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GMC V6 & V12 Engine Data

The GMC 6-cylinder 60 degree V-type engine has two banks of cylinders with overhead valve mechanism.

Engines used in Vehicles covered on this page are designated as, 305A, 305B, 305C, 305D, 305E, 351, 351E, 401, 478, 702 V12.

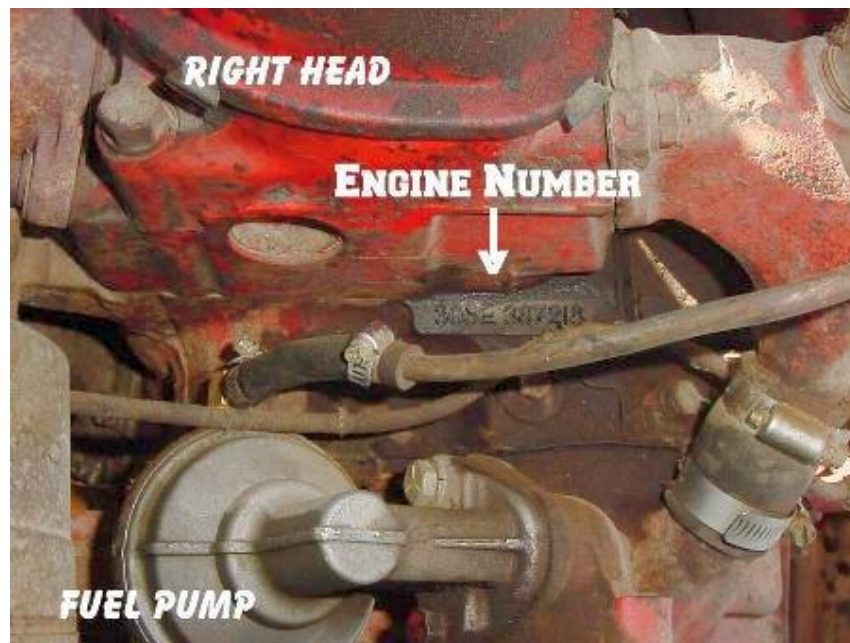
The "GMC Replacement Engine Catalogs" lists the following dry weights:

305A = 738 lbs.
305B = 771 lbs.
305C = 840 lbs.
305E = 795 lbs.
351 = 860 lbs.
401 = 880 lbs.
478 = 925 lbs.
702 = 1485 lbs.
637 = 1219 lbs.

So what engine do you have?

The V-6 engine has the model and Serial number stamped on the top of the block just forward of the right head. This number will help you know what size & series engine you have, as the displacement and model are the first part of the number.

Sample number, 305E 387218.



This is looking at the number on the block of my 1965 2500.

Engine Specifications

Engine Model	Gross Horsepower	Net Horsepower	Gross Torque lbs. ft.	Net Torque lbs. ft.	Bore - Stroke	Displacement	Compression	Notes
305A V6	150 @ 3600 rpm	125 @ 3600 rpm	260 @ 1600-2000	240 @ 1600-1800	4.25 in. - 3.58 in.	304.7 cu. in. (5.0L)	7.75 to 1	1
305B V6	150 @ 3600 rpm	127 @ 3600 rpm	266 @ 1200-1400	245 @ 1400 rpm	4.25 in. - 3.58 in.	304.7 cu. in. (5.0L)	7.75 to 1	2, 4, 5
305C V6	165 @ 3800 rpm	142 @ 3800 rpm	270 @ 1400-1600	250 @ 1400-1600	4.25 in. - 3.58 in.	304.7 cu. in. (5.0L)	7.75 to 1	2, 4
305D V6	165 @ 3800 rpm	142 @ 3800 rpm	280 @ 1600 rpm	260 @ 1600 rpm	4.25 in. - 3.58 in.	304.7 cu. in. (5.0L)	7.75 to 1	3, 6
305E V6	165 @ 3800 rpm	142 @ 3800 rpm	280 @ 1600 rpm	260 @ 1600 rpm	4.25 in. - 3.58 in.	304.7 cu. in. (5.0L)	7.75 to 1	6
351 V6	180 @ 3400 rpm	155 @ 3400 rpm	312 @ 1800-2000	288 @ 1400-1600	4.56 in. - 3.58 in.	351.2 cu. in. (5.7L)	7.50 to 1	7
351E V6	220 @ 4000 rpm	190 @ 3700 rpm	320 @ 1600 rpm	304 @ 1600 rpm	4.56 in. - 3.58 in.	351.2 cu. in. (5.7L)	7.50 to 1	11

379 V6	~~	170 @ 3600 rpm	~~	266 @ 1600 rpm	4.562 in. - 3.86 in.	351.2 cu. in. (6.2L)	7.50 to 1	14
401 V6	205 @ 3200 rpm	178 @ 3200 rpm	377 @ 1400 rpm	351 @ 1400 rpm	4.87 in. - 3.58	400.9 cu. in. (6.6L)	7.50 to 1	8
432 V6	~~	190 @ 3200 rpm	~~	336 @ 2000 rpm	4.875 in. - 3.86 in.	351.2 cu. in. (7.1L)	7.50 to 1	14
Twin-Six 702 V12	275 @ 2400 rpm	250 @ 2400 rpm	630 @ 1600-1900	585 @ 1600-1900	4.56 - 3.58	702.4 cu. in. (11.5L)	7.50 to 1	9
478 V6	235 @ 3200 rpm	206 @ 3200 rpm	440 @ 1400 rpm	400 @ 1400 rpm	5.125 in. - 3.86 in.	477.7 cu. in. (7.8L)	7.50 to 1	10
351M V6	220 @ 4000 rpm	190 @ 3700 rpm	320 @ 1600 rpm	304 @ 1600 rpm	4.56 in. - 3.58 in.	351.2 cu. in. (5.7L)	7.50 to 1	12
401M V6	237 @ 4000 rpm	210 @ 3700 rpm	372 @ 1600 rpm	348 @ 1600 rpm	4.87 in. - 3.58	400.9 cu. in. (6.6L)	7.50 to 1	12
478M V6	254 @ 3700 rpm	225 @ 3400 rpm	442 @ 1400 rpm	410 @ 1400 rpm	5.125 in. - 3.86 in.	477.7 cu. in. (7.8L)	7.50 to 1	12
637 V8	275 @ 2800 rpm	185 @ 2800 rpm	250 @ 1550 rpm	560 @ 1550 rpm	5.125" - 3.86"	637.0 cu. in. (10.4L)	7.5 to 1	13

Engine Application (Notes)

All rating are for first year engine was used, many got bumped up in Horsepower and Torque during there run.

1. Used in 1960-61 in series 1000-3500 trucks. Dropped from line in 1962.
2. Used in 1960-61 in series 4000 trucks.
3. The 305D was an option in 1961, and standard for 1962 in series 1000-3500 trucks.
4. The 305C was the same as a 305B except for manifold and carburetor which provide increase horsepower.
5. The 305B was dropped from the line in 1962.
6. In 1963 the 305E replaced the 305D in series 1000-3500 trucks.
7. Used in series 5000 trucks. Optional in the 4000.
8. Used in 5500, 6000, & H-5000 and optional in W-and SP-5000.
9. The 702 Twin-Six V12 was used in the B-, BW-, L-, & LW-7000 series trucks.
10. In 1962 the 478 V6 was introduced for use in the 6500 series trucks.
11. In 1966 the 351E was offered series 1000-3500 trucks.
12. M = Magnum series engines introduced in 1966.
13. Replaced the Twin-Six in 1966.

14. Info from 1973 GMC Broucher, year range unknown.

Magnum Engines

"Magnum" refers to 1966 and up 351M, 401M and 478M V6's with the large port heads. The 351E V6 which was available from 1966 to 1968 in 1/2 to 1 ton trucks is essentially a Magnum engine, as it has the big port heads and bigger manifolds. If you ever run into some old magazine ads from 1966 it mentions the 351 Magnum engine available as a high performance option. The 351's were available both as Magnums and small port head 351C engines up to 1972. In 1973 the 351 was stroked to a 379, but never got the Magnum heads and retained the anemic little WW2 carburetor. Though GMC never designated the 432 with an "M" it was a Magnum engine. The intake manifold design was different on the magnum engines to give more power and better torque by adding an internal baffle that acts to develop better fuel distribution and also pulses that help to charge the cylinders better. The exhaust manifolds have bigger and smoother passages and are not restricted at the collector. They are found in 4000 and up series trucks. Magnum Head V6's have much higher flowing exhaust manifolds due to the larger ports and passages and the collector is considerably larger like about 3 inches in diameter. The 351E is in all reality a pickup truck version of the 351M engine and has large ports and passages in the manifold, but it has the bottleneck at the collector just like all the 305A, D and E V6 manifolds. These manifolds are identified by their I-beam shape. 351M, 401M, 432 and 478M manifolds have even bigger passages but won't match up to smaller port heads on the 305 V6 but will on the 351E which has the Magnum Heads. The 351C and 379 heads are basically the same small port heads as the 305-A, B, D and E engines. 1960-65 401 and 478 also have small port heads but larger valves. 1966 to 1974 351E, 351M, 401M, 432 and 478M share the larger port "Magnum" heads, that's what the "M" designation stands for. The bigger "M" heads will bolt to a 305 if you're into increasing the performance of your engine.

GMC V6 Engine Paint

No one has GMC Engine Red paint, but I have been told the "Ford Engine Red" & NAPA "Chrysler Industrial Engine Red" paint comes vary close.
Other then that you'll have to have it Custom Matched.

Tune Up Specifications

For All Engines listed, except as noted.

Maximum Recommended Speeds in rpms:

305A V6 -- 3600
 305B V6 -- 3600
 305C V6 -- 3800
 305D V6 -- 3400
 351 V6 -- 3400
 401 V6 -- 3200
 478 V6 -- 3200
 702 V12 -- 2400

Valve Lash (Hot, Running)
 All V6s: Intake -- 0.012", Exhaust -- 0.018"
 V12 -- Zero

Cylinder Head Bolt Torque -- 65-72 ft-lbs**Idling Speed, Manual Trans, 400 - 450 rpm, Auto trans, 450 rpm****Spark Plugs Gap;****305A, 305B & 305D -- 0.030"****305E & 305C 0.035"****351, 401, & 478 0.030"****Ignition Timing -- 5 degrees before TDC**

Distributor V6 Dwell -- 28 - 35 degrees, Point gap -- 0.016, V12 Dwell -- 42 degrees
More V12 timing info: The timing was 7-1/2 degrees for the left bank & 7-1/2 degrees for
the right bank. You time the left bank first. You turn the distributor for left bank
timing & a set screw in where the points are located for the right bank.

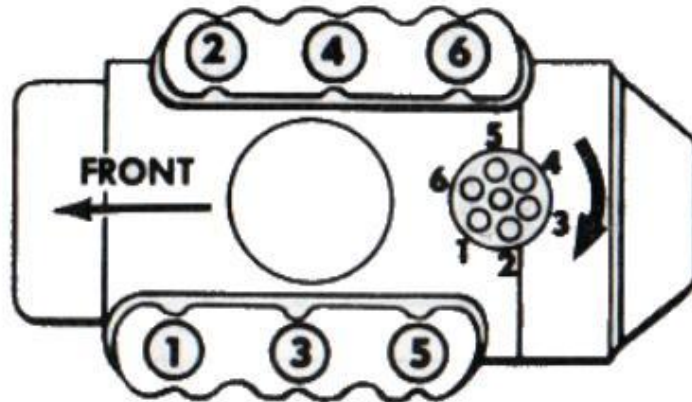
Oil Capacities

Engine Model	Quarts	w/ filter
305A	5 Qts	6 Qts
305B	8 Qts	10 Qts
305c	8 Qts	10 Qts
305D	5 Qts	6 Qts
305E	5 Qts	6 Qts
351	8 Qts	10 Qts
351E	5 Qts	6 Qts
401	8 Qts	10 Qts
478	8 Qts	10 Qts
702	14 Qts	16 Qts

Cooling System Capacities

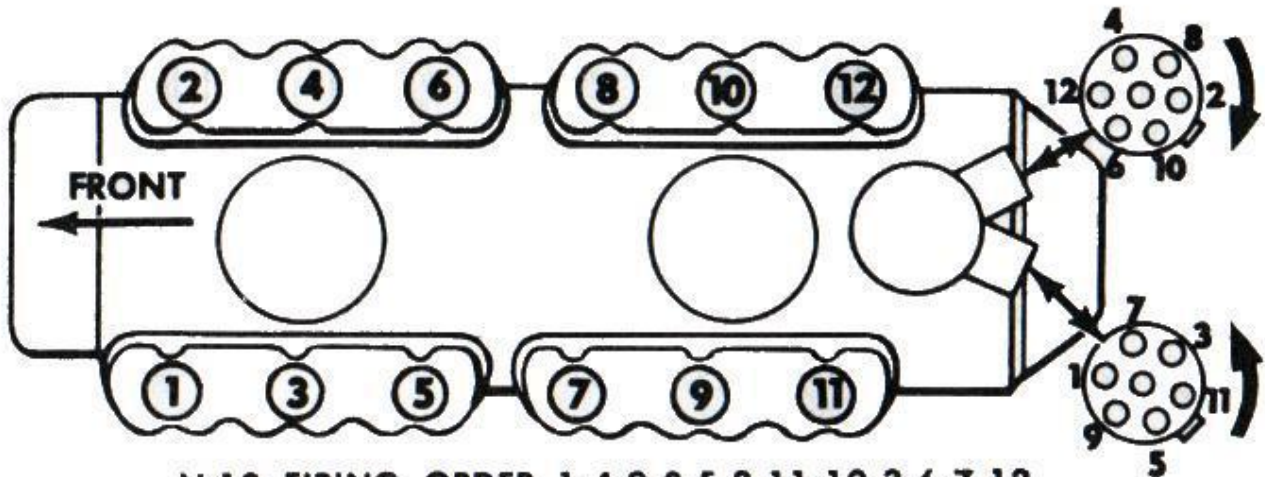
Series	Model	Coolant Quarts
1000 - 3500	Conv. & B-model	32 Quarts
4000	Conv. & B-model	40 Quarts
4000	L-model	47 Quarts
5000	Conv. & B-model	39 Quarts
5000	L-model	45 Quarts
5500-6000	B-model	37 Quarts
5500-6000	L-model	43 Quarts
7000-9000	B-model	67 Quarts
7000	L-model	74 Quarts

Firing Order



V-6 FIRING ORDER 1-6-5-4-3-2

GMC V6 Firing Order: 1-6-5-4-3-2





V-12 FIRING ORDER 1-4-9-8-5-2-11-10-3-6-7-12

Twin-Six V12 Firing Order: 1-4-9-8-5-2-11-10-3-6-7-12

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Information About GMC Truck Drive Trains

 <p>GMC Big Block V6</p>	<p>1960-1966 GMC Drive-Train Data Pages</p>	 <p>GMC Twin-Six V12</p>
<p>1960-1974 GMC V6 Engines Page #1</p>	<p>1960-1974 GMC V6 & V12 Engine Data</p>	<p>GMC's Twin-Six V-12 Engine!</p>

<u>1960-1974 GMC V6 Engines Page #2</u>	<u>1960-1966 GMC's Inline 6 Engines</u>	<u>GMC Twin-Six V12 Engines</u>
<u>GMC Plaid Valve Covers</u>	<u>GMC Diesel Engine Data Page</u>	<u>GMC Twin-Six V12 Myths</u>
<u>GMC V6 Performance Upgrades</u>	<u>Carburator Data Page</u>	<u>1965 Article GMC Irrigation Engines</u>
<u>GMC 351 V6 Engines</u>	<u>GMC Toro-Flow Diesels</u>	<u>Powered by GMC V6/V12 Engines</u>
<u>GMC 401 Magnum V6 Engines</u>	<u>GMC Transmission Data</u>	<u>Known Good Part Numbers</u>
<u>GMC 478 V6 Engines</u>	<u>GMC Drive Axle Data</u>	<u>Spicer 5831 Aux Transmission</u>

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