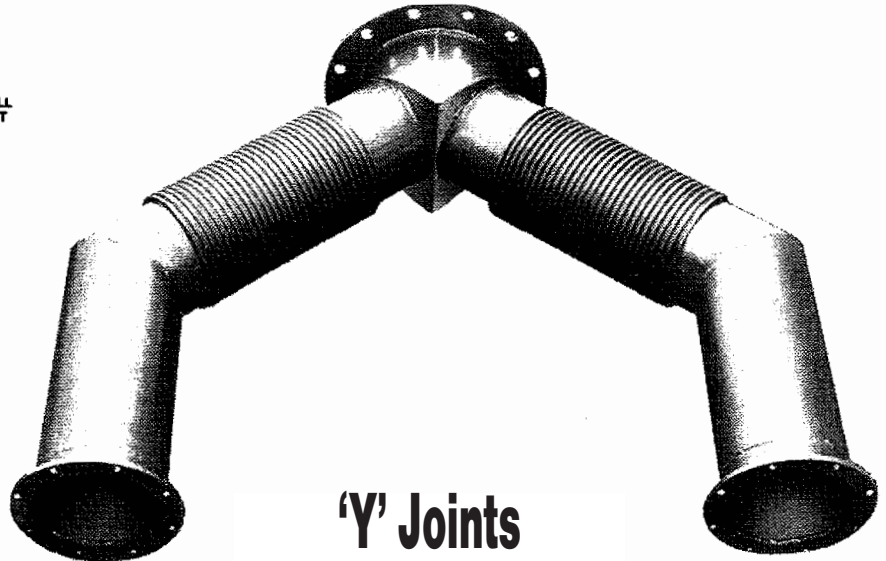
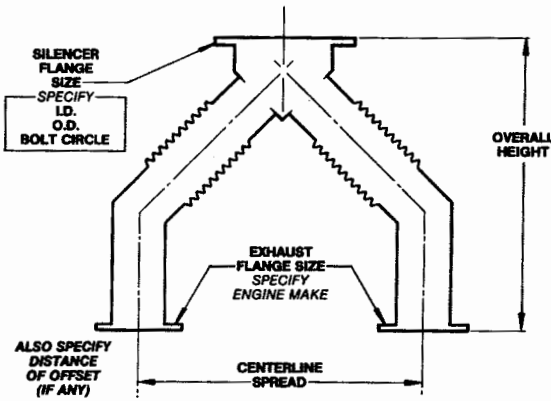




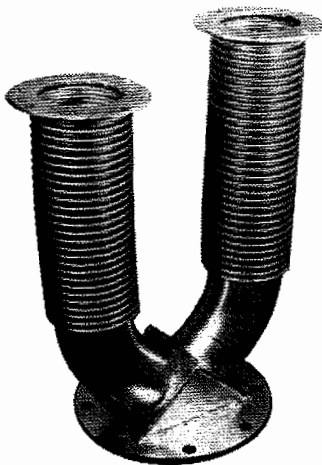
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Flexible Exhaust Y-Connections

Flexible Exhaust Y-Connections



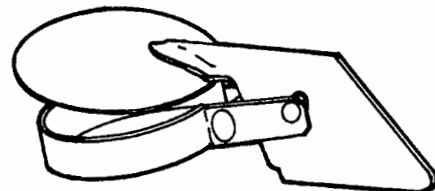
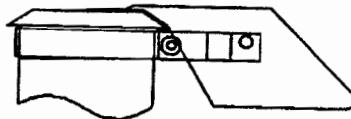
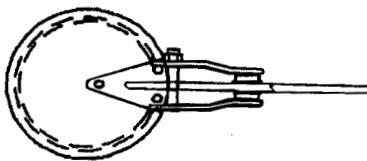
'Y' Joints



Valley Forge "Y" Joints feed dual exhaust engines into single flow systems using a single silencer. Corrugated flexible hose in the "Y" isolates engine vibration and helps to compensate for misalignment. Flexible legs of the "Y" can be stainless steel or carbon steel. Carbon steel can be used for operating temperatures up to 850°F. Valley Forge can supply "Y" joints for the largest Detroit Diesel and Cummins dual exhaust engines. The joint that appears above is a Detroit Diesel 16V149T. The photo to the left shows a joint with an offset that is for a Cummins VT1710. Just specify engine make, operating temperature range and dimensions shown in the drawing to the above left.

7

Exhaust Rain Caps



AVAILABLE IN SIZES FROM 1.25" TO 16"

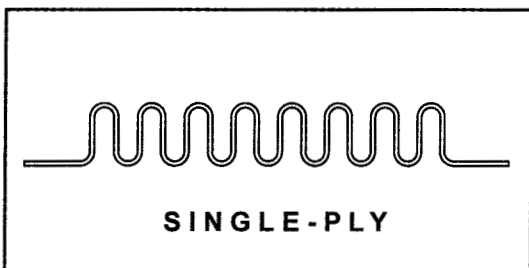


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HUMCO ENGINE ROOM

Exhaust Flex Connectors

A240 T-321 STAINLESS STEEL BELLOWS

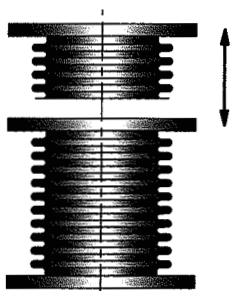


▶ A240 T-321 STAINLESS STEEL BELLOWS

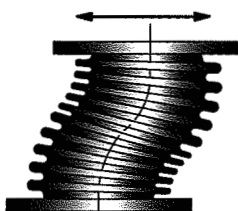
Single-ply bellows construction is used for moderate amounts of lateral and axial motions. Spring forces are higher than multi-ply and fatigue cycle life is better than flex hose. Single-ply bellows are commonly used to absorb axial compression and lateral offset in the piping. When used to absorb thermal growth, the bellows must be placed in a piping system that is properly anchored and guided.

BELLOWS I.D.	CONV. LENGTH	MAX.* PSIG @ 900°F	MAX. BELLOWS TEMP.	AXIAL COMPR. ONLY	MINIMUM CYCLE LIFE (THEOR)	AXIAL SPRING RATE # / INCH	LATERAL OFFSET ONLY	MINIMUM CYCLE LIFE (THEOR)	LATERAL SPRING RATE # / INCH
1.50	6.00	20	1200°F	0.75	10,800	105	0.75	11,000	13
2.00	6.00	10	1200°F	1.25	13,900	67	1.00	15,000	15
2.38	6.00	15	1200°F	1.25	12,700	79	0.88	15,000	25
2.50	6.00	15	1200°F	1.25	12,600	74	0.88	11,800	26
2.88	6.00	20	1200°F	1.25	11,600	86	0.75	12,700	39
3.00	9.00	8	1200°F	2.00	11,800	78	1.75	11,700	17
3.50	9.00	10	1200°F	2.00	10,600	89	1.25	15,000	26
4.00	9.00	10	1200°F	2.50	10,200	70	1.25	15,000	26
4.50	9.00	10	1200°F	2.25	15,000	79	1.25	15,000	36
5.00	9.00	20	1200°F	2.00	15,000	145	1.00	15,000	92
5.56	9.00	20	1200°F	2.00	15,000	160	1.00	10,700	123
6.00	9.00	20	1200°F	2.00	14,900	173	0.88	14,500	153
6.63	9.00	25	1200°F	2.00	14,000	191	0.75	15,000	201
7.50	9.00	30	1200°F	2.00	13,000	212	0.75	10,000	279
8.00	9.00	30	1200°F	2.00	12,000	227	0.63	18,000	339
8.63	9.00	35	1200°F	2.00	12,000	242	0.63	12,000	415
9.50	9.00	35	1200°F	2.00	12,000	269	0.50	15,000	550
10.00	9.00	30	1200°F	2.50	15,000	224	0.75	11,000	500
10.75	9.00	30	1200°F	2.50	15,000	237	0.63	15,000	605
12.00	9.00	30	1200°F	2.50	12,000	264	0.50	15,000	824
12.75	9.00	30	1200°F	2.75	10,600	282	0.50	15,000	986
14.00	9.00	25	1200°F	3.00	15,000	213	0.63	15,000	886
16.00	9.00	30	1200°F	3.00	15,000	242	0.50	15,000	1,288
18.00	9.00	35	1200°F	3.00	15,000	247	0.50	13,000	1,641
20.00	9.00	40	1200°F	3.00	15,000	272	0.38	15,000	2,194
22.00	9.00	40	1200°F	3.00	15,000	299	0.38	11,000	2,901
24.00	9.00	45	1200°F	3.00	15,000	323	0.38	13,000	3,699

7



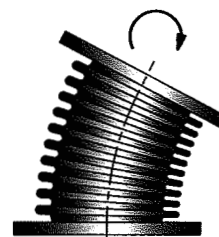
AXIAL COMPRESSION / EXTENSION



LATERAL OFFSET



COMBINED



ANGULAR

NOTES:

- Maximum PSIG and temperature ratings are for the bellows only. The rating for the assembly will be based on the fitting style and type of materials selected.
- Movements are non-concurrent.
- Longer and shorter bellows can be furnished upon customer's request.

- Inconel 625, T-316 Stainless Steel, Hastelloy C276, T-304 Stainless Steel, Alloy-X, Monel 400 bellows are available on request.
- Bellows can be extended up to 50% of the axial compression rating.
- Larger sizes available.

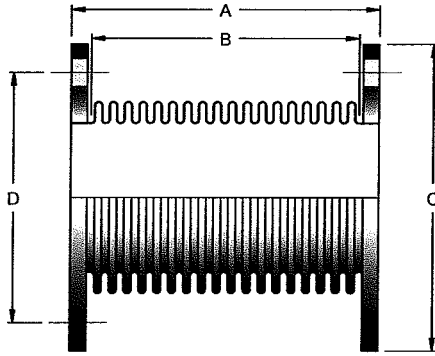


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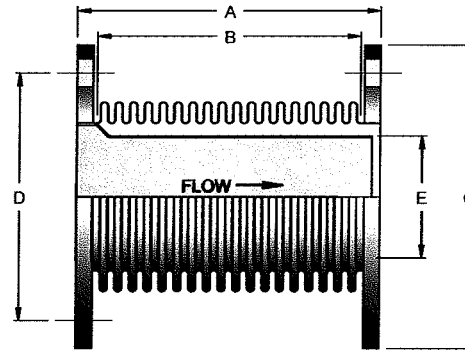
HUMCO ENGINE ROOM

Exhaust Flex Connectors

TYPE 1 - FIXED X FIXED FLANGE (ANSI)
T-321 STAINLESS STEEL BELLOWS & FLEX
125-150# ANSI FLANGE INLET, A-36 STEEL
125-150# ANSI FLANGE OUTLET, A-36 STEEL



TYPE 1L - FIXED X FIXED FLANGE (ANSI)
T-321 S/S BELLOWS / FLEX WITH INTERNAL FLOW LINER
125-150# ANSI FLANGE INLET, A-36 STEEL
125-150# ANSI FLANGE OUTLET, A-36 STEEL



TYPE 1 - MULTI-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	10.00	9.00	7.50	6.00	4	0.75	1M0300-10
3-1/2"	10.00	9.00	8.50	7.00	8	0.75	1M0350-10
4"	10.00	9.00	9.00	7.50	8	0.75	1M0400-10
5"	10.00	9.00	10.00	8.50	8	0.88	1M0500-10
6"	10.00	9.00	11.00	9.50	8	0.88	1M0600-10
8"	10.00	9.00	13.50	11.75	8	0.88	1M0800-10
10"	10.00	9.00	16.00	14.25	12	1.00	1M1000-10
12"	10.00	9.00	19.00	17.00	12	1.00	1M1200-10
14"	10.00	9.00	21.00	18.75	12	1.13	1M1400-10
16"	10.00	9.00	23.50	21.25	16	1.13	1M1600-10
18"	10.00	9.00	25.50	22.75	16	1.25	1M1800-10
20"	10.00	9.00	27.50	25.00	20	1.25	1M2000-10
22"	10.00	9.00	29.50	27.25	20	1.38	1M2200-10
24"	10.00	9.00	32.00	29.50	20	1.38	1M2400-10

TYPE 1L - MULTI-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	10.00	9.00	7.50	6.00	2.88	1M0300-10L
3-1/2"	4.00	10.00	9.00	8.50	7.00	3.38	1M0350-10L
4"	4.50	10.00	9.00	9.00	7.50	3.88	1M0400-10L
5"	5.56	10.00	9.00	10.00	8.50	4.75	1M0500-10L
6"	6.63	10.00	9.00	11.00	9.50	5.75	1M0600-10L
8"	8.63	10.00	9.00	13.50	11.75	7.75	1M0800-10L
10"	10.75	10.00	9.00	16.00	14.25	9.88	1M1000-10L
12"	12.75	10.00	9.00	19.00	17.00	11.88	1M1200-10L
14"	14.00	10.00	9.00	21.00	18.75	13.00	1M1400-10L
16"	16.00	10.00	9.00	23.50	21.25	15.00	1M1600-10L
18"	18.00	10.00	9.00	25.50	22.75	17.00	1M1800-10L
20"	20.00	10.00	9.00	27.50	25.00	19.00	1M2000-10L
22"	22.00	10.00	9.00	29.50	27.25	21.00	1M2200-10L
24"	24.00	10.00	9.00	32.00	29.50	23.00	1M2400-10L

TYPE 1 - SINGLE-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	10.00	9.00	7.50	6.00	4	0.75	1S0300-10
3-1/2"	10.00	9.00	8.50	7.00	8	0.75	1S0350-10
4"	10.00	9.00	9.00	7.50	8	0.75	1S0400-10
5"	10.00	9.00	10.00	8.50	8	0.88	1S0500-10
6"	10.00	9.00	11.00	9.50	8	0.88	1S0600-10
8"	10.00	9.00	13.50	11.75	8	0.88	1S0800-10
10"	10.00	9.00	16.00	14.25	12	1.00	1S1000-10
12"	10.00	9.00	19.00	17.00	12	1.00	1S1200-10
14"	10.00	9.00	21.00	18.75	12	1.13	1S1400-10
16"	10.00	9.00	23.50	21.25	16	1.13	1S1600-10
18"	10.00	9.00	25.50	22.75	16	1.25	1S1800-10
20"	10.00	9.00	27.50	25.00	20	1.25	1S2000-10
22"	10.00	9.00	29.50	27.25	20	1.38	1S2200-10
24"	10.00	9.00	32.00	29.50	20	1.38	1S2400-10

TYPE 1L - SINGLE-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	10.00	9.00	7.50	6.00	2.88	1S0300-10L
3-1/2"	4.00	10.00	9.00	8.50	7.00	3.38	1S0350-10L
4"	4.50	10.00	9.00	9.00	7.50	3.88	1S0400-10L
5"	5.56	10.00	9.00	10.00	8.50	4.75	1S0500-10L
6"	6.63	10.00	9.00	11.00	9.50	5.75	1S0600-10L
8"	8.63	10.00	9.00	13.50	11.75	7.75	1S0800-10L
10"	10.75	10.00	9.00	16.00	14.25	9.88	1S1000-10L
12"	12.75	10.00	9.00	19.00	17.00	11.88	1S1200-10L
14"	14.00	10.00	9.00	21.00	18.75	13.00	1S1400-10L
16"	16.00	10.00	9.00	23.50	21.25	15.00	1S1600-10L
18"	18.00	10.00	9.00	25.50	22.75	17.00	1S1800-10L
20"	20.00	10.00	9.00	27.50	25.00	19.00	1S2000-10L
22"	22.00	10.00	9.00	29.50	27.25	21.00	1S2200-10L
24"	24.00	10.00	9.00	32.00	29.50	23.00	1S2400-10L

TYPE 1 - FLEX HOSE							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	18.00	17.00	7.50	6.00	4	0.75	1F0300-18
3-1/2"	18.00	17.00	8.50	7.00	8	0.75	1F0350-18
4"	18.00	17.00	9.00	7.50	8	0.75	1F0400-18
5"	18.00	17.00	10.00	8.50	8	0.88	1F0500-18
6"	18.00	17.00	11.00	9.50	8	0.88	1F0600-18
8"	18.00	17.00	13.50	11.75	8	0.88	1F0800-18
10"	18.00	17.00	16.00	14.25	12	1.00	1F1000-18
12"	18.00	17.00	19.00	17.00	12	1.00	1F1200-18
14"	18.00	17.00	21.00	18.75	12	1.13	1F1400-18
16"	18.00	17.00	23.50	21.25	16	1.13	1F1600-18
18"	18.00	17.00	25.50	22.75	16	1.25	1F1800-18

- OPTIONS:**
- Longer / Shorter Lengths
 - Increasing / Reducing Flanges
 - Special Drilled / Metric Flanges
 - Cummins and Detroit Flanges
 - T-304 Stainless Steel Flanges
 - Inconel 625 Bellows

- NOTES:**
- T-321 Stainless Steel Vanstone (Standard).
 - Standard Flow Liner Diameter "E" Limits Lateral Offset to 3/8" For Increased Offset "E" Must Be Reduced.
 - Internal Flow Liners are Required if Flow Conditions are Equal or Greater Than the Following:
6" and Under (Gas / Steam) - 4ft/sec/inch of Diameter.
8" and Over (Gas / Steam) - 25ft/sec.



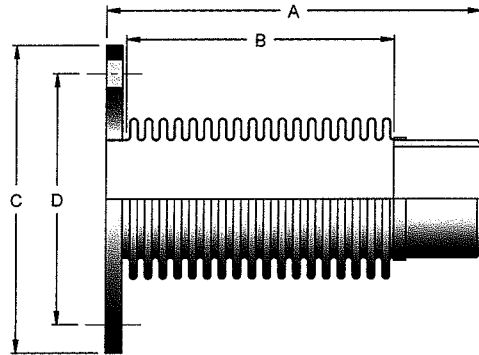
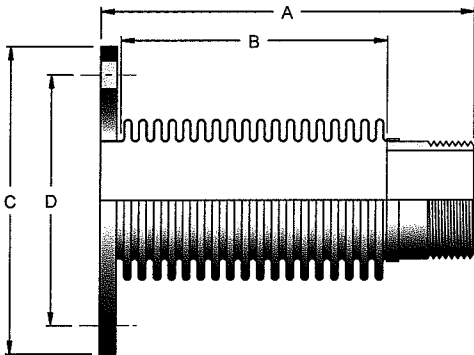
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Phone: 1-800-381-9968

HUMCO ENGINE ROOM

Exhaust Flex Connectors

TYPE 3 - FIXED FLANGE X MALE NPT
T-321 STAINLESS STEEL BELLOWS & FLEX
125-150#, ANSI A 36 CARBON STEEL FLANGE ONE END
SCHED. 40, CARBON STEEL MALE NPT ONE END

TYPE 4 - FIXED FLANGE X BEVELED WELD END
T-321 STAINLESS STEEL BELLOWS & FLEX
125-150#, ANSI A 36 CARBON STEEL FLANGE ONE END
SCHED. 40, CARBON STEEL BEVELED WELD END ONE END



TYPE 3 - MULTI-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	9.00	6.00	6.00	4.75	4	0.75	3M0200-9
2-1/2"	9.50	6.00	7.00	5.50	4	0.75	3M0250-9.5
3"	12.50	9.00	7.50	6.00	4	0.75	3M0300-12.5
3-1/2"	13.50	9.00	8.50	7.00	8	0.75	3M0350-13.5
4"	13.50	9.00	9.00	7.50	8	0.75	3M0400-13.5
5"	13.50	9.00	10.00	8.50	8	0.88	3M0500-13.5
6"	13.50	9.00	11.00	9.50	8	0.88	3M0600-13.5
8"	13.50	9.00	13.50	11.75	8	0.88	3M0800-13.5

TYPE 4 - MULTI-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	9.00	6.00	6.00	4.75	4	0.75	4M0200-9
2-1/2"	9.00	6.00	7.00	5.50	4	0.75	4M0250-9
3"	12.00	9.00	7.50	6.00	4	0.75	4M0300-12
3-1/2"	12.00	9.00	8.50	7.00	8	0.75	4M0350-12
4"	12.00	9.00	9.00	7.50	8	0.75	4M0400-12
5"	12.00	9.00	10.00	8.50	8	0.88	4M0500-12
6"	12.00	9.00	11.00	9.50	8	0.88	4M0600-12
8"	12.00	9.00	13.50	11.75	8	0.88	4M0800-12

TYPE 3 - SINGLE-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	9.00	6.00	6.00	4.75	4	0.75	3S0200-9
2-1/2"	9.50	6.00	7.00	5.50	4	0.75	3S0250-9.5
3"	12.50	9.00	7.50	6.00	4	0.75	3S0300-12.5
3-1/2"	13.50	9.00	8.50	7.00	8	0.75	3S0350-13.5
4"	13.50	9.00	9.00	7.50	8	0.75	3S0400-13.5
5"	13.50	9.00	10.00	8.50	8	0.88	3S0500-13.5
6"	13.50	9.00	11.00	9.50	8	0.88	3S0600-13.5
8"	13.50	9.00	13.50	11.75	8	0.88	3S0800-13.5

TYPE 4 - SINGLE-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	9.00	6.00	6.00	4.75	4	0.75	4S0200-9
2-1/2"	9.00	6.00	7.00	5.50	4	0.75	4S0250-9
3"	12.00	9.00	7.50	6.00	4	0.75	4S0300-12
3-1/2"	12.00	9.00	8.50	7.00	8	0.75	4S0350-12
4"	12.00	9.00	9.00	7.50	8	0.75	4S0400-12
5"	12.00	9.00	10.00	8.50	8	0.88	4S0500-12
6"	12.00	9.00	11.00	9.50	8	0.88	4S0600-12
8"	12.00	9.00	13.50	11.75	8	0.88	4S0800-12

TYPE 3 - FLEX HOSE							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	15.00	12.00	6.00	4.75	4	0.75	3F0200-15
2-1/2"	15.50	12.00	7.00	5.50	4	0.75	3F0250-15.5
3"	20.50	17.00	7.50	6.00	4	0.75	3F0300-20.5
3-1/2"	21.50	17.00	8.50	7.00	8	0.75	3F0350-21.5
4"	21.50	17.00	9.00	7.50	8	0.75	3F0400-21.5
5"	21.50	17.00	10.00	8.50	8	0.88	3F0500-21.5
6"	21.50	17.00	11.00	9.50	8	0.88	3F0600-21.5
8"	21.50	17.00	13.50	11.75	8	0.88	3F0800-21.5

TYPE 4 - FLEX HOSE							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
2"	15.00	12.00	6.00	4.75	4	0.75	4F0200-15
2-1/2"	15.00	12.00	7.00	5.50	4	0.75	4F0250-15
3"	20.00	17.00	7.50	6.00	4	0.75	4F0300-20
3-1/2"	20.00	17.00	8.50	7.00	8	0.75	4F0350-20
4"	20.00	17.00	9.00	7.50	8	0.75	4F0400-20
5"	20.00	17.00	10.00	8.50	8	0.88	4F0500-20
6"	20.00	17.00	11.00	9.50	8	0.88	4F0600-20
8"	20.00	17.00	13.50	11.75	8	0.88	4F0800-20

- OPTIONS:**
- Longer / Shorter Lengths
 - Special Drilled / Metric Flanges
 - T-304 Stainless Steel Flanges
 - Inconel 625 Bellows
 - Flow Liner
 - Increasing Outlet Flange

7

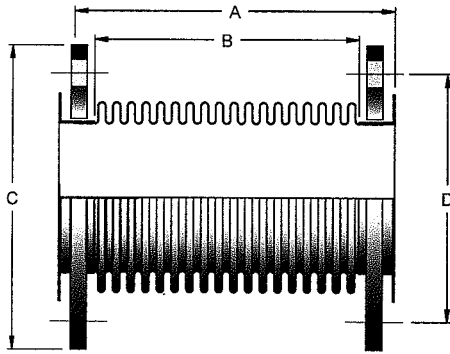


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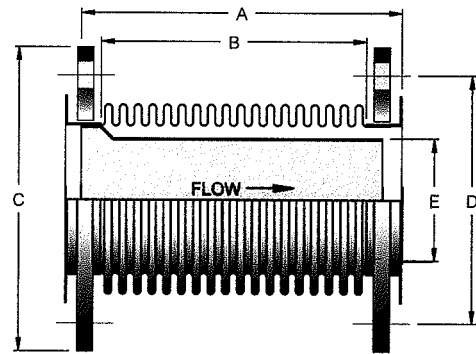
HUMCO ENGINE ROOM

Exhaust Flex Connectors

TYPE 31A - FLOATING X FLOATING (ANSI)
T-321 STAINLESS STEEL BELLOWS / FLEX
125-150# FLOATING ANSI FLANGE, A-36 STEEL EACH END



TYPE 31AL - FLOATING X FLOATING (ANSI)
T-321 STAINLESS STEEL BELLOWS / FLEX WITH FLOW LINER
125-150# FLOATING ANSI FLANGE, A-36 STEEL EACH END



TYPE 31A - MULTI-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	13.00	9.00	7.50	6.00	4	0.75	31M0300-13A
3-1/2"	13.00	9.00	8.50	7.00	8	0.75	31M0350-13A
4"	13.00	9.00	9.00	7.50	8	0.75	31M0400-13A
5"	13.00	9.00	10.00	8.50	8	0.88	31M0500-13A
6"	13.00	9.00	11.00	9.50	8	0.88	31M0600-13A
8"	13.00	9.00	13.50	11.75	8	0.88	31M0800-13A
10"	13.00	9.00	16.00	14.25	12	1.00	31M1000-13A
12"	13.00	9.00	19.00	17.00	12	1.00	31M1200-13A
14"	13.00	9.00	21.00	18.75	12	1.13	31M1400-13A
16"	13.00	9.00	23.50	21.25	16	1.13	31M1600-13A
18"	13.00	9.00	25.50	22.75	16	1.25	31M1800-13A
20"	13.00	9.00	27.50	25.00	20	1.25	31M2000-13A
22"	13.00	9.00	29.50	27.25	20	1.38	31M2200-13A
24"	13.00	9.00	32.00	29.50	20	1.38	31M2400-13A

TYPE 31AL - MULTI-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	13.00	9.00	7.50	6.00	2.88	31M0300-13AL
3-1/2"	4.00	13.00	9.00	8.50	7.00	3.38	31M0350-13AL
4"	4.50	13.00	9.00	9.00	7.50	3.88	31M0400-13AL
5"	5.56	13.00	9.00	10.00	8.50	4.75	31M0500-13AL
6"	6.63	13.00	9.00	11.00	9.50	5.75	31M0600-13AL
8"	8.63	13.00	9.00	13.50	11.75	7.75	31M0800-13AL
10"	10.75	13.00	9.00	16.00	14.25	9.88	31M1000-13AL
12"	12.75	13.00	9.00	19.00	17.00	11.88	31M1200-13AL
14"	14.00	13.00	9.00	21.00	18.75	13.00	31M1400-13AL
16"	16.00	13.00	9.00	23.50	21.25	15.00	31M1600-13AL
18"	18.00	13.00	9.00	25.50	22.75	17.00	31M1800-13AL
20"	20.00	13.00	9.00	27.50	25.00	19.00	31M2000-13AL
22"	22.00	13.00	9.00	29.50	27.25	21.00	31M2200-13AL
24"	24.00	13.00	9.00	32.00	29.50	23.00	31M2400-13AL

TYPE 31A - SINGLE-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	13.00	9.00	7.50	6.00	4	0.75	31S0300-13A
3-1/2"	13.00	9.00	8.50	7.00	8	0.75	31S0350-13A
4"	13.00	9.00	9.00	7.50	8	0.75	31S0400-13A
5"	13.00	9.00	10.00	8.50	8	0.88	31S0500-13A
6"	13.00	9.00	11.00	9.50	8	0.88	31S0600-13A
8"	13.00	9.00	13.50	11.75	8	0.88	31S0800-13A
10"	13.00	9.00	16.00	14.25	12	1.00	31S1000-13A
12"	13.00	9.00	19.00	17.00	12	1.00	31S1200-13A
14"	13.00	9.00	21.00	18.75	12	1.13	31S1400-13A
16"	13.00	9.00	23.50	21.25	16	1.13	31S1600-13A
18"	13.00	9.00	25.50	22.75	16	1.25	31S1800-13A
20"	13.00	9.00	27.50	25.00	20	1.25	31S2000-13A
22"	13.00	9.00	29.50	27.25	20	1.38	31S2200-13A
24"	13.00	9.00	32.00	29.50	20	1.38	31S2400-13A

TYPE 31AL - SINGLE-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	13.00	9.00	7.50	6.00	2.88	31S0300-13AL
3-1/2"	4.00	13.00	9.00	8.50	7.00	3.38	31S0350-13AL
4"	4.50	13.00	9.00	9.00	7.50	3.88	31S0400-13AL
5"	5.56	13.00	9.00	10.00	8.50	4.75	31S0500-13AL
6"	6.63	13.00	9.00	11.00	9.50	5.75	31S0600-13AL
8"	8.63	13.00	9.00	13.50	11.75	7.75	31S0800-13AL
10"	10.75	13.00	9.00	16.00	14.25	9.88	31S1000-13AL
12"	12.75	13.00	9.00	19.00	17.00	11.88	31S1200-13AL
14"	14.00	13.00	9.00	21.00	18.75	13.00	31S1400-13AL
16"	16.00	13.00	9.00	23.50	21.25	15.00	31S1600-13AL
18"	18.00	13.00	9.00	25.50	22.75	17.00	31S1800-13AL
20"	20.00	13.00	9.00	27.50	25.00	19.00	31S2000-13AL
22"	22.00	13.00	9.00	29.50	27.25	21.00	31S2200-13AL
24"	24.00	13.00	9.00	32.00	29.50	23.00	31S2400-13AL

TYPE 31A - FLEX HOSE							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	22.00	17.00	7.50	6.00	4	0.75	31F0300-22A
3-1/2"	22.00	17.00	8.50	7.00	8	0.75	31F0350-22A
4"	22.00	17.00	9.00	7.50	8	0.75	31F0400-22A
5"	22.00	17.00	10.00	8.50	8	0.88	31F0500-22A
6"	22.00	17.00	11.00	9.50	8	0.88	31F0600-22A
8"	22.00	17.00	13.50	11.75	8	0.88	31F0800-22A
10"	22.00	17.00	16.00	14.25	12	1.00	31F1000-22A
12"	22.00	17.00	19.00	17.00	12	1.00	31F1200-22A
14"	22.00	17.00	21.00	18.75	12	1.13	31F1400-22A
16"	22.00	17.00	23.50	21.25	16	1.13	31F1600-22A
18"	22.00	17.00	25.50	22.75	16	1.25	31F1800-22A

- OPTIONS:**
- Longer / Shorter Lengths
 - Increasing / Reducing Flanges
 - Special Drilled / Metric Flanges
 - Cummins and Detroit Flanges
 - T-304 Stainless Steel Flanges

- NOTES:**
- T-321 Stainless Steel Vanstone (Standard).
 - Standard Flow Liner Diameter "E" Limits Lateral Offset to 3/8" For Increased Offset "E" Must Be Reduced.
 - Internal Flow Liners are Required if Flow Conditions are Equal or Greater Than the Following:
6" and Under (Gas / Steam) - 4ft/sec/inch of Diameter.
8" and Over (Gas / Steam) - 25ft/sec.

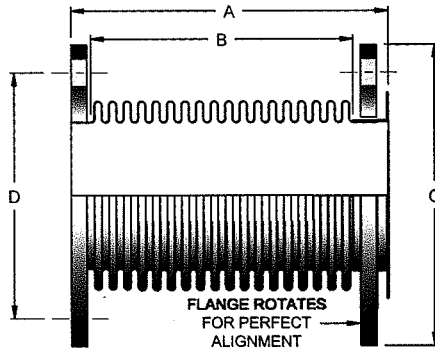


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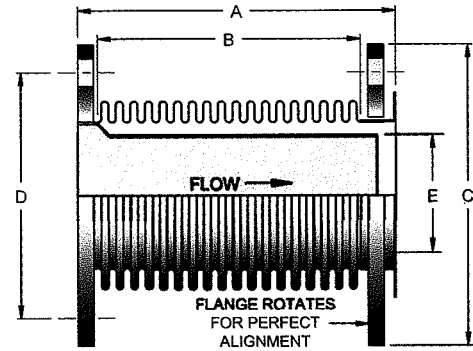
HUMCO ENGINE ROOM

Exhaust Flex Connectors

TYPE 13 - FIXED X FLOATING FLANGES (ANSI)
T-321 STAINLESS STEEL BELLOWS / FLEX
125-150# ANSI FLANGE INLET, A-36 STEEL
125-150# ANSI FLANGE OUTLET, A-36 STEEL



TYPE 13L - FIXED X FLOATING FLANGES (ANSI)
T-321 S/S BELLOWS / FLEX WITH INTERNAL FLOW LINER
125-150# ANSI FLANGE INLET, A-36 STEEL
125-150# ANSI FLANGE OUTLET, A-36 STEEL



TYPE 13 - MULTI-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	12.00	9.00	7.50	6.00	4	0.75	13M0300-12
3-1/2"	12.00	9.00	8.50	7.00	8	0.75	13M0350-12
4"	12.00	9.00	9.00	7.50	8	0.75	13M0400-12
5"	12.00	9.00	10.00	8.50	8	0.88	13M0500-12
6"	12.00	9.00	11.00	9.50	8	0.88	13M0600-12
8"	12.00	9.00	13.50	11.75	8	0.88	13M0800-12
10"	12.00	9.00	16.00	14.25	12	1.00	13M1000-12
12"	12.00	9.00	19.00	17.00	12	1.00	13M1200-12
14"	12.00	9.00	21.00	18.75	12	1.13	13M1400-12
16"	12.00	9.00	23.50	21.25	16	1.13	13M1600-12
18"	12.00	9.00	25.50	22.75	16	1.25	13M1800-12
20"	12.00	9.00	27.50	25.00	20	1.25	13M2000-12
22"	12.00	9.00	29.50	27.25	20	1.38	13M2200-12
24"	12.00	9.00	32.00	29.50	20	1.38	13M2400-12

TYPE 13L - MULTI-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	12.00	9.00	7.50	6.00	2.88	13M0300-12L
3-1/2"	4.00	12.00	9.00	8.50	7.00	3.38	13M0350-12L
4"	4.50	12.00	9.00	9.00	7.50	3.88	13M0400-12L
5"	5.56	12.00	9.00	10.00	8.50	4.75	13M0500-12L
6"	6.63	12.00	9.00	11.00	9.50	5.75	13M0600-12L
8"	8.63	12.00	9.00	13.50	11.75	7.75	13M0800-12L
10"	10.75	12.00	9.00	16.00	14.25	9.88	13M1000-12L
12"	12.75	12.00	9.00	19.00	17.00	11.88	13M1200-12L
14"	14.00	12.00	9.00	21.00	18.75	13.00	13M1400-12L
16"	16.00	12.00	9.00	23.50	21.25	15.00	13M1600-12L
18"	18.00	12.00	9.00	25.50	22.75	17.00	13M1800-12L
20"	20.00	12.00	9.00	27.50	25.00	19.00	13M2000-12L
22"	22.00	12.00	9.00	29.50	27.25	21.00	13M2200-12L
24"	24.00	12.00	9.00	32.00	29.50	23.00	13M2400-12L

TYPE 13 - SINGLE-PLY BELLOWS							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	12.00	9.00	7.50	6.00	4	0.75	13S0300-12
3-1/2"	12.00	9.00	8.50	7.00	8	0.75	13S0350-12
4"	12.00	9.00	9.00	7.50	8	0.75	13S0400-12
5"	12.00	9.00	10.00	8.50	8	0.88	13S0500-12
6"	12.00	9.00	11.00	9.50	8	0.88	13S0600-12
8"	12.00	9.00	13.50	11.75	8	0.88	13S0800-12
10"	12.00	9.00	16.00	14.25	12	1.00	13S1000-12
12"	12.00	9.00	19.00	17.00	12	1.00	13S1200-12
14"	12.00	9.00	21.00	18.75	12	1.13	13S1400-12
16"	12.00	9.00	23.50	21.25	16	1.13	13S1600-12
18"	12.00	9.00	25.50	22.75	16	1.25	13S1800-12
20"	12.00	9.00	27.50	25.00	20	1.25	13S2000-12
22"	12.00	9.00	29.50	27.25	20	1.38	13S2200-12
24"	12.00	9.00	32.00	29.50	20	1.38	13S2400-12

TYPE 13L - SINGLE-PLY BELLOWS WITH LINER							
SIZE	I.D.	A	B	C	D	E	PART NO.
3"	3.50	12.00	9.00	7.50	6.00	2.88	13S0300-12L
3-1/2"	4.00	12.00	9.00	8.50	7.00	3.38	13S0350-12L
4"	4.50	12.00	9.00	9.00	7.50	3.88	13S0400-12L
5"	5.56	12.00	9.00	10.00	8.50	4.75	13S0500-12L
6"	6.63	12.00	9.00	11.00	9.50	5.75	13S0600-12L
8"	8.63	12.00	9.00	13.50	11.75	7.75	13S0800-12L
10"	10.75	12.00	9.00	16.00	14.25	9.88	13S1000-12L
12"	12.75	12.00	9.00	19.00	17.00	11.88	13S1200-12L
14"	14.00	12.00	9.00	21.00	18.75	13.00	13S1400-12L
16"	16.00	12.00	9.00	23.50	21.25	15.00	13S1600-12L
18"	18.00	12.00	9.00	25.50	22.75	17.00	13S1800-12L
20"	20.00	12.00	9.00	27.50	25.00	19.00	13S2000-12L
22"	22.00	12.00	9.00	29.50	27.25	21.00	13S2200-12L
24"	24.00	12.00	9.00	32.00	29.50	23.00	13S2400-12L

TYPE 13 - FLEX HOSE							
SIZE	A	B	C	D	HOLES	DIA	PART NO.
3"	20.00	17.00	7.50	6.00	4	0.75	13F0300-20
3-1/2"	20.00	17.00	8.50	7.00	8	0.75	13F0350-20
4"	20.00	17.00	9.00	7.50	8	0.75	13F0400-20
5"	20.00	17.00	10.00	8.50	8	0.88	13F0500-20
6"	20.00	17.00	11.00	9.50	8	0.88	13F0600-20
8"	20.00	17.00	13.50	11.75	8	0.88	13F0800-20
10"	20.00	17.00	16.00	14.25	12	1.00	13F1000-20
12"	20.00	17.00	19.00	17.00	12	1.00	13F1200-20
14"	20.00	17.00	21.00	18.75	12	1.13	13F1400-20
16"	20.00	17.00	23.50	21.25	16	1.13	13F1600-20
18"	20.00	17.00	25.50	22.75	16	1.25	13F1800-20

- OPTIONS:**
- Longer / Shorter Lengths
 - Increasing / Reducing Flanges
 - Special Drilled / Metric Flanges
 - Cummins and Detroit Flanges
 - T-304 Stainless Steel Flanges
 - Inconel 625 Bellows

- NOTES:**
- T-321 Stainless Steel Vanstone (Standard).
 - Standard Flow Liner Diameter "E" Limits Lateral Offset to 3/8" For Increased Offset "E" Must Be Reduced.
 - Internal Flow Liners are Required if Flow Conditions are Equal or Greater Than the Following:
6" and Under (Gas / Steam) - 4ft/sec/inch of Diameter.
8" and Over (Gas / Steam) - 25ft/sec.

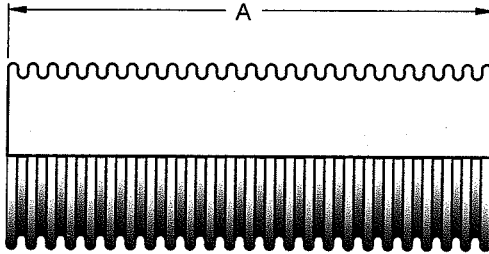


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HUMCO ENGINE ROOM

Corrugated Exhaust Flex

CORRUGATED EXHAUST FLEX HOSE



A 240 T-321 STAINLESS STEEL

Flex hose offers an economical solution for minor vibration isolation between the engine and piping. This product should only be used for a minor amount of thermal growth or piping mis-alignment. The life expectancy of flex hose is un-predictable and should only be used for non-critical applications.

FLEX I.D. (TRUE)	CONV. LENGTH "A"	MAX. PSIG @ 900°F	MAX. FLEX TEMP.	AXIAL COMP. ONLY	AXIAL SPRING RATE (lbs/inch)	ADDITIONAL MOVEMENT PER INCH (AXIAL)	LATERAL OFFSET ONLY	LATERAL SPRING RATE (lbs/inch)	ADDITIONAL MOVEMENT PER INCH (LATERAL)	CYCLE LIFE
1.00	12.00	20	1200° F	.140	320	.011	1.32	5.5	.110	N/A
1.25	12.00	20	1200° F	.140	319	.011	1.29	7.7	.107	N/A
1.50	12.00	19	1200° F	.140	298	.011	1.25	9.8	.104	N/A
2.00	12.00	18	1200° F	.140	343	.011	.960	18.4	.080	N/A
2.50	12.00	22	1200° F	.210	345	.017	.820	29	.068	N/A
3.00	17.00	10	1200° F	.289	191	.017	1.04	12	.061	N/A
3.50	17.00	10	1200° F	.289	217	.017	.918	18	.054	N/A
4.00	17.00	10	1200° F	.289	225	.017	.850	23	.050	N/A
5.00	17.00	15	1200° F	.289	342	.017	.663	54	.039	N/A
6.00	17.00	19	1200° F	.289	441	.017	.595	95	.035	N/A
7.50	17.00	14	1200° F	.374	311	.022	.553	104	.033	N/A
8.00	17.00	14	1200° F	.374	323	.022	.510	123	.030	N/A
8.63	17.00	15	1200° F	.374	341	.022	.474	147	.028	N/A
9.50	17.00	16	1200° F	.374	371	.022	.416	193	.024	N/A
10.00	17.00	14	1200° F	.374	310	.022	.357	192	.021	N/A
10.75	17.00	14	1200° F	.374	328	.022	.332	232	.020	N/A
12.00	17.00	15	1200° F	.374	359	.022	.340	311	.020	N/A
12.75	17.00	15	1200° F	.374	380	.022	.321	369	.019	N/A
14.00	17.00	17	1200° F	.374	397	.022	.306	415	.018	N/A
16.00	17.00	18	1200° F	.374	435	.022	.272	584	.016	N/A
18.00	17.00	18	1200° F	.374	483	.022	.255	809	.015	N/A

NOTES:

- 1" - 6" Sizes are Stocked in Approximately 20' Lengths.
- 7-1/2" and Larger Sizes are Stocked in 12", 18" and 24" Lengths.
- Larger and Metric Sizes Available on Request.
- Inconel 625, T-316L, Hastelloy and Other Alloys Available on Request.



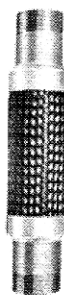
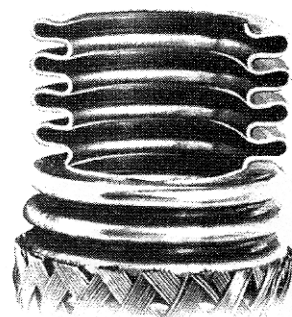
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HUMCO ENGINE ROOM

Exhaust Flex Braid Connectors

Exhaust Flex Braid Connectors

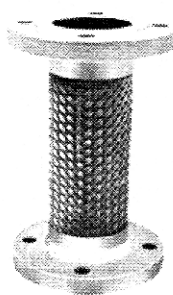
Valley Forge flexible metal connectors isolate vibration from being transferred to other related equipment, plumbing and systems. This prolongs the service life of the entire system. Annular corrugated metal hose is contained by a braided stainless steel sleeve. Standard material for hose and braid is type 321 stainless steel. Corrugated hose and fittings can be supplied in model, T316ss, T304ss, and carbon steel.



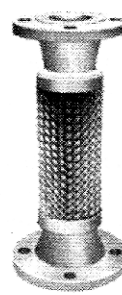
M
Male Pipe Threads



W
Weld Ends



SOF
Slip On Flanges



RF
Weld Neck Flanges



FRF
Weld Neck Flanges
and Floating Flanges

FLEXIBLE BRAID CONNECTORS

INSIDE DIAM.	1/4" (.635cm)	3/8" (.953cm)	1/2" (1.27cm)	3/4" (1.90cm)	1" (2.54cm)	1 1/4" (3.18cm)	1 1/2" (3.81cm)	2" (5.04cm)	2 1/2" (6.35cm)
LIVE LENGTH	8" (20.32cm)	8" (20.32cm)	8" (20.32cm)	8" (20.32cm)	8" (20.32cm)	8" (20.32cm)	8" (20.32cm)	5 3/4" (14.6cm)	5 3/4" (14.6cm)
OVERALL LENGTH	M or W	12" (30.48cm)	12" (30.48cm)	12" (30.48cm)	12" (30.48cm)	12" (30.48cm)	12" (30.48cm)	13 3/4" (35.56cm)	13 3/4" (35.56cm)
	SOF or PLATE	-	-	-	-	-	-	9" (22.86cm)	9" (22.86cm)
	RF	-	-	-	-	-	-	12 3/4" (32.38cm)	13 1/4" (33.66cm)
	FRF	-	-	-	-	-	-	11" (27.94cm)	11" (27.94cm)
MAX. WORKING PRESSURE (Atmos. @ 21°C)	2000 (136.1)	1420 (96.6)	1040 (70.7)	670 (45.6)	540 (36.7)	500 (34.0)	450 (30.6)	420 (28.6)	350 (23.8)

INSIDE DIAM.	3" (7.62cm)	3 1/2" (8.89cm)	4" (10.16cm)	5" (12.7cm)	6" (15.24cm)	8" (20.32cm)	10" (25.40cm)	12" (30.48cm)	14" (35.56cm)	16" (40.64cm)
LIVE LENGTH	5 3/4" (14.6cm)	5 3/4" (14.6cm)	5 3/4" (14.6cm)	7 1/2" (19.05cm)	7 1/2" (19.05cm)	8" (20.32cm)	9" (22.86cm)	10" (25.40cm)	10" (25.40cm)	10" (25.40cm)
OVERALL LENGTH	M or W	13 3/4" (35.56cm)	13 3/4" (35.56cm)	13 3/4" (35.56cm)	17 1/2" (45.72cm)	17 1/2" (45.72cm)	-	-	-	-
	SOF or PLATE	9" (22.86cm)	9" (22.86cm)	9" (22.86cm)	11" (27.94cm)	11" (27.94cm)	12" (30.48cm)	13" (33.02cm)	14" (34.56cm)	14" (34.56cm)
	RF	13 1/4" (33.66cm)	13 1/4" (33.66cm)	13 1/4" (33.66cm)	16 1/2" (41.91cm)	16 1/2" (41.91cm)	18" (45.72cm)	-	-	-
	FRF	11" (27.94cm)	11" (27.94cm)	11" (27.94cm)	13" (33.02cm)	13" (33.02cm)	14" (34.56cm)	13" (33.02cm)	16" (40.64cm)	16" (40.64cm)
MAX. WORKING PRESSURE (Atmos. @ 21°C)	315 (21.4)	300 (20.4)	270 (18.4)	200 (13.6)	185 (12.6)	180 (12.2)	150 (10.2)	130 (8.8)	110 (7.5)	100 (6.8)

Numbers in parentheses are metric equivalents.



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Standard Flexible Exhaust Assemblies

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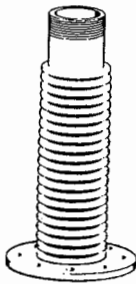
TYPE SS
 SLIP X SLIP



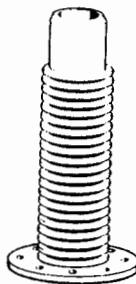
TYPE M
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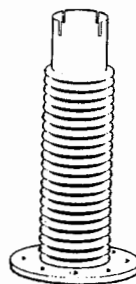
TYPE SM
 SLIP X NPT



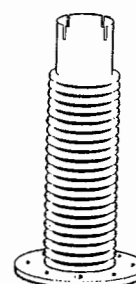
TYPE MA
 NPT X FLANGE



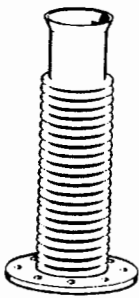
TYPE WA
 WELD END X FLANGE



TYPE SA
 FLANGE X SLIP



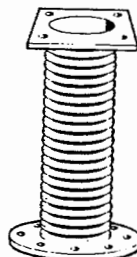
TYPE A
 FLANGE X FLANGE



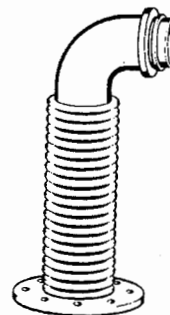
TYPE DA
 TROIT MARMOM
 X FLANGE



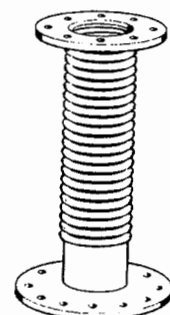
TYPE DM
 DETROIT MAR-
 MOM X NPT



TYPE KA
 CAT FLANGE
 X FLANGE



TYPE TA
 FLANGE X ELBOW,
 TURBO



TYPE XKA
 FLANGE X CONCENTRIC
 INCREASER FLANGE

EXHAUST ASSEMBLIES ARE MADE TO ANY LENGTH REQUIRED.
 STANDARD ASSEMBLIES ARE PROVIDED IN TYPE 321 STAINLESS STEEL WITH CARBON STEEL END FITTINGS.