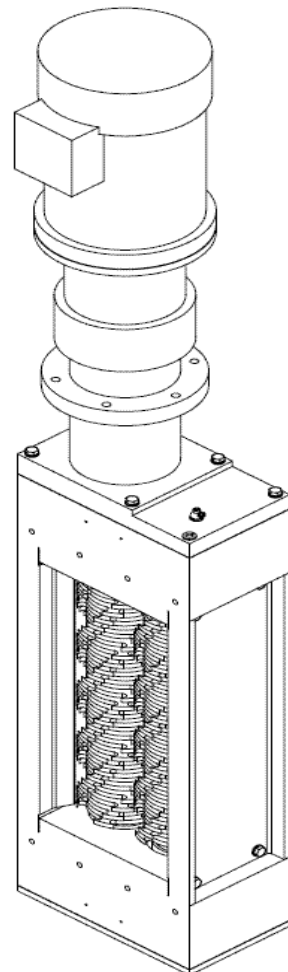


SERVICE MANUAL

MOYNO[®]

Annihilator[™]
Series 3



Always the Right Solution[™]

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SERVICE MANUAL

Moyno® Annihilator™

Series 3

1-1. INTRODUCTION

The complete Annihilator unit consists of the cutter cartridge assembly, reducer adapter, gearbox, motor (Figure 1-2).

1-2. GENERAL

The Moyno® Annihilator, twin shaft grinder, is a rugged and reliable grinder designed to efficiently reduce the size of large solids typically encountered in raw wastewater, primary thickened sludge, digested sludge, slaughterhouse waste, and pulp and paper recycling. The grinder has been tested to assure consistent performance in the most difficult of applications. It represents the next generation of the world's most reliable grinder.

The Moyno® twin Annihilator utilizes an improved version of the counter-rotating shaft design that has proven to be a reliable method of shredding large solids (pieces of wood, plastic bottles, cloth towels and rags, and aluminum cans, etc.) into smaller pieces. The slow rotating shafts are ideal for shredding solids that are large and dense. By utilizing a slow speed gear motor, the cutters have high torque capability and low impact while severing debris.

The Moyno Annihilator is designed with cutting teeth on both the cutters and spacer cutters which increases the cutting capability of rags over other twin shaft grinders and eliminates the greatest cause of failure – that of stringy material wrapping around the spacers.

The Moyno Annihilator product line is modular in concept allowing for optimal utilization of cutters for channel or in-line units to meet the requirements of the application. The cutter cartridge assembly allows for the removal and replacement of the entire cutting assembly as a single unit. The cutter cartridges consist of a top and bottom housing, side rails, seal cartridges, hex shafts, cutters, and spacer cutters (Figure 1-1).

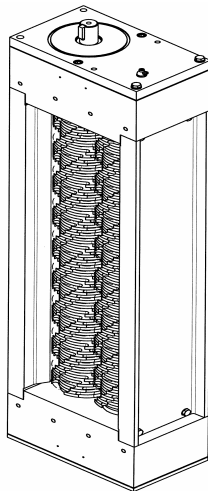


Figure 1-1. Cutter cartridge.

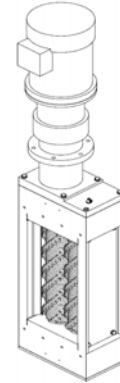


Figure 1-2. Complete unit.

1-3. NAMEPLATE DATA

The grinder nameplate, located on the top housing, contains important information relating to the operation and servicing of the grinder. This information includes the model and serial numbers (see Figure 1-3.). The grinder model number must be used for reference when ordering a replacement cartridge or spare parts.

Model:	M32C3 CS5R11C
MFG Serial:	0004034858
Date:	4/10

Figure 1-3. Typical nameplate data

1-4. Model Number. The grinder model number consists of two component parts: Frame Designation and a Trim Code. A typical model number, for example, might be M 06F3 CE7R5R as shown on the nameplate in Figure 1-3.

1-5. Frame Designation. The five characters in the frame designation describe the particular combination of construction and cutter height.

The first character in the frame designation, always a letter, indicates the construction as either a complete unit (M) or replacement cartridge (C).

The second and third characters, always numbers, indicate either the flange size or cutter stack height.

The fourth character is a letter indicating whether it's a flange unit (F) or channel unit (C). If the fourth character indicates a flange unit, the second and third characters indicate the flange size in inches. If the fourth character indicates a channel unit, the second and third characters indicate the cutter stack height.

The fifth character indicates the series of the unit:

Series 2 -- 2½" hex shaft

Series 3 -- 2" hex shaft, design after July 2003

Series 4 -- 2" hex shaft, one-piece flange housing design

1-6. Trim Code. Also included in the Model Number is the six character Trim Code which is used to identify grinder construction.

The first letter identifies the materials of construction.

C -- Cast iron, ductile iron, and alloy steel

S -- Stainless steel

X -- Special

The second letter identifies the type of drive utilized.

E -- Electric motor and gear box

S -- Submergible motor and gear box

H -- Hydraulic motor with power package

X -- Special

The third and fourth characters identify the type of cutters on the drive shaft:

5R -- 5 tooth reversible

7R -- 7 tooth reversible

7C -- 7 tooth cam

11C -- 11 tooth cam

The fifth and sixth characters identify the type of cutters on the idler shaft:

5R -- 5 tooth reversible

7R -- 7 tooth reversible

7C -- 7 tooth cam

11C -- 11 tooth cam

If the trim code of your grinder is other than the variations listed above contact your nearest Moyno representative for clarification. Do not modify your grinder with any variations unless you have determined that it is compatible with your application.

1.7 EQUIPMENT DESCRIPTION

1-8. Grinder Unit. The Moyno Annihilator is a motor driven, double shaft design stacked with intermeshing cutters and spacer cutters positioned on the shafts. The shafts are constructed of a hexagonal, 4140 steel and counter-rotate at 60 and 36 RPM. The shafts contain intermeshing cutters and spacer cutters.

The Moyno Annihilator series 1 and 3 product lines, consist of seven channel models ranging from 8 to 60 inch high cutting chamber, and five flanged, in-line models from 4 to 12 inch flanged.

1-9. Motor. Each Moyno Annihilator is equipped with a motor:

- TEFC or Explosion proof design
- 3 or 5 HP
- 1725 RPM, 3/60/230/460V

- Baldor or Moyno choice

1-10. Reducer. Each Moyno Annihilator is equipped with a cycloidal speed reducer:

- 29:1 ratio
- 60 RPM output
- Sumitomo or Moyno choice
- Model 6125Y...3HP and 5 HP

Note: See manufacturer's service manuals for more details.

2-1. INSTALLATION

2-2. GENERAL

Moyno Annihilators are lubricated and tested at the factory prior to shipment and require minimum pre-start up maintenance.

Accessibility to the grinder and adequate clearance should be a prime consideration in any installation. Enough space should surround the unit so that maintenance can be carried out with ease.

2-3. Piping. For in-line flanged units, piping should generally be the same size as the flange and supported, not applying vertical or horizontal forces to the grinder flanges. **Be sure to mount the unit in the piping in the proper flow direction. Check the flow direction arrow on the grinder.**

2-4. FOUNDATION

Flanged units should be mounted on a concrete base. The base should be 4-8 inches wider than the Grinder base. Anchor bolts are not required to attach the grinder to the concrete base.

Check the base surface with a carpenter's level and shim under the grinder at the places necessary to make the unit level. Care should be exercised to ensure the grinder flanges are mounted in line and without piping strain.

Channel units should be mounted in a suitable framework for support.

2-5. Motor Controls. To protect the Moyno Annihilator from potential damage, all Grinder units should be wired to a Moyno control panel. In the event a unusually difficult material engage the cutting chamber, the automatic controller senses the overload and reverses the rotation of the cutters to clear the object. The controller then returns the Grinder to the forward direction of rotation. It is highly recommended that this type of overload protection be provided for all grinders to prevent damage to the unit.

Caution:

- **Cutters and spacer cutters are very sharp. Keep personnel clear of cutting chamber.**
- **Do not lift heavy equipment over the head of personnel.**
- **Electrical hazard...Be sure power is off and locked out.**

3-1. OPERATION

3-2. INITIAL CHECK / START-UP CHECKLIST

Before putting the grinder into operation, the following items should be checked to ensure that each piece of equipment is installed correctly:

- Recheck for proper line voltage connections at the control panel and control transformer. Check the transformer for continuity.
- Set the programmed controller (inside the door of the Annihilator control panel) to the number of attempts desired to clear jams or overloads before automatic shutdown. The programmed controller is normally set at 3 reversals when shipped from the factory.
- Energize the incoming power lines by closing the disconnect device. The amber light ["POWER ON"] illuminates, indicating power is available to the control circuitry.
- Turn the Selector Switch to the "LOCAL" position. Depress the "Start" pushbutton. The blue light ["GRINDER ENABLED"] will illuminate to indicate that the control circuits are energized and the green light ["GRINDER RUNNING"] will illuminate indicating the drive motor should be operating.
- Check the direction of cutter rotation.

Reversible cutters denoted as 5R or 7R, can operate in either direction of rotation. The cutters should rotate with the teeth rotating inward, towards one another on the inlet side of the flow. If the motor is rotating in the reverse direction, disconnect the power to the control panel.

CAUTION: Using a volt meter double-check that the incoming power lines L1, L2, and L3, as well as the motor lines T1, T2, and T3 in the control panel all indicate that the power is OFF.

Interchange any two of the motor leads in the control panel at Terminal Blocks T1, T2, or T3. Do not change the connections at the contactors. Repeat Steps 3, 4, and 5, above.

However, **cam cutters** denoted as 7C or 11C, can only operate in one direction of rotation. The cutters should also rotate with the teeth rotating inward, towards one another on the inlet side of the flow. With cam cutters you must first install the unit in the piping in the correct flow orientation. Interchange motor leads if the cutter direction is wrong.

- To test the reversing function of the programmed controller, it is not necessary to attempt to physically jam the grinder. Simply depress the "Test" button on the controller inside the door of the panel. Each activation of the "Test" pushbutton will initiate a reversal of the grinder.

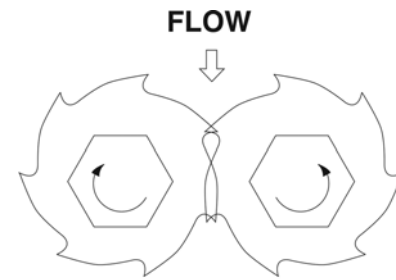


Figure 3-1. Cutters rotating inward.

4-1. MAINTENANCE

Note: In this section, a number or a letter in parentheses will follow the first reference to each grinder part (.). These numbers and letters are those used to identify the grinder parts and hardware items in the section view diagram.

4-2. LUBRICATION

4-3. Motor Bearings. The motor bearings are lubricated at the factory and will need to be re-lubricated after 12,000 hours of operation. See your motor maintenance manual for details.

4-4. Gear Reducer. The gear reducer is filled with grease at the factory and will require re-lubrication every 3-5 years. See your reducer maintenance manual for details.

4-5. Cartridge Assembly. The grinder top housing is half full of ACG-2 grease prior to shipment and is ready for operation. The top housing contains two gears that only need to be re-lubricated when the assembly is being repaired. You can re-lubricate the housing via the pressure release grease fitting (35). The pressure release grease fitting is pre-set at 10 psi. At pressures greater than 10 psi, the grease will be observed exiting the grease fitting via the bypass. This feature prevents over packing the bearings with grease and is available through Alomite.

The bottom bearing housing is sealed and gasketed and requires no lubrication.

List of Lubricants (or Equivalents)	
Motor Bearings	See Mfg Recommendation
Gear Reducer	See Mfg Recommendation
Top Housing	ACG-2 (Dubois Chemical)

4-6. DISASSEMBLY

Note: The following instructions cover grinder disassembly.

4-7. Disconnect Grinder

1. Flush the grinder (preferably with clean water) to remove all debris from the unit.
2. Shut off grinder.

3. Close suction and discharge valves.
4. Disconnect power source.

Caution: Electrical hazard...Be sure power is off and locked out.

5. Drain any fluid in grinder.

4-8. Cartridge Replacement

Note: The following instructions cover the removal of the motor and gear reducer as an assembly to facilitate replacement of the grinding cartridge.

1. Secure the motor/reducer with a nylon sling and support with a hoist.
2. Remove cap screws connecting the reducer adapter (42) to the housing adapter (9). Remove the reducer adapter, reducer, and motor by lifting up with the hoist. Be careful not to allow the assembly to tip over.
3. Loosen the jaw coupling (43) set screw and remove the coupling half and key from the drive shaft (7).
4. Flanged Models....M04F3, M06F3, M08F3, M1031, and M12F3
 - a. Remove the bolts and lock washers that connect the flange housings (41) to the inlet and outlet flanges of the pipe.
 - b. Remove the cutter cartridge / flange housing assembly from the piping.
 - c. Remove the cap screws and lock washers connecting the flange housings to the cutter cartridge. Remove the gaskets (40).
5. Remove and replace the cutter cartridge with a new or rebuilt cartridge from an Authorized Moyno Representative.

4-9. Motor Removal

The grinder may remain in line during motor removal and replacement.

Open and tag power disconnect in the control panel.

Disconnect and tag motor leads in the motor conduit box.

Remove the bolts connecting the motor (45) to the gear reducer (44). Some gentle prying may be necessary to remove the motor from the reducer.

Remove the key from the motor drive shaft.

4-10. Gear Reducer Removal

1. Remove the bolts connecting the gear reducer to the reducer adapter (42). Pry the gear reducer off the reducer adapter.
2. Loosen the jaw coupling (43) set screw and remove the coupling and key from the reducer shaft.
3. Remove cap screws connecting the reducer adapter (42) to the housing adapter (9). Remove the reducer adapter.

4-11. Cartridge Disassembly

1. Remove the socket head screws connecting the bottom cover (5) to the bottom housing (2) and remove the cover and gasket (3).
2. While holding the jaw coupling on the drive shaft, remove both castle nuts (16) and washers (15) from the drive and idler shafts.
3. Loosen the jaw coupling (43) set screw and remove the coupling and key from the drive shaft (7).
4. Remove the socket head screws connecting the housing adapter to the top housing (2). Remove the gasket (3) and clean grease from the top housing.
5. Remove the retaining rings (31) from both the drive shafts (7) and idler shaft (6).
6. Remove both gears (12, 13) and keys (30) from the shafts.
7. Remove the hex screws connecting the side rails (4) to the top and bottom housings. Remove both side rails and gaskets (37).
8. Remove the top housing. Clean any remaining grease from all cavities.
9. Remove the butt screws and washers holding the seal cartridge in the top housing. Gently press both cartridges out of their bores and remove the two spacers (32).
10. Remove the excluder plates (19), cutters (10), and spacer cutters (11) from both shafts. **Be careful removing the cutters and spacer cutters because they are very sharp.**
11. Pull both shafts from the bottom housing. Remove the excluder plates.
12. Remove the butt screws and washers holding the seal cartridge in the bottom housing and press the seal cartridges out of the housing.
13. Clean all parts in a suitable cleaning solvent being careful to observe all safety precautions regarding the use of solvent.

4-12. INSPECTION

1. Inspect all parts for wear and corrosion. Replace any parts that worn.
2. Replace all seals, bearings, O-rings, and gaskets.

4-13. ASSEMBLY

The Moyno Annihilator is generally reassembled in the reverse order of dismantling.

During the assembly process, cleanliness is important. To avoid premature failure, bearings, and seal components must be handled with care and kept clean.

4-14. Seal Assembly

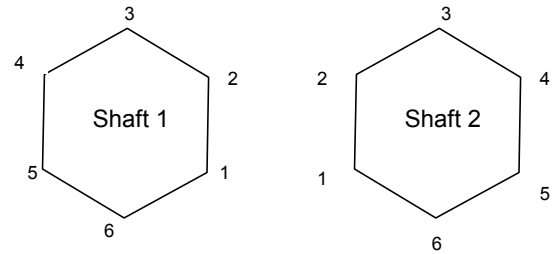
The seal cartridge assembly can be purchased from Moyno as a separate piece from the bearing and bearing sleeve for a more economical method of rebuilding your grinder. (See the parts list for part numbers). Follow the instructions below for assembly.

1. Install the O-ring (24) in the ID of the seal sleeve (17). Place the stationary portion of the seal on top of the rotating face. Place the O-ring (23) in the OD of the seal insert (19), push the entire assembly down on the seal sleeve until the retaining ring groove can be seen. Install the retaining ring (21) on the sleeve (17).
2. Carefully push the seal assembly (18, all parts mentioned in step 1.), spring end first, onto the shaft (6 & 7). Be careful not to damage the rubber o-rings as you slide it onto the shaft, both I.D. and O.D.
3. Place the ball bearing (20) onto the bearing sleeve (58) and install with bearing side first. The bearing sleeve will bottom out against the seal sleeve, while the bearing and seal insert should be in contact.
4. Repeat this procedure for each seal assembly.

4-15. Cartridge Assembly

1. Place the bottom housing (2) upside down on the work bench and gently push two seal cartridges (seal end first) into the bores. The ball bearing should be facing you.
2. Secure each cartridge with two butt screw and washers (38, 39).
3. Turn the bottom housing so that it rests on its side. Place two excluder plates (14) into position on the top side of the housing.
4. Push the lower end of both the drive and idler shafts through the holes in the seal cartridge in the bottom housing. Be careful not to damage the mechanical seals.
5. Place the flat washer and castle nut on the end of each shaft. Tighten castle nuts approximately $\frac{3}{4}$ of the way, leaving them loose at this point. The castle nuts are the prevailing torque type and will have resistance the entire way up the thread. It will be necessary to hold the shafts while you install the nuts.
6. Turn the bottom housing / shaft assembly up on the bench. Align both shafts so that the point of the hex is facing toward you and perpendicular to the long edge of the bottom housing. It does not matter which side the drive or idler shaft is on; right or left.
7. Note that each cutter and spacer cutter has only 1 of the 5 cutting teeth radially in line with one point of the hex ID hole. This tooth is denoted as the Assembly Position (AP).
8. The hex shaft on your left is denoted Shaft 1, and the one on the right is Shaft 2.

9. Place a large (L) cutter on Shaft 1 with the AP positioned at Point 6 on the shaft (See figure 4-1.). Place a small (S) spacer cutter on Shaft 2 with the AP positioned at



Point 3.

Figure 4-1

10. Place a small (S) spacer cutter on Shaft 1 with the AP positioned at Point 3, then place a large (L) cutter on Shaft 2 with the AP positioned at Point 6.

Follow the pattern below until all cutters and spacer cutters have been installed.

Cutters and spacer cutters are very sharp. Be careful handling them.

Shaft 1	Shaft 2
6L	3S
3S	6L
1L	4S
4S	1L
2L	5S
5S	2L
3L	6S
6S	3L
4L	1S
1S	4L
5L	2S
2S	5L
6L	3S
3S	6L

← Repeat Starts

Cutter and Spacer Stacking Arrangement

L = Large Cutter
S = Spacer Cutter

11. Place an excluder plate over the top of each shaft down on top of the last cutter and spacer cutter.
12. Place the top housing (2) upside down on the work bench and place the spacer (32) inside each bore. Gently push two bearing / seal cartridges (seal end first) into the bores. The ball bearing should be facing up towards you.
13. Secure each cartridge with two butt screw and washers (38, 39).
14. Gently lower the top housing down over the ends of each shaft being careful not to damage the mechanical seals.
15. Place a siderail gasket (37) against one side of the bottom housing and attached the siderail (4) with two cap screws and washers (28). Leave the screws loose at this point.

16. Slide another side rail gasket between the top housing and side rail at the top and secure with two more cap screws. Repeat this process on the other side and tighten all eight screws evenly.
17. Place a key (30) in the drive shaft and slide the small OD gear (13) down over the key. Install the retaining ring (31) in its groove above the gear.
18. Place a key (30) in the idler shaft and slide the large OD gear (12) down over the key. You may have to turn the shaft slightly to get the gear teeth to line up. Install the retaining ring (31) in its groove above the gear.
19. Carefully lay the unit down on its side. Before you completely tighten the two castle nuts in the bottom housing, it will be necessary to hold the drive shaft to prevent it from turning. You can either hold the shaft by temporarily mounting the coupling half (43) or by carefully wedging a small piece of soft metal between the teeth of the two gears. After you have secured the shafts, tighten both castle nuts.
20. Place the housing gasket (3) and bottom cover (5) against the bottom housing and secure them with six socket head cap screws (33).
21. Carefully turn the unit upright. With a hammer, tap the two spring dowels (8) into the two counter bored holes in the top housing.
22. Wipe a liberal amount of ACG-2 grease on and around each gear and fill the top housing approximately half full of grease.
23. Press the lip seal (25) into the housing adapter (9) with the spring side down.
24. Place the housing gasket (3) on the top housing and carefully slide the housing adapter over the drive shaft and down on the gasket. Secure the housing adapter with two socket head screws, two hex head screws and four washers. The two socket head screws go in the middle of the housing. The two hex head screws go in the two holes on the idler shaft side of the housing.
25. Install the grease fitting (26) in the housing adapter.
26. For Models...M04F3, M06F 3, M08F 3, M 10F3, and M12F3
 1. Place the gasket (40) against one side of the cartridge body and place a flange housing (41) against the gasket. Secure the flange with the screws and washer (57). Place the gasket (52) and inspection plate (53) against the flange housing and secure with studs, washers, and nuts (54, 56)
 2. Repeat the above procedure on the other side with the second flange housing.

4-16. Reducer / Motor Assembly

1. Slide the key (29) and coupling half (43) down on the drive shaft and secure in place with the set screw. The root of the coupling teeth should be lined up with the end of the shaft.

2. Place the O-ring (46) in the groove in the housing adapter and place the drive adapter (42) on the housing adapter. Secure the drive adapter with four hex head screws and washers. The two longer screws thread into the top housing along the outside and the two shorter screws thread into the housing adapter.
3. Slide the key (29) and coupling half (43) on the reducer shaft and secure in place with the set screw.
4. Lower the gear reducer (44) onto the drive adapter carefully aligning the coupling halves. Align the holes in the flanges and install and tighten the six hex screws, washers and nuts (49).
5. Place the key in the reducer shaft and lower the motor (45) down onto the reducer while aligning the key and keyway. Attach the motor to the reducer with four hex screws and washers.

4-17. TORQUE GUIDELINES CHART

Stainless Steel Bolts		Carbon Steel Bolts	
Size	Max Torque	Size	Max Torque
NO. 10-24	22.8 in. lb.	5/16 - 18	10 ft. lb.
1/4 - 20	75.2 in. lb.	3/8 - 16	21.7 ft. lb.
5/16 - 18	132 in. lb.	1/2 - 13	43.5 ft. lb.
3/8 - 16	236 in. lb.	5/8 - 11	86 ft. lb.
1/2 - 13	517 in. lb.	3/4 - 10	152 ft. lb.

Note: Torque values are from the Industrial Fasteners Institute and Craftsman Corp.

4-18. STORAGE

4-19. Short-Term Storage. Storage of 6 months or less will not damage the grinder. However, to ensure the best possible protection, the following is advised:

1. Store grinder inside whenever possible or cover with some type of protective covering. Do not allow moisture to collect around the unit.
2. See OPERATION Section before startup. Be sure all lubricants are in good condition.

4-20. Long-Term Storage. If grinder is to be stored for up to three years, perform the above short-term storage procedures plus the following:

1. Apply rust inhibitor to all unpainted cast iron and machined carbon steel surfaces.
2. Store in a dry area with dust cover.
3. Maximum temperature 120F, minimum temperature 30F.
4. Relative humidity should not exceed 60%. Provide desiccation for moisture control above the maximum.
5. Vibration levels should not exceed 2 mils at 60 hertz.

4-21. Hardware List

Your Moyno Annihilator has been designed and built to minimize overall operating cost. All wearable parts are replaceable. A recommended inventory of spare parts is dependent upon the application and the importance of continued operation.

ITEM	DESCRIPTION		LOCATION	P/N	QTY
51	HEXSCR	.50-13 X 1.25, 18-8 SS	MOTOR	6191552200	4
50	LCKWAH	.500REG,18-8SS	RED/MOT	6230012430	4
49	HEXSCR	.375-16X1.50,18-8SS	REDUCER	6191532240	6
48	HEXNUT	.375-16,18-8SS	RED/DRVADP	6140012110	6
47A	HEXSCR	.375-16X1.00,18-8SS	DRIVE ADP	6191532160	2
36	HEXSCR	.375-16X2.25,18-8SS	DRIVE ADP	6191532360	2
27	LCKWAH	.375REG,18-8SS	DRIVE ADP	6230012410	4
			REDUCER		6
			HOUSING ADP		4
			SIDERAIL		8
35	SKTSCR	.375-16X1.25,18-8SS	HOUSING ADP	6191462200	2
47	HEXSCR	.375-16X2.5LG,18-8SS	HOUSING ADP	6191532400	2
34	LCKWAH	.375,HI-COLLAR,18-8	HOUSING ADP	6230013010	2
28	HEXSCR	.375-16X1.25,18-8SS	SIDERAIL	6191532200	8
33	BUTSCR	.375-16X1.00,18-8SS	COVER PLATE	6191232160	6
38	PLNWAH	.250 ZNCPLT	HOUSING	6230070051	8
39	BUTSCR	.250-20X.50LG,STL	HOUSING	6191210083	8
15	PLNWAH	1.06X2.00X.13,ZNCPLT	DRIVE & IDLER SHAFT	6230020181	2
16	HEXNUT	1-14 ELASTIC,ZNCPLT		6140320101	2
8	DOWEL	.375 sping Dowel	Housing	6160100711	4

ADDITIONAL FLANGED PARTS/HARDWARE LIST					
27	LCKWAH	.375REG,18-8SS	FLANGE	6230012410	14
49	HEXSCR	.375-16X1.50,18-8SS	FLANGE	6191532240	14
54	STUD	.312-18X1.25, ZNCPLT	INSPECTION COVER	6040250101	9
56	HEXNUT	.312-18X1.25, ZNCPLT	INSPECTION COVER	6140010101	9
57	LCKWAH	.312-18REG, ZNCPLT	INSPECTION COVER	6230010401	9

4-22. PARTS LIST

REF. NO.	DESCRIPTION	PART NUMBER	Qty
2	HOUSING	4251462001	2
3	HOUSING GASKET	4230834001	2
4	SIDE RAIL	4241507001	2
5	COVER PLATE	4230837001	1
6	IDLER SHAFT	4251468001	1
7	DRIVE SHAFT	4251469001	1
9	HOUSING ADAPTER	4251484001	1
10	CUTTER	See Table 5	Table 5
11	SPACER CUTTER	4230721001	Table 5
12	GEAR - IDLER SHAFT	4230729001	1
13	GEAR - DRIVE SHAFT	4220691001	1
14	EXCLUDER PLATE	4230827001	4
17	SEAL SLEEVE	Incl. w/ seal	4
18	SHAFT SEAL	4231036001	4
19	SEAL INSERT	Incl. w/ seal	4
20	BALL BEARING (Incl. w/ seal) or sold separately	6300502081	4
21	RETAINING RING	Incl. w/ seal	4
22	O-RING	Incl. w/ seal	4
23	O-RING (Incl. w/ seal) or sold separately	3207905233	4
24	O-RING	Incl. w/ seal	4
25	GREASE SEAL	6030021001	1
26	GREASE FITTING	4220692001	1
29	KEY	6110060200	1
30	KEY	6110040240	2
31	RETAINING RING	4220691001	2
32	SPACER	4220752001	2
37	SIDE RAIL GASKET	4230817001	4
40	GASKET	See Table 6	2
41	FLANGE HOUSING	See Table 6	2
42	DRIVE ADAPTER	4251485001	1
43	GRINDER COUPLING	4230733001	1
44	REDUCER	4230840001	1
45	MOTOR	Per Application	1
46	O-RING	3207902252	1
52	INSPECTION PLATE GASKET	SEE TABLE 6	2
53	INSPECTION PLATE	SEE TABLE 6	2
58	BEARING SLEEVE (Incl. w/ seal) or sold separately	4231037001	4

Note A: Seal Assembly includes items 17, 18, 19, 20, 21, 22, 23, 24, & 58 .

Note B: See Table 7 for gasket kits.

Table 2 (Ref. No. 4) — Side Rail

Model	Part Number
8C	4241505001
12C	4241506001
18C	4241507001
24C	4241508001
32C	4241509001
40C	4241510001
60C	4241511001
4F	4241512001
6F/8F	4241513001
10F	4241514001
12F	4241515001

Table 3 (Ref. No. 6) — Idler Shaft

Model	Part Number
8C/4F	4251464001
12C/6F/8F	4251466001
18C/10F	4251468001
24C/12F	4251470001
32C	4251472001
40C	4251474001
60C	4251476001

Table 4 (Ref. No. 7) — Drive Shaft

Model	Part Number
8C/4F	4251465001
12C/6F/8F	4251467001
18C/10F	4251469001
24C/12F	4251471001
32C	4251473001
40C	4251475001
60C	4251477001

Table 5 (Ref. No. 10) — Cutter

Style	Part Number
5R, 5 Tooth Reversible	4230913001
7R, 7 Tooth Reversible	4230914001
7C, 7 Tooth Cam	4230724001
11C, 11 Tooth Cam	4230915001

Table 6 — Flange Housing Arrangement

Model	Ref. No. 41	Ref. No. 40	Ref. No. 53	Ref. No. 52
	Flange Housing	Flange Housing Gasket	Inspection Plate	Inspection Plate Gasket
4F	4251300001	4230737001	4230741001	4230745001
6F	4251301001	4230738001	4230742001	4230746001
8F	4251302001	4230738001	4230742001	4230746001
10F	4251303001	4230739001	4230742001	4230746001
12F	4251304001	4230740001	4230742001	4230746001

Table 7 — Gasket Kits

Model	Part Number
All Channel models	KCHA30Q
M04F3	K04F30Q
M06F3/M08F3	K06F30Q
M10F3	K10F30Q
M12F3	K12F30Q

Note C: Channel model gasket kits include items 3 and 37.

Note D: Flanged model gasket kits include items 3, 37, 40, and 52.

Model	Qty of Cutters Required	Qty of Spacer Cutters Required
M08C3, M04F3	24	24
M12C3, M06F3, M08F3 M04F4, M06F4, M08F4	38	38
M18C3	58	58
M24C3, M10F3, M12F3 M10F4, M12F4	78	78
M32C3	104	104
M40C3	130	130
M60C3	198	198

Pre-assembled replacement cutter cartridges are available. Consult your local Moyno Representative for details.

