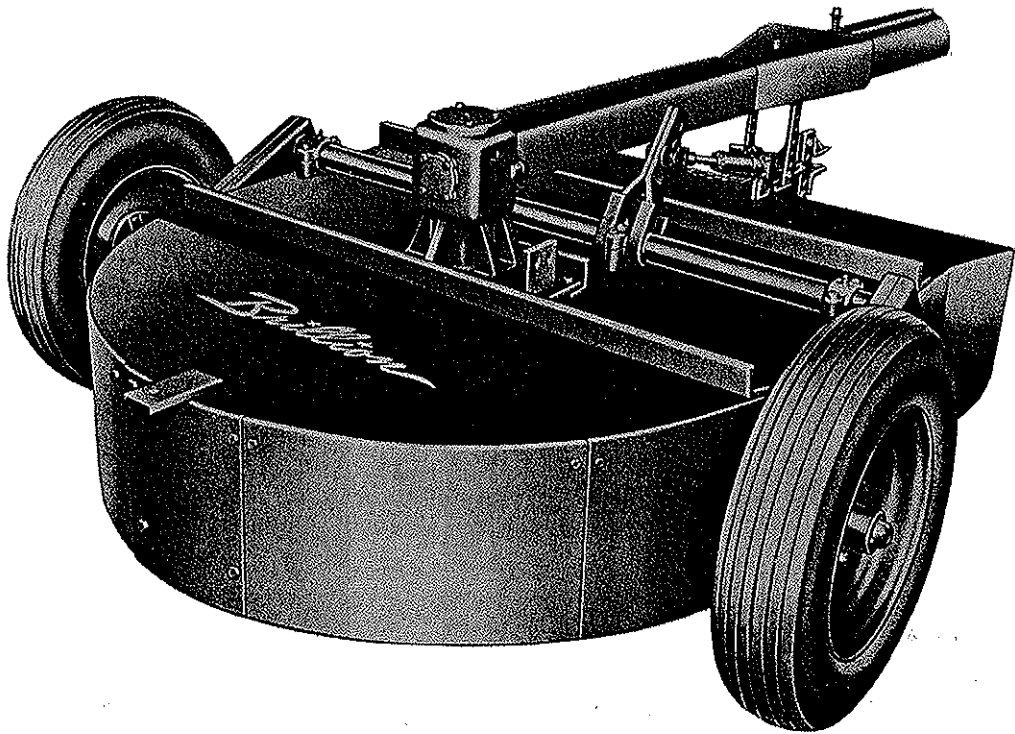


OPERATOR'S MANUAL

Brillion

ROTARY SHREDDER



BRILLION IRON WORKS
BRILLION, WISCONSIN

5C-103

Brillion

5' CUT-ALL ROTARY SHREDDER

MODELS

R-60 RH-60 RO-60 RCV-60 RMV-60
RMHV-60 RMOV-60 RCHV-60 RCOV-60

Your Brillion Cut-All Rotary Shredder is built with the best material and workmanship available. All machines are adjusted at the factory to assure proper mechanical operation.

You can avoid many future difficulties by following the operating and maintenance instructions and by correctly adjusting and lubrication the machine when necessary.

* * * * *

LOCATION REFERENCE

"Right" and "Left", "Front" and "Rear" refer to the operators "Right" and "Left", "Front" or "Rear" when he faces the same direction as the machine is traveling.

5C-103

SAFETY INSTRUCTIONS



Federal regulations require that at the time of initial assignment and at least annually thereafter, each employee shall be instructed in the safe operation and servicing of all equipment which he will be operating. This instruction shall cover the following safe operating practices:

1. Keep all guards and shields in place when machine is in operation.
2. Stop engine, disengage PTO and wait for all movement to stop before servicing, adjusting, cleaning, or unclogging machine.
3. Keep hands and feet away from machine openings and moving parts when operating.
4. Do not allow anyone but operator to ride tractor or equipment.
5. Make sure everyone is clear of machine before starting engine, engaging PTO or operating machine.
6. Run PTO at proper PTO speed for this machine. Refer to tractor Operator's Manual for proper engine speed to obtain proper PTO speed.
7. If servicing or adjusting require the temporary removal of any shield, wait until all movement has stopped before attempting to lift or remove shield.
8. Block machine up when working under the machine. Do not rely on hydraulic cylinders to support machine or machine parts.
9. Do not transport machine at speeds where the operator loses control. Do not exceed 20 mph under any conditions.

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SHREDDER SPECIFICATIONS

Width of Cut- - - - - 5 Foot

Height of Cut- - - - - Adjustable 0-14 inches

Blades- - - - - Heat-treated alloy steel
Three blade types available
All blades reversible

Adjustable Slip Clutch- - - - - Multi-friction disc type
4-replaceable discs
Adjustable to compensate
for clutch facing wear

Gears- - - - - Heat-treated alloy steel
Machine cut--Run in oil bath
Step-up P.T.O. speed by 17-
14 gear ratio

Bearings- - - - - Gear Housing
Timken Tapered roller
Shim adjusted
P.T.O. Shaft Support
Sealed ball bearing
No lubrication required
Universal Joints
Needle bearing
Wheel Hubs
Timken tapered roller
Nut adjusted

P.T.O. Drive Shaft- - - - - Heavy duty-3 joint-
Needle bearing-telescoping-
to fit 1 3/8" spline
tractor power take-off
shaft.

Hitch- - - - - Adjusts to drawbar height
of tractor

Lift- - - - - Hydraulic or manual

Wheel Size- - - - - 6.70 x 15" Rim

Frame- - - - - Heavy gauge steel
welded assembly-Three
removable rear shields

Shredder Weight- - - - - 1165 lbs.

5C-103

REFERENCE NOTE

When reference to Page 1, Page 2, Page 3, etc. is made in the text, they refer to specific pages of the Repair Part Catalog. The page numbers will be found at the bottom of each page.

When reference to parts is made by number as #1, #2, #3, etc., the number represents the INDEX NUMBERS found on the pages of the Repair Parts Catalog.

OPERATING INSTRUCTIONS

CUTTING RANGE

The height of cut is controlled by adjusting the hydraulic cylinder stroke, or the manual lift cylinder to the desired position. For shredding most crop residue or brush, the machine should be operated with the hood a minimum distance above the ground. However, proper clearance should be maintained, so that the lower blades do not strike the ground. For general operation, keep the bottom edge of the hood 3" to 4" above ground level. The cutting height can be adjusted from ground level to 14" above the ground.

BLADES

The machine as you receive it is equipped with four #10 Bent Suction Blades. These blades are reversible, each blade having two cutting edges. When the blades become worn, they can be turned over to provide a new cutting edge. NEVER ATTEMPT TO USE THE #10 (BENT) BLADES WHEN WORKING IN BRUSH, EXCEPT IN VERY LIGHT STANDS OF LESS THAN 1" DIAMETER. When working in brush larger than 1" diameter, #11 (Flat) cutting blades should be used in their place.

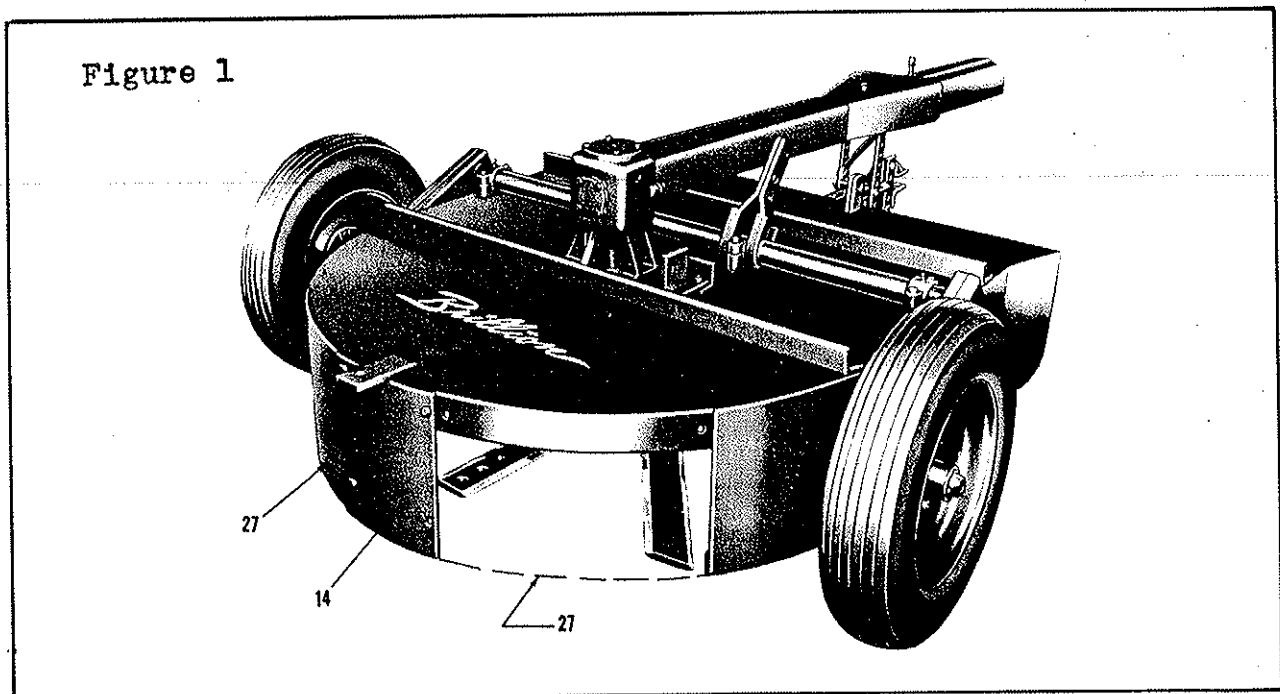
REAR SHIELD CLOSURES (See Figure 1)

These shields, when used in various combinations, can improve the cutting or shredding on most jobs. When clipping pastures, shredding stalks, vines or other heavy crop residue, it is desirable to leave all the rear shields in place. This will retain the material long enough for it to receive the maximum cutting before being discharged from the machine and also produce an even cover of clippings on the cut-over area.

In heavy stands, it may be found necessary to remove the #14 Center Shield, along with the #27 Right Shield--providing a larger area from which the shredded material can be discharged.

When chopping a light cover of brush, a finer degree of chopped material can be obtained by leaving all three shields in place. The brush will remain in contact with the blades for a longer period of time, and the chopped material will be spread evenly on the cut-over area.

When working in heavy brush, remove either one side shield--one side and one center--or both side and center shields. The



type of material you are cutting will determine the opening to provide for the discharge of the chopped brush.

The front of the shredder is provided with a baffle to prevent cut pieces from being thrown toward the operator. In extreme operations, a heavy piece of belting can be attached to the baffle for added protection. Attaching holes are provided for this in the baffle.

SLIP CLUTCH OPERATION

(See Fig. 2)

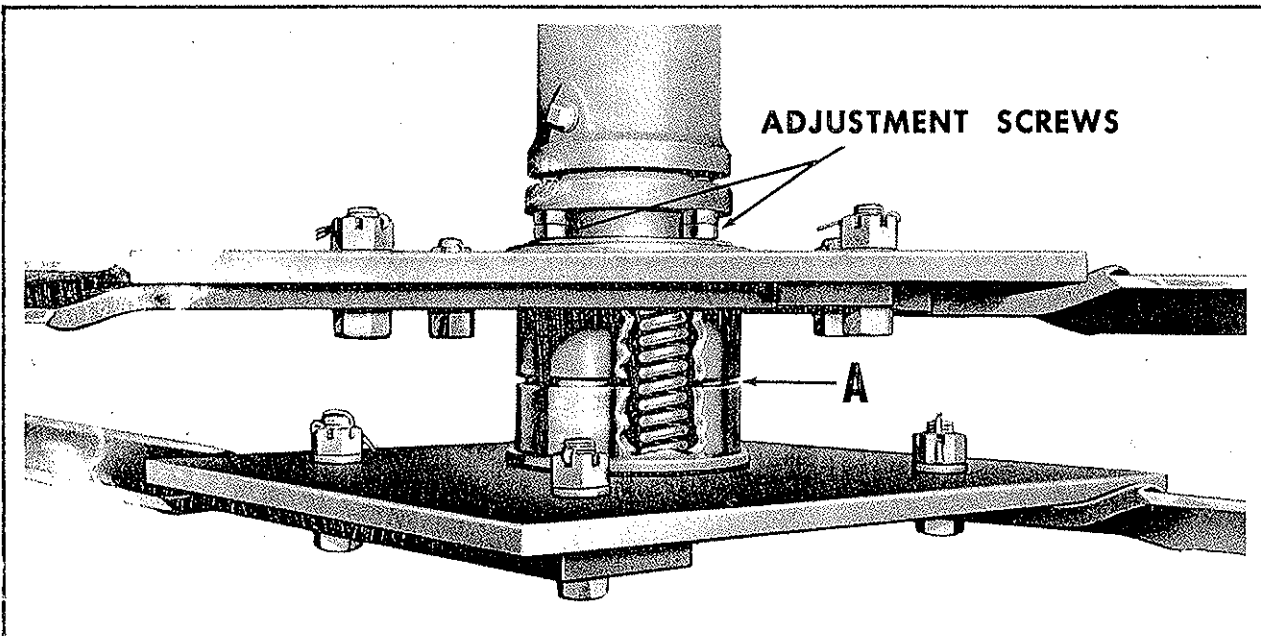
The slip clutch is located under the hood on the blade drive shaft. It was put in this location to protect the bevel gear drive as well as the tractor from shock loads or excessive strain. If an obstruction or heavy object is encountered by the blades, that set of blades will slip independently of the

other set until the obstruction has cleared itself. Both sets of blades will then again rotate together. Should the machine become overloaded with brush or stalks in heavy operations, resulting in clutch slippage, the tractor should be put in neutral, and the shredder raised, allowing the machine to run until it has cleared itself. However, if it will not clear itself, it will be necessary to remove the material from the blades by hand. If the machine has a manual type (hand operated cylinder) lift, it will be necessary to stop the shredder and raise the unit to clear it of the excess material causing the overloading of the clutch.

The machine can then be lowered to the proper cutting height and normal operations again resumed.

Clutch adjustment has been provided, so as to compensate for wear of the clutch facings. The spacing at "A" (Fig. 2) should be $1/4$ " when the clutch is properly adjusted. Clutch adjustments are made by loosening the three lock nuts and turning down on the adjustment screws. Always maintain an even load on all three of the screws. If excessive slippage occurs, check and adjust the clutch.

When the #4 Friction Plates become worn to $1/16$ " thickness, they should be replaced with new facings. Failure to do this can result in destruction of the machined surfaces of the driving plates and spring cages. Replacing the clutch facings is explained in the "Care and Maintenance Section" of this manual.



TYPES OF OPERATION

PASTURE CLIPPING

For best results, the #10 (Bent) suction blades should be used

on the upper and lower blade plates. Cutting height for this type of operation is dependent on field conditions and type of clipping desired. For most purposes, a height of 6" to 8" above the ground should prove satisfactory. Forward speed of travel will vary according to the stand of grass to be cut.

STALK & VINE SHREDDING

When shredding crop residue, the same blade set-up should be used as for pasture clipping--namely the #10 (Bent) suction blades will provide suction to pick up the fallen stalks and crop residue bringing it into contact with both upper and lower sets of blades. The shredder should be set to a height of 4" to 6" above the ground. The forward speed of travel will have to be determined by the operator. In most instances, a range of 2 1/2 to 5 M.P.H., should prove very satisfactory.

BRUSH CHOPPING

In chopping brush over 1" diameter, it should be noted that the #10 (Bent) suction blades should be removed from the lower blade plate. In their place, a set of #11 (Flat) cutting blades should be used. The flat cutting blades are available at your Brillion dealer. When operating in heavier stands of brush, a second set of #11 flat blades can be interchanged with the bent blades on the top blade plate. When chopping heavy brush, it is advisable to add a set of #13 Brush Breaker Blades to the blades on the lower blade plate. Brush Breaker Blades tend to improve operation in dense stands of heavy brush, etc. Never attach the Brush Breaker Blades to the upper blades, as the machine cannot be operated with them in this position. Height of cut and forward speed for shredding are best left up to the operator. A little experimenting will determine the proper operating speed and cutting height.

LUBRICATION

GEAR BOX

Check oil level every 50 hours of operation; add oil if necessary. The oil level is marked by a level line and plug on the side of the gear housing. Do not carry a higher oil level than indicated. When adding oil, use #140 Gear oil for summer, or #90 oil for winter use.

ALL GREASE FITTINGS

Use a good quality grease--lubricate every 50 hours of operation.

WHEEL BEARINGS

Have been packed at the factory and should be repacked yearly with a good grade of wheel bearing grease.

MAINTENANCE

GEAR HOUSING

After each year's use, the gear housing should be drained and flushed, and a new filling of oil added. A complete change of oil requires 2 1/2 quarts. For proper lubrication of the gear box, see section on Lubrication.

Check the oil seals on the input and output shafts to see that excessive leakage is not occurring. If the seals need replacing, it is best taken care of when draining and flushing the gear housing.

When replacing worn bearings or gears, it should be noted that the #21 output gear and input gear shaft are to be replaced as a set. To begin disassembly of the drive, remove the #25 bearing flange. The #21 gear shaft and #19 and #22 bearings can now be removed. The #15 bearing cap can also be removed at this time. To remove the #12 output shaft, loosen the #3 hexagon nut on the end of the shaft in the gear housing. Then drive the shaft down through the #6 bearing cone. When replacing bearing cones on the two shafts, always remember to drive them up squarely against their respective shoulder on the shaft. The same applies for the assembly of the bearing flanges--always be sure the bearing cups are all the way down against the seat in the casting.

When assembling the drive housing, be sure #7 and #9 bearing cups are seated down against the shoulders in the housing. Then reassemble #10 cone to the #12 shaft, and insert this assembly up through the bottom of the housing, with the threaded end of the shaft extending up into the gear housing. Now place #6 bearing cone and #21 output gear on the shaft, making sure the #11 square key is in place to key the gear to the shaft. Then replace the #4 washer and #3 nut. The bearings on this shaft are nut adjusted. In adjusting the bearing set up, draw up on the nut until all end play has been removed from the shaft. When adjusted correctly, a light drag will be noticed when turning on the shaft. To lock the adjustment, insert the cotterpin through the slotted nut and hole in the shaft, and bend over the ends of the pin.

In assembly of the #21 gear shaft, be sure the #19 and #22 bearing cones are fully seated against the shoulders of the shaft and gear. Then place the #18 bearing cup in the small bore of the gear housing. Next place #9 bearing cup in the #25 bearing flange, making sure the cup is all the way down against the shoulder in the

flange. The #21 input gear shaft can now be inserted into the housing and the #25 bearing flange can be bolted to the housing. The bearings on the input shaft, as well as the gear backlash. (Running clearance) are adjusted by the use of shims. The #23 and #24 shims are used with the #25 flange, while the #16 and #17 shims are used with the #15 bearing cap. It is generally advisable to set up the assembly with two of the thin #24 shims and one of the heavy #23 shims on the #25 flange, and two of the #16 and #17 shims used with the #15 bearing flange. Draw up on the capscrews, bolting the flanges to the housing. Draw all the screws up tightly and check the bearings for end play as well as the gears for backlash. By adding to or reducing the number of shims used with either of the flanges, the correct backlash, can then be set as well as end play removed from the shaft itself. The bearings should be set up so that no end play exists, tho the shaft should turn over without too much drag. (Should turn over with force of hand). To check for correct backlash of gears, rock #13 output shaft back and forth a small amount to see that a slight amount of looseness can be detected between the gears. When properly assembled, the output shaft can be turned over by hand, tho some drag will be noticed.

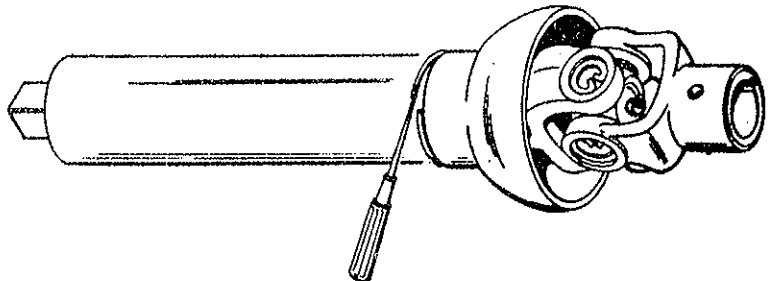
When replacing the #14, #26, and #33 seals make sure the seal lips are not damaged. Refill drive with oil to level shown on the side of the case. Proper care and adjustment of this drive will insure proper operation. Note lubrication instructions on cover of gear housing.

SLIP CLUTCH (See Page-2 & 4)

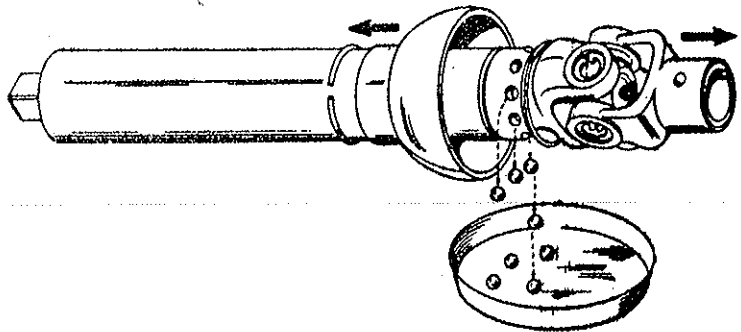
When disassembling the clutch, back off the three locknuts and adjustment screws. Then flatten lockwasher #9 and remove #10 retaining screw. All clutch parts can now be removed from the shaft. In assembling the clutch, begin by sliding #1 Adjustment Plate onto the shaft with threaded end of adjustment screws pointed up toward the housing. Now place the #13 clutch key (7 3/8" long, round end) into the long keyway, fully engaging it with keyway in the Adjustment Plate. Follow with the remaining clutch parts and blade plate assemblies, as shown on Page-4. Be sure the #30 clutch key, (3 3/4" long, round end) has been placed in the short keyway in the shaft before placing #8 Bottom Plate, #9 Lockwasher and #10 L.H. Retaining Screw into position. Before drawing up on the 1" screw up tight in the shaft. With a pry bar or screw driver, bend up edge of the #9 Lockwasher against flat of bolt head. This is to prevent loosening of the bolt and insure proper assembly. Now, adjust the Slip Clutch as explained under Slip Clutch operation.

INSTRUCTIONS FOR REMOVING
QUICK DETACHABLE FREE WHEELING GUARD

1. Use screw driver or sharp pointed tool to remove snap ring from groove at back of bell.

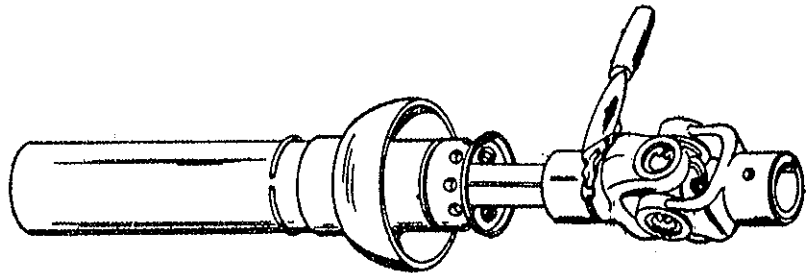


2. Hold assembly over container so that balls will not be lost and slide bell away from joint toward opposite end of tube. If balls do not drop out, slide tube away from joint, forcing balls from cage.

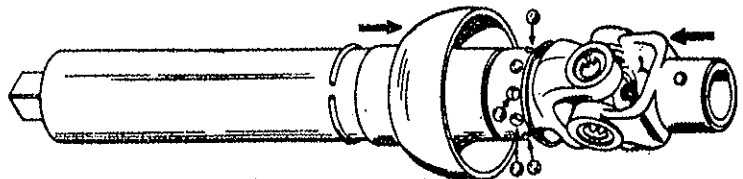


INSTRUCTIONS FOR ASSEMBLING
QUICK DETACHABLE FREE WHEELING GUARD

3. Fill raceway in yoke with grease.



4. Slide tube with bell and snap ring over raceway. Insert balls through holes into raceway where grease will hold them in place. Slide bell over balls. Slide snap ring into groove.



Grease joints, telescoping shafts and guard regularly. This Quick Detachable Free Wheeling Guard is the finest guard built. It is provided for your protection.

Form 4D-200
9C-544

9C-636
1D-626
8C-658

9C-494
5C-103
6C-727

5C-983

INSTRUCTION SHEET

for ASSEMBLY OF SPLINED YOKE $\frac{w}{/}$ SET SCREW

to SPLINED SHAFT

- 1 - Loosen the lock nut (B) in the yoke (F) and back off the set screw (A) with the Hex Allen wrench provided.
- 2 - Align the set screw in the yoke, with the tapered hole (C) in the splined shaft.
- 3 - Slide the splined yoke (F) on the splined shaft (E) until it rests against the bearing at (D).
- 4 - Now turn the set screw (A) down tight into the tapered hole (C). This will cause the yoke (F) to be clamped against the bearing at (D) to eliminate the end play of the yoke on the shaft.
- 5 - Lock the set screw by holding it with the Hex Allen wrench, drawing down tight on the hexagon lock nut. This will prevent loosening of the set screw and joint on the splined shaft.

SPLINED JOINT & SHAFT ASSEMBLY

