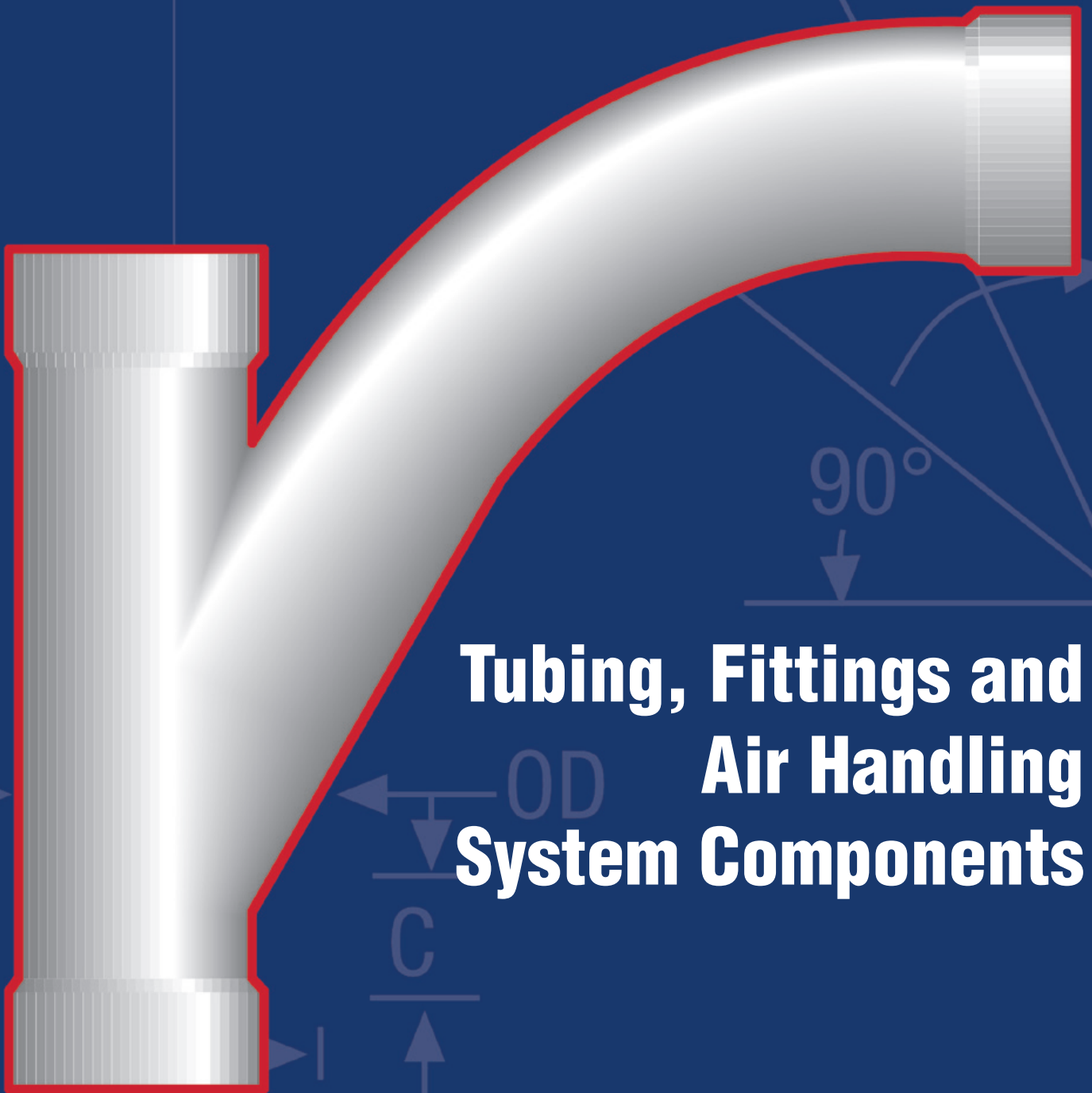


Spencer[®]



**Tubing, Fittings and
Air Handling
System Components**



Laying Out a Tubing System _____	3	Shrink Sleeves _____	19
Tubing Assembly _____	3	Weather Caps _____	19
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METALLIC TUBING AND FITTINGS FOR AIR HANDLING SYSTEMS



As an air and gas handling specialist, Spencer offers a wide range of stock light gauge metallic tubing and the companion fittings that make it easy to lay out and implement an entire network for central vacuum cleaning, pneumatic conveying, low pressure air handling and material handling systems.

More economical than steel pipe and pipe fittings, more durable than PVC or other plastic tubing and without worries about static electricity buildup, our metallic tubing products are lightweight and strong. They are made in carbon steel, galvanized steel, stainless steel and aluminum, in diameters from 2-1/8" to 14". Contact Spencer for availability of special tubing and fittings diameters and material gauges.



Standard fittings include elbows, YL and TY branches, couplings, reducers and adapters, which are supplemented by a complete line of accessories—flanges, rubber sleeves, vacuum hoses, check valves, air gates, butterfly valves, etc.

Special fittings can be fabricated of various metals for custom-designed ease of connection or installation. Some ideas: 180° returns, manifolds, double threaded Ys, tube to pipe adapters, hose adapters, flanged adapters.

Vacuum system inlet valves are available for floor or wall installation. Some options include, recessed, flush-type valves; valves with locking features; slotted floor valves that can vacuum dirt from dry mops and push-brooms; silent valves for hospitals, libraries and schools; oversized valves for large diameter vacuum hoses.

Special fabrication services are available in aluminum, stainless steel, galvanized steel and carbon steel—plain or primed. Starting with economical standard Spencer fittings, we can fabricate machine manifolds, welded configurations, assemblies, prefabricated ductwork and various types of air distribution devices. Using Spencer components is a smart way to save jobsite time.

Layout and design services are available from Spencer to help you develop an integrated tubing and fittings network for your central vacuum cleaning, pneumatic conveying or low-pressure air and process material handling system applications.

ORDER INSTRUCTIONS



To provide you with the best service and to avoid possible errors please include the following on all orders.

- Correct billing and shipping address with shipping method.
- Material of construction - Carbon Steel, Galvanized Steel, Stainless Steel, or Aluminum.
- Quantity • Part Number • Description
- Tubing Length - specify if other than standard.
- Type of ends on fittings - straight or expanded.
- Required shipping date.
- Confirming order - if confirms a previous telephone, email or fax order, please mark "Confirming Order - Do Not Duplicate."

LAYING OUT A TUBING SYSTEM



Before laying out a tubing system a review of the building should be performed. This will bring out any structural peculiarities the building may have.

Sizing of the tubing should be made to assure a velocity that will allow materials to flow freely without "dropout" or high abrasion. The friction loss chart (on page 30) can help with sizing problems.

Generally the use of good plumbing practices will give satisfactory results. Remember that a smooth and continuous flow of air throughout the system is the chief goal. Tubing should be arranged so that there are no connections into which heavier material will drop by gravity or which can cause line obstructions.

TUBING ASSEMBLY



Time spent in preparing the tubing and fittings for assembly will save time in installation and possible problems later. All burrs should be removed and ends where joints are to be made should be cleaned of oil, grease, dust, etc.

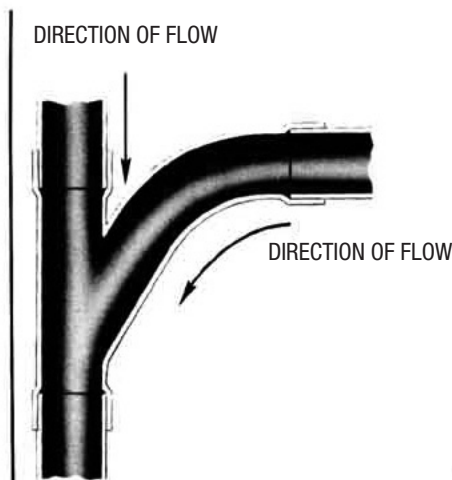
Tubing may be joined by adhesive, heat shrinkable sleeves, welding, brazing or compression couplings. (Note: Adhesive is not recommended for lines over 6" OD).

Heat shrinkable sleeves are the most popular method for joining Spencer tubing and fittings. The tubing is slipped into the expanded end of the fitting and heat sealed. A slip coupling is used to join two sections of tubing.

Short runs can be assembled on the floor and then raised into position. Horizontal runs should be supported every 8-10 feet under normal conditions. Risers and drops should be supported to prevent movement which can cause deterioration of the joints.

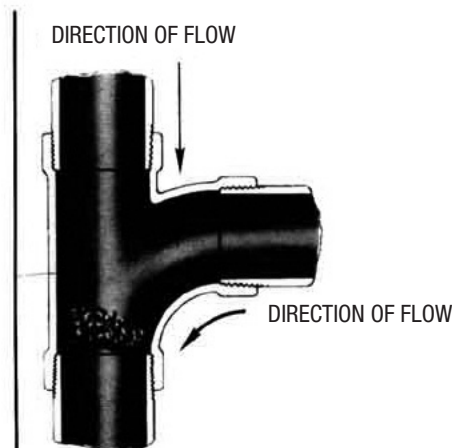
Regardless of the sealing method used, tubing systems should be tested for leaks prior to enclosing them in walls or other structures where it would be difficult to make an effective repair. Testing should be done under vacuum.

Correct Fitting Use long turn 90 "TY" fitting



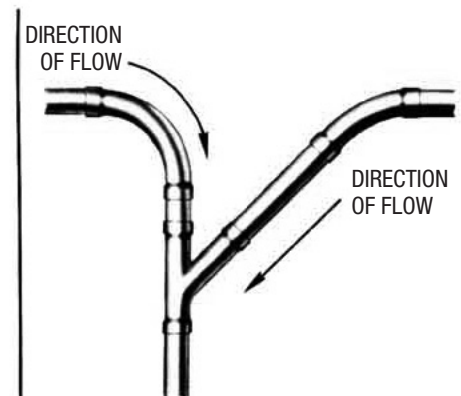
TUBING MUST BUTT FIRMLY AGAINST THE SHOULDERS OF THE FITTING

Incorrect Fitting Do not use steam or water fittings

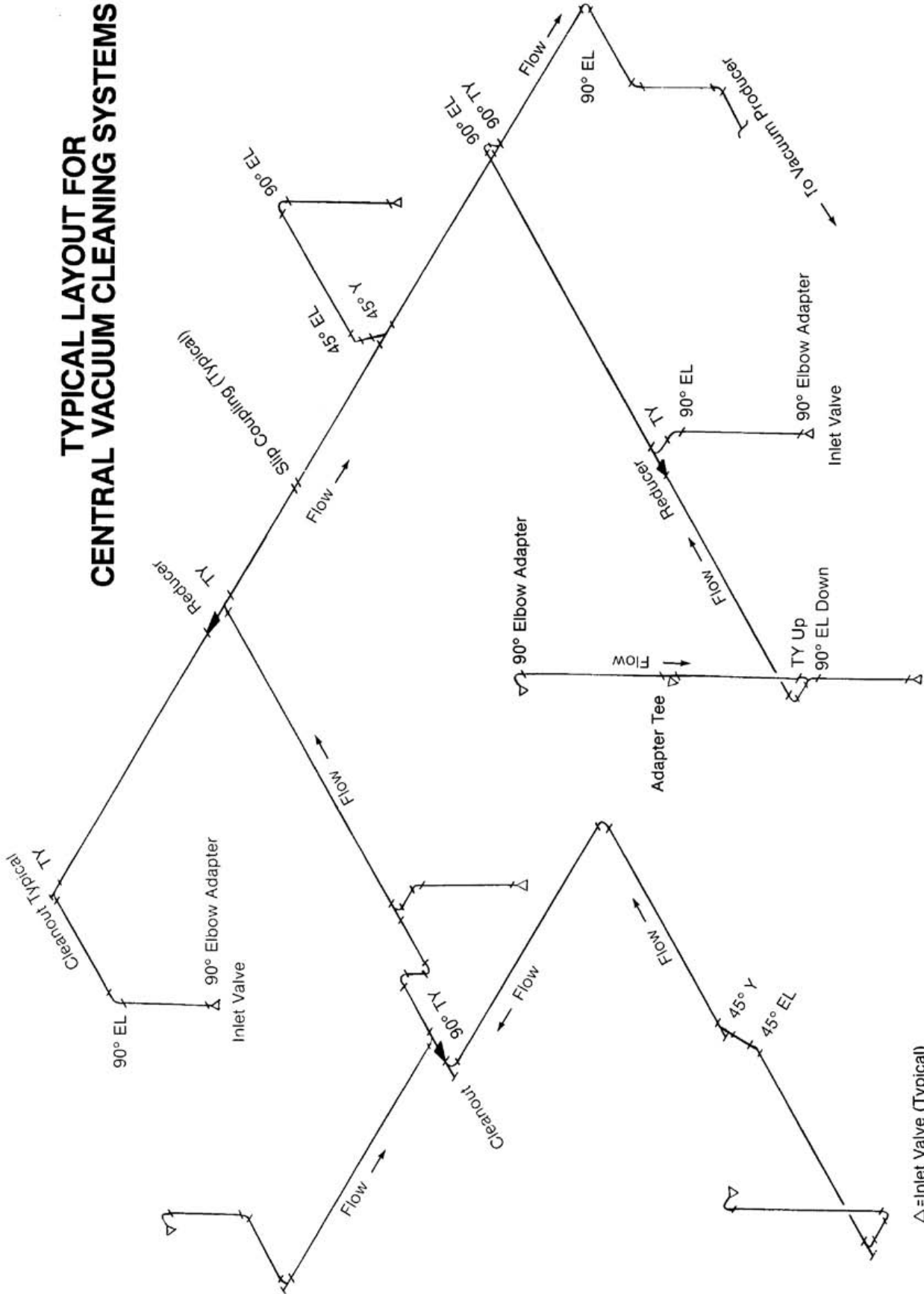


CLOG CAUSED BY PROJECTING SHOULDERS IN STEAM OR WATER FITTINGS

Preferred Connection where two horizontal mains join



TYPICAL LAYOUT FOR CENTRAL VACUUM CLEANING SYSTEMS



△ = Inlet Valve (Typical)

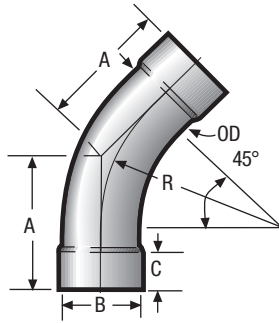


Cat. No.	(OD)	Standard Length		Gauge
		Steel	Aluminum/SS	
20T20	2-1/8"	20 ft.	20 ft.	16
25T20	2-1/2"	20 ft.	20 ft.	16
30T20	3"	20 ft.	20 ft.	16
35T20	3-1/2"	20 ft.	20 ft.	16
40T20	4"	20 ft.	20 ft.	16
50T20	5"	20 ft.	20 ft.	14
60T20	6"	20 ft.	20 ft.	14
80T20	8"	20 ft.	20 ft.	14
10T20	10"	20 ft.	20 ft.	12
12T20	12"	20 ft.	20 ft.	12
14T20	14"	20 ft.	8 ft. / 20 ft.	12

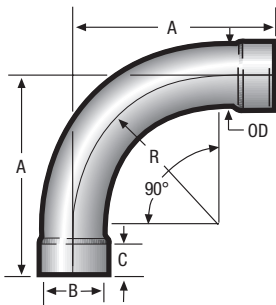
Contact Spencer for availability of 1-1/2" OD tubing.
 Contact Spencer for availability of #11 gauge tubing.
 Standard stock tubing (unless noted) is 20 ft. lengths, but will cut to your specifications.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.

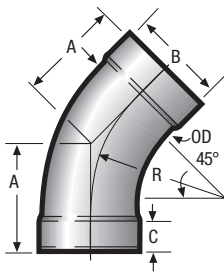




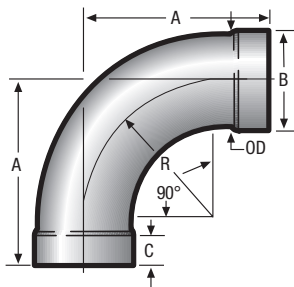
45° Standard Radius Elbow



90° Standard Radius Elbow



45° Short Radius Elbow



90° Short Radius Elbow

Cat. No.	(OD)	A	B (ID)	C	R	Gauge
20L45	2-1/8"	4-1/16"	2-1/8"	1-3/8"	5"	16
25L45	2-1/2"	4-1/2"	2-1/2"	1-3/8"	6"	16
30L45	3"	5-1/8"	3"	1-3/8"	7-1/2"	16
35L45	3-1/2"	5-5/8"	3-1/2"	1-3/8"	8-3/4"	16
40L45	4"	6-1/8"	4"	1-3/8"	10"	16
50L45	5"	7-13/16"	5"	1-5/8"	12-1/2"	14
60L45	6"	9-7/16"	6"	1-5/8"	15"	14
80L45	8"	12-9/16"	-	-	20"	14
*10L45	10"	28-1/4"	-	-	32"	12
**12L45	12"	21-5/32"	-	-	36"	12
**14L45	14"	22-5/32"	-	-	36"	12

Cat. No.	(OD)	A	B (ID)	C	R	Gauge
20L90	2-1/8"	7"	2-1/8"	1-3/8"	5"	16
25L90	2-1/2"	8"	2-1/2"	1-3/8"	6"	16
30L90	3"	9-1/2"	3"	1-3/8"	7-1/2"	16
35L90	3-1/2"	10-3/4"	3-1/2"	1-3/8"	8-3/4"	16
40L90	4"	12"	4"	1-3/8"	10"	16
50L90	5"	15-1/8"	5"	1-5/8"	12-1/2"	14
60L90	6"	18-1/4"	6"	1-5/8"	15"	14
80L90	8"	24-1/4"	-	-	20"	14
*10L90	10"	47"	-	-	32"	12
**12L90	12"	42-1/4"	-	-	36"	12
**14L90	14"	43-1/4"	-	-	36"	12

*Stainless Steel is segmented.

**Segmented - 90 degree = 5 pieces; 45 degree = 3 pieces.

Cat. No.	(OD)	A	B (ID)	C	R	Gauge
20SRL45	2-1/8"	3-7/16"	2-1/8"	1-3/8"	3-1/2"	16
25SRL45	2-1/2"	3-21/32"	2-1/2"	1-3/8"	4"	16
30SRL45	3"	3-7/8"	3"	1-3/8"	4-1/2"	16
35SRL45	3-1/2"	4-1/16"	3-1/2"	1-3/8"	5"	16
40SRL45	4"	4-1/2"	4"	1-3/8"	6"	16
50SRL45	5"	5-23/32"	5"	1-5/8"	7-1/2"	14
60SRL45	6"	6-31/32"	6"	1-5/8"	9"	14
80SRL45	8"	9-7/32"	-	-	12"	14

Cat. No.	(OD)	A	B (ID)	C	R	Gauge
20SRL90	2-1/8"	5-1/2"	2-1/8"	1-3/8"	3-1/2"	16
25SRL90	2-1/2"	6"	2-1/2"	1-3/8"	4"	16
30SRL90	3"	6-1/2"	3"	1-3/8"	4-1/2"	16
35SRL90	3-1/2"	7"	3-1/2"	1-3/8"	5"	16
40SRL90	4"	8"	4"	1-3/8"	6"	16
50SRL90	5"	10-1/8"	5"	1-5/8"	7-1/2"	14
60SRL90	6"	12-1/4"	6"	1-5/8"	9"	14
80SRL90	8"	16-1/4"	-	-	12"	14

8" and larger sizes - straight ends only.

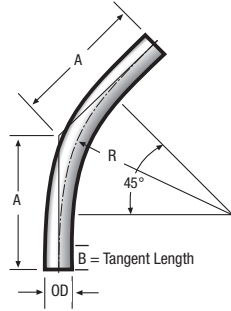
Contact Spencer for availability of #11 gauge items - straight ends only.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.

LONG RADIUS BENDS



45° Long Radius Bend



45° on 24" Center Line

Cat. No.	(OD)	B	A	R	Gauge
20P45	2-1/8"	6	15-15/16"	24"	16
25P45	2-1/2"	6	15-15/16"	24"	16
30P45	3"	6	15-15/16"	24"	16
40P45	4"	8	17-15/16"	24"	16

45° on 30" Center Line

Cat. No.	(OD)	B	A	R	Gauge
32U45	3"	6	18-7/16"	30"	16
35U45	3-1/2"	7	19-7/16"	30"	16
42U45	4"	8	20-7/16"	30"	16
52U45	5"	10	22-7/16"	30"	14
62U45	6"	12	24-7/16"	30"	14
82U45	8"	16	25-1/4"	32"	14

45° on 36" Center Line

Cat. No.	(OD)	B	A	R	Gauge
23J45	2-1/8"	6	20-15/16"	36"	16
25J45	2-1/2"	6	20-15/16"	36"	16
30J45	3"	6	20-15/16"	36"	16
35J45	3-1/2"	7	21-15/16"	36"	16
40J45	4"	8	22-15/16"	36"	16

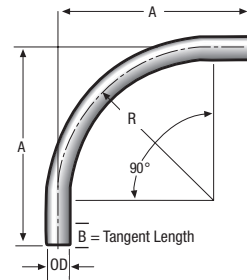
45° on 48" Center Line

Cat. No.	(OD)	B	A	R	Gauge
34K45	3"	6	25-7/8"	48"	16
35K45	3-1/2"	7	26-7/8"	48"	16
44K45	4"	8	27-7/8"	48"	16
54K45	5"	10	29-7/8"	48"	14
64K45	6"	12	31-7/8"	48"	14
84K45	8"	16	31-7/8"	48"	14
10K45	10"	22	41-7/8"	48"	12

45° on 60" Center Line

Cat. No.	(OD)	B	A	R	Gauge
40Q45	4"	8	32-7/8"	60"	16
60Q45	6"	12	36-7/8"	60"	14

90° Long Radius Bend



90° on 24" Center Line

Cat. No.	(OD)	B	A	R	Gauge
20P90	2-1/8"	6	30"	24"	16
25P90	2-1/2"	6	30"	24"	16
30P90	3"	6	30"	24"	16
40P90	4"	8	30"	24"	16

90° on 30" Center Line

Cat. No.	(OD)	B	A	R	Gauge
32U90	3"	6	36"	30"	16
35U90	3-1/2"	7	37"	30"	16
42U90	4"	8	38"	30"	16
52U90	5"	10	40"	30"	14
62U90	6"	12	42"	30"	14
82U90	8"	16	48"	32"	14

90° on 36" Center Line

Cat. No.	A (OD)	B	A	R	Gauge
23J90	2-1/8"	6	42"	36"	16
25J90	2-1/2"	6	42"	36"	16
30J90	3"	6	42"	36"	16
35J90	3-1/2"	7	43"	36"	16
40J90	4"	8	44"	36"	16

90° on 48" Center Line

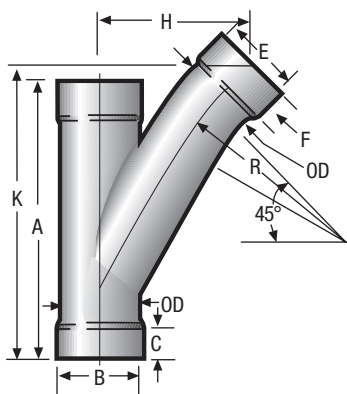
Cat. No.	(OD)	B	A	R	Gauge
34K90	3"	6	54"	48"	16
35K90	3-1/2"	7	55"	48"	16
44K90	4"	8	56"	48"	16
54K90	5"	10	58"	48"	14
64K90	6"	12	60"	48"	14
84K90	8"	16	64"	48"	14
10K90	10"	22	70"	48"	12

90° on 60" Center Line

Cat. No.	(OD)	B	A	R	Gauge
40Q90	4"	8	68"	60"	16
60Q90	6"	12	72"	60"	14

Furnished with straight ends as standard.
Expanded ends available upon request, except on 8" and 10" bends and #11 gauge bends.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



45° YL

Cat No.	Size (OD)	A	B	C	E	F	H	K	R
24Y52	2-1/8"X2-1/8"	9-1/2"	2-1/8"	1-3/8"	2-1/8"	1-3/8"	4-11/16"	9-3/32"	5"
25Y42	2-1/2"X2-1/8"	10"	2-1/2"	1-3/8"	2-1/8"	1-3/8"	4-7/8"	9-9/32"	5"
25Y25	2-1/2"X2-1/2"	10"	2-1/2"	1-3/8"	2-1/2"	1-3/8"	5-3/16"	10-5/32"	6"
34Y52	3"X2-1/8"	10-1/2"	3"	1-3/8"	2-1/8"	1-3/8"	5-1/8"	9-17/32"	5"
34Y25	3"X2-1/2"	10-1/2"	3"	1-3/8"	2-1/2"	1-3/8"	5-7/16"	10-13/32"	6"
34Y53	3"X3"	11-1/2"	3"	1-3/8"	3"	1-3/8"	5-29/32"	11-19/32"	7-1/2"
35Y42	3-1/2"X2-1/8"	11"	3-1/2"	1-3/8"	2-1/8"	1-3/8"	5-3/8"	9-25/32"	5"
35Y25	3-1/2"X2-1/2"	11"	3-1/2"	1-3/8"	2-1/2"	1-3/8"	5-11/16"	10-21/32"	6"
35Y43	3-1/2"X3"	13"	3-1/2"	1-3/8"	3"	1-3/8"	6-5/32"	11-27/32"	7-1/2"
35Y35	3-1/2"X3-1/2"	13"	3-1/2"	1-3/8"	3-1/2"	1-3/8"	6-9/16"	12-31/32"	8-3/4"
44Y52	4"X2-1/8"	12"	4"	1-3/8"	2-1/8"	1-3/8"	5-5/8"	10-1/32"	5"
44Y25	4"X2-1/2"	12"	4"	1-3/8"	2-1/2"	1-3/8"	5-15/16"	10-29/32"	6"
44Y53	4"X3"	12"	4"	1-3/8"	3"	1-3/8"	6-13/32"	12-3/32"	7-1/2"
44Y35	4"X3-1/2"	14"	4"	1-3/8"	3-1/2"	1-3/8"	6-13/16"	13-7/32"	8-3/4"
44Y54	4"X4"	14"	4"	1-3/8"	4"	1-3/8"	7-1/4"	14-11/32"	10"
54Y52	5"X2-1/8"	13"	5"	1-5/8"	2-1/8"	1-3/8"	6-1/8"	10-17/32"	5"
54Y25	5"X2-1/2"	13"	5"	1-5/8"	2-1/2"	1-3/8"	6-7/16"	11-13/32"	6"
54Y53	5"X3"	15-1/2"	5"	1-5/8"	3"	1-3/8"	6-29/32"	12-19/32"	7-1/2"
54Y35	5"X3-1/2"	15-1/2"	5"	1-5/8"	3-1/2"	1-3/8"	7-5/16"	13-23/32"	8-3/4"
54Y54	5"X4"	15-1/2"	5"	1-5/8"	4"	1-3/8"	7-3/4"	14-27/32"	10"
54Y55	5"X5"	18-1/2"	5"	1-5/8"	5"	1-5/8"	9"	17-9/16"	12-1/2"
64Y52	6"X2-1/8"	15"	6"	1-5/8"	2-1/8"	1-3/8"	6-5/8"	11-1/32"	5"
64Y25	6"X2-1/2"	15"	6"	1-5/8"	2-1/2"	1-3/8"	6-15/16"	11-29/32"	6"
64Y53	6"X3"	15"	6"	1-5/8"	3"	1-3/8"	7-13/32"	13-3/32"	7-1/2"
64Y35	6"X3-1/2"	17"	6"	1-5/8"	3-1/2"	1-3/8"	7-13/16"	14-7/32"	8-3/4"
64Y54	6"X4"	17"	6"	1-5/8"	4"	1-3/8"	8-1/4"	15-11/32"	10"
64Y55	6"X5"	21"	6"	1-5/8"	5"	1-5/8"	9-1/2"	18-1/16"	12-1/2"
64Y56	6"X6"	21"	6"	1-5/8"	6"	1-5/8"	10-25/32"	20-25/32"	15"

2-1/8" OD to 4" OD #16 gauge material.

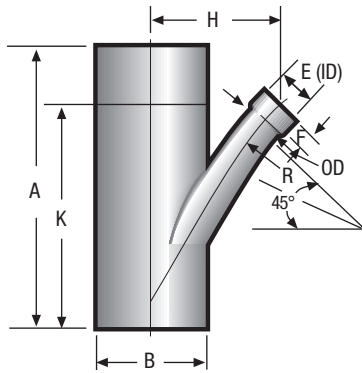
5" OD to 8" OD #14 gauge material.

10" OD to 14" OD #12 gauge material.

Contact Spencer for availability of #11 gauge items - straight ends only.

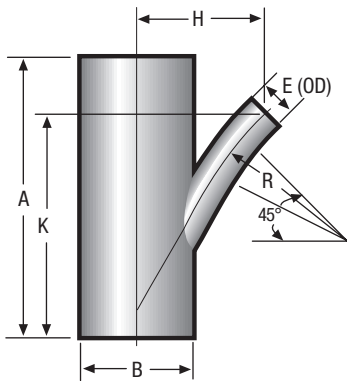
Expanded ends standard through 6" size.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



45° YL

Fig. No. 1 - Branch Expanded



45° YL

Fig. No. 2 - Straight Ends

Cat. No.	Size (OD)	Fig. No.	A	B	E	F	H	K	R
84Y52	8"X2-1/8"	1	18"	8"	2--1/8"	1-3/8"	7-5/8"	12-1/32"	5"
84Y25	8"X2-1/2"	1	18"	8"	2-1/2"	1-3/8"	7-15/16"	12-29/32"	6"
84Y53	8"X3"	1	18"	8"	3"	1-3/8"	8-13/32"	14-3/32"	7-1/2"
84Y35	8"X3-1/2"	1	21"	8"	3-1/2"	1-3/8"	8-13/16"	15-7/32"	8-3/4"
84Y54	8"X4"	1	21"	8"	4"	1-3/8"	9-1/4"	16-11/32"	10"
84Y55	8"X5"	1	24"	8"	5"	1-5/8"	10-1/2"	19-1/16"	12-1/2"
84Y56	8"X6"	1	24"	8"	6"	1-5/8"	11-25/32"	21-25/32"	15"
84Y58	8"X8"	2	29"	8"	8"	-	14-5/32"	27"	20"

10Y52	10"X2-1/8"	1	21"	10"	2-1/8"	1-3/8"	8-5/8"	13-1/32"	5"
10Y25	10"X2-1/2"	1	21"	10"	2-1/2"	1-3/8"	8-15/16"	13-29/32"	6"
10Y53	10"X3"	1	21"	10"	3"	1-3/8"	9-13/32"	15-3/32"	7-1/2"
10Y35	10"X3-1/2"	1	24"	10"	3-1/2"	1-3/8"	9-13/16"	16-7/32"	8-3/4"
10Y54	10"X4"	1	24"	10"	4"	1-3/8"	10-1/4"	17-11/32"	10"
10Y55	10"X5"	1	24"	10"	5"	1-5/8"	11-1/2"	20-1/16"	12-1/2"
10Y56	10"X6"	1	28"	10"	6"	1-5/8"	12-25/32"	22-3/4"	15"
10Y58	10"X8"	2	32"	10"	8"	-	15-5/32"	28"	20"
10Y10	10"X10"	2	36"	10"	10"	-	18-5/8"	34-11/16"	32"

12Y52	12"X2-1/8"	1	24"	12"	2-1/8"	1-3/8"	9-5/8"	14-1/32"	5"
12Y25	12"X2-1/2"	1	24"	12"	2-1/2"	1-3/8"	9-31/32"	14-29/32"	6"
12Y53	12"X3"	1	24"	12"	3"	1-3/8"	10-13/32"	16-3/32"	7-1/2"
12Y35	12"X3-1/2"	1	27"	12"	3-1/2"	1-3/8"	10-13/16"	17-7/32"	8-3/4"
12Y54	12"X4"	1	27"	12"	4"	1-3/8"	11-1/4"	18-11/32"	10"
12Y55	12"X5"	1	27"	12"	5"	1-5/8"	12-1/2"	21-1/16"	12-1/2"
12Y56	12"X6"	1	31"	12"	6"	1-5/8"	13-25/32"	23-3/4"	15"
12Y58	12"X8"	2	35"	12"	8"	-	16-5/32"	29"	20"
12Y10	12"X10"	2	39"	12"	10"	-	19-5/8"	35-11/16"	32"
12Y12	12"X12"	2	43"	12"	12"	-	21-27/32"	40-3/4"	36"

14Y52	14"X2-1/8"	1	24"	14"	2-1/8"	1-3/8"	10-5/8"	14-1/16"	5"
14Y25	14"X2-1/2"	1	24"	14"	2-1/2"	1-3/8"	10-15/16"	14-7/8"	6"
14Y53	14"X3"	1	24"	14"	3"	1-3/8"	11-3/8"	15-13/16"	7-1/2"
14Y35	14"X3-1/2"	1	27"	14"	3-1/2"	1-3/8"	11-13/16"	17-3/16"	8-3/4"
14Y54	14"X4"	1	30"	14"	4"	1-3/8"	12-1/4"	24-1/4"	10"
14Y55	14"X5"	1	30"	14"	5"	1-5/8"	13-9/16"	24-15/16"	12-1/2"
14Y56	14"X6"	1	31"	14"	6"	1-5/8"	14-3/4"	23-3/4"	15"
14Y58	14"X8"	2	38"	14"	8"	-	17-5/32"	30"	20"
14Y10	14"X10"	2	42"	14"	10"	-	20-5/8"	36-11/32"	32"
14Y12	14"X12"	2	46"	14"	12"	-	22-27/32"	41-3/4"	36"
14Y14	14"X14"	2	52"	14"	14"	-	24-13/32"	45-15/16"	36"

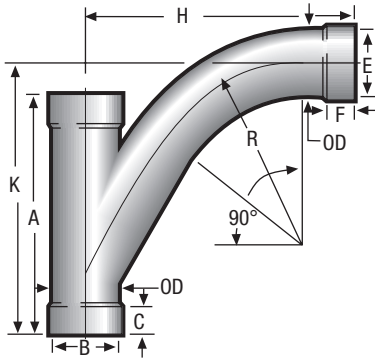
2-1/8" OD to 4" OD #16 gauge material.

5" OD to 8" OD #14 gauge material.

10" OD to 14" OD #12 gauge material.

Contact Spencer for availability of #11 gauge items - straight ends only.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.

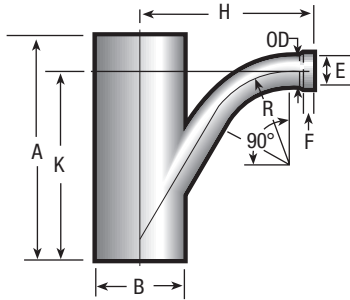


90° TY

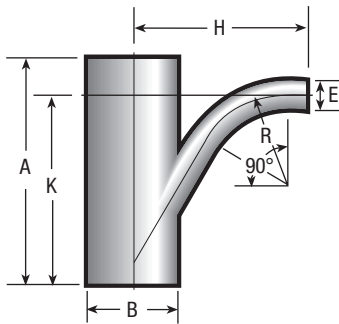
Cat. No.	Size (OD)	A	B	C	E	F	H	K	R
29T02	2-1/8"X2-1/8"	9-1/2"	2-1/8"	1-3/8"	2-1/8"	1-3/8"	8-13/16"	9-5/32"	5"
25T92	2-1/2"X2-1/8"	10"	2-1/2"	1-3/8"	2-1/8"	1-3/8"	9"	9-11/32"	5"
25T25	2-1/2"X2-1/2"	10"	2-1/2"	1-3/8"	2-1/2"	1-3/8"	10-1/32"	10-1/2"	6"
39T02	3"X2-1/8"	10-1/2"	3"	1-3/8"	2-1/8"	1-3/8"	9-1/4"	9-19/32"	5"
39T25	3"X2-1/2"	10-1/2"	3"	1-3/8"	2-1/2"	1-3/8"	10-9/32"	10-3/4"	6"
39T03	3"X3"	11-1/2"	3"	1-3/8"	3"	1-3/8"	11-25/32"	12-3/8"	7-1/2"
35T92	3-1/2"X2-1/8"	11"	3-1/2"	1-3/8"	2-1/8"	1-3/8"	9-1/2"	9-27/32"	5"
35T25	3-1/2"X2-1/2"	11"	3-1/2"	1-3/8"	2-1/2"	1-3/8"	10-17/32"	11"	6"
35T93	3-1/2"X3"	13"	3-1/2"	1-3/8"	3"	1-3/8"	12-1/32"	12-5/8"	7-1/2"
35T35	3-1/2"X3-1/2"	13"	3-1/2"	1-3/8"	3-1/2"	1-3/8"	13-11/32"	14-1/8"	8-3/4"
49T02	4"X2-1/8"	12"	4"	1-3/8"	2-1/8"	1-3/8"	9-3/4"	10-3/32"	5"
49T25	4"X2-1/2"	12"	4"	1-3/8"	2-1/2"	1-3/8"	10-25/32"	11-1/4"	6"
49T03	4"X3"	12"	4"	1-3/8"	3"	1-3/8"	12-9/32"	12-7/8"	7-1/2"
49T35	4"X3-1/2"	14"	4"	1-3/8"	3-1/2"	1-3/8"	13-19/32"	14-3/8"	8-3/4"
49T04	4"X4"	14"	4"	1-3/8"	4"	1-3/8"	14-29/32"	15-7/8"	10"
59T02	5"X2-1/8"	13"	5"	1-5/8"	2-1/8"	1-3/8"	10-1/4"	10-19/32"	5"
59T25	5"X2-1/2"	13"	5"	1-5/8"	2-1/2"	1-3/8"	11-9/32"	11-3/4"	6"
59T03	5"X3"	15-1/2"	5"	1-5/8"	3"	1-3/8"	12-25/32"	13-3/8"	7-1/2"
59T35	5"X3-1/2"	15-1/2"	5"	1-5/8"	3-1/2"	1-3/8"	14-3/32"	14-7/8"	8-3/4"
59T04	5"X4"	15-1/2"	5"	1-5/8"	4"	1-3/8"	15-13/32"	16-3/8"	10"
59T05	5"X5"	18-1/2"	5"	1-5/8"	5"	1-5/8"	18-5/8"	19-3/8"	12-1/2"
69T02	6"X2-1/8"	15"	6"	1-5/8"	2-1/8"	1-3/8"	10-3/4"	11-3/32"	5"
69T25	6"X2-1/2"	15"	6"	1-5/8"	2-1/2"	1-3/8"	11-25/32"	12-1/4"	6"
69T03	6"X3"	15"	6"	1-5/8"	3"	1-3/8"	13-9/32"	13-7/8"	7-1/2"
69T35	6"X3-1/2"	17"	6"	1-5/8"	3-1/2"	1-3/8"	14-19/32"	15-3/8"	8-3/4"
69T04	6"X4"	17"	6"	1-5/8"	4"	1-3/8"	15-29/32"	16-7/8"	10"
69T05	6"X5"	21"	6"	1-5/8"	5"	1-5/8"	19-1/8"	19-7/8"	12-1/2"
69T06	6"X6"	21"	6"	1-5/8"	6"	1-5/8"	22-11/32"	22-7/8"	15"

2-1/8" OD to 4" OD #16 gauge material.
 5" OD to 8" OD #14 gauge material.
 10" OD to 14" OD #12 gauge material.
 Contact Spencer for availability of #11 gauge items - straight ends only.
 Expanded ends standard through 6" size.

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



90° TY
Fig. No. 1 - Branch Expanded



90° TY
Fig. No. 2 - Straight Ends

Cat. No.	Size (OD)	Fig. No.	A	B	E	F	H	K	R
89T02	8"X2-1/8"	1	18"	8"	2-1/8"	1-3/8"	11-3/4"	12-3/32"	5"
89T25	8"X2-1/2"	1	18"	8"	2-1/2"	1-3/8"	12-25/32"	13-1/4"	6"
89T03	8"X3"	1	18"	8"	3"	1-3/8"	14-9/32"	14-7/8"	7-1/2"
89T35	8"X3-1/2"	1	21"	8"	3-1/2"	1-3/8"	15-19/32"	16-3/8"	8-3/4"
89T04	8"X4"	1	21"	8"	4"	1-3/8"	16-29/32"	17-7/8"	10"
89T05	8"X5"	1	24"	8"	5"	1-5/8"	20-1/8"	20-7/8"	12-1/2"
89T06	8"X6"	1	24"	8"	6"	1-5/8"	23-11/32"	23-7/8"	15"
89T08	8"X8"	2	29"	8"	8"	-	29-17/32"	29-7/8"	20"

10T02	10"X2-1/8"	1	21"	10"	2-1/8"	1-3/8"	12-3/4"	13-3/32"	5"
10T25	10"X2-1/2"	1	21"	10"	2-1/2"	1-3/8"	13-25/32"	14-1/4"	6"
10T03	10"X3"	1	21"	10"	3"	1-3/8"	15-9/32"	15-7/8"	7-1/2"
10T35	10"X3-1/2"	1	24"	10"	3-1/2"	1-3/8"	16-17/32"	17-3/8"	8-3/4"
10T04	10"X4"	1	24"	10"	4"	1-3/8"	17-29/32"	18-7/8"	10"
10T05	10"X5"	1	24"	10"	5"	1-5/8"	21-1/8"	21-7/8"	12-1/2"
10T06	10"X6"	1	28"	10"	6"	1-5/8"	24-11/32"	24-7/8"	15"
10T08	10"X8"	2	32"	10"	8"	-	30-17/32"	30-7/8"	20"
10T10	10"X10"	2	36"	10"	10"	-	42-25/32"	40-3/8"	32"

12T02	12"X2-1/8"	1	24"	12"	2-1/8"	1-3/8"	13-3/4"	14-3/32"	5"
12T25	12"X2-1/2"	1	24"	12"	2-1/2"	1-3/8"	14-25/32"	15-1/4"	6"
12T03	12"X3"	1	24"	12"	3"	1-3/8"	16-9/32"	16-7/8"	7-1/2"
12T35	12"X3-1/2"	1	27"	12"	3-1/2"	1-3/8"	17-19/32"	18-3/8"	8-3/4"
12T04	12"X4"	1	27"	12"	4"	1-3/8"	18-29/32"	19-7/8"	10"
12T05	12"X5"	1	27"	12"	5"	1-5/8"	22-1/8"	22-7/8"	12-1/2"
12T06	12"X6"	1	31"	12"	6"	1-5/8"	25-11/32"	25-7/8"	15"
12T08	12"X8"	2	35"	12"	8"	-	31-17/32"	31-7/8"	20"
12T10	12"X10"	2	39"	12"	10"	-	43-25/32"	41-3/8"	32"
*12T12	12"X12"	2	43"	12"	12"	-	49-1/8"	46-7/8"	36"

14T02	14"X2-1/8"	1	24"	14"	2-1/8"	1-3/8"	14-3/4"	14-1/8"	5"
14T25	14"X2-1/2"	1	24"	14"	2-1/2"	1-3/8"	15-3/4"	15-1/4"	6"
14T03	14"X3"	1	24"	14"	3"	1-3/8"	17-5/16"	16-13/16"	7-1/2"
14T35	14"X3-1/2"	1	27"	14"	3-1/2"	1-3/8"	18-5/8"	18-3/8"	8-3/4"
14T04	14"X4"	1	30"	14"	4"	1-3/8"	19-7/8"	25-3/4"	10"
14T05	14"X5"	1	31"	14"	5"	1-5/8"	23-1/8"	23-7/8"	12"
14T06	14"X6"	1	31"	14"	6"	1-5/8"	26-5/16"	22-7/8"	15"
14T08	14"X8"	2	38"	14"	8"	-	32-17/23"	32-7/8"	20"
14T10	14"X10"	2	42"	14"	10"	-	44-25/32"	42-3/8"	32"
*14T12	14"X12"	2	46"	14"	12"	-	50-1/8"	47-7/8"	36"
*14T14	14"X14"	2	52"	14"	14"	-	50-3/4"	51-3/8"	36"

* Segmented branch.

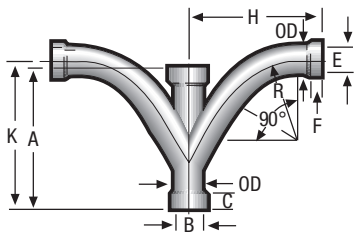
2-1/8" OD to 4" OD #16 gauge material.

5" OD to 8" OD #14 gauge material.

10" OD to 14" OD #12 gauge material.

Contact Spencer for availability of #11 gauge items - straight ends only.

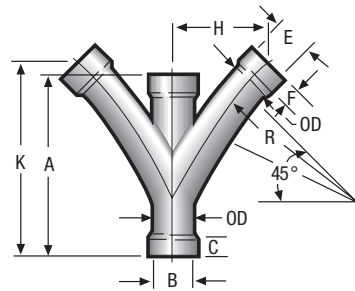
When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



Standard Double 90° TY

Standard Double 90° TYs

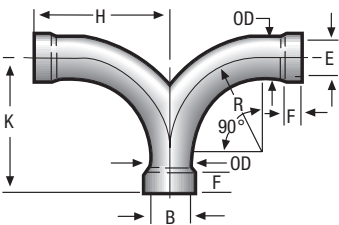
Cat.No.	Size (OD)	A	B	C	E	F	H	K	R
29DT02	2-1/8"x2-1/8"	9-1/2"	2-1/8	1-3/8"	2-1/8	1-3/8"	8-13/16"	9-5/32"	5"
25DT25	2-1/2"x2-1/2"	10"	2-1/2	1-3/8"	2-1/2	1-3/8"	10-1/32"	10-1/2"	6"
39DT03	3"x3"	11-1/2"	3	1-3/8"	3	1-3/8"	11-25/32"	12-3/8"	7-1/2"
35DT35	3-1/2"x3-1/2"	13"	3-1/2	1-3/8"	3-1/2	1-3/8"	13-11/32"	14-1/8"	8-3/4"
49DT04	4"x4"	14"	4	1-3/8"	4	1-3/8"	14-29/32"	15-7/8"	10"
59DT05	5"x5"	18-1/2"	5	1-5/8"	5	1-5/8"	18-5/8"	19-3/8"	12-1/2"
69DT06	6"x6"	21"	6	1-5/8"	6	1-5/8"	22-11/32"	22-7/8"	15"



Standard Double 45° YL

Standard Double 45° YLs

Cat.No.	Size (OD)	A	B	C	E	F	H	K	R
24DY52	2-1/8"x2-1/8"	9-1/2"	2-1/8	1-3/8"	2-1/8	1-3/8"	4-11/16"	9-3/32"	5"
25DY25	2-1/2"x2-1/2"	10"	2-1/2	1-3/8"	2-1/2	1-3/8"	5-3/16"	10-5/32"	6"
34DY53	3"x3"	11-1/2"	3	1-3/8"	3	1-3/8"	5-29/32"	11-19/32"	7-1/2"
35DY35	3-1/2"x3-1/2"	13"	3-1/2	1-3/8"	3-1/2	1-3/8"	6-9/16"	12-31/32"	8-3/4"
44DY54	4"x4"	14"	4	1-3/8"	4	1-3/8"	7-1/4"	14-11/32"	10"
54DY55	5"x5"	18-1/2"	5	1-5/8"	5	1-5/8"	9"	17-9/16"	12-1/2"
64DY56	6"x6"	21"	6	1-5/8"	6	1-5/8"	10-15/32"	20-25/32"	15"



Standard Double 90° Elbow

Standard Double 90° Elbows

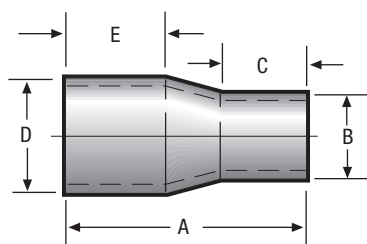
Cat.No.	Size (OD)	B	C	E	F	H	K	R
20DL90	2-1/8"x2-1/8"	2-1/8	1-3/8"	2-1/8	1-3/8"	7"	7"	5"
25DL90	2-1/2"x2-1/2"	2-1/2	1-3/8"	2-1/2	1-3/8"	8"	8"	6"
30DL90	3"x3"	3	1-3/8"	3	1-3/8"	9-1/2"	9-1/2"	7-1/2"
35DL90	3-1/2"x3-1/2"	3-1/2	1-3/8"	3-1/2	1-3/8"	10-3/4"	10-3/4"	8-3/4"
40DL90	4"x4"	4	1-3/8"	4	1-3/8"	12"	12"	10"
50DL90	5"x5"	5	1-5/8"	5	1-5/8"	15-1/8"	15-1/8"	12-1/2"
60DL90	6"x6"	6	1-5/8"	6	1-5/8"	18-1/4"	18-1/4"	15"

2-1/8" O.D. to 4" O.D. - #16 gauge material
 5" O.D. to 8" O.D. - #14 gauge material
 10" O.D. to 14" O.D. - #12 gauge material
 Expanded ends standard through 6" size.

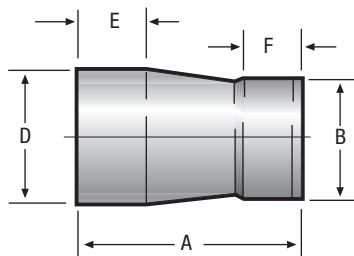
When Ordering Specify Material: Carbon Steel, Galvanized Steel, Stainless Steel and Aluminum.



Reducing Couplings



Standard Reducing Coupling
(straight end)



Standard Reducing Coupling
(expanded end)

Cat. No.	Size D (OD) x B (ID)	A	C	F	E	Gauge
*22R15	2-1/8"X1-1/2"	5-3/16"	1-7/8"	-	2"	16
*22R20	2-1/8"X2"	4"	1-25/32"	-	2"	16
25R22	2-1/2"X2-1/8"	4-1/2"	1-3/4"	1-3/8"	1-1/2"	16
03R22	3"X2-1/8"	8-3/4"	2-1/4"	1-3/8"	2"	16
32R25	3"X2-1/2"	5"	2"	1-3/8"	1-1/2"	16
35R22	3-1/2"X2-1/8"	11"	2-1/4"	1-3/8"	2"	16
35R25	3-1/2"X2-1/2"	9-1/4"	2-7/8"	1-3/8"	2-7/8"	16
35R23	3-1/2"X3"	5-1/2"	2-1/8"	1-3/8"	2-1/8"	16
04R22	4"X2-1/8"	13-1/2"	1-5/8"	1-3/8"	2"	16
42R25	4"X2-1/2"	10-1/2"	2-1/4"	1-3/8"	2"	16
04R23	4"X3"	9-1/4"	2-1/4"	1-3/8"	2"	16
42R35	4"X3-1/2"	6"	2"	1-3/8"	1-1/2"	16
05R22	5"X2-1/8"	19-1/4"	2-1/4"	1-3/8"	2-3/4"	14
52R25	5"X2-1/2"	17-1/2"	2-1/4"	1-3/8"	2-3/4"	14
05R23	5"X3"	15"	2-1/4"	1-3/8"	2-3/4"	14
52R35	5"X3-1/2"	12-1/2"	2-1/4"	1-3/8"	2-3/4"	14
05R24	5"X4"	8"	2-1/4"	1-3/8"	1-3/4"	14
06R22	6"X2-1/8"	24-3/4"	2-1/4"	1-3/8"	3-1/4"	14
62R25	6"X2-1/2"	23"	2-1/4"	1-3/8"	3-1/4"	14
06R23	6"X3"	20-1/2"	2-1/4"	1-3/8"	3-1/4"	14
62R35	6"X3-1/2"	18"	2-1/4"	1-3/8"	3-1/4"	14
06R24	6"X4"	15-3/4"	2-1/4"	1-3/8"	3-1/4"	14
06R25	6"X5"	10"	2-5/8"	1-3/8"	1-3/4"	14
08R24	8"X4"	26-1/4"	2"	1-3/8"	4-1/4"	14
08R25	8"X5"	21-7/8"	2-5/8"	1-5/8"	4-1/4"	14
08R26	8"X6"	17-1/2"	3-1/4"	1-5/8"	3-5/8"	14
10R25	10"X5"	32-7/8"	2-5/8"	1-5/8"	5-1/4"	12
10R26	10"X6"	28-1/2"	3-1/4"	1-5/8"	5-1/4"	12
*10R28	10"X8"	18-1/4"	2-1/2"	-	5-1/4"	12
*12R28	12"X8"	29-1/4"	2-1/2"	-	6-1/4"	12
*12R10	12"X10"	19-3/4"	3-1/4"	-	6"	12
*14R10	14"X10"	30"	3"	-	7-1/4"	12
*14R12	14"X12"	20"	4"	-	7-1/4"	12

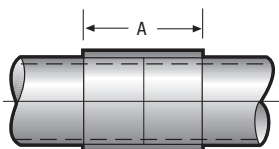
Standard reducers are OD x ID (straight x expanded), except as noted by (*).

*Size is OD x OD (straight x straight).

Contact Spencer for availability of #11 gauge items - straight ends only.

Slip Couplings

Cat No.	Size (ID)	A				Gauge
02C20	2-1/8"	3"				16
25C00	2-1/2"	3-1/2"				16
03C30	3"	4"				16
35C00	3-1/2"	4-1/2"				16
04C40	4"	5"				16
05C50	5"	6"				14
06C60	6"	7"				14
08C80	8"	8"				14
10C10	10"	10"				12
12C12	12"	12"				12
14C14	14"	14"				12

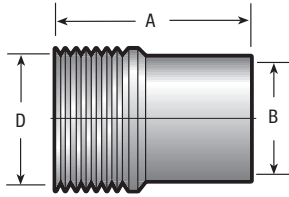


Slip Coupling

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



Male Adapters

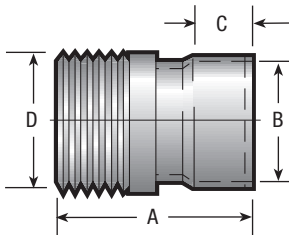


Male Adapter

Cat. No.	D (MPT) x B (OD)	A		Gauge
23M20	2"X2"	6"		16
23M82	2"X2-1/8"	6"		16
25M25	2-1/2"X2-1/2"	6"		16
33M83	3"X3"	6"		16
35M35	3-1/2"X3-1/2"	6"		16
43M84	4"X4"	6"		16
53M85	5"X5"	6-1/2"		14
63M86	6"X6"	7"		14
83M88	8"X8"	8"		14
10M10	10"X10"	8-1/2"		12
12M12	12"X12"	9"		12

Contact Spencer for availability of #11 gauge items - straight ends only.

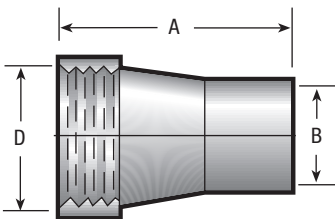
Expanded Male Adapters



Expanded Male Adapter

Cat. No.	D (MPT) x B (ID)	A	C	Gauge
02E20	2"X2"	4"	1-1/8"	16
02E32	2"X2-1/8"	4"	1-3/8"	16
25E25	2-1/2"X2-1/2"	4"	1-3/8"	16
03E33	3"X3"	4-3/4"	1-3/8"	16
35E35	3-1/2"X3-1/2"	4-3/4"	1-3/8"	16
04E34	4"X4"	4-3/4"	1-3/8"	16
05E35	5"X5"	5"	1-5/8"	14
06E36	6"X6"	5-1/4"	1-5/8"	14

Female Adapters

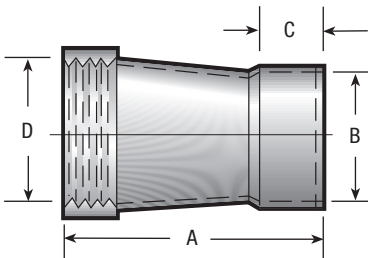


Female Adapter

Cat. No.	D (FPT) x B (OD)	A		Gauge
22F20	2"X2"	6"		16
22F82	2"X2-1/8"	6"		16
25F25	2-1/2"X2-1/2"	6"		16
32F83	3"X3"	6"		16
35F35	3-1/2"X3-1/2"	6"		16
42F84	4"X4"	6-1/2"		16
52F85	5"X5"	6-3/4"		14
62F86	6"X6"	7"		14
82F88	8"X8"	9"		14
10F10	10"X10"	11"		12
12F12	12"X12"	13"		12

Contact Spencer for availability of #11 gauge items - straight ends only.

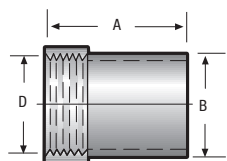
Expanded Female Adapters



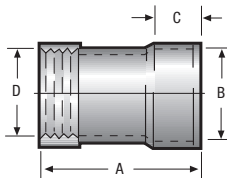
Expanded Female Adapter

Cat. No.	D (FPT) x B (ID)	A	C	Gauge
02X20	2"X2"	4"	1-3/8"	16
02X42	2"X2-1/8"	6"	1-3/8"	16
25X25	2-1/2"X2-1/2"	5"	1-3/8"	16
03X43	3"X3"	5-1/4"	1-3/8"	16
35X35	3-1/2"X3-1/2"	5-1/2"	1-3/8"	16
04X44	4"X4"	6-1/2"	1-3/8"	16
05X45	5"X5"	6-3/4"	1-5/8"	14
06X46	6"X6"	7"	1-5/8"	14

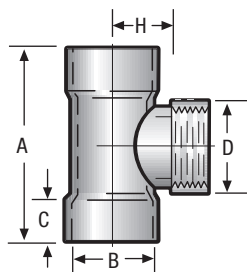
When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum.



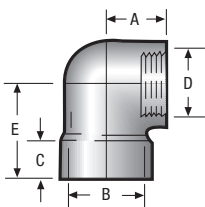
Female Reducing Adapter



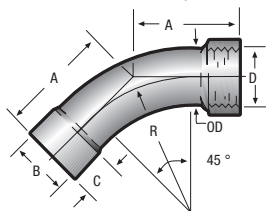
Expanded Female Reducing Adapter



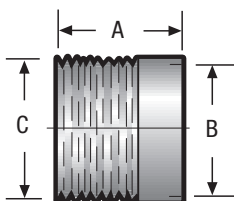
Adapter Tee



90° Elbow Adapter



45° Female Elbow Adapter



Male Adapter Nipple

Female Reducing Adapters

Cat. No.	D (FPT) x B (OD)	A	Gauge
25E02	2"X2-1/2"	4-1/4"	16

Expanded Female Reducing Adapters

Cat. No.	D (FPT) x B (ID)	A	C	Gauge
02E52	2"X2-1/2"	4-1/4"	1-3/8"	16

Adapter Tees

Cat. No.	B (ID) x D (FPT)	A	C	H
*02D62	2-1/8"X2"	4-13/16"	1-3/8"	1-9/16"
25D62	2-1/2"X2"	6-1/2"	1-3/8"	2-1/8"
03D62	3"X2"	6-1/2"	1-3/8"	2-3/4"
35D62	3-1/2"X2"	6-7/8"	1-3/8"	3-7/16"
04D62	4"X2"	6-7/8"	1-3/8"	3-7/16"

*02D62 available only in: Cast Gray Iron, Galvanized Steel, Cast Aluminum or Stainless Steel.

90° Elbow Adapters

Cat. No.	B (ID) x D (FPT)	A	C	E
*02D92	2-1/8"X2"	1-5/8"	1-3/8"	2-9/16"

*02D92 available only in: Cast Gray Iron, Galvanized Steel, Cast Aluminum or Stainless Steel.

45° Female Elbow Adapters

Cat. No.	B (ID) x D (FPT)	A	C	R	Gauge
02D72	2-1/8"X2"	4-1/16"	1-3/8"	5"	16
25D72	2-1/2"X2"	4-1/2"	1-3/8"	6"	16
25D25	2-1/2"X2-1/2"	4-1/2"	1-3/8"	6"	16

Male Adapter Nipples

Cat. No.	B (ID)	A	C (MPT)
02N22	2-1/8"	2"	2"

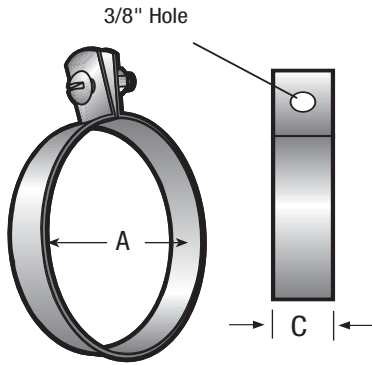
2-1/8" Male Adapters

Cat. No.	C (MPT) x B	A
125M82	1-1/4"X2-1/8" OD	5-3/4"
150M82	1-1/2"X2-1/8" OD	5-3/4"
125E32	1-1/4"X2-1/8" ID	5-3/4"
150E32	1-1/2"X2-1/8" ID	5-3/4"

When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum, except as noted above.



Tubing Hangers

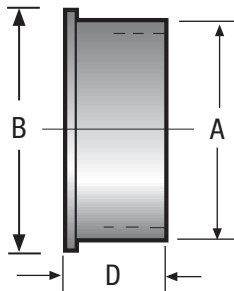


Tubing Hanger

Cat. No.	A (ID)	C	Gauge
00H20	2-1/8"	7/8"	16
00H25	2-1/2"	7/8"	16
00H30	3"	7/8"	16
00H35	3-1/2"	7/8"	16
00H40	4"	7/8"	16
00H50	5"	7/8"	16
00H60	6"	7/8"	16
00H80	8"	7/8"	16
10H00	10"	7/8"	16
12H00	12"	7/8"	16
14H00	14"	7/8"	16

Tubing Hangers available only in: Galvanized Steel.

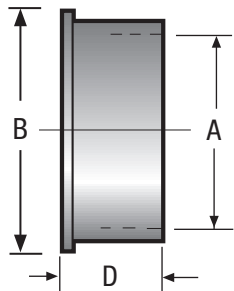
Tubing Plugs



Tubing Plug OD

Cat. No.	A (OD)	B	C	D
02G01	2-1/8"	2-1/4"	16 Ga.	1-3/8"
02G51	2-1/2"	2-5/8"	16 Ga.	1-3/8"
03G01	3"	3-1/8"	16 Ga.	1-3/8"
03G51	3-1/2"	3-5/8"	16 Ga.	1-3/8"
04G01	4"	4-1/8"	16 Ga.	1-3/8"
05G01	5"	5-1/8"	14 Ga.	1-1/2"
06G01	6"	6-1/8"	14 Ga.	1-1/2"

Tubing Plugs (OD) available only in: Galvanized Steel, Stainless Steel, and Aluminum.

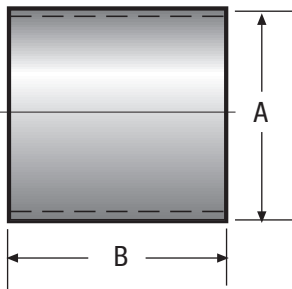


Tubing Plug ID

Cat. No.	A (ID)	B	C	D
08G01	8"	8-1/2"	14 Ga.	1-3/4"
10G01	10"	10-9/16"	12 Ga.	2"
12G01	12"	12-1/2"	12 Ga.	2"
14G01	14"	14-1/2"	12 Ga.	2"

Tubing Plugs (ID) available only in: Galvanized Steel, Stainless Steel, and Aluminum.

Tubing Nipples

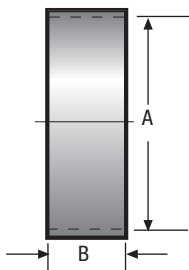


Tubing Nipple

Cat. No.	A (OD)	A	Gauge
02N12	2-1/8"	2-1/2"	16
25N12	2-1/2"	2-1/2"	16
03N13	3"	2-1/2"	16
03N53	3-1/2"	2-1/2"	16
04N14	4"	2-1/2"	16
05N15	5"	3"	14
06N16	6"	3"	14
08N18	8"	4"	14
10N10	10"	5"	12
12N12	12"	6"	12
14N14	14"	7"	12

Tubing Nipples available only in: Galvanized Steel, Stainless Steel and Aluminum.

Slip Welding Collars



Slip Welding Collar

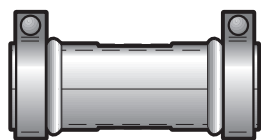
Cat. No.	A (ID)	B	Gauge
08W28	8"	3"	14
10W10	10"	3"	12
12W12	12"	3"	12
14W14	14"	3"	12

Slip Welding Collars available in: Carbon Steel, Galvanized Steel, Stainless Steel, and Aluminum.

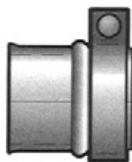
When Ordering Specify Material: Carbon Steel, Stainless Steel, Galvanized Steel and Aluminum, except as noted above.



These couplings are used to join a tubing system. It is recommended for use in situations where a system may be taken apart due to cleaning requirements or system changes.



Quick Clamp Coupling



Cap

Quick Clamp Couplings & Caps

Size OD	Couplings		Caps	
	Part No.	Length	Part No.	Length
1-1/2"	COT90379	4"	PTA90048	3"
2"	COT90385	4"	PTA90049	3"
2-1/8"	COT90370	4"	PTA90050	3"
2-1/2"	COT90371	4"	PTA90051	3"
3"	COT90380	6"	PTA90052	3"
3-1/2"	COT90381	6"	PTA90053	3"
4"	COT90382	4"	PTA90054	3"
5"	COT90383	8"	PTA90055	3"
6"	COT90384	8"	PTA90056	3"

Couplings and Caps are galvanized steel. Standard O-ring is black nitrile up to 4". Silicon O-ring standard for 5" and 6". Viton O-rings also available.

Compression Couplings



Compression Coupling

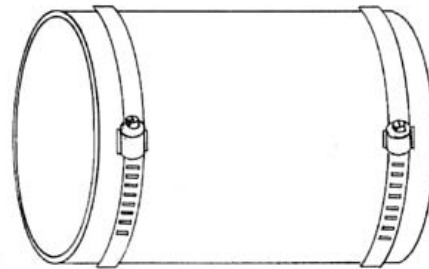
Tube Size	Part No.	Length	Number Bolts	Bolt Size	Weight
2-1/8"	COT90200	4"	2	1/2"x2"	2.1
2-1/2"	COT90201	4"	2	1/2"x2"	2.6
3"	COT90202	6"	3	5/8"x2-1/4"	4.5
3-1/2"	COT90203	6"	3	5/8"x2-1/4"	5.9
4"	COT90204	6"	3	5/8"x2-1/4"	5.3
5"	COT90205	6"	3	5/8"x2-1/4"	6.2
6"	COT90206	6"	3	5/8"x2-1/4"	7.0
8"	COT90207	8"	3	3/4"x3"	14.3
10"	COT90208	10"	4	3/4"x3"	21.8
12"	COT90209	10"	4	3/4"x3"	25.5
14"	COT90210	10"	4	3/4"x3"	27.6

Standard coupling is galvanized steel with black neoprene gasket and stainless steel grounding strip. Fittings should be ordered with straight ends to be able to butt together within the ID of the coupling.

RUBBER SLEEVES AND CLAMPS



Rubber sleeves and clamps are used as a flexible joint in low pressure and vacuum systems. Spencer Rubber Sleeves are available to fit sheet metal pipe (tubing), wrought iron pipe or cast iron pipe. Standard sleeves 1-7/8" through 10-3/4" are constructed of 1/16" inner tube, 4 ply duck, and are frictioned cover. 12" through 26" are constructed of 1/16" inner tube, 5 ply duck, and are frictioned cover. High temperature sleeves are for pressures 5 to 15 psi and are made of a butyl compound of at least 2 ply. They will withstand up to 300°F.



Normal Size	Type	Nominal ID	Length	High Temperature Sleeve With Clamps Part No.	Clamp Only Part No.	Clamp Qty.
1-1/2	WP	1-7/8	6	KAC90006	CLM90001	2
2	WP	2-1/4	4	KAC90007	CLM90001	2
2-1/8	SMP	2-1/8	4	KAC90008	CLM90001	2
2-1/2	SMP	2-1/2	4	KAC90054	CLM90002	2
2-1/2	WP	2-7/8	4	KAC90055	CLM90002	2
3	SMP	3	6	KAC90010	CLM90002	2
3	WP	3-1/2	6	KAC90035	CLM90003	2
4	SMP	4	6	KAC90036	CLM90003	2
4	WP	4-1/2	6	KAC90037	CLM90004	2
5	SMP	5	6	KAC90038	CLM90005	2
5	WP	5-5/8	6	KAC90039	CLM90005	2
6	SMP	6	6	KAC90040	CLM90027	2
6	WP	6-5/8	6	KAC90041	CLM90006	2
8	SMP	8	6	KAC90042	CLM90007	2
8	WP	8-5/8	6	KAC90043	CLM90007	2
10	SMP	10	6	KAC90044	CLM90008	2
10	WP	10-3/4	6	KAC90045	CLM90008	2
12	SMP	12	6	KAC90046	CLM90009	2
12	WP	12-3/4	6	KAC90047	CLM90022	2
14	SMP/WP	14	12	KAC90048	CLM90023	4
16	SMP/WP	16	12	KAC90050	CLM90024	4
18	SMP/WP	18	12	KAC90051	CLM90025	4
20	SMP/WP	20	12	KAC90052	CLM90008	8
22	SMP/WP	22	12	KAC90030	CLM90008	4
					CLM90009	4
24	SMP/WP	24	12	KAC90031	CLM90009	8
26	SMP/WP	26	12	KAC90032	CLM90007	12
28	SMP/WP	28	12	KAC90033	CLM90007	8
					CLM90008	4
30	SMP/WP	30	12	KAC90034	CLM90008	12

Dimensions in inches.

SMP - For Sheet Metal Pipe (SMP sleeve actually 3/16 larger in diameter to fit over piping). Also used for tubing connections.

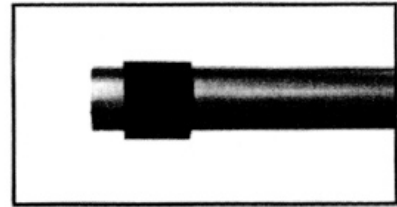
WP - For Wrought Pipe, designed to fit OD of Wrought Steel or Wrought Iron Pipe.

SHRINK SLEEVES

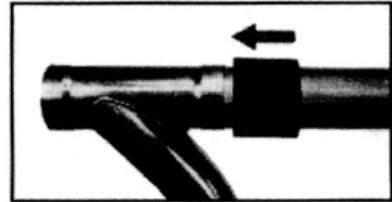


Shrink sleeves are 4" long polyolefin bands lined with a meltable adhesive for sealing tubing joints under vacuum. Applying billowy flame or other heat source causes the sleeve to shrink tightly around a tubing joint while the adhesive melts and fills any minor voids making a vacuum tight joint.

Cat. No.	Part No.	Tube Size
20S20	SLV90002	2-1/8"
25S25	SLV90002	2-1/2"
30S30	SLV90003	3"
35S35	SLV90004	3-1/2"
40S40	SLV90004	4"
50S50	SLV90006	5"
60S60	SLV90006	6"
80S80	SLV90007	8"
10S10	SLV90023	10"
12S12	SLV90024	12"
14S14	SLV90014	14"



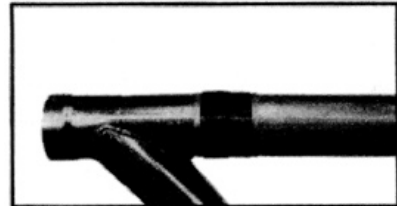
1 Flash joint lightly with torch to remove excess foreign matter, then place Shrink Sleeve on tubing or fitting.



2 Join tubing and fitting together. Center Shrink Sleeve over joint.



3 Heat Shrink Sleeve with wide billowy flame. **Do Not Use Pin Point Flame.** Work flame around joint evenly.



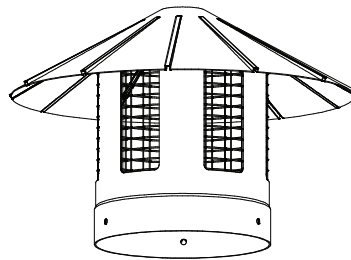
4 At 250° F Shrink Sleeve will tighten around tube and adhesive will appear from sides. Remove flame and allow to cool. Joint is complete.

WEATHER CAPS

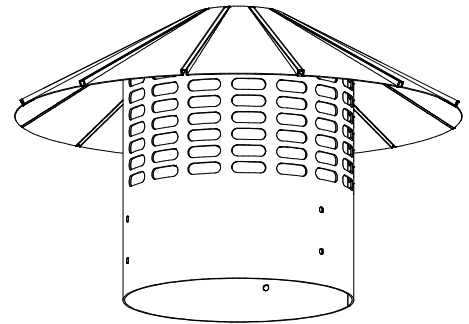


Weather Caps are used on the intake of a blower or the outlet of a vacuum producer to eliminate water, snow and other elements from entering the machine.

Outlet Size (ID)	Part No.
3"	WCA90001
4"	WCA90003
5"	WCA90005
6"	WCA90006
8"	WCA90008
10"	WCA90009
12"	WCA90010
14"	WCA90011
16"	WCA90012
20"	WCA90013
22"	WCA90014



3" - 8"



10" - 22"



Consider the application, the size and service requirements when selecting a hose.

1-1/4" ID hose is recommended for light commercial duty. It is lightest in weight and with superior flexibility.

1-1/2" ID hose is the most common and used for average vacuum cleaning applications.







2" ID hose is recommended for large quantities or bulky materials.

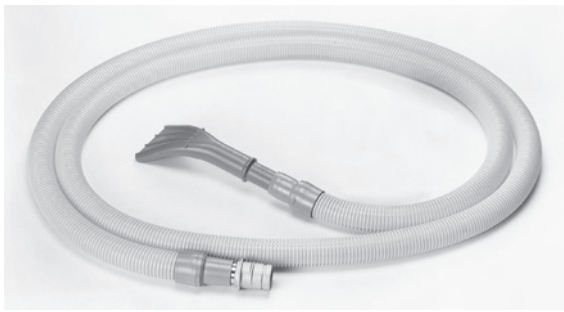
Note: For other diameter hose or special applications — consult factory.

Both the 1-1/4" and 1-1/2" ID hoses are used with our 1-1/2" attachments. 2" ID hose is used with 2" attachments.

Hoses are supplied with one male and one female coupling. The male coupling connects into the inlet valve; the female coupling connects directly to tools or attachments. Hoses may be joined for additional length using the standard male and female couplings.

HOSE ASSEMBLIES (EXCEPT TUFF-FLEX AND YELLOW CAR CARE PRODUCTS) ARE TESTED FOR ELECTRICAL CONDUCTIVITY TO ASSURE STATIC ELECTRICITY IS MINIMIZED.

Hose Type	Inside Diameter	Lengths and Part Numbers			
		12 1/2'	25'	37 1/2'	50'
Light-Duty PVC 	1 1/2"	HOS90164	HOS90166	HOS90168	HOS90170
	2"	HOS90176	HOS90178	HOS90180	HOS90182
Medium-Duty Polyethylene "TUFF-FLEX" NON STATIC RESISTANT 	1 1/4"	HOS90081	HOS90082	HOS90212	HOS90083
	1 1/2"	HOS90077	HOS90078	HOS90079	HOS90080
	2"	HOS90084	HOS90085	HOS90086	HOS90087
	1 1/2"	HOS90088	HOS90089	HOS90090	HOS90091
Heavy-Duty PVC "KLAM" 	1 1/2"	HOS90188	HOS90190	HOS90192	HOS90194
	2"	HOS90200	HOS90202	HOS90204	HOS90206
Heavy-Duty Urethane "SPENCER-FLEX" 	1 1/2"	HOS90241	HOS90243	HOS90245	HOS90247
Heavy-Duty Vinyl "PYTHON" 	1 1/2"	HOS90101	HOS90103	HOS90105	HOS90107
	2"	HOS90109	HOS90111	HOS90113	HOS90115
Heavy-Duty Rubber "RHINO" 	1 1/2"	HOS90117	HOS90119	HOS90208	HOS90121
	2"	HOS90123	HOS90125	HOS90210	HOS90127



CAR CARE KIT

KAC90104

Convenient all-in-one operator package with 15' long, 1-1/2" diameter yellow plastic hose, coupling, duck foot cleaning tool and tool holder.

KAC90108

Same as above with static resistant hose.
Replacement rubber backing RUB90001

Weight (lbs./ft.)	Vacuum Rating "Hg	Color	Flexibility	Durability	Application	Construction
.26	26	Grey	Excellent	Fair	Commercial, Light Industrial Duty, Offices	Fiber-reinforced PVC Hose Cover Spring Steel Helix Static Resistant
.37	25	Grey	Excellent	Fair	(Temp Range: -20° to +150°F)	
.28	25	Grey	Excellent	Good	General Vacuum Cleaning, Commercial,	Polyethylene Two-Piece Construction Crush Proof
.41	20	Blue	Excellent	Good	Car Wash, Offices	
.50	12	Blue	Excellent	Good	(Temp Range: -20° to +150°F)	
.41	20	Orange	Excellent	Good		
.40	28	Blue	Good	Very Good	General Service, Schools, Industrial Cleaning	PVC Compound Plastic Helix Copper Ground Wire Abrasion Resistant Static Resistant
.50	28	Blue	Good	Very Good	(Temp Range: -22° to +104°F)	
.32	24	Blue w/ Black	Very Good	Excellent	General Service, Industrial Cleaning, Schools	PVC Helix Urethane Core Abrasion Resistant Copper Ground Wire Chemical Resistant Static Resistant
.50	29.8	Blue	Very Good	Very Good	General Service, Schools, Hospitals, Clean Rooms	Smooth Vinyl Cover Steel Wire Nylon Yarn Foam Inner Wall Chemical Resistant Static Resistant
.60	29.8	Blue	Very Good	Very Good	(Temp Range: -20° to +120°F)	
.7	28	Black	Good	Excellent	Industrial and Heavy Commercial Vacuum Cleaning in Factories, Foundries	Braided SS Ground Wire Nitrile Rubber Tube Abrasion Resistant Neoprene Cover Oil Resistant Static Resistant
.9	28	Black	Good	Excellent	(Temp Range: -40° to +200°F)	

WALL INLET VALVES FOR 1-1/2" DIAMETER HOSE



Inlet valves provide a quick connection of the male hose coupling to the piping system or separator. The cover is self-closing and includes a hook to prevent the hose from being pulled out. Valve bodies are forged brass, covers are steel, and the entire valve is nickel plated.

Four basic valves are available. Each may be fitted with a standard or recessed escutcheon plate. The basic valves are used with exposed piping in basements, on concrete walls, in factories or on separators.

The standard wall flange is recommended for most typical installations. Valve protrusion into the room is only 1 inch. Furthermore, the face of the threaded connection can be as little as 13/16 of an inch from the wall — advantageous where space is limited.

The recessed flange is recommended for areas using flush wall design. It is considered a more attractive installation.

Optimum mounting height of wall valves is 18 to 20 inches above floor level. **NOTE: Optional lock type covers are available.**



2" male thread-exposed pipe. The popular (standard) valve. 2 1/32" long.
VLV90083 (8720-Type E) **(VLV90091 Lock Type)**
 1.13 lb.



2" female thread-exposed pipe. 2 13/32" long.
VLV90101 (8815-Type E) **(VLV90102 Lock Type)**
 1.50 lb.



2" male thread VLV90083 with "standard" flange.
VLV90084 (8705-Type D) **(VLV90093 Lock Type)**
 1.50 lb.



2" female thread VLV90101 with "standard" flange.
VLV90103 (8805-Type D) **(VLV90104 Lock Type)**
 1.78 lb.



2" male thread VLV90083 with "recessed" flange.
VLV90085 (8705A-Type DA) **(VLV90095 Lock Type)**
 1.63 lb.



2" female thread VLV90101 with "recessed" flange.
VLV90105 (8810A-Type DA) **(VLV90106 Lock Type)**
 1.75 lb.



2" male thread-exposed pipe with short body. 1 7/8" long.
VLV90087 (8730-Type E) **(VLV90092 Lock Type)**
 1.00 lb.



1 1/2" male thread-exposed pipe. Use when a 1 1/2" thread must be used. 2 7/16" long.
VLV90082 (8740-Type B) **(VLV90090 Lock Type)**
 1.13 lb.



2" male thread VLV90087 with "standard" flange. For limited wall space.
VLV90088 (8715-Type D) **(VLV90094 Lock Type)**
 1.25 lb.



1 1/2" male thread VLV90082 with "standard" flange.
VLV90089 (8745-Type C) **(VLV90097 Lock Type)**
 1.25 lb.



2" male thread VLV90087 with "recessed" flange. For limited wall space.
VLV90086 (8715A-Type DA) **(VLV90096 Lock Type)**
 1.25 lb.



1 1/2" male thread VLV90082 with "recessed" flange.
VLV90098 (8745A-Type CA) **(VLV90099 Lock Type)**
 1.25 lb.



304SS version of an 8720 Type E inlet valve with 2" male thread valve.
VLV90239 1.13 lb.



304SS "recessed" flange to fit VLV90239.
FLG90024 0.3 lb.
 304SS "standard" flange to fit VLV90239 (Not Shown).
FLG90025 0.2 lb.

FLOOR INLET VALVES FOR 1-1/2" DIAMETER HOSE



When it is inconvenient to use wall valves, floor valves are available. The valve is made of forged brass with a natural brush finish. It is designed to maintain its original appearance even in heavy traffic areas. **It is recommended that the hose be connected to these valves using a Part No. EVT90005 floor elbow.**



2" male thread – Installed flush with floor surface.

VLV90110 (VLV90111 Lock Type)
(8900-Type G) 1.88 lb.



2" male thread – Beveled edge designed for use with carpets.

VLV90112 (VLV90113 Lock Type)
(8905-Type R) 1.88 lb.



Chrome plated version of a VLV90110 Type G floor valve.

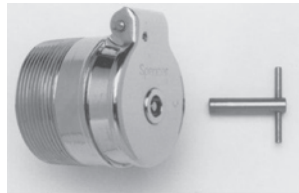
VLV90246 1.9 lb.



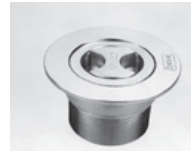
304SS version of a VLV90110 Type G floor valve.

VLV90227 1.9 lb.

LOCKING INLET VALVES



Optional lock type covers can be furnished on all wall and floor inlet valves designed for use with 1 1/2" diameter hose.



"Easy-Lift" keyless floor valve.

VLV90449
Complete valve (chrome body with aluminum cover/lid)



L1V90036
Aluminum cover/lid only (replacement for existing valves)

INLET VALVES FOR 2" DIAMETER HOSE OR LARGER

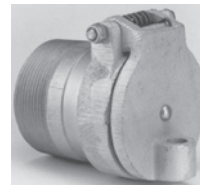


The 2" valve body is forged brass. The cover is steel and the entire valve is nickel plated. 2-1/2" and larger valve bodies are carbon steel. The covers are forged brass and the entire body is nickel plated.



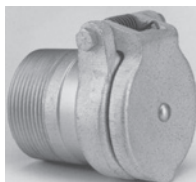
2" male thread-exposed pipe. Accepts 2" male hose coupling.

VLV90100
(8755-Type I) 1.25 lb.



3" male thread-exposed pipe. Accepts 3" male hose coupling.

VLV90108
(8675-Type L) 4.25 lb.



2 1/2" male thread-exposed pipe. Accepts 2 1/2" male hose coupling.

VLV90107
(8690-Type J) 2.75 lb.



4" male thread-exposed pipe. Accepts 4" male hose coupling.

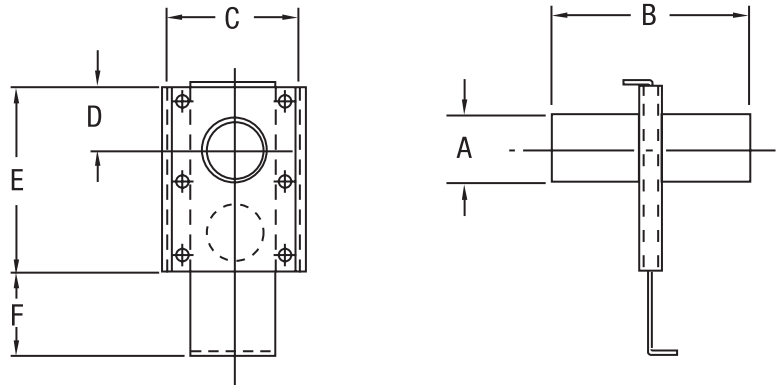
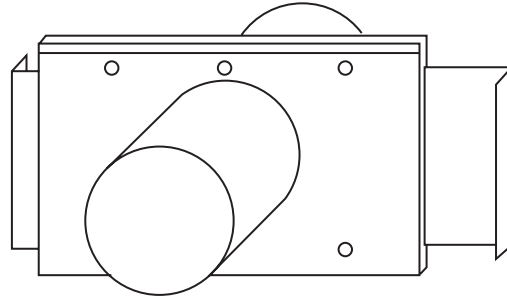
VLV90109
(8676-Type K) 6.25 lb.

5", 6" and 8" inlet valves are also available.

AIR GATE VALVES



Spencer Air Gate Valves may be used to regulate air flow or as a shut-off valve for branch lines in vacuum systems and low pressure exhaust systems.



Diameter (A)	Galvanized Part No.	*Stainless Steel Part No.	*Aluminum Part No.	Cat. No.	Length (B)	Housing Width (C)	Tubing CL (D)	Housing Length (E)	Adjustment Slide (F)
2-1/8"	VLV90125	VLV90251	VLV90258	AG-2000	8-7/16	4	2-1/16	6	2-5/8
2-1/2"	VLV90126	VLV90252	VLV90259	AG-2500	8-7/16	4-1/2	2-1/4	6-3/4	3
3"	VLV90127	VLV90253	VLV90260	AG-3000	8-7/16	5-1/4	2-1/2	8	3-1/2
4"	VLV90128	VLV90254	VLV90261	AG-4000	10-7/16	6-1/4	3	10	4-1/2
5"	VLV90224	VLV90255	VLV90262	AG-5000	12-7/16	8	4	14-1/4	6-3/4
6"	VLV90129	VLV90256	VLV90263	AG-6000	12-5/8	10	5	18	8-13/16
8"	VLV90219	VLV90257	VLV90264	AG-8000	12-9/16	13	6	22	10-13/16

Dimensions in inches.

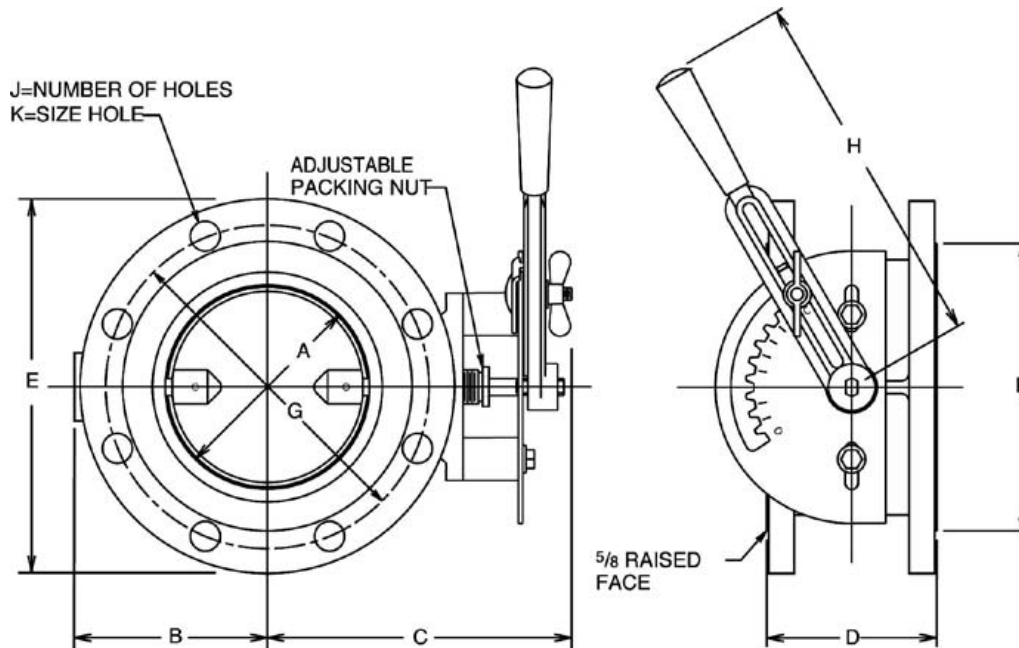
Stock Air Gate Valves are galvanized steel with straight ends.

*Stainless steel, aluminum, and valves with expanded ends are available as non-stock items.

BLAST GATES



Spencer blast gates, also called butterfly valves, are effective flow regulating devices offered in 4" to 14" diameters. These blast gates are flanged, with ANSI 125/150# drilling for convenient mounting with manual lever actuator.



Part No.	Size *	A	B	C	D	E	F	G	H	J	K	Approx. Wt. (lbs.)
VLV90474	4"	4	4-1/2	8-3/8	5	9	6-3/16	7-1/2	10-3/4	8	3/4	40
VLV90475	6"	6	5-1/2	9-3/8	5	11	8-1/2	9-1/2	10-3/4	8	7/8	56
VLV90476	8"	8	7-3/4	11-5/8	5-1/2	13-1/2	10-5/8	11-3/4	10-3/4	8	7/8	77
VLV90477	10"	10	8-3/4	12-5/8	5-1/2	16	12-3/4	14-1/4	10-3/4	12	1	96
VLV90478	12"	12	9-3/4	13-5/8	5-1/2	19	15	17	10-3/4	12	1	125
VLV90479	14"	13-1/8	11-1/2	15-5/8	5-1/2	21	16-1/4	18-3/4	21	12	1-1/8	155

Dimensions are in inches.

*Contact factory for larger sizes.

Specifications

Graphited Teflon® braid packing is secured with adjustable brass packing nut; repacking can be done in place

Graphited bronze bushing offers low friction, long life

Ten position locking and infinite throttling lever with indicator plate

Full-flanged, ANSI 125/150# drilling accommodates dead end installation

Maximum temperature rating 450° (232C)°; maximum pressure rating 25 PSIG

Contoured bore with swing-through seat lessens flow restriction

Standard Materials of Construction

Body — Ductile Iron

Disc — Cast Iron CL30

Shaft — 416 Stainless Steel

Bushing — Graphited Bronze

Packing — Graphited Teflon Braid

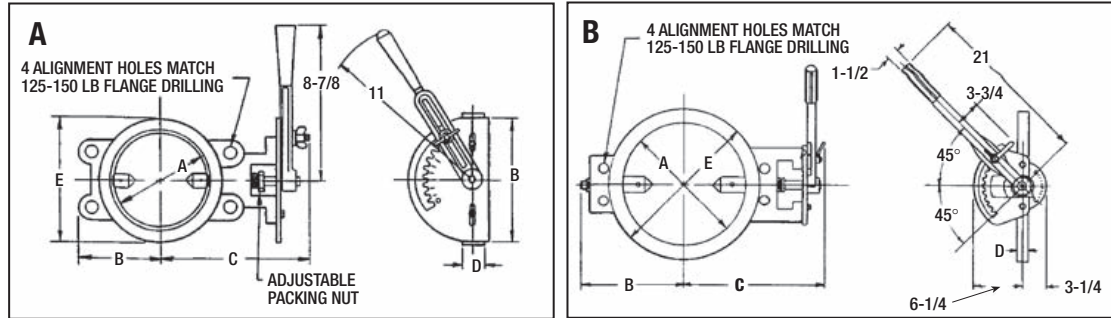
Packing Nut — Brass

WAFER BUTTERFLY VALVES



Wafer Butterfly Valves are a flow regulating device similar to Blast Gates. They are used where weight is a consideration. Spencer Wafer Butterfly Valves are metal-seated and made of an iron body and disc with an adjustable packing gland, 416 stainless steel shaft and a ten position locking lever with indicator plate. They are available in sizes 4" to 20" diameter.

Specifications:
 Cast iron body and disc
 416 stainless steel shaft
 Bronze bushings
 Brass packing nut
 Graphited Teflon packing



Sizes 4" - 12" Illustration A

Size (A)	Part No.	Cat. No.	Valve CL to Body End (B)	Valve CL to Lever Arm Exten. (C)	Height (D)	Outside Diameter OD (E)	Weight lbs.
4	VLV90039	GB-204	4-1/4	8-3/8	1-1/2	6-1/4	15
6	VLV90040	GB-206	5-3/8	9-3/8	1-1/2	8-1/2	20
8	VLV90038	GB-208	6-1/2	11-5/8	1-7/8	10-3/4	35
10	VLV90037	GB-210	8	12-5/8	1-7/8	13	43
12	VLV90152	GB-212	9-1/2	13-5/8	1-7/8	15-1/4	53

Sizes 14" - 20" Illustration B

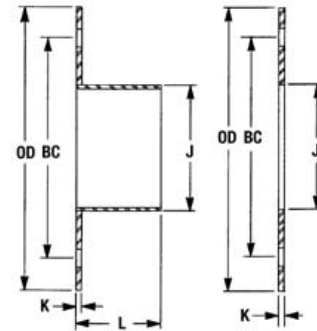
Nominal Size	Size (A)	Part No.	Cat. No.	Valve CL to Body End (B)	Valve CL to Lever Arm Exten. (C)	Height (D)	Outside Diameter OD (E)	Weight lbs.
14	13-1/8	VLV90153	GB-214	11-3/8	15-5/8	1-7/8	17-1/2	75
16	15-1/8	VLV90154	GB-216	12-3/4	18	2-3/8	18-1/4	127
18	17-1/8	VLV90155	GB-218	13-7/8	19	2-3/8	20-3/4	160
20	19-1/8	VLV90156	GB-220	14-7/8	20	2-3/8	22-3/4	197

Dimensions in inches.

FLANGE ADAPTERS



Flange Adapters are used where a full 125/150# thickness is not required. Used to join a blower, exhaustor or fan to a tubing system Spencer standard Flange Adapters are supplied with a tube neck. (May be furnished without a tube neck – disregard "L" dimension and tube neck gauge.) Blind flanges are also available.



Size (J)	Part No.	Cat. No.	Thickness Gauge (K)	Length (L)	Outside Diameter OD	Bolt Circle BC	Number of Bolt Holes	Bolt Hole Dia.	Tube Neck Gauge
3	AFA90033	03Q03	10	3	7-1/2	6	4	3/4	16
3	AFA90034	04Q03	10	3	9	7-1/2	8	3/4	16
4	AFA90020	04Q04	10	3	9	7-1/2	8	3/4	16
3	AFA90036	05Q03	10	3	10	8-1/2	8	7/8	16
4	AFA90037	05Q04	10	3	10	8-1/2	8	7/8	16

Dimensions in inches.

FLANGE ADAPTERS



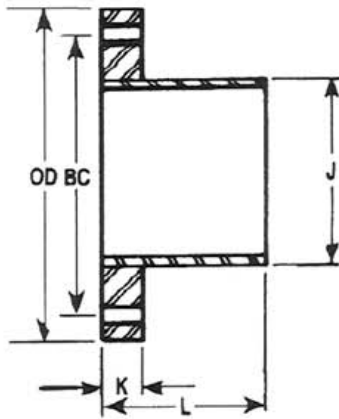
Size (J)	Part No.	Cat. No.	Thickness Gauge (K)	Length (L)	Outside Diameter OD	Bolt Circle BC	Number of Bolt Holes	Bolt Hole Dia.	Tube Neck Gauge
5	AFA90038	05Q05	10	3	10	8-1/2	8	7/8	14
3	AFA90039	06Q03	10	3	11	9-1/2	8	7/8	16
4	AFA90040	06Q04	10	3	11	9-1/2	8	7/8	16
5	AFA90041	06Q05	10	3	11	9-1/2	8	7/8	14
6	AFA90017	06Q06	10	3	11	9-1/2	8	7/8	14
5	AFA90043	08Q05	10	3	13-1/2	11-3/4	8	7/8	14
6	AFA90044	08Q06	10	3	13-1/2	11-3/4	8	7/8	14
8	AFA90019	08Q08	10	3	13-1/2	11-3/4	8	7/8	14
6	AFA90046	10Q06	10	3	16	14-1/4	12	1	14
8	AFA90047	10Q08	10	3	16	14-1/4	12	1	14
10	AFA90018	10Q10	10	3	16	14-1/4	12	1	12
6	AFA90049	12Q06	10	3	19	17	12	1	14
8	AFA90050	12Q08	10	3	19	17	12	1	14
10	AFA90051	12Q10	10	3	19	17	12	1	12
12	AFA90052	12Q12	10	3	19	17	12	1	12
8	AFA90053	14Q08	10	3	21	18-3/4	12	1-1/8	12
10	AFA90054	14Q10	10	3	21	18-3/4	12	1-1/8	12
12	AFA90055	14Q12	10	3	21	18-3/4	12	1-1/8	12
14	AFA90056	14Q14	10	6	21	18-3/4	12	1-1/8	12
8	AFA90057	16Q08	10	6	23-1/2	21-1/4	16	1-1/8	14
10	AFA90058	16Q10	10	6	23-1/2	21-1/4	16	1-1/8	12
12	AFA90059	16Q12	10	6	23-1/2	21-1/4	16	1-1/8	12
14	AFA90060	16Q14	10	6	23-1/2	21-1/4	16	1-1/8	12
16	AFA90061	16Q16	10	6	23-1/2	21-1/4	16	1-1/8	12
12	AFA90062	18Q12	10	6	25	22-3/4	16	1-1/4	12
14	AFA90063	18Q14	10	6	25	22-3/4	16	1-1/4	12
16	AFA90064	18Q16	10	6	25	22-3/4	16	1-1/4	12
18	AFA90065	18Q18	5/8	6	25	22-3/4	16	1-1/4	12
14	AFA90066	20Q14	5/8	6	27-1/2	25	20	1-1/4	12
16	AFA90067	20Q16	5/8	6	27-1/2	25	20	1-1/4	12
18	AFA90068	20Q18	5/8	6	27-1/2	25	20	1-1/4	12
20	AFA90069	20Q20	5/8	6	27-1/2	25	20	1-1/4	12
18	AFA90070	22Q18	5/8	6	27-1/2	25	20	1-1/4	12
20	AFA90071	22Q20	5/8	6	27-1/2	25	20	1-1/4	12
22	AFA90072	22Q22	5/8	6	27-1/2	25	20	1-1/4	12
20	AFA90073	24Q20	5/8	6	32	29-1/2	20	1-3/8	12
22	AFA90074	24Q22	5/8	6	32	29-1/2	20	1-3/8	12
24	AFA90075	24Q24	5/8	6	32	29-1/2	20	1-3/8	12
20	AFA90076	26Q20	5/8	6	32	29-1/2	20	1-3/8	12
22	AFA90077	26Q22	5/8	6	32	29-1/2	20	1-3/8	12
24	AFA90078	26Q24	5/8	6	32	29-1/2	20	1-3/8	12
26	AFA90079	26Q26	5/8	6	32	29-1/2	20	1-3/8	12

Dimensions in inches.

COMPANION FLANGES

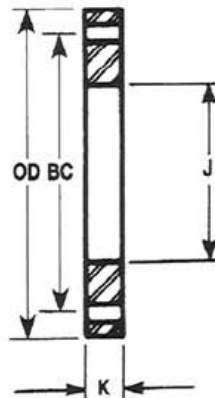


Spencer centrifugal blowers and vacuum producers are furnished with inlets and outlets ranging from 4" to 42". To adapt the inlet and/or outlet to the system piping, companion flanges may be required. The following three types are available:



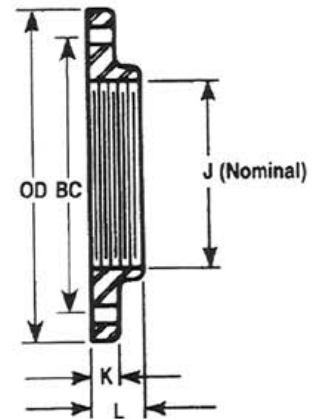
Type A

Long Neck
Tube or Pipe Size
Sleeve Connections



Type B

Steel Ring
Tube or Pipe Size
Weld Connections



Type C

Threaded (FPT)
Schedule 40
Pipe

Type "A" Part No.	Type "B" Part No.	Type "C" Part No.	Diameter (J)	Thickness (K)	Length (L)	Outside Diameter (OD)	Bolt Circle (BC)	Number of Bolt Holes	Bolt Hole Diameter
AFA90015	RFC90006	FLG90004	4	1/2	*3	9	7-1/2	8	3/4
AFA90022	RFC90012	FLG90003	4-1/2	1/2	3	9	7-1/2	8	3/4
—	RFC90097	—	5	1/2	3	10	8-1/2	8	7/8
AFA90014	RFC90007	FLG90005	6	1/2	**3	11	9-1/2	8	7/8
AFA90023	RFC90013	FLG90002	6-5/8	1/2	3	11	9-1/2	8	7/8
AFA90016	RFC90004	FLG90006	8	1/2	**3	13-1/2	11-3/4	8	7/8
AFA90024	RFC90017	N/A	8-5/8	1/2	3	13-1/2	11-3/4	8	7/8
AFA90013	RFC90008	FLG90007	10	1/2	***3	16	14-1/4	12	1
AFA90025	RFC90060	N/A	10-3/4	1/2	3	16	14-1/4	12	1
AFA90026	RFC90005	N/A	12	1/2	3	19	17	12	1
AFA90027	RFC90061	N/A	12-3/4	1/2	3	19	17	12	1
AFA90028	RFC90000	N/A	14	5/8	6-1/8	21	18-3/4	12	1-1/8
AFA90029	RFC90040	N/A	16	5/8	6-1/8	23-1/2	21-1/4	16	1-1/8
AFA90030	RFC90041	N/A	18	5/8	6-1/8	25	22-3/4	16	1-1/4
AFA90031	RFC90081	N/A	20	3/4	6-1/4	27-1/2	25	20	1-1/4
AFA90032	RFC90063	N/A	24	3/4	6-1/4	32	29-1/2	20	1-3/8

ANSI 125/150# drilling. Dimensions in inches.

* (L) dimension is 1 5/8" for Type "C"

** (L) dimension is 1 1/2" for Type "C"

*** (L) dimension is 1 3/4" for Type "C"

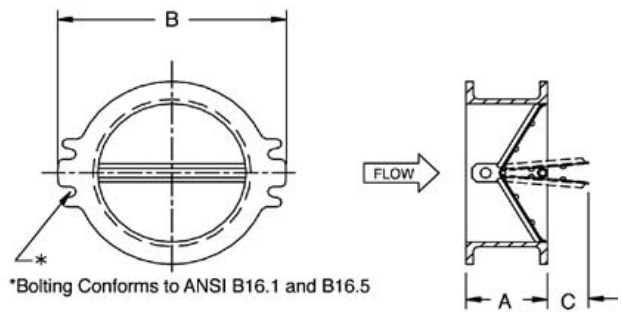
Other sizes available in Type "A" and Type "B" only. Consult factory for details.

CHECK VALVES



Wafer Style - 125# Class

Size ID	Part No. EPDM	Part No. Silicone	A	B	C
2"	VLV90484	VLV90497	1-3/8"	4-1/4"	1/2"
3"	VLV90485	VLV90498	1-7/8"	6"	3/4"
4"	VLV90486	VLV90499	2-3/8"	7-1/2"	7/8"
5"	VLV90487	VLV90500	2-7/8"	9"	1-1/4"
6"	VLV90488	VLV90501	3-3/8"	10-1/2"	1-1/2"
8"	VLV90489	VLV90502	4-3/8"	13"	2"
10"	VLV90490	VLV90503	5-3/8"	14-7/8"	2-5/8"
12"	VLV90491	VLV90504	6-3/8"	17-1/2"	3"
14"	VLV90492	VLV90505	7-3/8"	21"	3-3/8"
16"	VLV90493	VLV90506	8-3/8"	23-1/2"	3-15/16"
18"	VLV90494	VLV90507	9-3/8"	25"	4-1/2"
20"	VLV90495	VLV90508	10-3/8"	27-1/2"	5-1/4"
24"	VLV90496	VLV90509	12-3/8"	32"	6-1/4"

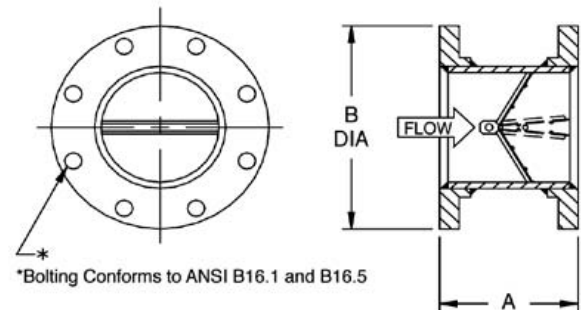


Standard Specs:

Cast Iron Body
 6061 T6 Aluminum Internals
 10" and above SS springs
 200 psi@150°F
 EPDM Seals: -40°F to 300°F
 Silicone Seals: -100°F to 500°F
 Ref: TDS-156, TDS-157

Flanged Ends - 125# Class

Size ID	Part No. EPDM	Part No. Silicone	A	B
1"	VLV90510	VLV90527	3"	4-1/4"
1-1/4"	VLV90511	VLV90528	4-1/2"	4-5/8"
1-1/2"	VLV90512	VLV90529	4-1/2"	5"
2"	VLV90513	VLV90530	4-1/2"	6"
2-1/2"	VLV90514	VLV90531	5"	7"
3"	VLV90515	VLV90532	5"	7-1/2"
4"	VLV90516	VLV90533	5-1/2"	9"
5"	VLV90517	VLV90534	6"	10"
6"	VLV90518	VLV90535	7"	11"
8"	VLV90519	VLV90536	9"	13-1/2"
10"	VLV90520	VLV90537	11"	16"
12"	VLV90521	VLV90538	13"	19"
14"	VLV90522	VLV90539	15"	21"
16"	VLV90523	VLV90540	17"	23-1/2"
18"	VLV90524	VLV90541	19"	25"
20"	VLV90525	VLV90542	21"	27-1/2"
24"	VLV90526	VLV90543	25"	32"

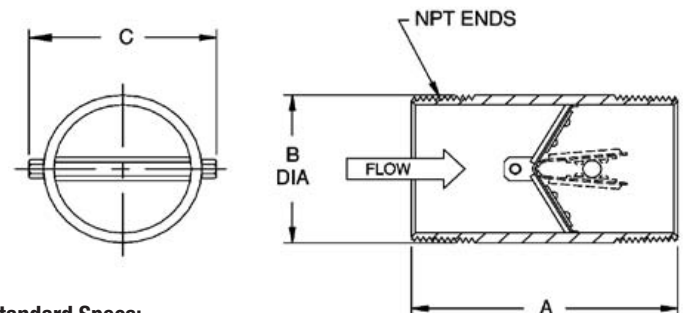


Standard Specs:

Carbon Steel Body
 6061 T6 Aluminum Internals
 10" and above SS Springs
 200 psi@150°F
 EPDM Seals: -40°F to 300°F
 Silicone Seals: -100°F to 500°F
 Ref: TDS-154, TDS-155

Male Pipe Thread Ends (MPT)

Size ID	Part No. Silicone	A	B	C
1"	VLV90544	3-1/2"	1-5/16"	1-3/4"
1-1/4"	VLV90545	3-1/2"	1-21/32"	2-1/16"
1-1/2"	VLV90546	4"	1-29/32"	2-3/8"
2"	VLV90547	4"	2-3/8"	2-13/16"
2-1/2"	VLV90548	5"	2-7/8"	3-5/16"
3"	VLV90549	5-1/2"	3-1/2"	4-1/8"
4"	VLV90550	6"	4-1/2"	5-1/8"
5"	VLV90551	7"	5-9/16"	6-3/16"
6"	VLV90552	8"	6-5/8"	7-1/2"
8"	VLV90553	10"	8-5/8"	9-1/2"
10"	VLV90554	12"	10-3/4"	11-3/4"
12"	VLV90555	14"	12-3/4"	14-1/4"



Standard Specs:

Carbon Steel Body
 6061 T6 Aluminum Internals
 10" and above SS Springs
 200 psi@150°F
 Silicone Seals: -100°F to 500°F
 Ref: TDS-153

FRICION LOSS CHART



This chart may be used to compute friction losses in a piping system. For example, determine the friction loss incurred with 70 CFM flows through a 2" pipe, 50' long.

Step 1: Intersect 70 CFM and the sloping line for 2" pipe as shown.

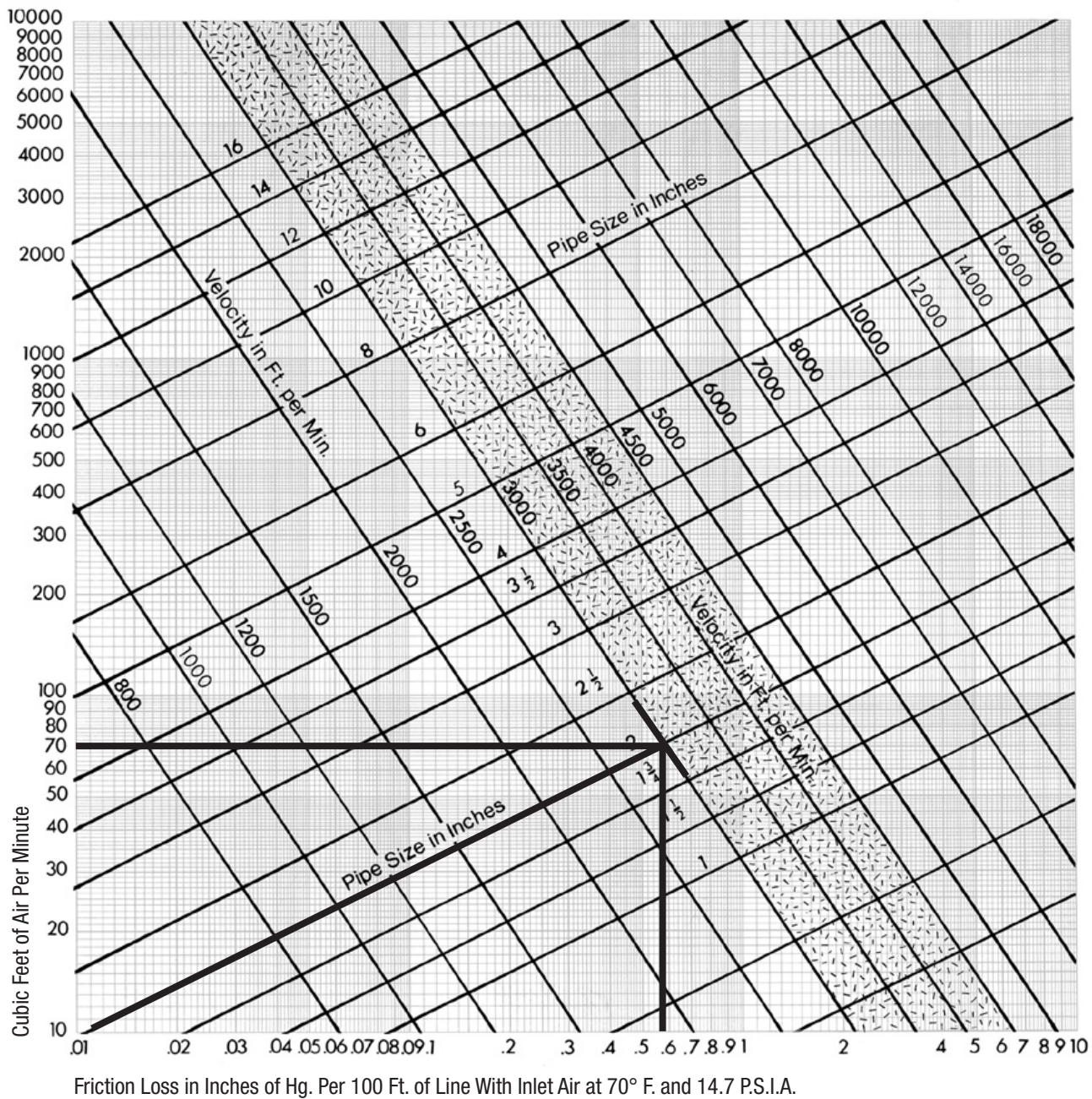
Step 2: Drop a vertical from this point of intersection and read the loss/100', in this case, .60Hg/100'.

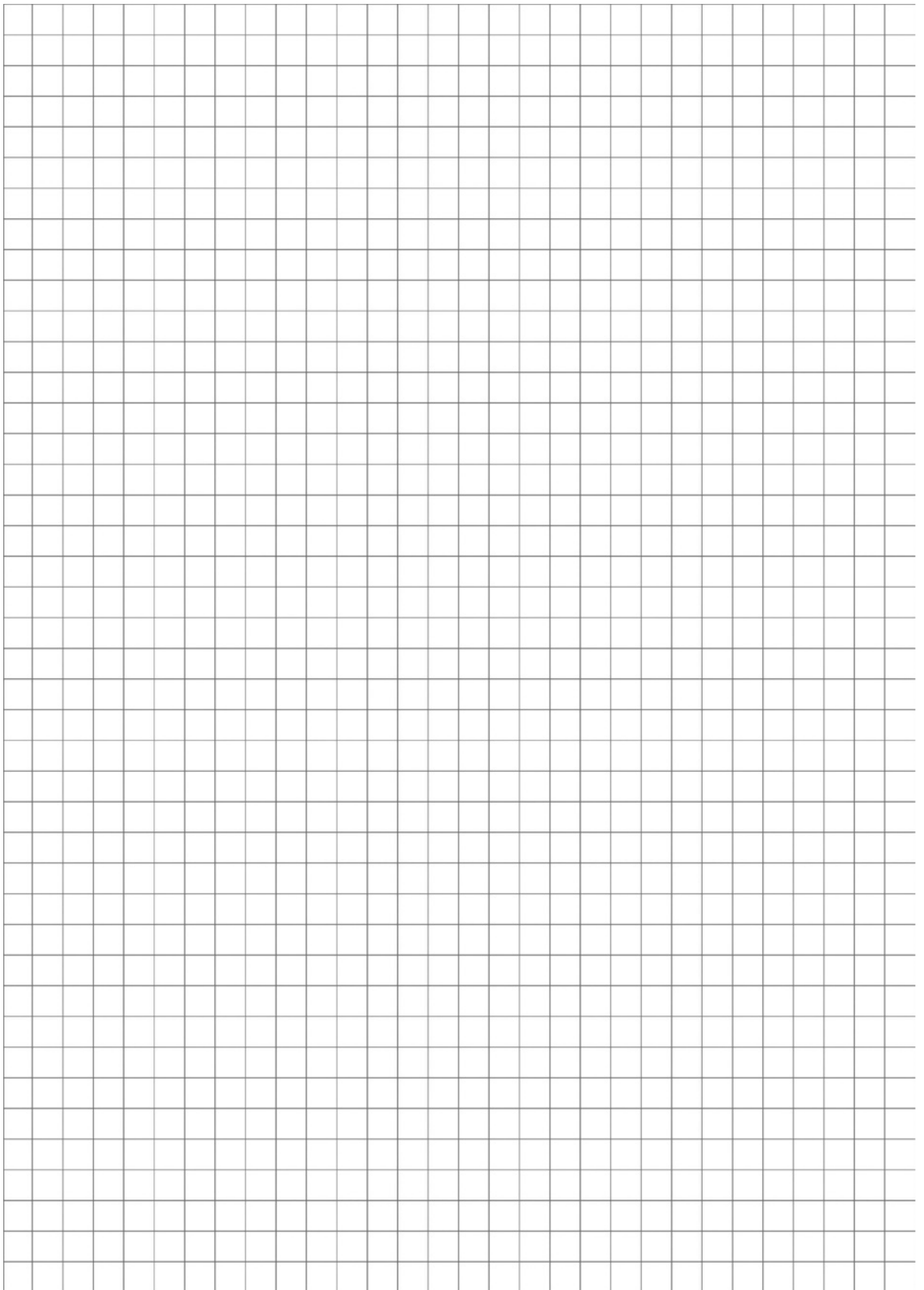
Step 3: Multiply the loss/100' of line by the length of run/100'.

The loss for 50', then, is

$$.60 \left(\frac{\text{length of run}}{100'} \right) = .60 \left(\frac{50'}{100'} \right) = 0.30'' \text{ Hg.}$$

Also: Velocity in the line may be read from the negatively sloping lines on the graph. Here, to get 70 CFM through a 2" line, the air must travel at a velocity of approximately 3000 FPM.







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