

# Sheppard & TRW Steering Gears

- Steering Gear Information for Holiday Rambler and Monaco Brand Coach Owners

- Presented by Mike Hughes

# 2011 Monaco Knight 36 PFT



Craig French's Coach (Crazyknight)

- ❖ Craig purchased the coach in 2012, drove 1300 miles home. What a handful!
- ❖ Craig attended his first iRV2 gathering in Quartzsite AZ January 2013. What a GREAT group of Monaco owners! Learned a **bunch**.
- ❖ Visit Redlands RV Repair for an alignment check and a 4 wheel weigh, to run correct tire pressure based on weight.
- ❖ Craig asked Redlands to adjust the steering gear because it felt a bit loose and was *very tiring* to drive, sore shoulders to say the least. When he picked up the coach from Redlands, they said the coach had a NON-Adjustable steering gear and the play it had was “normal”.
- ❖ Craig stood there thinking.... He did not know they even made a NON- Adjustable steering gear. OK, guess I do the best I can with what I have.

Was he missing something ? or doing something wrong ?

❖ Was his coach the only one having this steering gear “issue” ?

He began reading EVERYTHING he could find on the Sheppard M100 steering gear, steering gear play, loose gear boxes, handling, shimming or “blue printing” etc.

❖ LOTS of iRV2 forum HR/Monaco thread reading.

Various owner reports found during his  
research of the steering gear “issue”.  
(here are just a few)

“We have a 2003 Windsor that is a great coach to live in but it is bear to keep in the lane at anything over 55 mph. It is a white knuckle and tiring ride every time we get behind the wheel. The dealer has adjusted toe-in, ride height, drive shaft angle, all to no avail. I've talked to other owners, some Monaco, some other coaches. They all say that their units are a pleasure to drive. Is there anyone who has had this problem and had it fixed and if so, what was the remedy?”

“We just got back from our first long distance outing going from Chicago to Branson and back. Our 2001 DIP has, what seems to me, to be a lot of play in the wheel. There is definitely a no-correct zone where the steering wheel is free and consequently I'm constantly adjusting left-right-left-right to stay centered in my lane. Wind was negligible going down but very gusty coming home which made the situation even tougher.”

“Is this play normal?”

# FMCA Post

“Driving the RV is very tiring because I am constantly correcting - it seems to have a 10 degree slop in the steering. The coach only has 13, 000 miles on it. Has anyone else had this problem and if so, how did you fix it.”

(Holiday Rambler Endeavor)



During Craig's research he learned that HR/Monaco used BOTH Sheppard and TRW steering gears in various coaches. There were times when a coach of the same name and year would have different steering gears.

WHY ?

- Basic Answer: Availability
- Could this help him in a search for a REAL solution to the problem?
- Is this WHY some Monaco brand coaches are reported to HANDLE so well ?

# Holiday Rambler & Monaco Brand Steering Gears

- ✦ Front Axle Weight 8 to 10K LBS
  - ✦ TRW TAS 55 or Sheppard M80
- ✦ Front Axle Weight 10K to 14.6K LBS
  - ✦ TRW TAS 65 or Sheppard M100/HD94
- ✦ Front Axle Weight 14.6K to 18K LBS
  - ✦ TRW TAS 85 or Sheppard M110

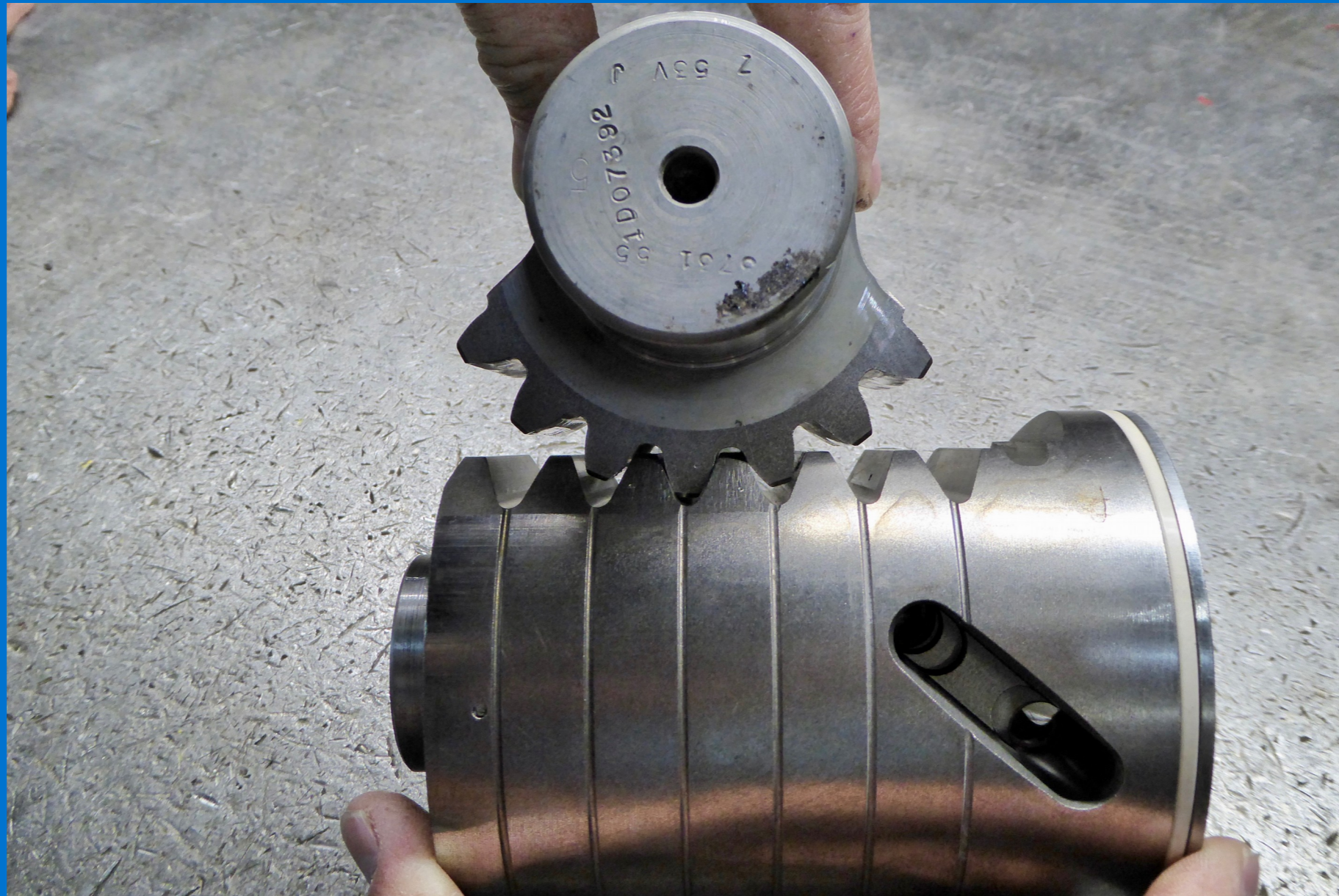


# Holiday Rambler & Monaco Brand Steering Gears

Lets look at the design differences between a Sheppard and a TRW steering gear.

# Output Shafts





- Sheppard Steering Gear Design

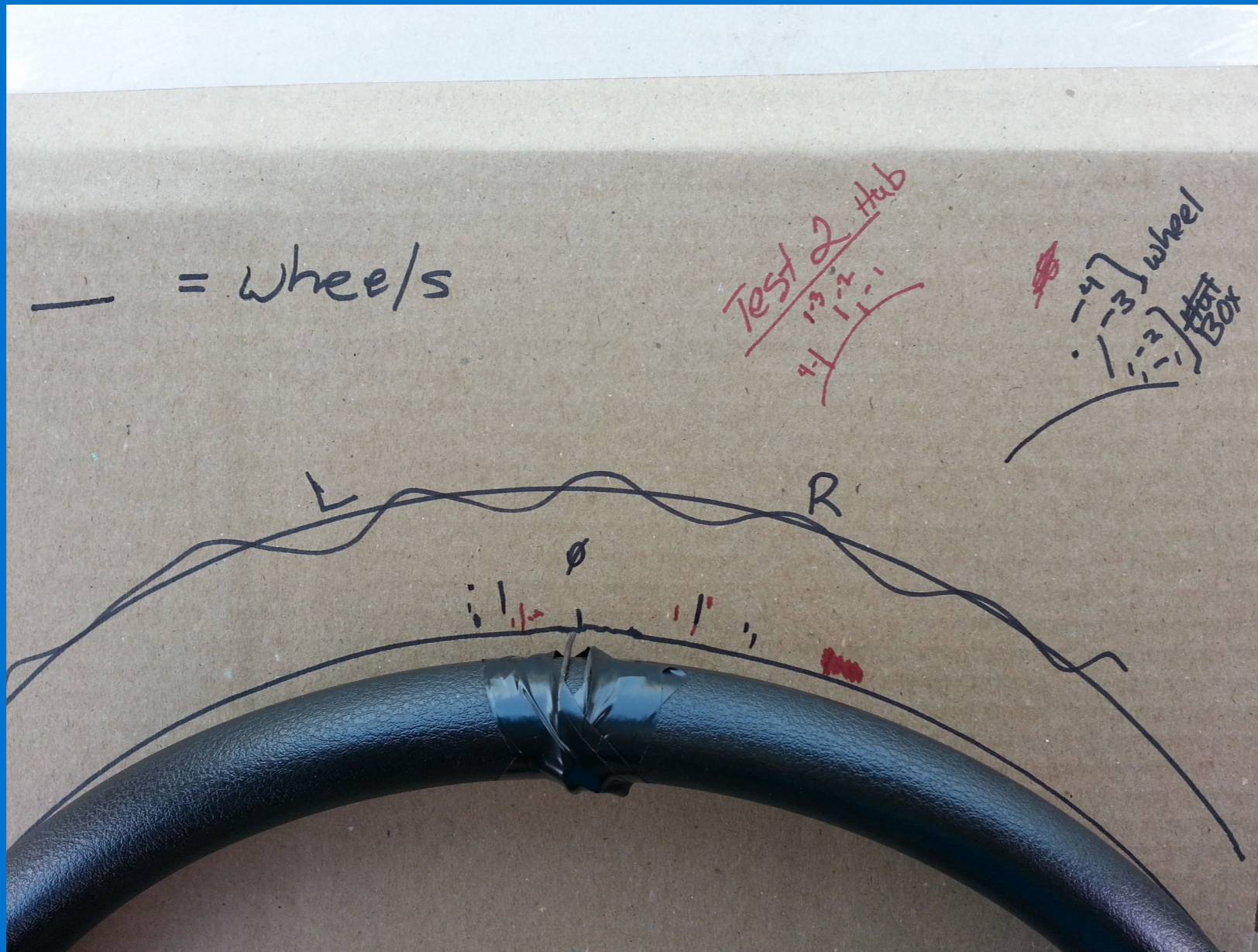
# 2013 Sheppard Steering Gear Trouble Shooting Guide

“Unresponsive motion is inherent to the design and must be considered normal.”

Current production Sheppard steering gears in service will have 1 1/2 to 2 1/2 inches of unresponsive motion.

Measurement is made at the rim of the steering wheel, from initial tire and wheel movement left steer, to initial tire and wheel movement right steer.”

- ✦ The Sheppard steering gear is actually a very well built steering gear.
- ✦ It just so happens that it's design characteristics do not fit our motorhome application well.



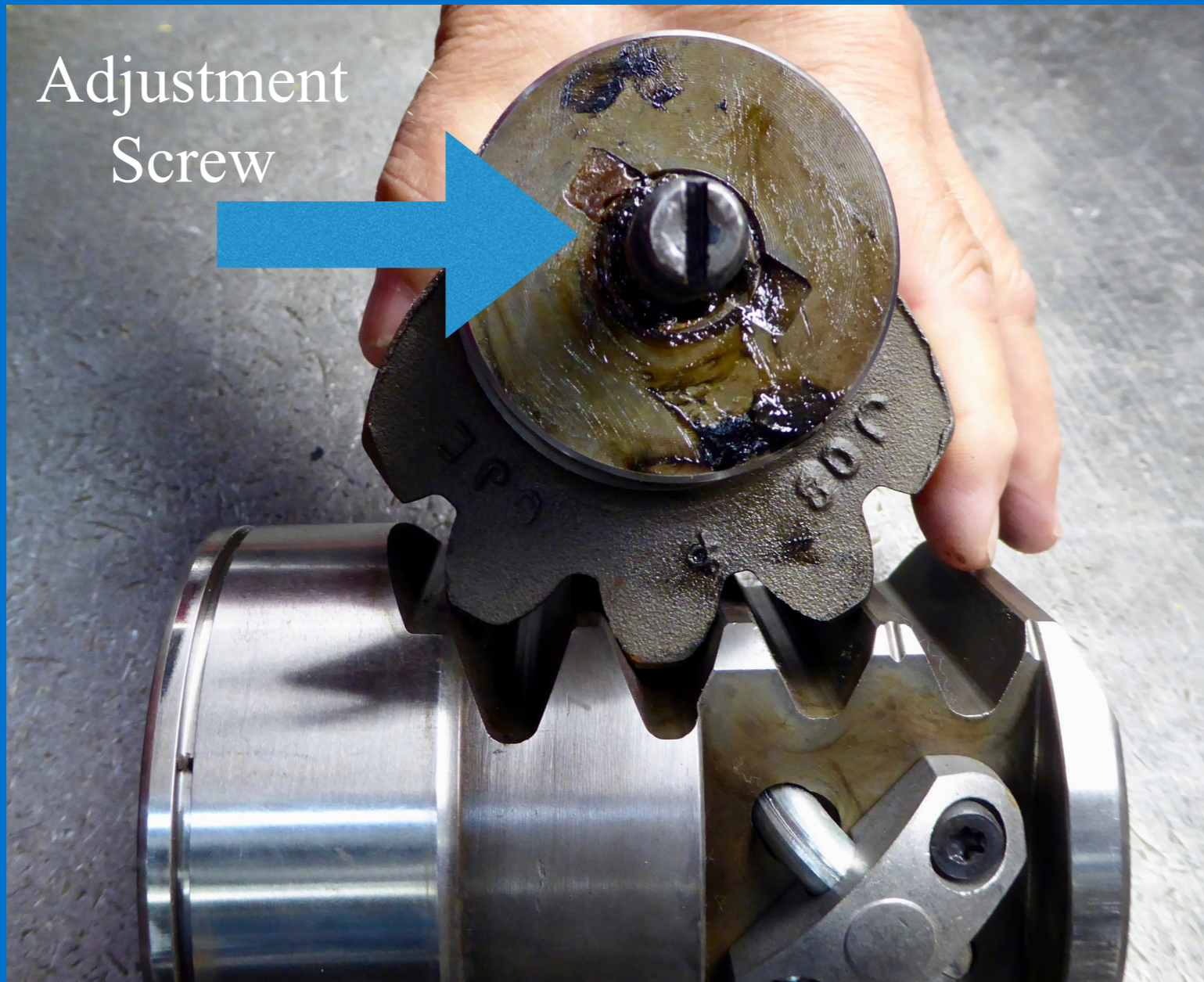
- Sheppard Unresponsive Motion Test Result 1.5”



# TRW Sector Shaft and Rack Piston



TRW TAS Sector Shaft & Rack Piston



## ✦ TRW Steering Gear Design

# Steering Gears

Is your coach equipped with a TRW steering gear, properly adjusted, or a NON-adjustable Sheppard steering gear?

(75% of the TRW steering gears inspected in the last 36 months, almost 250, needed some adjustment.)

Even a small adjustment will make a **BIG** difference.

- ✦ NOW WHAT ?

- ✦ Craig contacted both Sheppard and TRW

- ✦ (No help due to liability)

— Call your coach builder they said.

- ✦ We know from research, and discussions with a VERY KNOWLEDGABLE person at Monaco that Holiday Rambler and Monaco have been replacing steering gears under warranty for years, starting with the Sheppard M80 then on to the Sheppard M100 and even the Sheppard M110 up to and including the 2014 model year due to steering gear “play”.

## ✦ PROGRESS

- ✦ At an FMCA rally in Perry GA, Van Williams (Vanwill) and Craig French (CrazyKnight), arrange to meet. Van was making good progress on the iRV2 forum in the HANDLING department and Craig sought out his expertise. The steering gear needed to be fixed, even if it meant designing a new mount to allow the installation of a TRW steering gear into the coach.
- ✦ THIS was the beginning of the
- ✦ Steering box play-Sheppard M100 shim or swap for a TRW iRV2 thread.

Knowing that both steering gears were used in other applications Craig called a national truck parts rebuilder, **Weller Truck Parts**, who gave Craig an AMAZING fact. There was possibly a DIRECT BOLT ON TRW replacement for the Sheppard steering gear.

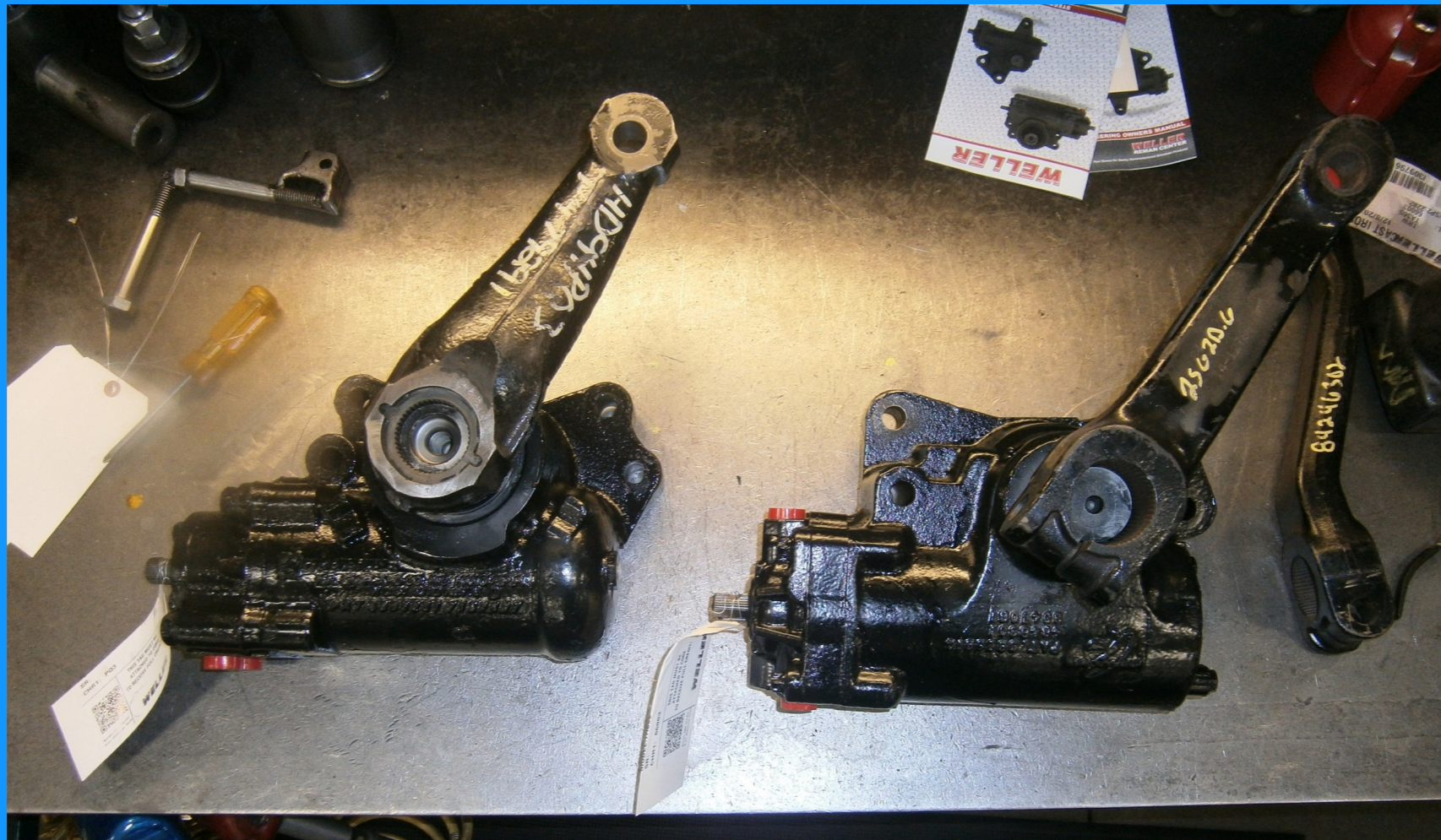
WHAT ?

Could it REALLY be that easy ?

So, off to the salvage yard to investigate



What he found was this!





▪ So..... SUCCESS

▪ A TRW steering gear SWAP is not a magic bullet to solve **ALL** of the Road Master chassis "unique" handling qualities but it is a **GREAT** place to start.

▪ Over 125 Monaco coach owners to date, going on 5 years, have swapped their playful Sheppard steering gears for TRW steering gears. The steering gear swap satisfaction rate is 98%.

## ■ So, What to do about Steering Play

If you have a TRW Steering Gear Box then make sure it is adjusted properly OR remove steering gear Non-motion with a possible

Sheppard to TRW steering gear swap.

Available for numerous Sheppard steering gears, but

**Not available for all coaches**

Keep in mind your coach is only going where your wheels  
are pointed.

Are the coach wheels pointed where YOU want them to be?

Are your wheels, and the associated steering gear  
components doing **exactly** what YOU TELL them to do ?



▪ "My first impressions of the test drive.... WOW!

▪ My wife noticed right away once we got onto the interstate. In fact, she made the first comment about the swap. She stated it was a much better ride and noticed I wasn't sawing away on the steering wheel like before. I would have never guessed how much of the wandering she was feeling from her "princess" recliner. It did take me a little time to get settled in. I found myself over correcting, causing the coach to sway for no reason. Once I learned how to "drive" all over again, I was able to rest my elbows on the arm rests and drive the coach with slight movements using my wrists. I have never been able to do this before. I can't express my excitement enough having something that shouldn't kick my butt after 4-5 hrs of driving".



- "I drove the motorhome about 120 miles today. The extreme wandering that was the result of the loose Shepherd steering gear is now gone. For the first time I was comfortable and relaxed driving the motorhome. Yes, there is still a little wandering from wind and road ruts".
- "I just got back from a 6 hr trip pulling my car trailer. I am still very impressed with how well my coach handles with the TRW box installed. Although the tail still wags the dog, it's only a fraction of what it use to be. Steering corrections were at a minimum and it was much easier to keep the trailer at bay. It seems the extreme play in the Sheppard box was amplifying the "tail wagging the dog" effect causing the trailer to excessively sway. I also discovered I had much more energy at the end of the trip. No more constant sawing back and forth on the steering wheel."

## Paul Miller HR419 2017 MS Review

Craig and Van “described how Holiday Rambler and Monaco used both Sheppard and TRW steering gears and that the TRW unit was adjustable, so that excessive play in the steering wheel could be adjusted out. The Sheppard steering gear is not adjustable and can have 1-1/2" to 2" of play in the steering wheel and be within tolerances. In both sessions Craig talked about the significant improvement in handling he experienced with these modifications on his 2011 Monaco Knight. He also said if you are moderately handy you can install them yourself as he had done.”

“From the very first time I drove our new 2013 HR Ambassador I noticed excessive play in the steering wheel, but I never knew I could eliminate it until listening to Craig and Van. At the MS Craig came out to my coach and we measured 1-1/2" of play in my Sheppard steering gear. I had also experienced some sideways buffeting of the coach in a head wind or cross wind, especially driving out west. I knew then that I wanted to make these modifications to my coach.”

“Now the results. Our first long trip was from Virginia to Amana, IA, for the HRRVC EIR, and then north for a circle tour of Lake Superior, which we're still on as I write this article. The coach handles so much better now, with much fewer and smaller steering wheel movements driving down the road. The steering wheel is almost as responsive as a car, and in windy conditions I can feel wind trying to buffet the coach but it hardly moves side to side. I'm really glad for Craig and Van's presentations at the MS and all the work they have put into finding solutions to Roadmaster chassis handling issues”.

# Commonly asked Questions

- ❖ What is the cost ? About \$875 for parts.
- ❖ Can I do it myself ? Yes, it takes about 4 to 5 hours and there are GREAT instructions on my iRV2 thread.
- ❖ What does a shop charge to perform the TRW SWAP ? About \$600
- ❖ Can you recommend a shop ? Yes, Josams in Florida and Hendersons in Oregon. These 2 shops have the most experience. There are others that have successfully performed the swap, ask around.

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Thank you Tom and Brent

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