck export shipment, unless otherwise agreed.
- **LETTER OF CREDIT** - Unless otherwise specified in writing, payment shall be made by irrevocable letter of credit in form acceptable to Company, confirmed by a major USA bank, acceptable to the company and providing for payment in full in United States dollars against presentation of United States inland shipping documents and invoices, such letter of credit to be established prior to company's acceptance of the order. The letter of credit shall also provide that in the event Company is, for any reason beyond its control, prevented from making shipment from Company's factory or delivery at the port of embarkation, a certificate of manufacture of the whole or any part of the goods shall constitute delivery of such whole or any part of the goods and payment in full of any and all drafts drawn against the letter of credit for the goods so "delivered" shall be made upon presentation of such certificates of manufacture in lieu of United States inland shipping documents. In the event that Company is prevented by law, or otherwise, from making shipment from Company's factory or delivery at port of embarkation of the goods or any part thereof, on completion of manufacture, Company reserved the right to place the goods in storage for the Purchaser's account and risk. Any charges incurred in this connection will be for the account of the Purchaser at cost and will be payable upon demand. In regions where Letters of Credit are not available, surety bonds will be utilized in lieu of the bank guarantee.
- **COMPANY AS AGENT** - If Company makes or arranges for ocean shipment, Company shall act as agent for the Purchaser and reserves the right to procure full insurance coverage, including war risk insurance, at the expense of the Purchaser. All expenses incurred in this connection will be payable upon demand to the Company. If Company as agent applies for or secures manufacturing, financing, exporting or other licenses required by the United States Government, or any department thereof, Company shall make such applications or secure such licenses solely as agent for the purchaser, and assumes no responsibility therefore.

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