Marlin Crawler MC09
4.7 low range gears

Tacoma/4Runner - 2.7 liter 26 spline

Fresno, California
May 12, 2003

Photo 1

Photo 2

Photo 3

Photo 1: Entering California.
Photo 2: The Marlin Crawler shop.
Photo 3: My 1999 4Runner and Marlin's 1983 pickup.

Photo 4

Photo 5

Photo 6

Photo 4: Pile of Toyota transfer cases & transmissions.
Photo 5: Pile of 1979-1985 Toyota front axles.
Photo 6: Stock transmission and transfer case.

Photo 7

Photo 8

Photo 9

Photo 7: Marlin detailing the game plan.

Photo 8: Beginning to build the crawler.
Photo 9: Building the MC09 crawler.


Photo 10


Photo 11


Photo 12

Photo 10: Building the MC09 crawler.
Photo 11: Building the MC09 crawler.
Photo 12: Building the MC09 crawler.


Photo 13


Photo 14


Photo 15

Photo 13: Building the MC09 crawler.
Photo 14: Building the MC09 crawler.
Photo 15: Building the MC09 crawler.


Photo 16


Photo 17


Photo 18

Photo 16: Building the MC09 crawler.
Photo 17: MC09 with 4.7 Japanese made gears.
Photo 18: Beginning to work on the gear driven case housing.


Photo 19


Photo 20


Photo 21

Photo 19: Clearanceing the gear driven case for the 4.7 gears.
Photo 20: Clearanceing the gear driven case for the 4.7 gears.
Photo 21: Clearanceing the gear driven case for the 4.7 gears.

		
Photo 22	Photo 23	Photo 24

Photo 22: Punching in the serial numbers.
Photo 23: Ready to assemble the gear driven cover.
Photo 24: Adding the cover to the 4.7 gears.

		
Photo 25	Photo 26	Photo 27

Photo 25: Building the MC09 crawler.
Photo 26: The serial number book of who has purchased the units.
Photo 27: Building the MC09 crawler.

		
Photo 28	Photo 29	Photo 30

Photo 28: Marlin dictating what serial numbers will be applied.
Photo 29:Complete MC09 crawler with 4.7 low range gears.
Photo 30: Stock transmission and transfer case from the 1999 4Runner.

		
Photo 31	Photo 32	Photo 33

Photo 31: Transmission removed clutch visible.
Photo 32: Separating 5-Speed transmission from the transfer case.
Photo 33: MC09 Crawler, Stock Transfer case and 5-Speed transmission.


Photo 34


Photo 35


Photo 36

Photo 34: Transmission and transfer case removed.
Photo 35: Pulling 26 to 26 spline coupler which will be replaced with a 26 to 23 spline coupler.
Photo 36: 5-Speed ready for the crawler to be installed.


Photo 37


Photo 38


Photo 39

Photo 37: Clutch flywheel, you can see where I burned it wheeling.
Photo 38: Flywheel removed.
Photo 39: Assembling the crawler / transfer case / transmission.


Photo 40


Photo 41


Photo 42

Photo 40: Assembling the crawler / transfer case / transmission.
Photo 41: Assembling the crawler / transfer case / transmission.
Photo 42: Assembling the crawler / transfer case / transmission.


Photo 43


Photo 44


Photo 45

Photo 43: Assembled the crawler / transfer case / transmission.
Photo 44: MC09 crawler.
Photo 45: 5-speed shifter seats. The green one ($10.00) came in the 2.7 and the blue one ($30.00) came in the 3.4. The blue one is much better according to Marlin, so I upgraded to the blue seat in my transmission.


Photo 46


Photo 47


Photo 48

Photo 46: Completed transmission / crawler / transfer case.
Photo 47: Lifting the unit up into the truck.
Photo 48: Lifting the unit up into the truck.


Photo 49


Photo 50


Photo 51

Photo 49: Starting the custom shift levers by cutting a stock lever into 3 pieces. Converting to short throw as well.
Photo 50: Welding the shift lever back together with the short throw bottom.
Photo 51: Custom lever installed in the 4Runner.


Photo 52


Photo 53


Photo 54

Photo 52: Front boot re-installed.
Photo 53: Three parts to the shift lever. Tooth, ball and lever.
Photo 54: Rear lever installed in the 4Runner.


Photo 55


Photo 56


Photo 57

Photo 55: Drive shafts after being lengthened and shortened.
Photo 56: Transmission / MC09 crawler / Transfer case installed in the 4Runner.
Photo 57: MC09 crawler, the serial numbers can be seen.

		
Photo 58	**Photo 59**	**Photo 60**

Photo 58: Crawler installed in the 4Runner.
Photo 59: Back in Arizona.
Photo 60: On the drive home the shifter bases rubbed the body so I got the dremel out and cleaned up the openings.

		
Photo 61	**Photo 62**	**Photo 63**

Photo 61: Shifter holes after being dremeled looser back in Arizona.
Photo 62: Front boots re-installed.
Photo 63: The 3 levers: 5-speed, crawler box with 4.7 gears & stock transfer case. The rear cup holder & brake handle was retained in the stock location.

		
Photo 64	**Photo 65**	**Photo 66**

Photo 64: Marlin has a few R.O.R.E. e-locker skid plates, so I picked one up as an impulse purchase and installed it when I got back to Arizona.
Photo 65: Rear support bracket I made for the transfer case. The longer assemble was hitting the body with the shorter drive shaft and the extra length.
Photo 66: Rear support installed with Daystar poly shock bushings for dampening.

		
Photo 67	**Photo 68**	**Photo 69**

Photo 67: Final interior shift levers. Two stock transfer case knobs looked the cleanest to me.
Photo 68: In January of 2004 the Crawler box was removed to swap the front adapter plates.
Photo 69: The front plate Marlin installed in Fresno was apparently machined incorrectly so they shipped me a redesigned front adapter plate. The crawler box was burping gear oil out the shifter base.

		
Photo 70	Photo 71	Photo 72

Photo 70: With only 1 cup holder the passenger was left without a place to put a drink. I found this fancy folding German cup holder made by a company called Fisher. I mounted it to the passenger door.
Photo 71: I found an original Toyota OEM 4WD shift lever knob with the actual shift pattern of the crawler box. This knob is from a 4WD 2003 Toyota Sequoia, Toyota Part # 36303-34030.
Photo 72: The three genuine Toyota shift knobs, all showing the actual shift patterns of the levers.

I also installed a 1" Body Lift from Roger Brown to create more clearance for the levers under the center counsel and for the relocated stock case under the body. This is needed to prevent the Tacoma style transfer case from hitting the bottom of the body.

		
Photo 73	Photo 74	Photo 75

Photo 73: The poorly designed Tacoma short throw base Marlin installed in May 2003 has always made a "sewing machine" noise when driving. In May of 2004 I finally tracked down the cause of the chatter.
Photo 74: I re-installed the stock Toyota shift base and made an aluminum lift block with a channel in the bottom for the spring that pushes the lever back toward the 4H side.
Photo 75: The stock base has much higher quality pins and a rubber seat to dampen any noise and ensure a proper fit. The lift block made out of aluminum converts the stock base a short throw. This is the same way Roger Brown of 4Crawler makes a short throw kit with a non-weld on pin extension.

		
Photo 76	Photo 77	Photo 78

Photo 76: In July of 2004 out the two transfer cases came again. The transmission was leaking gear oil into the front case, resulting in a lower oil level in the transmission.
Photo 77: Here you can see the custom block I made for the stock base and the Marlin short throw base on the older gear driven case.
Photo 78: Installed here is the new seal Marlin sent me. It is different than the stock seal, since his custom coupler is a slightly different diameter, if you look close in photo 36 above you can see that the stock seal was not originally swapped out in June of 2003. In January of 2004 I replaced the seal with a new stock one, not knowing there was a custom one needed. The stock seal leaves a 1mm gap all around the coupler. The custom seal is a perfect fit for the new crawler 26 to 23 spline coupeler.

Final Drive Ratio:

2.7L 5 speed first gear transmission ratio: 3.954
Chain driven transfer case: 2.566
Marlin Crawler box: 4.70
Ring and Pinion: 5.29

3.954 x 2.566 x 4.70 x 5.29 = 252:1