



## Upgrading Transmission Cooler Lines

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### Using the Correct Line Adapter

One of the things that many have done when rebuilding the TH425 Transmission is to upgrade the coolant lines going from the transmission to the radiator cooler. This upgrade involves going from the original 5/16" diameter lines to 3/8" diameter lines to increase fluid flow and decrease resistance to flow. To do this you must change the fitting on the transmission to a fitting that is a 3/8" inverted flare. Some have simply used the existing fitting and obtained an adapter to go from 5/16" inverted flare to 3/8" inverted flare.

Standard Drill Sizes – Inches							
Drill Size	Decimal Equiv.	Drill Size	Decimal Equiv.	Drill Size	Decimal Equiv.	Drill Size	Decimal Equiv.
80	= .0135	43	= .089	8	= .199	25/64	= .3906
79	= .0145	42	= .0935	7	= .201	X	= .397
1/64	= .0156	3/32	= .0938	13/64	= .2031	Y	= .404
78	= .016	41	= .096	6	= .204	13/32	= .4063
77	= .018	40	= .098	5	= .2055	Z	= .413
76	= .020	39	= .0995	4	= .209	27/64	= .4219
75	= .021	38	= .1015	3	= .213	7/16	= .4375
74	= .0225	37	= .104	7/32	= .2188	29/64	= .4531
73	= .024	36	= .1065	2	= .221	15/32	= .4688
72	= .025	7/64	= .1094	1	= .228	31/64	= .4844
71	= .026	35	= .110	A	= .234	1/2	= .500
70	= .028	34	= .111	15/64	= .2344	33/64	= .5156
69	= .0292	33	= .113	B	= .238	17/32	= .5313
68	= .031	32	= .116	C	= .242	35/64	= .5469
1/32	= .0313	31	= .120	D	= .246	9/16	= .5625
67	= .032	1/8	= .1250	1/4(E)	= .250	37/64	= .5781
66	= .033	30	= .1285	F	= .257	19/32	= .5938
65	= .035	29	= .136	G	= .261	39/64	= .6094
64	= .036	28	= .1405	17/64	= .2656	5/8	= .625
63	= .037	9/64	= .1406	H	= .266	41/64	= .6406
62	= .038	27	= .144	I	= .272	21/32	= .6563
61	= .039	26	= .147	J	= .277	43/64	= .6719
60	= .040	25	= .1495	K	= .281	11/16	= .6875
59	= .041	24	= .152	9/32	= .2813	45/64	= .7031
58	= .042	23	= .154	L	= .290	23/32	= .7188
57	= .043	5/32	= .1563	M	= .295	47/64	= .7344
56	= .0465	22	= .157	19/64	= .2969	3/4	= .750
3/64	= .0469	21	= .159	N	= .302	49/64	= .7656
55	= .052	20	= .161	5/16	= .3125	25/32	= .7813
54	= .055	19	= .166	O	= .316	51/64	= .7969
53	= .0595	18	= .1695	P	= .323	13/16	= .8125
1/16	= .0625	11/64	= .1719	21/64	= .3281	53/64	= .8281
52	= .0635	17	= .173	Q	= .332	27/32	= .8438
51	= .067	16	= .177	R	= .339	55/64	= .8594
50	= .070	15	= .180	11/32	= .3438	7/8	= .875
49	= .073	14	= .182	S	= .348	57/64	= .8906
48	= .076	13	= .185	T	= .358	29/32	= .9063
5/64	= .0781	3/16	= .1875	23/64	= .3594	59/64	= .9219
47	= .0785	12	= .189	U	= .368	15/16	= .9375
46	= .081	11	= .191	3/8	= .375	61/64	= .9531
45	= .082	10	= .1935	V	= .377	31/32	= .9688

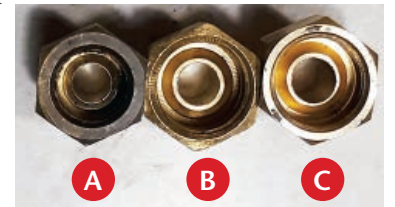
For these fittings, contact Applied GMC at 800-752-7502

When you use a 3/8" inverted female to 5/16" inverted male adapter, you are defeating the reason for going to the 3/8" line. If you look in the transmission line adapter (the fitting still in the transmission), you will see a smaller hole than the ID that the 3/8" line provides. The original 5/16" line adapter on the transmission has a hole in it that is .244". The 3/8" line adapter that you will use has .282" hole in it, and the actual ID of the 3/8" line is .312". So if you use the 3/8" inverted female to 5/16" inverted male adapter you are necking

down actual flow from .312" to .218". That is a .094" restriction before the oil even gets into the 3/8" line. IMO, you should replace the original line adapter with the correct adapter that you can get from Jimmy K at Applied GMC. It is a brass adaptor that has standard SAE straight threads on one end and 3/8" Female inverted flare on the other end. Then before you put that adapter in the trans, take it to a drill press and drill the hole out with a 5/16 drill which will approximate the .312 ID of the 3/8" tubing. The images show how to check the ID of the tubing and adapters using a drill bit. Use the drill size chart below to identify the correct drill bit to use. Clean up the shavings and install using a copper crush washer. With this you will have NO transmission fluid line restriction. You then need to make sure that all adapters, at the radiator or other external coolers are likewise at a 5/16" ID. IMO, failing to do that is no better than using the old 5/16" lines with the 7/32" ID. Just a word of caution, the fittings going into the transmission must be straight SAE thread fittings on one end going to a female inverted flare on the other end. DO NOT use pipe fitting threaded adapters which have a tapered thread. They have the same threads per inch as the straight SAE fittings but when tightened, the tapered portion could crack the casting of the aluminum transmission. Additionally, if you make the change to 3/8" lines with the proper straight adapter, you must be careful not to over tighten it. Over tightening it runs the risk of stripping the soft aluminum in the transmission. Crack it or strip it... you're looking at a new transmission case. So be careful!



A. Original 5/16 line fitting with .244 hole  
 B. 3/8 line fitting with .282 hole  
 C. 3/8 line fitting with .312 hole  
 D. 3/8 tubing with .312 ID



A. Original 5/16 line fitting with .244 hole  
 B. 3/8 line fitting drilled to .312 hole  
 C. 3/8 line fitting with .282 hole