

Determining The Correct Insert for Tubing

You have to know TWO of THREE pieces of information:

1. Outside Diameter (O.D.) of the tubing.
2. Inside Diameter (I.D.) of tubing.
3. Gauge of material or thickness of material. Gauges are tolerances for ranges of measurement. Please refer to a metal gauge chart indicating the ranges of each gauge. As an example, 18 gauge tubing has a tolerance of .0508" (maximum) to .0449" (minimum) and the normal thickness is .0478".

Now that you have gathered that information you are ready to calculate the correct insert or stem for your application.

RULE #1 If you know the O.D. and the I.D., to calculate the gauge of tubing do the following: $(O.D. - I.D.) / 2$ - gauge of tubing.

Example: O.D. is 3/4" or 0.750" & I.D. is 0.660"

Formula: $(0.750 - 0.660) / 2 = 0.045$ or 18 gauge

RULE #2 If you know the O.D. and the gauge, to calculate the I.D. of tubing do the following: $O.D. - (gauge \times 2) = I.D.$ of tubing.

Example: O.D. is 0.750" & Gauge is 18ga or 0.0478

Formula: $0.750 - (0.0478 \times 2) = 0.6544$

RULE #3 If you know the I.D. and the gauge, to calculate the O.D. of tubing do the following: $I.D. + (gauge \times 2) = O.D.$ of tubing.

Example: I.D. is 0.660" & Gauge is 18ga or 0.0478

Formula: $0.660 + (0.0478 \times 2) = 0.7556$

One Final Note: It is important to keep in mind that gauges have a wide tolerance and that samples may be required or you can send a sample of the tubing for exact insert or stem.



PLASTIC 375 INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
-	Round	-	375	0.440	Plastic	I-375 PLASTICWOOD	0.01
1/2"X1"	Rectangle	20	375	-	Plastic	I-1/2X1REC 20GA 375	0.01
1/2"	Round	16	375	0.402	Plastic	I-1/2RD 16GA 375	0.01
	Round	18		0.440	Plastic	I-1/2RD 18GA 375	0.01
0.580	Round	-	375	0.580	Plastic	I-.580RD SPGA 375	0.01
3/4"	Round	16	375	0.630	Plastic	I-3/4RD 16GA 375	0.01
	Round	20		0.700	Plastic	I-3/4RD 20GA 375	0.01
	Square	16		0.630	Plastic	I-3/4SQ 16GA 375	0.01
	Square	18		0.660	Plastic	I-3/4SQ 18GA 375	0.01
5/8"	Round	16	375	0.510	Plastic	I-5/8RD 16GA 375	0.01
	Round	18		0.540	Plastic	I-5/8RD 18GA 375	0.01
	Square	18		0.540	Plastic	I-5/8SQ 18GA 375	0.01
7/8"	Round	20	375	0.820	Plastic	I-7/8RD 20GA 375	0.01
	Square	16		0.760	Plastic	I-7/8SQ 16GA 375	0.02
	Square	20		0.820	Plastic	I-7/8SQ 20GA 375	0.02
1"	Round	16	375	0.900	Plastic	I-1RD 16GA 375	0.02
	Square	16		0.900	Plastic	I-1SQ 16GA 375	0.02
	Square	18		0.935	Plastic	I-1SQ 18GA 375	0.02

PLASTIC 375L INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
5/8"	Round	16	375L	0.520	Plastic	I-5/8RD 16GA 375L	0.01
	Round	18		0.540	Plastic	I-5/8RD 18GA 375L	0.01
3/4"	Round	16	375L	0.630	Plastic	I-3/4RD 16GA 375L	0.01
	Square	16		0.630	Plastic	I-3/4SQ 16GA 375L	0.01
7/8"	Round	16	375L	0.750	Plastic	I-7/8RD 16GA 375L	0.01
1"	Round	16	375L	0.910	Plastic	I-1RD 16GA 375L	0.02
	Square	16		0.910	Plastic	I-1SQ 16GA 375L	0.03

DIE CAST INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
1"	Round	14	625S	1.010	Die Cast	I-1RD 14GA 625S	0.02
1 1/4"	Square	14	625S	1.100	Die Cast	I-1 1/4SQ 14GA 625S	0.34
1 1/2"	Square	16	625S	1.400	Die Cast	I-1 1/2SQ 16GA 625S	0.63
	Square	16	437SX1 5/16	1.400	Die Cast	I-1 1/2SQ 16GA 437SX1 5/16	0.56
1 5/8"	Round	16	625S	1.500	Die Cast	I-1 5/8RD 16GA 625S	0.36

437SX1 5/16



PLASTIC 437SX1 5/16 INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
1 1/16"	Round	16	437SX1 5/16	0.675	Plastic	I-11/16RD 16GA 437SX1 5/16	0.01
3/4"	Round	16	437SX1 5/16	0.630	Plastic	I-3/4RD 16GA 437SX1 5/16	0.01
	Square	16		0.630	Plastic	I-3/4SQ 16GA 437SX1 5/16	0.01
7/8"	Round	16	437SX1 5/16	0.760	Plastic	I-7/8RD 16GA 437SX1 5/16	0.01
	Square	16		0.760	Plastic	I-7/8SQ 16GA 437SX1 5/16	0.02
0.880	Round	-	437SX1 5/16	-	Plastic	I-.880RD SPGA 437SX1 5/16	0.02
1"	Round	14	437SX1 5/16	0.860	Plastic	I-1RD 14GA 437SX1 5/16	0.02
	Round	16		0.905	Plastic	I-1RD 16GA 437SX1 5/16	0.02
	Square	16		0.900	Plastic	I-1SQ 16GA 437SX1 5/16	0.03
	Square	17		0.900	Nylon	I-1SQ 17GA 437SX1 5/16	0.05
1 1/4"	Round	17	437SX1 5/16	1.640	Plastic	I-1 1/4RD 17GA 437SX1 5/16	0.03
	Square	14		1.115	Plastic	I-1 1/4SQ 14GA 437SX1 5/16	0.03

STEEL



STEEL INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
-	Round	-	375	0.375	Steel	I-375 STEEL WOOD	0.01
	Round	-	437SX1 5/16	0.580	Steel	I-437SX1 5/16RD ST FS	0.14
	Round	-	437SX1	0.575	Steel	I-1/2RD ST 437SX1	0.04
1"	Round	16-18	3/8-16	.880-.904	Steel	I-1RD STGA 3/8-16	0.06
	Round	16-18	437SX1 5/16	.880-.904	Steel	I-1RD STGA 437SX1 5/16	0.04
	Square	16-18	437SX1 5/16	.880-.904	Steel	I-1SQ STGA 437SX1 5/16	0.05
1 1/4"	Round	16-18	437SX1 5/16	1.130-1.154	Steel	I-1 1/4RD STGA 437SX1 5/16	0.06
	Square	16-18	437SX1 5/16	1.130-1.154	Steel	I-1 1/4SQ STGA 437SX1 5/16	0.06
1 1/2"	Round	16-18	437SX1 5/16	1.380-1.404	Steel	I-1 1/2RD STGA 437SX1 5/16	0.07
	Square	16-18	437SX1 5/16	1.380-1.404	Steel	I-1 1/2SQ STGA 437SX1 5/16	0.07
2"	Round	16-18	437SX1 5/16	1.880-1.904	Steel	I-2RD STGA 437SX1 5/16	0.10
2 1/2"	Round	16-18	437SX1 5/16	2.380-2.404	Steel	I-2 1/2RD STGA 437SX1 5/16	0.15
3"	Round	16-18	437SX1 5/16	2.880-2.904	Steel	I-3RD STGA 437SX1 5/16	0.20
	Square	16-18	437SX1 5/16	2.880-2.904	Steel	I-3SQ STGA 437SX1 5/16	0.25

EXPANDABLE



EXPANDABLE INSERTS					PART NUMBER		
Tubing O.D.	Tubing Type	Gauge	Stem	Cat Insert O.D.	Material	Part Number	Shipping Weight (LBS) (Each)
3/4"	Round	-	Expandable	.750-.813	Rubber	I-3/4RD EXP	0.27
	Square	-		.750-.813	Rubber	I-3/4SQ EXP	0.32
7/8"	Round	-	Expandable	.875-.938	Rubber	I-7/8RD EXP	0.26
	Square	-		.875-.938	Rubber	I-7/8SQ EXP	0.27
1"	Round	-	Expandable	1.062-1.125	Rubber	I-1RD EXP	0.41
	Square	-		1.062-1.125	Rubber	I-1SQ EXP	0.43
1 1/8"	Round	-	Expandable	1.125-1.188	Rubber	I-1 1/8RD EXP	0.43
	Square	-		1.125-1.188	Rubber	I-1 1/8SQ EXP	0.46
1 3/8"	Round	-	Expandable	1.375-1.438	Rubber	I-1 3/8RD EXP	0.54
	Square	-		1.375-1.438	Rubber	I-1 3/8SQ EXP	0.54
1 1/2"	Round	-	Expandable	1.500-1.563	Rubber	I-1 1/2RD EXP	0.54
	Square	-		1.500-1.563	Rubber	I-1 1/2SQ EXP	0.56

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