

ATTENTION TO ALL ARB STOCKISTS



SPREADING A DANA DIFFERENTIAL

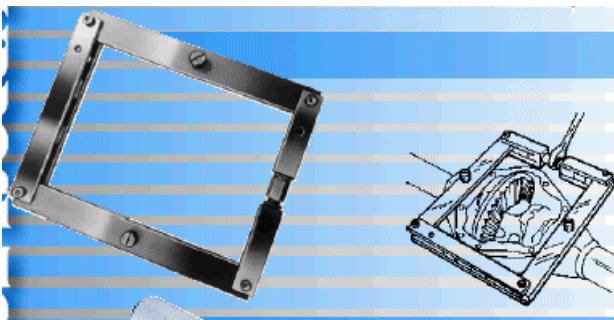
This bulletin is in reference to recent ARB Air Locker models that suit Dana/Spicer shim adjusted Salisbury axle housings. (Model #s RD100, RD101, RD102, RD103, RD104, RD105, RD109, RD113, RD116 & RD117)

It has come to our attention that some of our stockist network has been experiencing difficulty when installing some of our recently released Dana/Spicer model differentials which include a replacement carrier bearing for both ends of the carrier. The problem seems to arise from the necessity of holding a shim pack onto the carrier bearing (RH side or side opposite the air entry side) while installing the differential assembly to achieve a certain degree of pre-load.

The newer Air Locker models listed above employ higher rated carrier bearings and heavier bearing journal cross sections than were available on the factory designs. Unfortunately because of this the Air Locker unit does not support re-using the existing Dana shims which are located under the bearing cone because the bearing journal diameter of these models is larger than that of the original model. As a replacement for these, ARB includes a full set of shims to use on the outside of the supplied bearing cup. The difficulty then seems to lie in squeezing the differential center into its cavity at the same time as the desired thickness of shim.

We have investigated this and found that if the assembly has been adequately spread using a common differential housing spreader (as detailed in the Air Locker Installation Guide and the vehicle manufacturer's service manual) then no such difficulty exists. Once spread enough to accommodate the differential, bearings and shims, an Air Locker can be simply placed into the housing by hand.

We are, however, aware that this installation is sometimes attempted without the use of any form of differential housing spreader. This is a practice that ARB cannot support. Dana Spicer and the vehicle manufacturer explicitly detail the importance of using a differential housing spreader and demands it of all of their approved service technicians. These tools are readily available for sale at reputable axle service shops, and most designs are adjustable to suit the whole range of Dana axle applications.



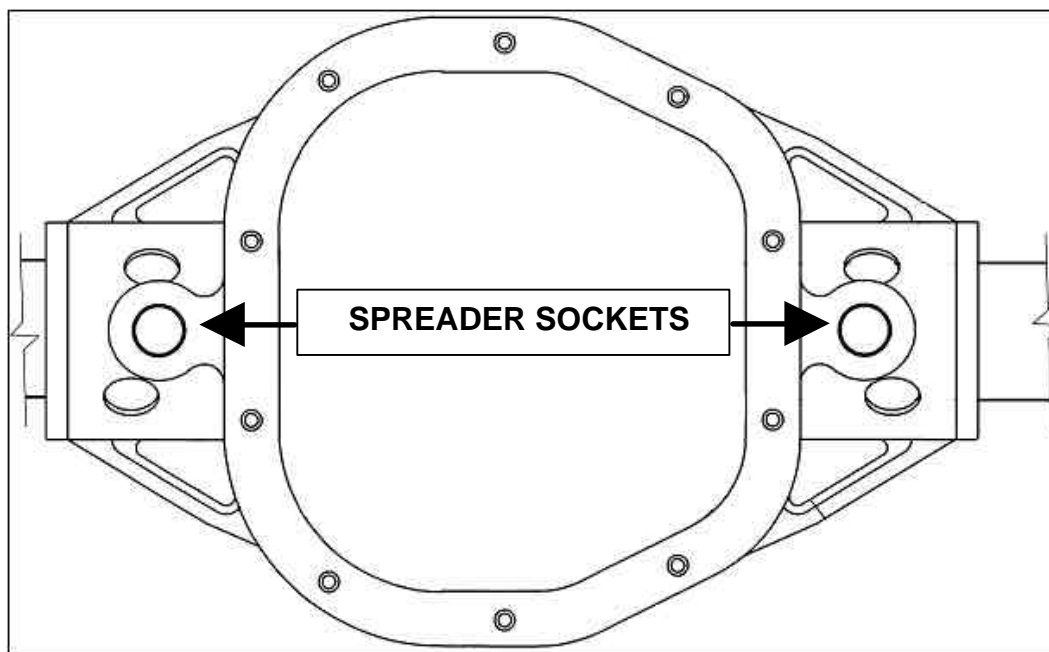
Differential Housing Spreader

Here's a tool that eases the job of removing or installing differential ring-gear assemblies from Dana axle models 30 through 70. It's a heavy-duty device using mechanical screw power to spread the housing. It helps prevent the component damage that often results from the use of homemade devices.

No. 7071 – Differential housing spreader. Wt., 34 lbs.

-Picture courtesy OTC Tools

During heavy off-road driving, high torque at the axle means that the ring gear on the differential carrier can get pushed away from the drive pinion gear with so much force that it partially disconnects the two halves of the carrier bearing on the opposite side. In a factory differential this temporary misalignment can result in ring and pinion gear damage, as well as carrier bearing damage to both sides. In an Air Locker installation a misalignment condition of this type could also result in damaged O-rings leading to air or oil leaks. To combat this the factory equipped Dana differential assembly was designed to run with a great deal of tension holding the assembly together known as pre-load. You can easily identify this design by the existence of the spreader sockets provided.



Although some fitters may think that by hammering it into a tight fit situation they are still “pre-loading a differential” – it is not possible to fully and adequately pre-load a Dana differential using this method. Without the use of a spreader a properly pre-loaded differential is actually too tight to even just remove without difficulty, and next to impossible to refit.

Spreading a Dana shim type axle assembly will not only reduce the installation time and effort required to set up an Air Locker, but it will also allow for the preload necessary to support the increased torque demands of off-road use on a locked differential, increase overall bearing life, and insure that your Air Locker seals run reliably for many, many years of use.

Attached are some instruction manuals for commercially available differential housing spreaders.

If you have any further questions regarding the above, please contact Daniel Bongard in Air Locker Design Engineering at:

ARB Head Office
42-44 Garden Street, Kilsyth, Victoria 3137 Australia
Tel: +61 3 9761 6622
Fax: +61 3 9761 6807

Or Tim Lund in Air Locker Tech Support in Seattle, USA at:

Air Locker Inc.
20 South Spokane Street, Seattle, WA 98134 USA
Tel: +206 264 1669
Fax: +206 264 1670



A division of SPX Corporation
 655 Eisenhower Drive
 Owatonna, MN 55060
 Phone: (507) 455-7000
 Tech. Serv.: (800) 533-6127
 Fax: (800) 955-8329
 Order Entry: (507) 455-1480
 Fax: (800) 283-8665
 International Sales: (507) 455-7223
 Fax: (507) 455-7746

Form No. 104672

**Parts List &
 Operating Instructions**
 for:

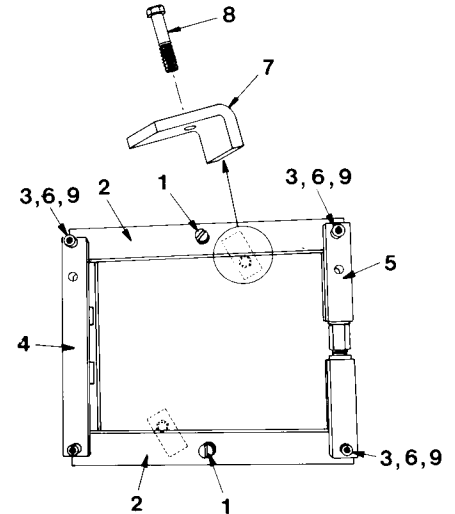
7071
 MEL-1144
 TOOL 4000-E

Differential Housing Spreader

The Differential Housing Spreader is used with the Dial Indicator Set (OTC #7079) on Dana axle models 27, 30, 44, 53, 60, and 70 heavy duty.

Parts List

Item No.	Part No.	No. Req'd	Description
1	203006	2	Bearing Pin
2	37050	2	Bolster (1" x 2" x 17")
3	12560	4	Soc. Hd. Cap Screw (1/2-13 x 2-1/2" Lg.)
4	37047	1	Leg Weldment
5	37051	1	Spreader Assembly
6	12004	4	Washers (17/32" I.D.)
7	207683	2	Bracket
8	10057	2	Hex Hd. Cap Screw
9	10208	4	Hex Nut (1/2-13 UNC)



Operating Instructions

- Assemble the tool as shown in the parts list illustration. **Important:** The four 17/32" I.D. washers (Item #6) must be placed between the bolsters (#2) and the spreader assembly (#5).
- See Figure 1. The bearing pins (#1) have a 7/8" dia. thread on one end and a 1" dia. thread on the other end. Place the spreader on the carrier housing, and determine which threaded end of the pin should be used.
- Turn the clevis screw (located on the spreader assembly) to adjust the distance and alignment of the bearing pins with the correct holes in the carrier housing. When the pins are in position, thread them in until they bottom out in the holes in the carrier housing.
- Lightly wrench tighten the four socket head cap screws (#3) located in the corners of the spreader.
- Mount two brackets (#7) at an angle as shown.

Warning: To prevent personal injury, the brackets (#7) must have maximum contact with the flat, parallel surfaces on the carrier housing and the bolsters. See Figure 1.

- Position the Dial Indicator (OTC #7079) as shown in Figure 2. Spread the carrier housing by turning the clevis screw. **Important:** Do not spread the carrier housing beyond the manufacturer's specifications, or damage can occur.
- Remove the dial indicator. Lift the differential assembly from the carrier.

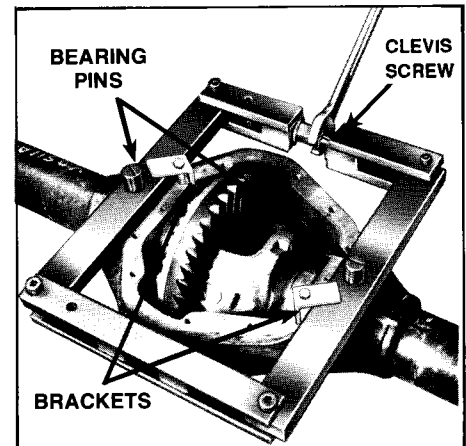


FIGURE 1

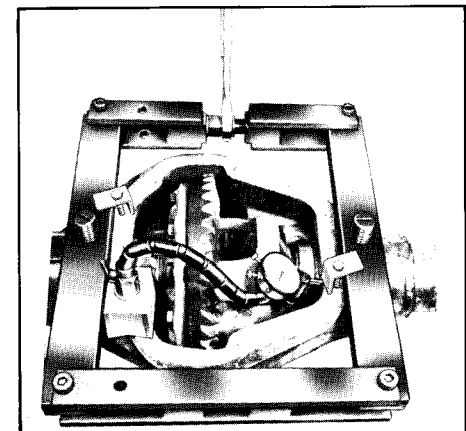


FIGURE 2

Sheet No. 1 of 1

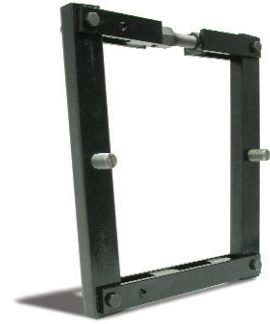
Issue Date: Rev. 7-1-94

Dana Housing Spreader

The Yukon Housing Spreader is designed for use in Dana applications only, although many corporate differentials have provisions built in to allow for the use of a spreader. However, in most of these applications, a spreader is actually unnecessary, and more often than not, will make the job more time consuming.



Unassembled



Assembled

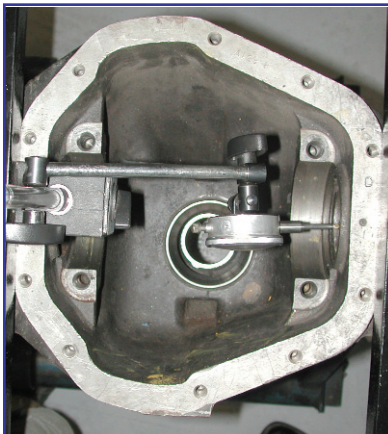
STEP 1



To begin, adjust the spreader to fit the dowel holes of the particular Dana housing you are working on. This is done by either manipulating the threaded adjuster, or for larger rearends (D70 & D80), by changing the overall spread of the tool. The upper and lower bars have two sets of holes drilled in them allowing for adjustment to adapt to a variety of applications.

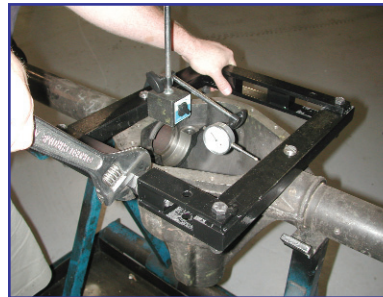


STEP 2



After the spreader is set into place, snug the adjuster just enough to allow the spreader to hold itself in place. Once you have the spreader set up, you will need to use a dial indicator with a magnetic base across the opening of the housing. (See photo.)

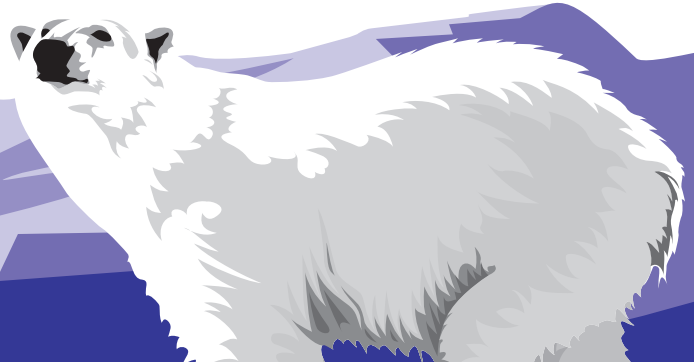
STEP 3



Once you have everything set up, you are ready to spread the housing. You need to pay close attention to the dial indicator reading as it is possible to over-spread the housing. You should never spread the housing more than .015". More than this can cause severe damage.

In most cases you will still need to pry the carrier out of the housing – even with the spreader in place. When reinstalling the carrier with the housing spread, you should still have to tap the carrier into place; the carrier should not drop freely.

Yukon Gear & Axle®



636 West Diversey Parkway, PMB #180, Chicago, IL 60614-1511
www.YukonGear.com