

Moorfeed

A Division of EAS

**60 IN DUAL MOTION CENTRIFUGAL
MOORFEED P\N 66600**

**P\N 66600-WR HAS THE OPTIONAL STAINLESS
STEEL WEAR RING ON THE TUB FLANGE**



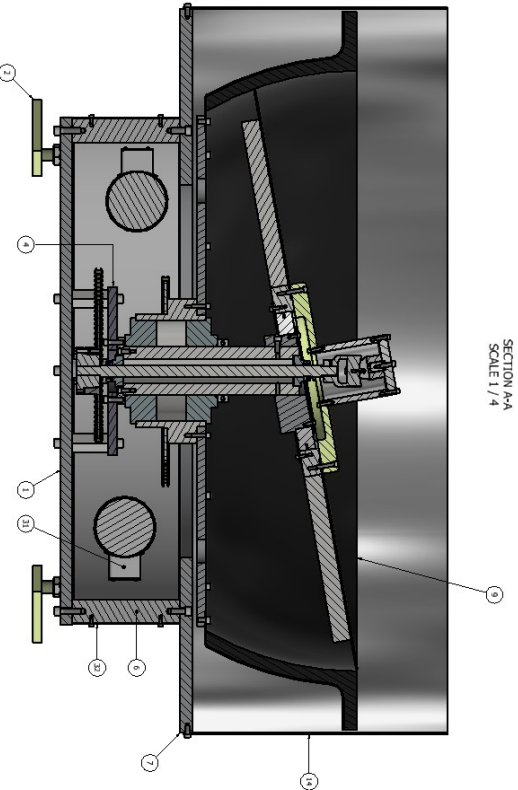
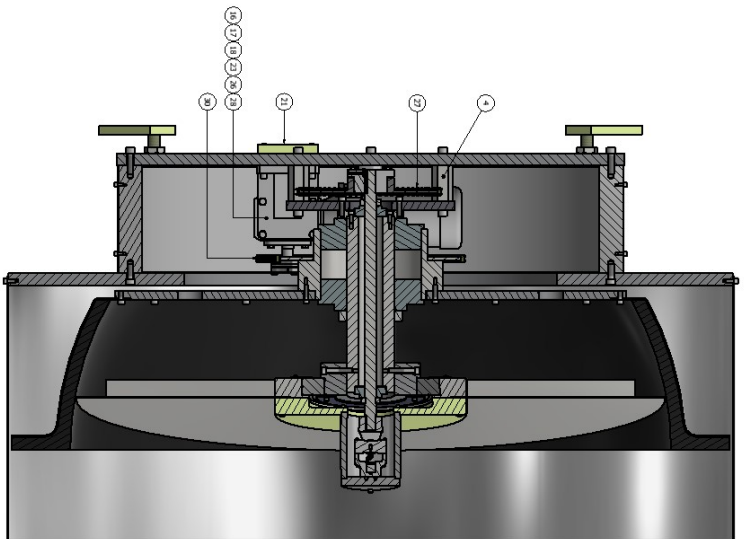
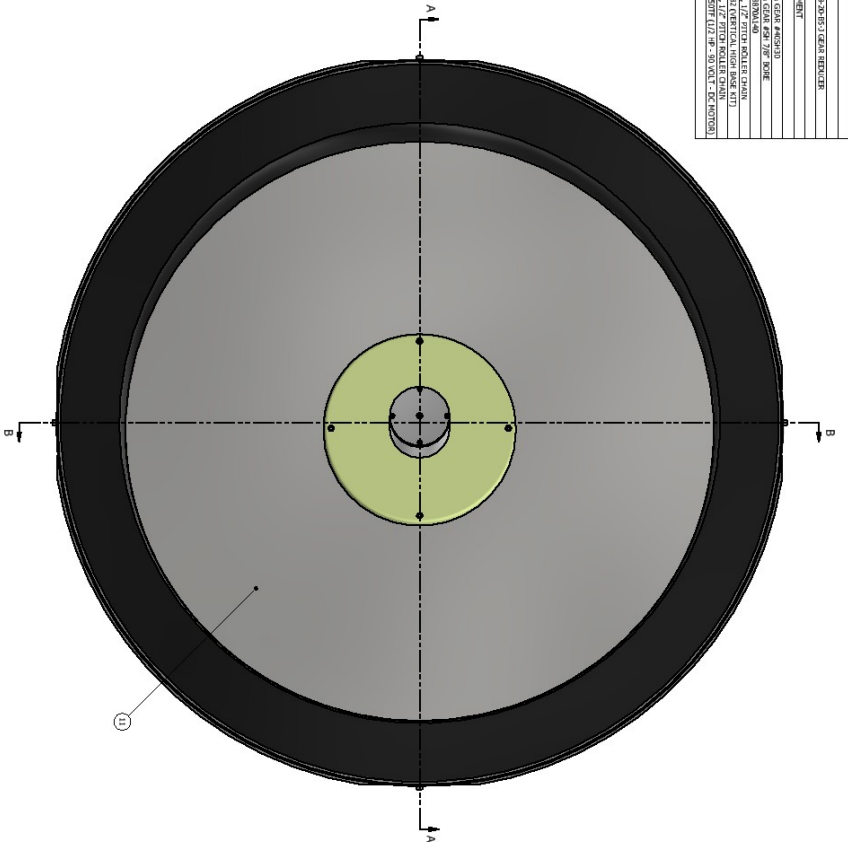
**4162 EMS BLVD.
GREENFIELD, IN 46250
PH 317-545-7171
FX 317-542-7317**

With over 30,000 sq. ft. of manufacturing facilities in Indianapolis over 60 years of experience in the development of special parts feeding equipment, Moorfeed is a major leader in parts feeding and automated assembly systems of the North American and worldwide markets. Our clients include many Fortune 500 manufacturers providing systems for electronic computer, pharmaceutical, automotive, packaging, appliance, food and cosmetic industries to name but a few. We have a thorough understanding of the technology required to design and build even the most complex feed systems. Each Moorfeed component is carefully designed for durability, dependability, ease of fabrication and compliance to industry standards. We offer a variety of equipment, quality constructed and inspected. Moorfeed quality means the feed system we build for you today will be on less concern for you tomorrow.

**When you want to feed more
parts through your line, think Moorfeed.....
Our name says it all.**

**Moorfeed
A Division of EAS**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	66001	HOUSING PLATE
2	4	66002	POST WASHDOWN
3	1	66003	SPRING ASSEMBLY
4	1	66004	SPRING ASSEMBLY
5	1	66005	SPRING ASSEMBLY
6	1	66006	SPRING ASSEMBLY
7	1	66007	SPRING ASSEMBLY
8	1	66008	SPRING ASSEMBLY
9	1	66009	SPRING ASSEMBLY
10	1	66010	SPRING ASSEMBLY
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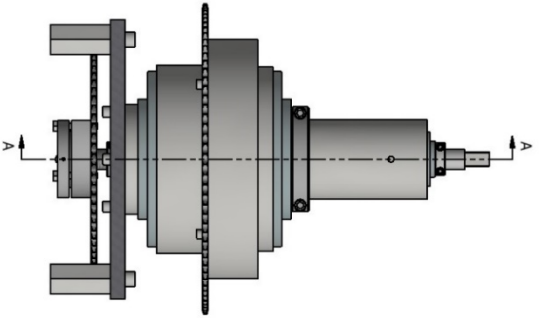
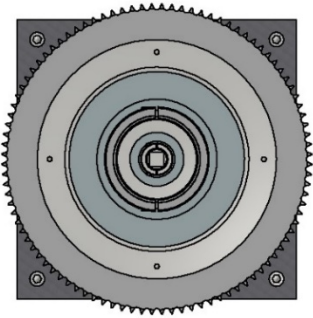
SECTION B-B
SCALE 1/4

SECTION A-A
SCALE 1/4

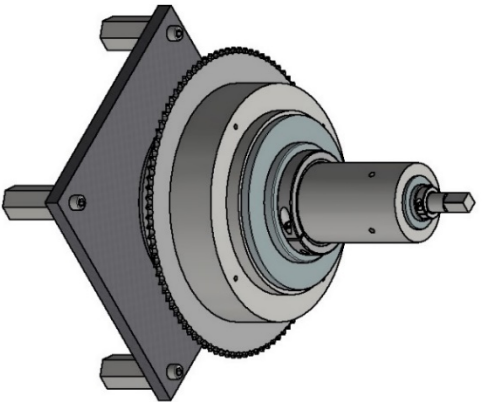
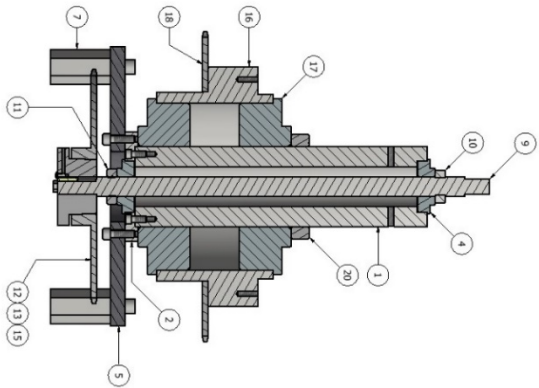
REV	DESCRIPTION	DATE	APPROVED

MOORFEED DIVISION OF BNS
 60° DM ROTARY
 66600
 PART 1 OF 1

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	66070	POST MATE
2	1	81661 (CONE) & 81660 (CUP)	TIMMEN #2100 (CONE) & TIMMEN #2128 (CUP)
3	1	66056	SUPPORT PLATE
4	1	66057	PLATE SPACER
5	1	66050	DRIVE SHAFT
6	1	81658	BILAND HRC. #70-15-1/2" (TIMBERED CLAMP COLLAR)
7	1	81658	MARTIN SPRING-CUT & GEAR #40872
8	1	81689	DODGE MECHANICAL GRIP #120417 (1/4" BORE OD BUSHING)
9	1	81188	3/16 SQ. X 1.00 MACHINE KEY (MAKMASTER 98870A340)
10	1	66053	HUB
11	2	81683 (CONE) & 81662 (CUP)	TIMMEN #941 (CONE) & TIMMEN #932 (CUP)
12	2	81654	BILAND HRC. #52-64" (SPR1 CLAMP COLLAR)
13	1	81657	BILAND HRC. #52-64" (SPR1 CLAMP COLLAR)



SECTION A-A
SCALE 1/3

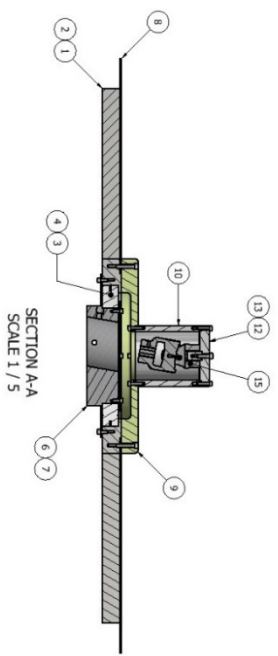
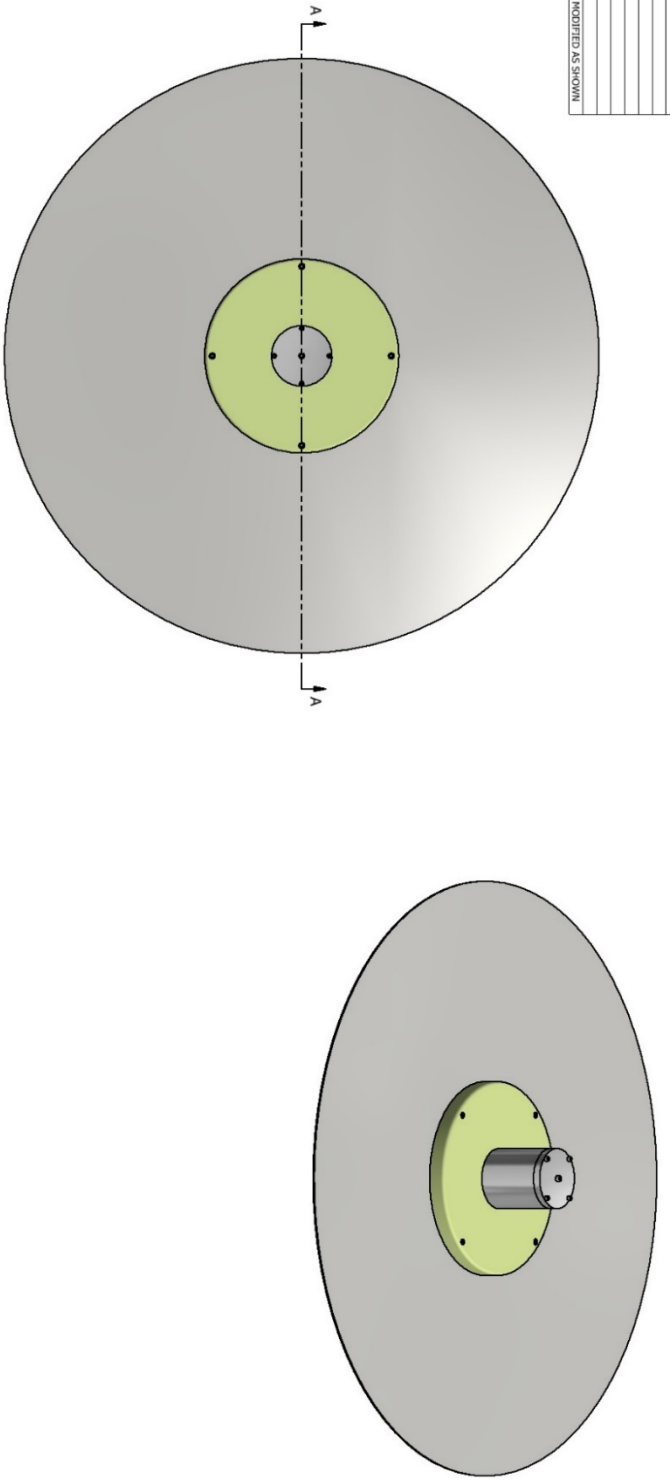


REV	DESCRIPTION	REVISION HISTORY	DATE	APPROVED

MATL:
FINISH:
QTY REQD:

DRAWN BY: RED
 CHECKED BY: VCS
 DATE: 11/16
 SCALE: 1.5:1
 PART NO: 66602
 TITLE: SPINDLE ASSEMBLY

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	66044	DISC SUPPORT WELDMENT
2	1	81143	1/4-28 TAPER GREASE FITTING
3	1	81805	THK #R800035 JU LCD
4	1	66038	LOWER BEARING RETAINER
5	1	66051	BEARING PLATE
6	1	66048	UPPER BEARING RETAINER
7	1	66043	DISC
8	1	66059	CAP BOTTOM
9	1	66045	CAP MIDDLE
10	1	66046	CAP TOP
11	1	66064	STUB
12	1	66059	BOSTON GEAR #MINS 125-125, MOORFEED P/N 81859 MODIFIED AS SHOWN
13	1	66059	BOSTON GEAR #MINS 125-125, MOORFEED P/N 81859 MODIFIED AS SHOWN



REV	DESCRIPTION	DATE	APPROVED

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MOORFEED
A Division of EAS

DISC ASSEMBLY

DATE: 1/16
SCALE: 1.5
SHEET: 1 OF 1

60 IN DUAL MOTION MAINTENANCE INSTRUCTION

TOOLS REQUIRED:

Allen Wrench set range from 1/16" to 5/6"
 Torque Wrench
 Flat bladed screwdriver
 Rubber mallet
 Adjustable wrench

BOLT TORQUE REQUIREMENTS:

BOLT SIZE

10-24 SHCS
10-32 SHCS
1/4-20 SHCS
5/16-18 SHCS
3/8-16 SHCS
1/2-13 SHCS

TORQUE REQUIREMENTS

INCH·POUNDS	FOOT·POUNDS
79 IN·LBS	6.5 FT·LBS
90 IN·LBS	7.5 FT·LBS
200 IN·LBS	16.5 FT·LBS
415 IN·LBS	34.5 FT·LBS
740 IN·LBS	61.5 FT·LBS
1800 IN·LBS	150 FT·LBS

NEWTON·METERS

M8X1.25 SHCS
M8X1.25 FHCS
M10X1.50 SHCS
M10X1.50 FHCS

65 Nm
28 Nm
130 Nm
56 Nm

I. TOOLING BAND REMOVAL (Detail 14)

1. Remove four 5/16-18 S.H.C.S. located 90 degrees apart on outside lower portion of band
2. It may be necessary to remove some tooling and disconnect electrical and/or air line connections before removing tooling band
3. Two people required to lift off band.

II. TOOLING BAND INSTALLATION

1. Reverse above procedure.

III. DISC REMOVAL (Detail 11)

1. Remove the four bolts (5/16-18 S.H.C.S.) at the top of the disc assembly. Lift off the cap top (Detail 12).
2. Remove four bolts (5/16-18 S.H.C.S.) on the cap bottom (Detail 9). Lift off the cap assembly.
3. Remove disc (Detail 8)

IV. DISC INSTALLATION

1. Install disc (Detail 8).
2. Install cap bottom (Detail 9) with the four bolts removed in section II.2.
3. Set universal joint so that it is centered and sitting up.
4. Slowly install cap top (Detail 12) making sure it sets securely down and U-joint is inserted. Re-install remaining bolts removed in section III.

V. TUB REMOVAL (Detail 9)

1. Proceed by going through steps I and III preceding this section.
2. Remove four bolts (1/4-20 S.H.C.S.). Remove upper retainer (Detail 7).
3. Remove disc support (Detail 1), two people required. As Detail 1 is removed, Details 3 and 4 will come off also.
4. Remove three bolts (3/8-16 S.H.C.S.) on the sides of the bearing plate (Detail 6). Remove bearing plate (Detail 6).
5. Remove the four bolts (5/16-18 S.H.C.S.) closest to the center of the tub. Tub assembly can now be lifted from spindle.

VI. TUB INSTALLATION

1. Reverse above procedure.

VII. SPINDLE ASSEMBLY REMOVAL (Detail 4)

1. Proceed by going through steps I, III, and V preceding this section.
2. Remove the band bottom (Detail 7)
3. Remove upper chain by removing master link from chain.
4. Remove clamp (Detail 20) by loosening and removing screw. Insert flat bladed screwdriver in slot of (Detail 20) and remove clamp.
5. Remove hub (Detail 16).
6. Remove bearing cups and bearing cones (Detail 17)

VIII. HUB INSTALLATION

1. Reverse above procedure.

IX. POST REMOVAL (Detail 1 [SPINDLE ASSEMBLY])

1. Remove upper and lower chain by removing master link from chain.
2. Remove four bolts that fasten the plate (Detail 5 [SPINDLE ASSEMBLY]) to the lower plate (Detail 1 [60" DM ROTARY])
3. Lift post out.
4. Shaft (Detail 9) runs in two sealed bearings, upper and lower. Access to shaft bearing requires removal of hub (Detail 16) and post (Detail 1).
5. To access shaft bearings, remove sprocket (Detail 12).

NOTE: Do not lose keystone

6. Remove clamp collar (Detail 11)
7. Using a rubber mallet or soft faced hammer, tap shaft out. Tap on sprocket end of shaft, tap shaft out of top – upper bearing and shaft will be removed.
8. Separate plate (Detail 5) from post (Detail 1) by removing four bolts at the bottom of plate.
9. To access lower bearing, take the four bolts (5/16-18 S.H.C.S.) that are in Detail 2 out. Remove plate from post. Lower bearing will remain in plate. To remove lower bearing, take post, set back inside bearing and lightly tap out with rubber mallet.

X. POST INSTALLATION

1. Reverse above procedure.

XI. MOTOR AND GEAR REDUCER REMOVAL (Detail 31 & 28)

1. Disconnect electrical connections.

NOTE: Make sure power is disconnected

2. Remove the four 3/8-16 bolts (Detail 8) from the base of the reducer.
3. Remove the chain from the reducer.
4. Remove the four 3/8-16 hex head bolts attaching motor to reducer.
5. The motor can now be removed from reducer.

NOTE: Do not lose 3/16 keystone.

XII. MOTOR AND GEAR REDUCER INSTALLATION

1. Reverse above procedure.

PART	LUBRICANT RECOMMENDED
BEARING CUP AND CONE (DETAIL 17 [SPINDLE ASSEMBLY])	LUBRIPLATE #1200-2 OR COMPARABLE WHEEL BEARING GREASE
THK BEARING (DETAIL 3 [DISC ASSEMBLY])	LUBRIPLATE #630-AA OR COMPARABLE SUBSTITUTE
UNIVERSAL JOINT (DETAIL 15)	LUBRIPLATE #630-AA OR COMPARABLE SUBSTITUTE
CHAINS (DETAIL 27 & 30)	LIGHTWEIGHT OIL
GEAR REDUCERS (DETAIL 28)	90 WEIGHT GEAR OIL

IT IS RECOMMENDED THAT ALL PARTS LISTED IN THE ABOVE LUBRICATION DATA CHART
HAVE LUBRICATION CHANGED ONCE EVERY SIX MONTHS.

RECOMMENDED LUBRICANTS

The table indicates the type and viscosity of suitable lubricants and applicable AGMA numbers for speed reducers operating at various temperatures. It is important to use the proper type of oil since many oils are not suitable for the lubrication of worm gears. Different types of gears require different lubricants.

The lubricant must remain free from oxidation and contamination by water or debris since only a very thin film of oil stands between efficient operation and failure. To ensure long service life, the speed reducer should be periodically drained (preferably while warm) and refilled to the proper level with a recommended gear oil.

Recommended oil change intervals for Boston Gear speed reducers:

Under normal environment conditions, oil changes are suggested after the first 250 hours of operation, and thereafter at regular intervals of 2500 hours or every six months. Synthetic lubricants will allow extended lubrication intervals because of their increased resistance to thermal and oxidation degradation. If a synthetic lubricant is used, it should be changed after the first 1500 hours of operation, and thereafter at 5000 hour intervals.

CAUTION: Speed reducers must be lubrication more frequently when operated at high ambient or operation temperatures, in unusually contaminated environments, or with high loads.

LUBRICANTS FOR BOSTON GEAR 700 SERIES WORM GEAR SPEED REDUCERS

Ambient (Room) Temperature	Recommended Lubricant (or equivalent)	Viscosity Range SUS at 100° F.	Lubricant AGMA No. +	ISO Viscosity Grade	Boston Gear Catalog Nos. Of Standard Lubricant Container Sizes ++
					1 qt. 1 gal.
-30° to +156°F.** (-34° to +52° C.)	Mobil SHC 634* Synthetic	1950/2150	-	320/460	51493 41494
40° to 90°F. (4.4° to 32.2°C.)	Mobil 600W Cylinder Oil	1920/3200	7 or 7C	460	27300 51492
80° to 125°F. (26.7° to 51.7°C.)	Mobil Extra Hecla Super Cylinder Oil	2850/3600	8 or 8C	680	- -

*Synthetic recommendation is exclusively for Mobil SHC 634.

**Mobil SHC 634 lubricant will perform at oil temperatures exceeding 225°F. However, factory should always be consulted before operating at higher temperatures since damage may occur to oil seals and other components.

+Other lubricants corresponding to AGMA numbers are available from most major oil companies.

++Boston Gear Distributors stock Mobil SHC 634 (synthetic) and Mobil 600W (cylinder oil) in both 1 quart and 1 gallon containers.

OIL ORDER QUANTITY FOR ENCLOSED GEAR DRIVES

Oil capacity is determined by oil level plug or dip stick measurement as indicated in installation and lubrication instructions furnished with each drive. This chart indicates suggested quantity of oil to purchase for each drive to be serviced.

Model No.	Order Quantity Per Unit	Model No.	Order Quantity Per Unit	Model No.	Order Quantity Per Unit
221	1 Pint	710	1/2 Pint	H1270	1 Pint
226	2 Pints	713	1/2 Pint	H1350	1 Quart
231	3 Pints	715	1 Pint	H1530	2 Quarts
239	3 Quarts	718	1 1/2 Pints	R131/R231	1/2 Pint
247	4 Quarts	721	1 1/2 Pints	R137/R237	1/2 Pint
252	6 Quarts	724	1 1/2 Pints	R146/R246	1 1/2 Pints
259	11 Quarts	726	2 1/2 Pints	R158/R258	2 1/2 Pints
621	1 Quart	732	2 1/2 Quarts	VR131VR231	1/2 Pint
631	1 Quart	738	3 1/2 Quarts	VR137VR237	1/2 Pint
641	1 Quart	752	8 Quarts	VR146VR246	1 1/2 Pints
651	1 1/2 Quarts	760	12 Quarts	VR158VR258	2 1/2 Pints
661	3 Quarts	FW & W713	1 Pint	R1211	1 Pint
622/623	1 Pint	FW & W718	2 Pints	R1214	1 Pint
632/633	1 1/2 Quarts	FW & W721	2 Pints	R1215	1 Pint
642,643 (R)	2 Quarts	FW & W726	3 Pints	R1216	1 Pint
652,653 (R)	2 1/2 Quarts	FW & W732	3 Quarts	R1412	1 1/2 Pints
662,663 (R)	4 1/2 Quarts	FW & W738	4 Quarts	R1413	2 Pints
		FW & W762	9 Quarts	R1414	2 Pints
		FW & W760	14 1/2 Quarts	R1416	1 1/2 Pints
		TW 113	1/2 Pint	R1511	4 Pints
				R1514	5 1/2 Pints
				R1515	4 1/2 Pints
				R1516	4 1/2 Pints

TROUBLE SHOOTING

SYMPTOM	POSSIBLE CAUSES	REMEDY
I. DISC WILL NOT SPIN	1. FOREIGN OBJECT LODGED BETWEEN DISC AND TUB 2. WORN BEARING DISC 3. WORN UNIVERSAL JOINT 4. SHAFT BEARING WORN 5. BAD MOTOR OR GEAR REDUCER	REMOVE DISC AND REMOVE ANY FOREIGN OBJECTS REMOVE DISC AND CHECK DISC BEARING FOR WEAR. IF WORN, REPLACE. REMOVE DISC AND CHECK UNIVERSAL JOINT. CHECK FOR STIFFNESS AND PROPER LUBRICATION. IF UNIVERSAL JOINT IS BAD, REPLACE. FOLLOW MAINTENANCE MANUAL THROUGH NUMBER IX POST REMOVAL. CHECK UPPER AND LOWER SHAFT BEARINGS. IF WORN, REPLACE. CHECK GEAR REDUCER FOR PROPER OIL LEVEL. IF MOTOR OR REDUCER IS BAD, REPLACE.
II. TUB IS HARD TO SPIN	1. WORN UPPER AND LOWER THRUST BEARINGS 2. BAD MOTOR OR GEAR REDUCER	FOLLOW MAINTENANCE MANUAL THOUGH NUMBER VII HUB REMOVAL. CHECK UPPER AND LOWER THRUST BEARINGS FOR WEAR AND PROPER LUBRICATION. IF BAD, REPLACE. CHECK GEAR REDUCER FOR PROPER OIL LEVEL. IF MOTOR OR REDUCER IS BAD, REPLACE.
III. TUB APPEARS TO WOBBLE OR HAVE RUNOUT	1. WORN HUB BEARINGS 2. BENT TUB	FOLLOW MAINTENANCE MANUAL THOUGH NUMBER VII HUB REMOVAL. INSPECT HUB BEARING FOR WEAR. IF BAD, REPLACE.

		REMOVE TUB AND INSPECT FOR IMPERFECTIONS. IF TUB IS BEND, REPLACE.
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RECOMMENDED SPARE PARTS LIST

1. Motor- Moorfeed #83751
2. Bearing Cone (Top) – Moorfeed #81663
3. Bearing Cup (Top) – Moorfeed #81662
4. Bearing Cone (Bottom) – Moorfeed #81661
5. Bearing Cup (Bottom) – Moorfeed #81660
6. U-Joint – Moorfeed #66059
7. Disc Bearing – Moorfeed #81805

WARRANTY INFORMATION

WARRANTY: Moorfeed warrants the equipment to be free from defects in material and workmanship under normal use and service for a period of two (2) years after delivery. The warranties shall not apply to and Moorfeed will not be responsible for any equipment or part which has been repaired or altered in any way that, in our judgement, affects its stability or its reliability or which has been subjected to misuse, negligence or accident.

SERVICE WARRANTY: Moorfeed warrants that it will cover all labor, travel expense and materials for a service call as a result of faulty workmanship and materials or as a result of not meeting performance specifications that were mutually agreed to in writing. The service warranty period begins 30 days after shipment of equipment from Moorfeed. Service warranty does not cover installation or interface with equipment supplied by another manufacturer. Service warranty work covers only products shipped and installed in the continental United States. Moorfeed will not be responsible for any equipment or part which has been repaired or altered by customer or outside service or which has been subjected to misuse, negligence or accident.