

INVERTED FLARE



Tube O.D.	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Thread O.D. threads per inch	5/16-28	3/8-24	7/16-24	1/2-20	5/8-18	11/16-18	3/4-18	7/8-18	1-1/16-16	1-3/16-16	1-5/16-16

•Typical Application

Hydraulic brake, power steering, fuel lines and transmission cooler lines, LP and natural gas.

•Working Pressure Ranges

Temperature and type of tubing used are important factors. However, the following table is a good guide for proper selection. Temperature 73°F with copper tubing:

PSI	Tube O.D. (in.)	Tube Wall (in.)
2800	1/8	.030
1900	3/16	.030
1400	1/4	.030
1200	5/16	.032
1000	3/8	.032
750	1/2	.032
650	5/8	.035
550	3/4	.035

•Vibration

Excellent resistance.

•Temperature Range

-65°F to +250°F (-53°C to +121°C) range at maximum operating pressures.

•Used With

Copper, brass, aluminum and steel hydraulic tubing that can be flared.

•Advantages

Very low cost and reusable. Seats and threads are internal and protected. Compact, excellent vibration life. Short nut affords very close tube bends. Steel or brass tube nut.

•Tolerance

+/- .03 on all dimensions.

•Conformance

Meets specifications and standards of ASA, ASME, SAE and MS (Military Standards).

•Assembly Instructions

- 1-Cut tubing to desired length. Make sure all burrs are removed and the ends are cut square.
- 2- Slide nut on tube. Threaded end "A" of nut must face out.
- 3- Flare end of tube with a 45° flaring tool.
 - a- Measure flare diameter.
 - b- Examine flare for excessive thin out.
 - c- On thin wall, welded or brazed tubing, use double flare to prevent pinch-off and cracked flares.
- 4- Lubricate threads and assemble to fitting body. Nut should be turned hand tight.
- 5- Tighten assembly with wrench until a solid feeling is encountered. From that point, apply a one-sixth turn.

Note: Do not over-torque as it may damage the fitting or split the tubing at the flare.

STANDARD METRIC THREADS

Description Tube Size	Thread O.D.	Crest (Pitch)	Thread Description
Japanese 3/16"	10mm	1.0mm	M10 x 1.0
European 3/16"	10mm	1.0mm	M10 x 1.0
GM 6mm	12mm	1.0mm	M12 x 1.0
Fuel 5/16"	14mm	1.5mm	M14 x 1.5
Fuel 3/8"	16mm	1.5mm	M16 x 1.5

Measuring Metric Threads: Measure the O.D. of the threads and the crest to crest distance (pitch) in millimeters between threads.

Actual O.D. of male inverted flare threads

5/16"-28 2800 PSI	3/8"-24 1900 PSI	7/16"-24 1400 PSI	1/2"-20 1200 PSI	5/8"-18 1000 PSI	3/4"-18 750 PSI	7/8"-18 650 PSI	1-1/16"-16 550 PSI
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1/8"

3/16"

1/4"

5/16"

3/8"

1/2"

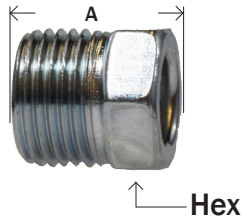
5/8"

3/4"

INVERTED FLARE

BRASS FITTINGS

ZINC CHROMATE STEEL NUT

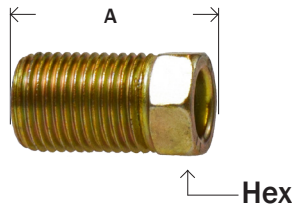


SAE# 040110

Part #	Size	Thread	A	Hex	Approx. Wt. Lbs.	List Price
12-001	1/8"	5/16-28	0.52	0.31	0.01	2.82
12-002	3/16"	3/8-24	0.56	0.37	0.02	0.41
12-018	3/16"	7/16-24	0.56	0.43	0.02	1.98
12-003	1/4"	7/16-24	0.56	0.43	0.02	0.46
12-004	5/16"	1/2-20	0.62	0.50	0.02	0.53
12-005	3/8"	5/8-18	0.66	0.62	0.03	0.89
12-000	7/16"	11/16-18	0.68	0.68	0.04	5.40
12-011	3/8"	11/16-18	0.66	0.68	0.05	6.42
12-006	1/2"	3/4-18	0.74	0.75	0.08	3.03
12-007	5/8"	7/8-18	0.80	0.87	0.10	3.37
12-008	3/4"	1-1/16-16	0.88	1.06	0.10	5.98

121XXX 2105 411FS 105 41W

LONG STEEL NUT



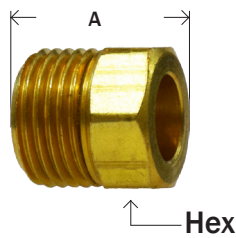
for Domestic lines

Part #	Size	A	Hex	Approx. Wt. Lbs.	List Price
12-009	3/16"	0.84	0.37	0.02	1.57
12-010	1/4"	0.81	0.43	0.02	1.78

7896

INVERTED FLARE BRASS NUT

SAE# 040110



Part #	Size	A	Hex	Approx. Wt. Lbs.	List Price
12-012	1/8"	0.52	0.31	0.01	2.90
12-013	3/16"	0.56	0.37	0.01	1.87
12-014	1/4"	0.56	0.43	0.02	0.65
12-015	5/16"	0.62	0.50	0.03	1.31
12-016	3/8"	0.66	0.62	0.04	1.72
12-017	1/2"	0.74	0.75	0.05	4.41

2100 411F 100 41B

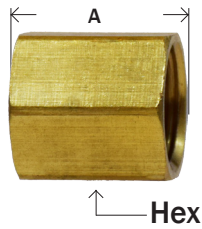
ZINC STEEL METRIC TUBE NUTS



Part #	Tube size	Thread	Ref#	List Price
12-260	3/16 British	3/8-24 Bubble	---	2.04
12-261	3/16 European	M10 x 1.0 Bubble	276110	1.98
12-262	3/16 Japanese	M10 x 1.0 Inv.	121050	1.98
12-263	3/16 Domestic	1/2 x 20 Inv.	---	2.52
12-264	3/16 Domestic	9/16 - 18 Inv.	121039	2.52
12-265	3/16 Imported	M11 x 1.5 Bubble	276011	2.52
12-266	3/16 Imported	M12 x 1.0 Bubble	276012	2.46
12-267	3/16 Imported	M13 x 1.5 Bubble	276013	2.58
12-268	1/4 Domestic	9/16 x 18 Inv.	121049	2.46
12-269	1/4 Domestic	1/2 x 20 Inv.	121045	2.58
12-270	6mm Imported	M12 x 1.0 Bubble		2.58
12-271	6mm GM	M12 x 1.0 Bubble		2.58
12-272	6mm GM	M12 x 1.5 Bubble		2.64
12-273	6mm GM	M14 x 1.5 Bubble		2.64
12-274	5/16 Domestic	M14 x 1.5 Surface Seal	121069	7.80
12-275	3/8 Domestic	M16 x 1.5 Surface Seal	121070	8.16

UNION INTERNAL

SAE# 040101



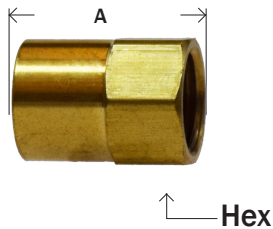
Part #	Inv. Flare X Inv. Flare	A	Hex	Approx. Wt. Lbs.	List Price
12-022	1/8"	0.59	0.40	0.02	2.40
12-023	3/16"	0.62	0.43	0.02	0.84
12-024	1/4"	0.62	0.50	0.03	1.79
12-025	5/16"	0.70	0.56	0.04	2.63
12-026	3/8"	0.80	0.75	0.08	3.17
12-027	1/2"	0.91	0.90	0.10	8.18

see page 72 for metric unions

302 2300 42IFHD

FEMALE ADAPTER

SAE# 040103

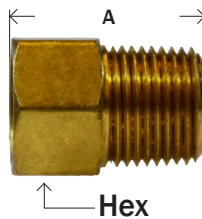


Part #	Inv. Flare X Female NPTF	A	Hex	Approx. Wt. Lbs.	List Price
12-032	3/16" x 1/8"	0.75	0.50	0.02	3.14
12-033	1/4" x 1/8"	0.75	0.53	0.02	1.98
12-034	5/16" x 1/8"	0.78	0.59	0.04	6.12
12-035	3/8" x 1/4"	1.03	0.75	0.08	6.62
12-036	1/2" x 3/8"	1.10	0.90	0.12	13.04

46IFHD 252 46W

MALE ADAPTER

SAE# 040102



Part #	Inv. Flare X Male NPTF	A	Hex	Approx. Wt. Lbs.	List Price
12-041	1/8" x 1/8"	0.63	0.40	0.02	2.83
12-042	3/16" x 1/8"	0.70	0.43	0.02	1.09
12-043	1/4" x 1/8"	0.74	0.50	0.03	1.05
12-044	1/4" x 1/4"	0.89	0.56	0.04	1.58
12-045	5/16" x 1/8"	0.79	0.56	0.03	2.10
12-046	5/16" x 1/4"	0.98	0.56	0.05	2.15
12-047	3/8" x 1/8"	0.88	0.72	0.05	2.89
12-048	3/8" x 1/4"	1.02	0.75	0.06	2.38
12-049	3/8" x 3/8"	1.02	0.75	0.08	4.81
12-038	1/2" x 1/4"	0.97	0.87	0.10	5.46
12-050	1/2" x 3/8"	1.06	0.87	0.08	6.56
12-051	1/2" x 1/2"	1.06	0.87	0.11	6.33
12-052	5/8" x 1/2"	1.32	1.06	0.15	5.25
12-040	3/4" x 3/4"	1.39	1.25	0.24	27.18

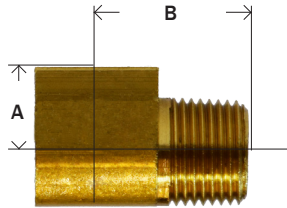
2200 48IFHD 202 48W 200

INVERTED FLARE

BRASS FITTINGS

ELBOW

SAE# 040202



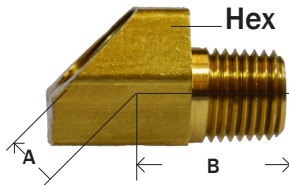
Part #	Inv. Flare X Male NPTF	A	B	Approx. Wt. Lbs.	List Price
12-057	1/8" x 1/8"	0.26	0.59	0.03	9.27
12-058	3/16" x 1/8"	0.26	0.61	0.03	2.95
12-059	1/4" x 1/8"	0.33	0.65	0.04	1.68
12-054*	1/4" x 1/8"	0.33	0.65	0.04	29.95
12-060	1/4" x 1/4"	0.28	0.82	0.06	3.36
12-061	5/16" x 1/8"	0.47	0.68	0.05	2.31
12-062	5/16" x 1/4"	0.45	0.85	0.08	3.36
12-063	3/8" x 1/8"	0.54	0.76	0.14	5.52
12-064	3/8" x 1/4"	0.53	0.92	0.14	4.97
12-065	3/8" x 3/8"	0.50	0.94	0.12	10.12
12-066	1/2" x 3/8"	0.59	1.03	0.16	6.93
12-067	1/2" x 1/2"	0.66	1.22	0.25	9.03
12-056	5/8" x 3/8"	0.67	1.09	0.20	17.78
12-068	5/8" x 1/2"	0.67	1.29	0.18	9.90
12-069	3/4" x 1/2"	0.80	1.39	0.42	57.45
12-080	7/8" x 3/4"	0.94	1.43	0.48	90.72
12-081	1" x 1"	1.02	1.69	0.60	106.44

* Restricted pipe end .062

400 2400 249IFHD 402 249IF 49W

45° ELBOW

SAE# 040302

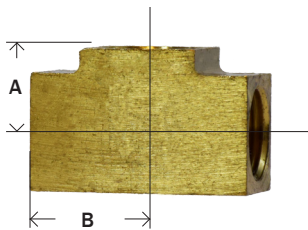


Part #	Inv. Flare X Male NPTF	A	B	Hex	Approx. Wt. Lbs.	List Price
12-072	3/16" x 1/8"	0.25	0.55	0.53	0.02	8.59
12-073	1/4" x 1/8"	0.27	0.58	0.56	0.04	4.10
12-074	5/16" x 1/8"	0.36	0.56	0.62	0.06	6.34
12-075	5/16" x 1/4"	0.23	0.83	0.62	0.06	18.19
12-076	3/8" x 1/4"	0.51	0.84	0.78	0.09	13.30
12-077	1/2" x 3/8"	0.38	0.91	0.84	0.11	13.14
12-079	5/8" x 1/2"	0.44	1.00	1.06	0.21	57.13

154 2352 259IFHD 352 94W

UNION TEE

SAE# 040401



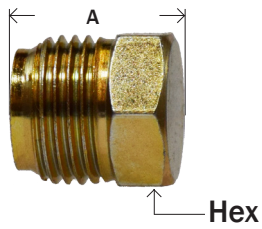
Part #	Size	A	B	Approx. Wt. Lbs.	List Price
12-085	1/8"	0.33	0.47	0.04	13.13
12-086	3/16"	0.39	0.55	0.04	4.33
12-087	1/4"	0.42	0.56	0.08	6.96
12-088	5/16"	0.45	0.63	0.09	7.77
12-089	3/8"	0.56	0.74	0.17	13.32
12-090	1/2"	0.67	0.88	0.24	31.37

244IFHD 702 44I

STEEL PLUG

• cored

SAE# 040109

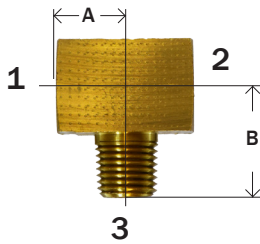


Part #	Size	A	Hex	Approx. Wt. Lbs.	List Price
12-091	3/16"	0.53	0.37	0.01	0.83
12-092	1/4"	0.54	0.43	0.02	1.04
12-093	5/16"	0.59	0.50	0.03	1.15
12-094	3/8"	0.66	0.62	0.04	2.69

106 41P 131 2131

MALE BRANCH TEE

SAE# 040425

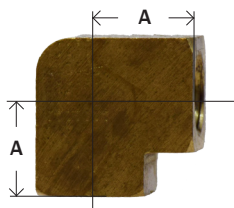


Part #	Inv. Flare x Male NPTF (1&2)x3	A	B	Approx. Wt. Lbs.	List Price
12-100	3/16" x 1/8"	0.41	0.60	0.04	4.92
12-101	1/4" x 1/8"	0.42	0.64	0.06	6.89
12-102	5/16" x 1/8"	0.47	0.68	0.07	11.34
12-103	3/8" x 1/4"	0.58	0.93	0.15	34.17

145 245IFHD 602 2600 600

FEMALE ELBOW

SAE# 040203

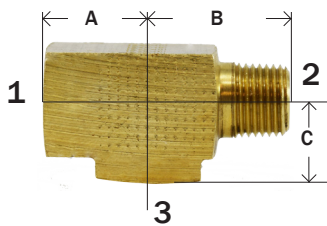


Part #	Inv. Flare x Female NPTF	A	Approx. Wt. Lbs.	List Price
12-110	1/4" x 1/8"	0.55	0.07	11.67
12-111	5/16" x 1/8"	0.51	0.08	23.53
12-112	3/8" x 1/4"	0.68	0.10	12.12

450

MALE RUN TEE

SAE# 040424



Part #	Inv. Flare x Male NPTF (1&3)x2	A	B	C	Approx. Wt. Lbs.	List Price
12-118	3/16" x 1/8"	0.53	0.72	0.39	0.06	39.61
12-119	1/4" x 1/8"	0.56	0.75	0.42	0.08	39.38
12-120	5/16" x 1/8"	0.62	0.85	0.45	0.10	12.50
12-121	3/8" x 1/4"	0.75	1.08	0.56	0.14	36.09

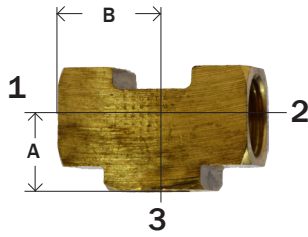
251IFHD 752 550 151

INVERTED FLARE

BRASS FITTINGS

FEMALE BRANCH TEE

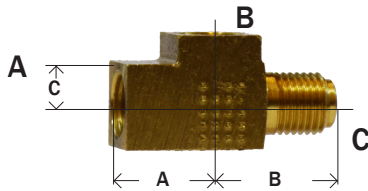
SAE# 040427



Part #	Inv. Flare x Female NPTF (1&2)x3	A	B	Approx. Wt. Lbs.	List Price
12-127	3/16" x 1/8"	0.39	0.55	0.06	16.33
12-129	5/16" x 1/8"	0.45	0.63	0.12	34.65
12-130	3/8" x 1/4"	0.56	0.74	0.17	30.25

252IFHD 652 136

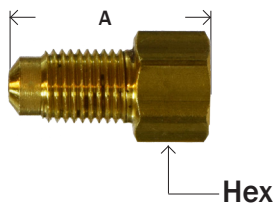
TOWED TRAILER BRAKE TEE



Part #	A	B	C	Reference #	Approx. Wt. Lbs.	List Price
12-147	3/16" 0.57	3/16" 0.76	3/16" 0.42	7900	0.08	7.35
12-145	3/16" (1/2-20) 0.68	3/16" (3/8-24) 0.94	3/16" (1/2-20) 0.47	7906	0.17	38.46
12-148	3/16" (9/16-18)	3/16" (3/8-24)	3/16" (9/16-18)	7933	0.10	14.76
12-144	3/16" (9/16-20) 0.82	3/16" (3/8-24) 0.94	3/16" (9/16-20) 0.47	7905	0.18	55.92
12-146	3/16" (7/16-24) 0.54	3/16" (3/8-24) 0.78	1/4" (7/16-24) 0.42	7914	0.08	32.82
12-150	1/4" 0.56	3/16" 0.77	1/4" 0.43	7901	0.10	31.14
12-149	1/4" (9/16-18) 0.81	3/16" (3/8-24) 0.93	1/4" (9/16-18) 0.50	7904	0.10	49.51
12-151	1/4" 0.56	1/4" 0.77	1/4" 0.43	7898	0.12	18.06

INVERTED FLARE AUTO FITTINGS

DUAL MASTER CYLINDER ADAPTER



Part #	Male Flare x Female Inv.	A	Hex	Reference #	Approx. Wt. Lbs.	List Price
12-200	3/16" x 3/16"	1.00	0.50	1441	0.03	4.08
12-202	5/16" x 3/16"	0.96	0.68	7897	0.07	9.72

DUAL MASTER CYLINDER ADAPTER

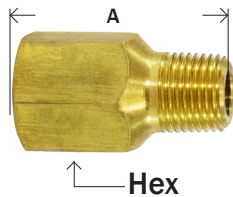


* Seals on hex face

Part #	Male Inverted Thread	Female Inverted Thread	Ref#	List Price
12-206	3/16(9/16-18)	3/16	7911	7.56
12-209	3/16(9/16-18)	3/16(1/2-20)	7913	7.00
12-207	3/16(9/16-20)	3/16	7910	5.40
12-210	3/16	1/4	7828	3.10
12-212	1/4	3/16	7818	2.82
12-214*	7/16-20	1/4	7732	8.45
12-211	1/4(9/16-18)	1/4	7908	7.19
12-215	1/4	5/16	7917	12.30
12-213*	5/16	3/16	7817	19.54
12-216	5/16	3/16	7909	5.27
12-208	5/16	3/16(9/16-18)	7912	6.92
12-218*	5/16	1/4	7727	7.91
12-220	5/16	1/4	7829	5.45
12-222*	5/16	5/16	1074	74.04
12-221	5/16	3/8	7915	6.69
12-224	3/8" NPTF	5/16	7771	18.11
12-217	3/8	5/16	7916	12.30

47W

CARBURETOR TO FUEL LINE ADAPTER - FORD

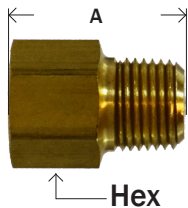


Part #	Female Tube OD x Male NPTF	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-230	1/4"(1/2-20) x 1/8"	1.06	0.56	1513	0.04	19.33

1513

RESTRICTION PIPE ADAPTER

(.0625 ORIFICE)



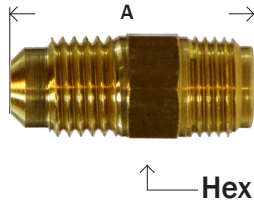
Part #	Size FIP x MIP	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-310	1/8"	0.75	0.50	1512	0.02	7.99

1510

INVERTED FLARE

BRASS FITTINGS

SAE FLARE X INVERTED FLARE

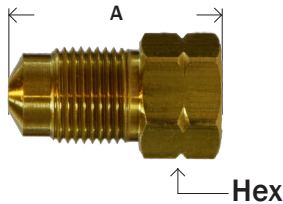


Part #	SAE Flare x Inv. Flare	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-250	1/4" x 3/16"	1.03	0.43	1518	0.02	13.84
12-252	1/4" x 1/4"	1.03	0.43	1522	0.03	2.69
12-254	3/8" x 5/16"	1.34	0.63	1553	0.08	25.52
12-256	3/8" x 3/8"	1.37	0.63	1563	0.09	12.14
12-257	3/8" x 7/16"	1.40	0.68	1554	0.10	22.49

4205

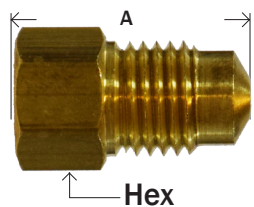
METRIC HYDRAULIC BRAKE FITTINGS

METRIC ADAPTER



Part #	Bubble Male Thread	Tube O.D./ Female Thread	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-335	M10x1.0	3/16"(3/8-24)	1.02	0.50	1442	0.02	3.90
12-326	M11x1.5	3/16"(M10x1.0)	1.06	0.50	7935	0.02	18.76
12-327	M12x1.0	3/16"(M10x1.0)	1.02	0.53	7936	0.04	18.10
12-328	M16x1.5	3/16"(M10x1.0)	1.02	0.56	7937	0.06	19.19

ADAPTER STANDARD TO METRIC BUBBLE

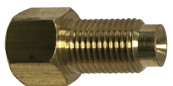


Part #	Female Inv. Flare Seat	Male Metric Bubble Flare	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-336	3/16" (3/8-24)	11x1.5			7973		11.22
12-337	3/16" (3/8-24)	(3/16") (10x1.25)	1.00	0.50	7970	0.02	21.06
12-339	3/16" (3/8-24)	13x1.5	1.03	0.56	7972	0.04	23.09
12-341	3/16" (3/8-24)	12x1.0	1.02	0.53	7974	0.04	18.97

FEMALE X MALE ADAPTERS



Part #	Female Standard Flare Seat	Male Bubble Flare	Material	List Price
12-330	3/8-24 (3/16)	7/16-20	Steel	6.18

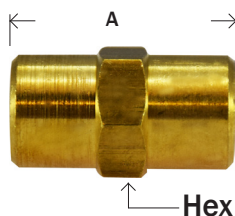


Part #	Tube OD/ Female Thread	Inverted Male Thread	Ref #	List Price
12-205	3/16 (3/8-24)	M10 x 1.0	1443	4.68



Part #	Female Standard Flare	Inverted Male Thread	Material	List Price
12-329	3/8-24 (3/16)	M9 x 1.0	Steel	9.18

METRIC UNION



Part #	Size	A	Hex	Ref #	Approx. Wt. Lbs.	List Price
12-342	British Brake Lines 3/16 (3/8-24 Bubble)	0.87	0.50	1594	0.03	7.32
12-343	European Brake Lines 3/16"(10.0MM)	1.04	0.56	7975	0.04	17.81
12-344	Japanese Brake Lines 3/16 (M10 x 1.0) Inverted	1.00	0.50	7934A	0.04	7.32
12-345	GM Brake Lines 6mm M12 x 1.0 Bubble	1.11	0.63		0.06	7.20