June 2017

NORTHSTAR CHEVELLE CLUB

MINNESOTA'S '64 - '87 CHEVELLE and EL CAMINO CLUB

From the Desk of the President:

Hi gang another month has come to an end and the May cruise was a wash, and I mean that literally. It rained pretty much the whole time, but I want to thank everyone that attended anyway. Taking the daily drivers was not as much fun but hopefully checking out the rod shop and having lunch at the cool diner made up for it.

I know most of us do the work on our cars ourselves, but I think all of us can appreciate work done at a shop like Fast Freddies. I like having a shiny well-built car just as much as the next. What I cannot fathom is actually driving one of these pristine beasts after it is all done. I would be so afraid of it getting a rock chip or god forbid having an accident. I have come to the realization in the last few years I care more about a car that I can drive and not have to worry about it. I don't foresee putting a nice paint job on my Chevelle anytime soon. I will however, make it safe, drivable, and enjoy it just the same. Guess it means I need to quit talking about it and really work on it!

I hope I have not offended anyone as I know some of you have a lot of time and money in your vehicles, but I am glad that we have lots of people who like to drive their cars. Everyone keep your fingers crossed that our fall cruise will have better weather. I also want to put out there that if anyone wants to do an impromptu cruise on a weekend or go to a car show that you post it on the forum or Facebook.

May Meeting

I missed the May meeting, but got a few pictures to post. There are two Studebakers in the shop at Fast Freddies. My grandfather always drove “studes” until they stopped making them. Then the only car that could compare was a Mercedes. I remember riding in a Studebaker like the older one (1953?) when I was young. When I was a teenager, my dad finally bought his dream car – a 1957 Golden Hawk. It was a disgusting salmon color, but he loved it. Then he bought a 1963 Avanti with the supercharged engine and 4-speed. Shortly after buying it, he had a heart attack and couldn’t drive it. So he would have me take him for a ride. Every time he would say “these supercharged engines need to be wound up once in a while”, so I would! We would drive around behind Bob’s Produce Ranch, drifting corners and banging gears until he was set for a while. That is one of my fondest memories of time with him.

Here are some pictures taken by President Chris:


NO SMOKING
MOTHERS
HOOKER
HEADERS
PERFORMANCE EXHAUST
MSD
JEGS
Holley
Milodon

12TH ANNUAL
Historic Hastings Saturday Night Cruise-In

We are Host Club on August 12th.

Downtown Hastings, Minnesota

June 3rd, 17th
July 1st, 15th, 29th
August 12th, [illegible]th
[illegible]ber 9th, 23rd

5-9pm

Food Vendors

Music

For more information contact:
Kevin Hoeschen, 651-303-2792 or
Tony Berens, 651-491-1563

RESTAURANTS AND SHOPS OPEN

Chevelle Trivia.

Chevelle Trivia 1968

The Chevelle received a major restyle in 1968, giving it more of a fastback look

Production of the SS 396 Chevelles dipped slightly from 1967, to 57,595 units, along with 5,190 SS 396 El Caminos.

1968 was the only year that an SS 396 El Camino was offered as a specific individual model.

In 1968 the Chevelle chassis came in two wheel bases: one for two door models, another for four-doors, wagons and El Caminos. Before 1968, all Chevelles measued 115" from hub to hub. For 1968, two doors measured 112" while the rest of the line got a longer 116" chassis.

One way to tell a 1968 SS 396 from the run of the mill Chevelle was it's exclusive lower body treatment. All but dark colored Super Sports got a blacked out section below the lower body side trim. Adding the optional pinstripes (RPO D96) deleted that treatment, although early models came with both.

Beginning in 1968 the VIN plate was located on the dash and visible through the windshield.

The turbo jet crossflags were replaced by a tag incorporated into the front side marker lamp bezels. Early cars included the SS with the numerals 396.

Engine choice was unchanged from 1967, limited to three 396 engines.

The 375hp SS 396 option finally made it's way to the front side of the order sheet. 4,751 Chevelles were ordered with this option.

From 1968 on, all engines used a spin on oil filter rather than the canister style with replacement cartridge.

The 1968 Chevelle SS 396's got improved finned front brake drums. Optional front disc brakes were available with the rally rims.

1968 was the first year for hideaway windshield wipers and they were standard on SS 396 models.

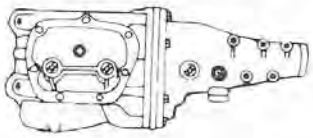
GENERAL MOTORS MUNCIE FOUR SPEED TRANSMISSION

M-20 , M-21, & M-22

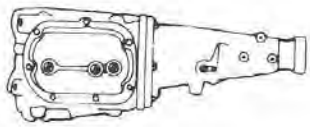
HISTORY AND NOMENCLATURE

The Muncie 4-speed transmission was used with many different GM models and engine combinations from 1964 through 1974. The basic design and operation theory of the gearbox changed little during this period, however several design upgrades and modifications were made during the total production run.

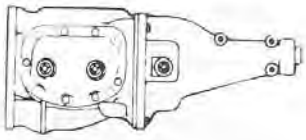
The Muncie was used with most performance engines, and is not to be confused with the Saginaw or Borg Warner 4-speeds. The Muncie is distinguished from the Saginaw in that the reverse lever on the Muncie is mounted in the extension housing, where the Saginaw reverse lever is mounted in the side cover. The main difference between the Muncie and the Borg-Warner is that the Muncie has a 7 bolt side cover and the Borg Warner has a 9 bolt side cover.



Muncie
7- BOLT
SIDE COVER



Saginaw
7- BOLT
SIDE COVER

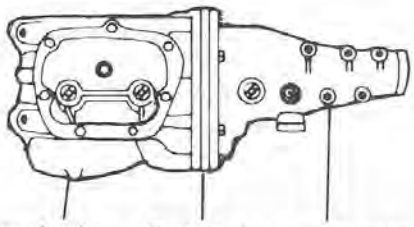


Borg Warner
9- BOLT
SIDE COVER
(curved bottom)

MUNCIE DESIGN & OPERATION

The Muncie consists of 2 basic sections: the transmission case (forward section) and the case rear extension (rear section). The forward section contains the 4 forward speed gear assemblies and their synchronizing mechanisms. The rear section contains the reverse gear assembly.

Incorporated throughout the transmission are helical gears specially designed to provide high torque capacity without additional weight, and gear teeth proportioned to operate at high speeds with neither excessive heat generation nor excessive friction losses. Shafts, bearings, high capacity clutches and other precision parts are held to close tolerance limits, providing proper clearances necessary for durability during extended heavy usage.



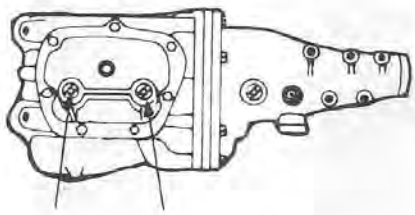
Forward section Casting retainer Rear section

The main drive gear is supported by a heavy-duty ball bearing at the front end of the transmission case and is piloted at its front end in a pilot bearing mounted in the rear of the engine crankshaft. The front end of the mainshaft is piloted in a row of roller bearings set into the hollow end of the main drive gear (input shaft). The rear end is carried by a heavy-duty ball bearing mounted at the rear of the forward section in a retainer casting which attaches the forward section to the rear section.

The counter gear (cluster) is carried on two double rows of rollers, one at each end, while the thrust is taken on thrust washers located at each end of the counter gear between the gear and bosses in the case. An anti backlash plate and damper spring are retained to the counter gear by rivets.

The two piece reverse idler gear is carried on bronze bushings supported by the casting retainer between the forward section and the rear section. Thrust is taken on thrust washers located between the front of the gear and the back of the reverse idler thrust boss and between the rear of the gear and the reverse idler shaft boss on the retainer casting.

Gear selection is manual through shift control rods to the transmission cover (side cover) shifter levers for first through fourth gears, and to the reverse lever located in the rear case. The lever to the rear of the side cover controls first and second gears while the lever to the front controls third and fourth. All forward gears are fully synchronized. Reverse is not synchronized, however it is helical cut to ensure quiet operation.



3rd/4th 1st/2nd

IDENTIFICATION

Muncie four speeds were produced in two different ratios wide ratio (**M-20**) and close ratio (**M-21**). An extra heavy duty close ratio version (**M-22**) was also offered on many of the Big Block high performance models.

The choice of transmission was dictated by the engine size and rear axle ratio. Axle ratios of 3.73 and lower (numerically higher) came with close ratio transmissions, while axle ratios of 3.55 and higher (numerically lower) used wide ratio transmissions. In addition, many GM high performance engines came with **M-22** "Rock-Crusher" in the 1970-3 years, however an early version of the **M-22** was available as early as 67 in Corvettes.

	M-20 WIDE RATIO	M-21 & M-22 CLOSE RATIO
1st	2.52 to 1	2.20 to 1
2nd	1.88 to 1	1.64 to 1
3rd	1.46 to 1	1.28 to 1
4th	Direct	Direct
Reverse	2.59 to 1	2.27 to 1

Proper identification of the transmission type is absolutely necessary, but sometimes difficult due to several factors. First, GM used several different methods to label and identify transmissions from year to year and model to model. Unfortunately the identification systems seem to have many exceptions, rendering them virtually useless to the restorer. In addition, due to engine and transmission swaps, and modifications that occur over the years many cars do not carry the original drivetrain that they were produced with.

For example, due to interchangeability, a 1969 Pontiac could have a trans case and gears from a Buick and a rear housing (extension) from an Oldsmobile. Several production changes through the years that effect the external appearance may also cause additional confusion when identifying a particular transmission:

1. Both single and dual drain plugs were used.
2. Speedometer adapters were used on either sides of the rear section (extension)
3. Side covers were sometimes secured with studs and nuts, other times with bolts.
4. Input shafts may be fine or coarse spline. Output shafts may be large or small. Combinations of these vary.
5. External shift levers are secured with studs and nuts, others with bolts. Some levers are long and some short.
6. Input shafts may have 1 ring, 2 rings or no rings at all.

M-20 Wide Ratio

Cluster gear teeth: 25-22-19-17
Input shaft / gear teeth: 21

M-21 & M-22 Close Ratio

Cluster Gear teeth: 27-22-19-17
Input shaft / gear teeth: 26

PLEASE NOTE: Due to identification and production factors the following diagram and descriptions are provided. To ensure that you are ordering the correct parts for your transmission, please carefully count the number of teeth on all gears and or counter gears (clusters) to verify transmission type.

M-22 "ROCK CRUSHER" IDENTIFICATION

The **M-22** close ratio transmission is easily identified internally from the **M-20** and **M-21** versions by the angle of the gear teeth.

M-20 / M-21

M-22

The **M-22** was only produced in a close ratio version, so it will not appear on models with high rear axle ratios (3.55 or lower numerically) unless someone has changed it.

The main internal differences in the 3 types of transmissions are listed in the parts below.

M-20 differs from **M-21**: Input shaft and Cluster gear

M-20 & **M-21** differ from **M-22**: Input shaft, Cluster gear, First, Second, Third, Reverse idler gear

All other components interchange, with the exception of production upgrades and changes. For example, 1964-65 synchronizers, blocking rings, etc. do not interchange with 1966 and newer versions, and therefore the transmission must be stock or interchanged as a unit.

Want-Ads.

Judging by the fact that no-one has sent me an ad, I assume this is not a vital part of this newsletter. So I guess it is time to concede defeat and discontinue this. But if you want me to post something in the future, just send it to me.

Meanwhile, I need a pair of Corvette 15 x 8 rally wheels. They must be stamped AZ. Thanks, Larry. Llucast80@gmail.com

Everyone needs an LS6!

Next meeting: June - Watch the forum for info.