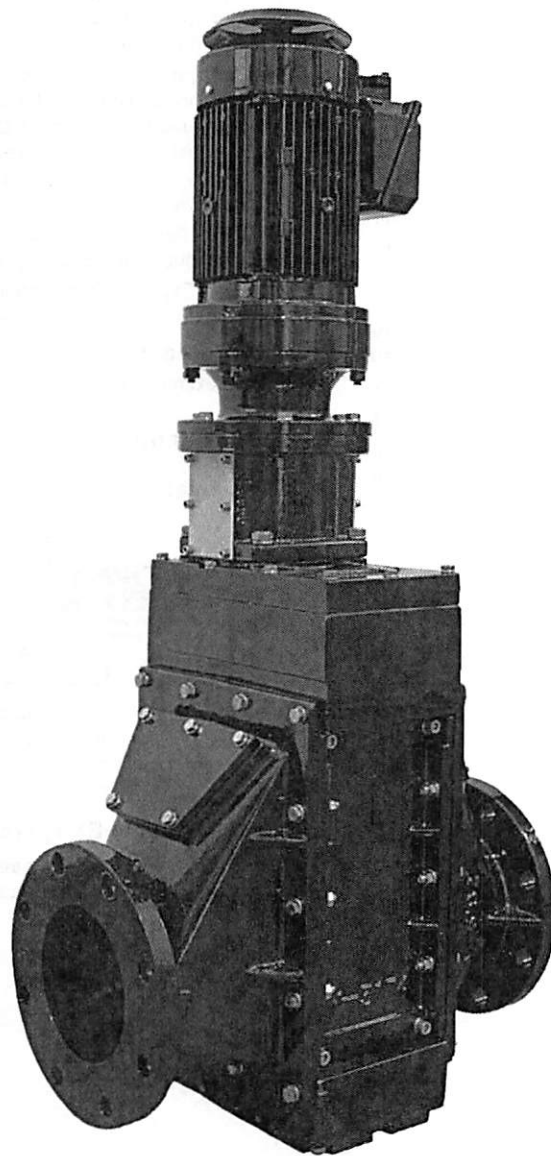


Sewer Chewer Ver. 7671A

Service instructions



English (US) Service instructions

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1. Servicing grinders with explosion proof motors

1.1 approval

The Sewer Chewer grinder has been approved by FM.

1.2 Explanation of FM Approval

The FM approved motors are explosion-proof and approved according to the following explosion protection classification: Class I, Division 1, Groups C and D/T3A. The repair of the FM approved motors by independent repair shops is permissible. However, to maintain the approved status, strict guidelines for the repair must be adhered to. They are as follows:



1. Yeomans Chicago Corporation must be notified prior to any work being done to motor, the nature of the work, and who will complete the work.
2. No machining, rework, or redesign to any part or assembly is permitted. There are no exceptions.
3. All new replacement parts required to reconstruct the motor back to operating condition must be ordered from Yeomans Chicago Corporation.
4. No changes to or removal of motor nameplates, warning plates, and/or instruction labels is permitted. Replacements are available from Yeomans Chicago Corporation. (Damaged plates must be returned to Yeomans Chicago Corporation.) Disregarding these guidelines will result in voiding the Factory Mutual Research Approved status of the motor.

Service not affecting the explosion protection of the motor is allowed without violating Ex regulations.

- Class I = Explosive atmosphere caused by gas or vapors
- Division 1 = Area classification
- Groups C and D = Classification of gases
- T3 = Maximum surface temperature is 392°F [200 °C]

2. Identification

2.1 Nameplate

 <small>Wastewater Conductor Sludge Grinder</small> 	Series:	<input type="text"/>
	Model:	<input type="text"/>
	Serial Number:	<input type="text"/>
Yeomans Chicago Corporation Aurora, Illinois, USA		

TMO5 6094 2113

2.2 Explanation to EX approval

Select Sewer Chewer motors have the following explosion-proof classification: FM Class 1, Division 1, Group C and D.

3. Safety

3.1 safety precautions



Warning

High voltage and rotating parts can cause serious or fatal injury. Installation, operation, and maintenance of electrical machinery should be performed by qualified personnel only.



Warning

Severe injury may result if body parts, clothing, etc., come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use proper lockout device before maintenance or operator adjustment to machine.

- Familiarization with NEMA publication MG-2, Safety Standard for Construction and Guide for Selection, Installation and Use of Electrical Motor and Generators, The National Electrical Code, and local codes and practices is recommended.
- Avoid by-passing or rendering inoperative any safeguards or protective devices. Avoid use of automatic reset devices. Automatic restarting may be hazardous to the safety of personnel. (When used with automatic restarting or remote starting capability, disconnect power to grinder controller and use lockout device before maintenance or operator adjustment to machine.)
- Failure to properly ground the frame of this machine can cause serious injury to personnel. Grounding should be in accordance with the National Electrical Code and consistent with pertinent local codes and practices.
- Make sure that the shaft key is fully captive before the motor is energized.
- Do not lift both the motor and the driven equipment with the motor lifting provisions unless it is the submersible gear motor with lifting bail. Motor lifting provisions are adequate for lifting the motor only.
- Disconnect main machine windings and all accessory devices from the power source before disassembly of gear motor.

4. Transportation and storage

The Sewer Chewer grinding machine is an accurately made, precision adjusted cutting device. Proper handling during installation and proper care in its maintenance will assure optimal operation and long life.

4.1 Transportation

Depending on the model, the Sewer Chewer will be transported in either a vertical or horizontal position. The unit will be protected by a tri-walled corrugated cardboard container and secured to a skid. Units shipped international are export crated in treated wooden shipping enclosures.

4.2 Receiving and inspection

Upon receiving shipment, make sure that no damage occurred in transit and that it complies with the bill-of-lading. Make note of damage or shortage on both receipt and freight bill. Claims should be made to the transportation company immediately. Any shortages should be noted, and Yeomans Chicago Corporation must be notified of the shortage within 5 days of delivery.

4.3 Lifting and handling

When installing or removing a grinder from its installation, do not lift the machine using the motor or the motor's lifting lugs or cables. We recommend the use of a sling wrapped around the reducer pedestal for lifting. All lifting equipment must be rated for the intended purpose and checked for damage before any attempts to lift the equipment. The lifting equipment rating must under no circumstances be exceeded.

Model	Weights lbs. [kg]	
	3 hp	5 hp
SC-04	281 [127]	284 [128]
SC-06	345 [156]	348 [157]
SC-08	371 [168]	374 [169]
SC-10	472 [214]	475 [215]
SC-12	596 [270]	600 [272]
CC-08	210 [95]	213 [96]
CC-12	243 [110]	246 [111]
CC-18	287 [130]	291 [131]
CC-24	333 [151]	337 [152]
CC-32	N/A	391 [177]
CC-40	N/A	449 [203]

*Weight does not include the gearmotor.

4.4 Storage

As shipped, the grinder and its accompanying equipment has adequate protection for shipment in covered trucks and covered storage at the job site. The standard packaging is also suitable for limited storage between installation and startup. If anticipated that the equipment will be exposed to extreme or extended storage conditions prior to installation, Yeomans Chicago Corporation should be notified so that shipment can be given special packaging and protection. If extended or long term storage is anticipated, notify Yeomans Chicago Corporation so that precautions can be made to preserve warranty. Any damage to the equipment due to improper storage conditions shall void the warranty.

4.5 Contaminated equipment

Note

Before the unit is disassembled or shipped off-site for service, properly clean and sanitize unit to protect against any contaminants.

If the unit is to be shipped to the factory for repair or refurbishing, you may be subject to a sanitizing charge if the unit has not been satisfactorily cleaned and sanitized.

5. Electrical connections

Warning

Connect the Grinder to an external disconnect switch which ensures all-pole disconnection with a contact separation according to National Electrical Code and all local codes. It must be possible to lock the disconnect switch in position OFF. Type and requirements as specified in National Electrical Code and all local codes. The electrical connection must be carried out in accordance with local regulations.



**Warning**

The Grinder must be connected to a controller with a motor protection relay with IEC trip class 10 or 15.

**Warning**

Grinders for hazardous locations must be connected to a control box with a motor protection relay with IEC trip class 10. See "Motor protection wiring diagram".

**Warning**

Do not install the Yeomans Chicago Corporation controller and the free end of the power cable in potentially explosive environments. The classification of the installation site must be approved by the local fire-fighting authorities in each individual case. On explosion-proof motors, make sure that an external earth lead is connected to the external earth terminal on the Grinder using a secure cable clamp. Clean the surface of the external earth connection and mount the cable clamp. The earth lead must be minimum AWG 12 type RHH, RHW, RHW-2 or similar, rated for 600 V and min. 194 °F (90 °C), yellow/green. Make sure that the earth connection is protected from corrosion. Make sure that all protective equipment has been connected correctly.

**Warning**

If the supply cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons. Set the motor protective circuit breaker to the rated current of the Grinder + 15% Service factor. The rated current is stated on the motor nameplate. If the Grinder has an Ex mark on the nameplate, make sure that the Grinder is connected in accordance with the instructions given in this booklet.

5.1 Power requirements

speed reducer provides very low power draw during normal operation. AC Induction motors shall operate successfully under running conditions at rated load with a variation in the voltage or the frequency up the following:

- Plus or minus 10 percent ($\pm 10\%$) of rated voltage, with rated frequency.
- Plus or minus 5 percent ($\pm 5\%$) of rated frequency, with rated voltage.
- A combined variation in voltage and frequency of 10 percent (10%) (sum of absolute values) of rated values, provided the frequency variation does not exceed plus or minus 5 percent ($\pm 5\%$) of the rated frequency.

5.2 Wiring Diagrams

Refer to the Digital Controller Installation Operation and Maintenance Instruction.

6. Overhaul**Warning**

Before starting work on the Sewer Chewer, make sure that the fuses have been removed or the mains switch has been switched off. It must be ensured that the power supply cannot be accidentally switched on. All rotating parts must have stopped moving.

After four (4) "Preventive Maintenance" messages have occurred, a "Full Maintenance" reminder will be displayed. This is a reminder to the operator that the grinder should go through a full maintenance overhaul including items 1-4 below. All resetting and grinder functions will remain (see Controller Operations Manual for further details). The Full Maintenance procedure requires a complete teardown of the grinder, and at a minimum, a rebuild with a Stage 1 kit (bearings and seals), or more extensive rebuild (Stage 2 or 3) as determined by the investigation.

Severe injury may result if body parts, clothing, etc. come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use lockout device before maintenance or any operator adjustment to machine.

Caution

- Speed Reducer - Do not initially or periodically lubricate gear reducer. The gear reducer is filled with Shell Alvania #2, lithium-based grease prior to shipment and is ready for use. Maintenance is recommended after 20,000 hours or 4-5 years of operation. We recommend the unit is returned to your local Sewer Chewer representative for inspection and re lubrication.
- Top Gear Housing - The Sewer Chewer gear housing is fully greased with gear grease prior to shipment and is ready for operation. Periodic inspection will maximize life of gears. Grease should be liberally used on gears, but should not completely fill the top housing. We recommend using MYSTIC JT-6 CODE 5484 or equivalent.
- Bearings and Seals - Bearings and seals are pre-lubricated and are ready for operation. Bearings feature permanent lubrication and require no external lubrication. Seals require no regular maintenance. They require no external flush or lubrication. It is recommended that whenever major maintenance or repairs are made, new bearings and seals should also be added.
- Inspect Cutters and Spacers - Cutters and spacers are wear parts and should be periodically inspected to enhance reliability, grinding effectiveness and life of the equipment. The following procedure should be used to inspect and maintain cutter tolerances.

Severe injury may result if body parts, clothing, etc. come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use lockout device before maintenance or any operator adjustment to machine.

Caution

1. Take grinder off-line, and follow proper "Power Down" and "Lock Out" procedures before any inspection or maintenance.
2. If the grinder is "In-Line" type, remove bolts, inspection cover and gasket material from the hopper flange.
3. If grinder is a channel type, there is no need to remove any gaskets or covers to gain access to the cutter stack.
4. Insert a heavy-duty flat head screwdriver into the inspection cover. Insert the screwdriver into the spacer area between two cutters on the driven shaft. Attempt to pry the cutters apart using moderate force. Check for any excessive movement or play in the cutters. Repeat this procedure with the cutters on

the driven shaft.

5. If no excessive movement or "play" in the cutters is observed, install new gasket material, replace inspection cover and tighten bolts. The grinder may be placed on-line.
6. If excessive movement or "play" is detected, you must gain access to the lower bearing housing locknuts. Loosen and remove lower bearing housing bolts, housing cover and gasket.
7. Tighten each shaft locknut to approximately 125 ft-lbs [169 N-M].
8. Use a heavy-duty flat head screwdriver to again check for any movement or play in the cutter stack.
9. If there is no longer any excessive movement or "play" in the cutter stack, replace the lower bearing housing gasket and cover, and tighten bolts.
10. Before unit is placed back on-line, re-tighten all nuts and bolts that may have been loosened during this procedure.
 - If the above procedure does not properly adjust the excessive movement or "play" in the cutter stack, the cutters and spacers may have worn and have become out of tolerance. Cutters will need to be inspected to check if they are within factory specifications. Any cutter or spacer that is found to be out of tolerance will require replacement. Contact your local representative or Yeomans Chicago Corporation for required items.
 - Motor – The motor comes pre-lubricated, and is ready for operation. Recommended re lubrication interval for standard service conditions is every 12,000 hours or 2-3 years. Refer to motor O&M packet for further information. Lubricate with a high grade ball and roller bearing grease of medium consistency and polyurea base. Recommended greases for standard service conditions are: Shell Dolium R or Chevron SR 1. If other greases are preferred, check with your local sales representative for recommendations.
 - Control Panel - The control panel has both "preventive and full maintenance" displays or lights. The Preventive Maintenance warning will illuminate approximately every 6 months of operation. The "Full Maintenance" warning will illuminate approximately every 2 years of operation. Both will require resetting after appropriate service has been performed as described above. Refer to your Controller Operations Manual. These intervals are based on average use and application. More frequent inspection will help maximize product life. While the bulbs and fuses in your Sewer Chewer pilot light control panel are "long life" items, it is recommended that you periodically check them during normal scheduled maintenance intervals.

7. Service

7.1 General information

7.1.1 Grinder

Should your Sewer Chewer brand grinder need repair, all parts are available through Yeomans Chicago Corporation or your authorized Sewer Chewer Representative. Sewer Chewer Rebuild Kits are available for repairs conducted in the field. The parts in the kits range from a minimum of the preventive maintenance items only to those required for a complete unit overhaul including cutters, spacers and shafts.

7.1.2 Motor

Required parts for motors are listed in the O&M of the motor furnished on your order. These parts may be available from the motor manufacturer as well as Yeomans Chicago Corporation.

7.1.3 Control panel

A Bill of Material is included with each control panel that identifies each part used in its manufacture. In most cases these are standard commercially available components available through most industrial supply sources. All parts are also available directly from Yeomans Chicago Corporation.

7.2 Repair and parts policy channel/sewer chewer (mechanical seal configuration) Fig. 1

Clients are strongly urged to use the RESCUE program for repair/ refurbishing of their equipment. The factory does not charge labor for repairs, only the parts are chargeable. Repairs done in the field are not cost competitive once repair shop labor is factored into the final costs. Contact the factory before attempting to quote field repairs. Repair parts are grouped into STAGES (rebuild kits) of items normally replaced. Severity of wear of the unit will dictate which stage (rebuild kit) is appropriate. Individual parts are not available.

- Stage 1 - Rebuild consists of the minimum amount of components that should be replaced during a preventative maintenance rebuild. Item numbers included are 5,6,11,14,15,16,17,18,19,20,21,22,24,25,27,28,29,32,33,34,35,36,37,38,39,44,45,46,47,48,49,50,51,52 & 53.
- Stage 2 - Rebuild consists of all items specified in the Stage 1 rebuild with the addition of a full set of cutters & spacers (item numbers 7,23,30, and 31).
- Stage 3 - Rebuild consists of all items in Stage 1 and Stage 2 rebuilds with the addition of both the drive and the driven shafts (items 3 and 8).

Rebuilds requiring components beyond Stage 3 are not economically repaired and require a Rescue cartridge assembly. Rescue Program pricing: Rescue cartridge assemblies are eligible for a 10% discount if the customer sends the nameplate of the existing unit in with their order. This program supersedes any previous rescue cartridge programs.

Contact your local representative for pricing and availability. 6/23 Most of the common parts used in this equipment are stocked and available on a "Next-Day" basis. Contact your authorized Sewer Chewer representative with your requirements. When ordering an entire replacement cutting cartridge, a special discount is available. Upon receipt of a purchase order, a new cutting cartridge assembly will be shipped. When the shipment arrives at the customer's facility, simply remove the nameplates off of the existing Sewer Chewer and return them to the factory. Upon receipt of the nameplates, a 10% credit will be issued. Forward the invoice for the newly purchased cutting cartridge assembly. The nameplates may also be sent in with the purchase order for an immediate discount.

7.2.1 Channel Chewer/Channel Chewer Guide-Rail/Sewer Chewer rebuild kits.

Model No.	Stage 1	Stage 2	Stage 3
CC-08/CCGR-08	98189861	98190429	98190452
CC-12/CCGR-12	98189861	98190441	98190455
CC-18/CCGR-18	98189861	98190444	98190456
CC-24/CCGR-24	98189861	98190426	98190451
CC-32/CCGR-32	98189861	98190428	98190453
CC-40/CCGR-40	98189861	98190430	98190454
SC-04	98189861	98190429	98190452
SC-06	98189861	98190441	98190455
SC-08	98189861	98190441	98190455
SC-10	98189861	98190444	98190456
SC-12	98189861	98190426	98190451

7.2.2 Channel Chewer/Channel Chewer Guide-Rail/Sewer Chewer rescue cartridges

Model No.	Rescue Cartridge	Model No.	Rescue Cartridge
CC-08	98256811	CCGR-08	98256805
CC-12	98256812	CCGR-12	98256806
CC-18	98256813	CCGR-18	98256807
CC-24	98256814	CCGR-24	98256808
CC-32	98256815	CCGR-32	98256809
CC-40	98256816	CCGR-40	98256810
SC-04	98256790		
SC-06	98256801		
SC-08	98256801		
SC-10	98256802		
SC-12	98256803		

7.2.3 Stage 1 rebuild kit no. - 98189861 Fig. 1 and Fig. 2

Item	Description	Qty.	Material no.	Drawing no.	Visual part no.
5	Ball bearing 6308	4	97816870	-	C2-39-8
6	Lnut,esna,1.25-1.08 stl	2	97808904	-	C17-37-60
11	Gasket 7671a bearing housing cover	2	98145317	M-113272	M-113272
14	Key,.31sq x 1.50",stl	3	97820357	M-108680	M-108680
15	Dowel pin,0.31" x 1",stl	2	97818645	-	C52-6-2
16	Seal,lip,1-0.31" id,buna-n	1	97820699	-	C3-7-116
17	Wshr,fender,0.34" id x 1.25 x 0.13"	4	97814940	M-108958	M-108958
18	Seal face,swr chwr,stat,tc	4	97815106	M-110907	M-110907
19	Formed wire spring wave	4	97808929	-	C175-1-2
20	Dowel pin,0.13" x .31	8	97820738	-	C52-2-10
21	Seal face,swr chwr,rotate,tc	4	97817419	M-110908	M-110908
22	Shim,.005th x 3 x 2,hexbore	1	97817345	M-108847	M-108847
24	Hhcs,.31-18 x .75,316ss	14	97873048	-	C1-44-3
25	Bush s/a, swr chwr, mech seal	4	97807935	A-110920	A-110920
27	Ret ring,65160-156,fl,ext	2	97817058	-	C5-1-84
28	Retaining ring 5108-200-h-st	4	97814399	-	C5-1-63-1
29	Ret ring,5160-137,fl,ext	2	97817059	-	C5-1-85
32	Hhcs,.31-18 x 2,316ss	8	97808445	-	C1-44-9
33	Gasket side rail	4	98144121	M-113315	M-113315
34	Lwshr,0.31",316ss	8	97809387	-	C33-7-8
35	Lwshr,.31,316ss	16	97809386	-	C33-7-7
36	O-ring, 1.3125 x 1.5625 x .125, buna-n	4	97820722	-	C49-1-96
37	O-ring, 2.875 x 3.0625 x .09375, buna-n	4	97818614	-	C49-1-281
38	O-ring, 2.750 x 2.9375 x .09375, buna-n	4	97821072	-	C49-1-291
39	Shcs,0.31"-16 x 1.25",316ss	8	97821067	-	C44-30-6
44	Gasket, 7671a, pedestal	2	98145279	M-113267	-
45	O-ring, 5.237 id x 5.443 od, .103 cs, bunan (grinder side)	1	98381077	-	-
46	Hhcs, 1/2-13 x 1.50", 316ss	4	97808461	-	C1-47-5
47	Lwshr, 1/2, 316ss	4	97809388	-	C33-7-9
48	Hhcs, 0.31-0.19" x 1.50", 316ss	6	97813867	-	C1-45-7
49	Lwsher, 0.31", 316ss	6	97809387	-	C33-7-8
50	O-ring, 5.750 x 5.939 x .09375, buna-n	1	98182108	-	-
51	O-ring, 8.250 x 8.500 x .125, buna-n	1	97820267	-	-
52	Schs 0.3125"-18 x 1.75" LG, Shcs, 316ss	2	98381054	-	-
53	Lwshr, 0.3125" High collar lock washer, 316ss	2	98381076	-	-
54	Lwshr, 1/4", high collar, 316ss	8	98531038	-	-
55	Shcs 1/4"-20 x 1", 316ss	8	98280473	-	-

* All parts are included in Stage 1, 2, and 3 rebuild kits.

7.2.4 Stage 2 rebuild kit Fig. 1

Model	Item	Description	Qty.	Material no.	Stage 2 kit no.	Drawing no.	Visual part no.
CC-08, SC-04, CCGR-08	7	Spacer,.192th,machined,laser	2	97815178	98190429	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	22	97817460		M-111513	M-111513
	31	Cutter,machined, laser cut	22	97815179		M-111515	M-111515
CC-12, SC-06/SC-08, CCGR-12	7	Spacer,.192th,machined,laser	2	97815178	98190441	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	36	97817460		M-111513	M-111513
	31	Cutter,machined,laser cut	36	97815179		M-111515	M-111515
CC-18, SC-10, CCGR-18	7	Spacer,.192th,machined,laser	2	97815178	98190444	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	54	97817460		M-111513	M-111513
	31	Cutter,machined,laser cut	54	97815179		M-111515	M-111515
CC-24, SC-12, CCGR-24	7	Spacer,.192th,machined,laser	2	97815178	98190426	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	73	97817460		M-111513	M-111513
	31	Cutter,machined,laser cut	73	97815179		M-111515	M-111515
CC-32, CCGR-32	7	Spacer,.192th,machined,laser	2	97815178	98190428	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	99	97817460		M-111513	M-111513
	31	Cutter,machined,laser cut	99	97815179		M-111515	M-111515
CC-40, CCGR-40	7	Spacer,.192th,machined,laser	2	97815178	98190430	M-111514	M-111514
	23	Spacer,mech seal,shft,sti	2	97817429		M-111161	M-111161
	30	Spacer,.319th, machined, laser	125	97817460		M-111513	M-111513
	31	Cutter,machined,laser cut	125	97815179		M-111515	M-111515

* Parts are included in Stage 2 and 3 kits ONLY

7.2.5 Stage 3 rebuild kit Fig. 1

Model	Item	Description	Qty.	Material no.	Stage 3 kit no.	Drawing no.	Visual part no.
CC-08, SC-04, CCGR-08	3	Shaft, driven, 2 hex, 8 unit	1	97820351	98190452	M-108661	M-108661-08
	8	Shaft, driving, 2 hex, 8 unit	1	97814909		M-108660	M-108660-08
CC-12, SC-06/SC-08, CCGR-12	3	Shaft, driven, 2 hex, 12 unit	1	97820352	98190455	M-108661	M-108661-12
	8	Shaft, driving, 2 hex, 12 unit	1	97814910		M-108660	M-108660-12
CC-18, SC-10, CCGR-18	3	Shaft, driven, 2 hex, 18 unit	1	97820353	98190456	M-108661	M-108661-18
	8	Shaft, driving, 2 hex, 18 unit	1	97814911		M-108660	M-108660-18
CC-24, SC-12, CCGR-24	3	Shaft, driven, 2 hex, 24 unit	1	97818745	98190451	M-108661	M-108661-24
	8	Shaft, driving, 2 hex, 24 unit	1	97814913		M-108660	M-108660-24
CC-32, CCGR-32	3	Shaft, driven, 2 hex, 32 unit	1	97820354	98190453	M-108661	M-108661-32
	8	Shaft, driving, 2 hex, 32 unit	1	97817330		M-108660	M-108660-32
CC-40, CCGR-40	3	Shaft, driven, 2 hex, 40 unit	1	97882178	98190454	M-108661	M-108661-40
	8	Shaft, driving, 2 hex, 40 unit	1	97817332		M-108660	M-108660-40

* Parts included in Stage 3 kit ONLY.

7.3 Lubrication

See "Overhaul" on page 4

7.4 Stage 1,2 and 3 rebuild kits

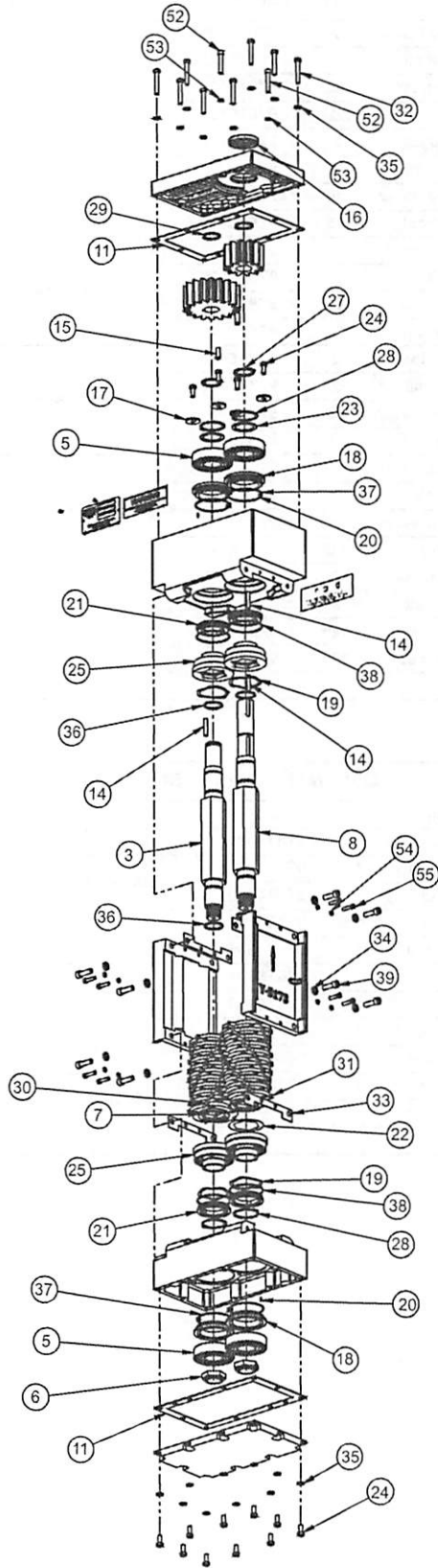


Fig. 1 View A

TM05 9697 4313

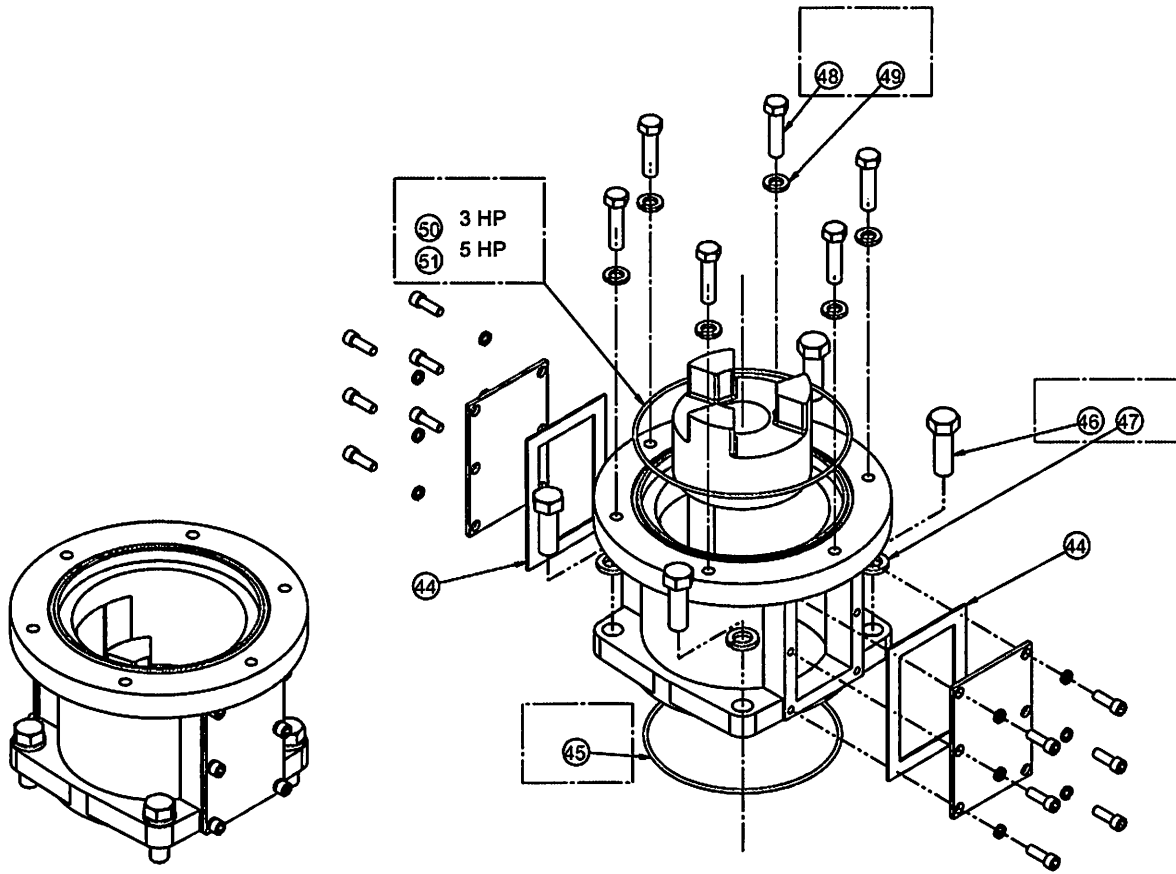


Fig. 2 View B

TM05 9868 4313

7.5 Disassembly Fig. 3



Warning

Severe injury may result if body parts, clothing, etc. come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use lockout device before maintenance or any operator adjustment to machine.

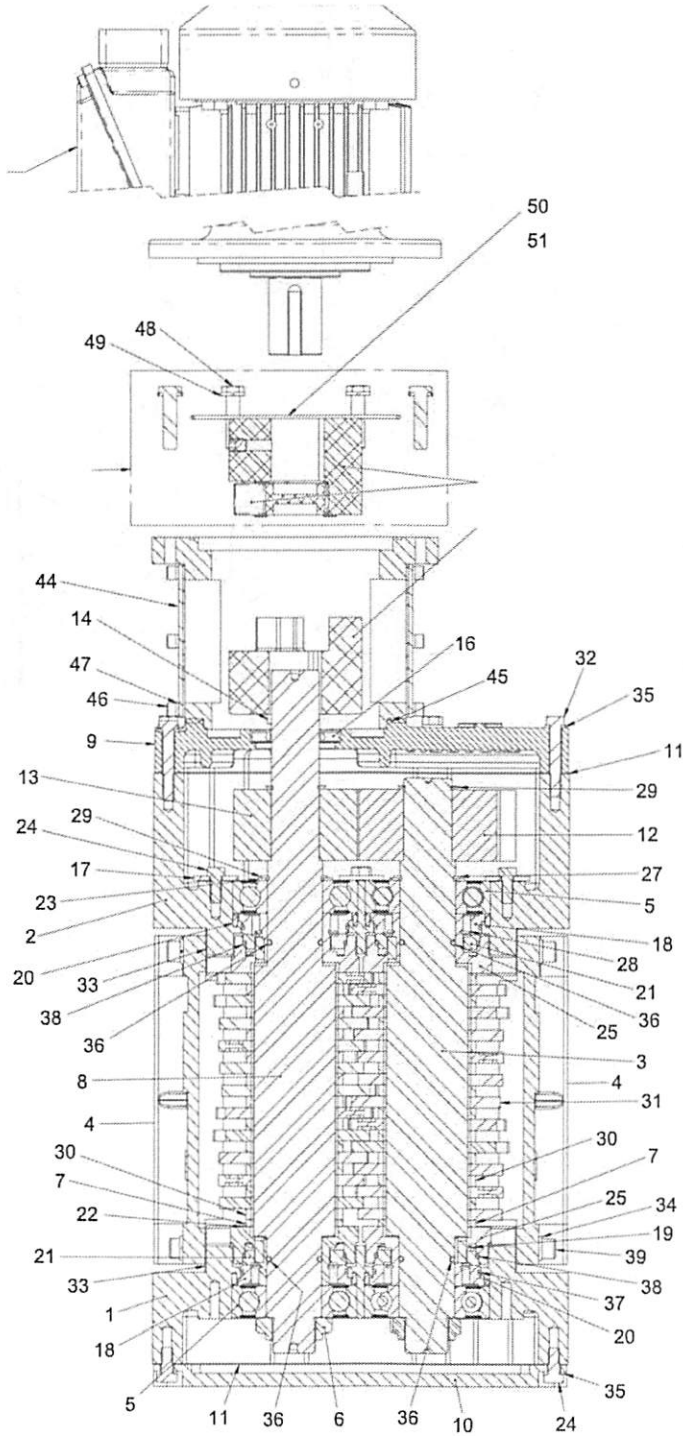


Fig. 3 Grinder

TM05 8057 2713

1. Disconnect motor leads.

Caution *Flanged Hoppers on in-line mounted Sewer Chewers should be removed before continuing with the disassembly operation.*

2. Remove hex head cap screws (48) and lock washers (49) and carefully remove gear motor, motor coupling, and reducer/pedestal o-ring. Item 50 (3HP) or Item 51 (5HP). Remove hex head cap screws (46) and lock washers (47) and carefully remove pedestal and o-ring (45).
3. Loosen set screw on drive shaft coupling and remove drive shaft coupling and coupling insert from drive shaft (8).
4. Remove drive shaft-coupling key (14) from the unit input shaft (8) and retain for reassembly.
5. Invert unit, such that the bottom cover (10) is facing up. (Turn assembly upside down).
6. Remove hex head cap screws and washers (24) & (35) from the lower bearing housing cover (10)
7. Remove bottom cover (10) and gasket (11). Use new gasket for reassembly.

Note *Prior to installing new gasket thoroughly clean gasket mating surfaces with a residue-free cleaning solvent such as isopropyl alcohol and allow to dry.*

8. Lay the unit on its side with cutters facing up.
9. Wedge a flat bar of non-ferrous metal in two places between the teeth of gears (12 & 13) to prevent rotation of the shafts (3 & 8).
10. Remove the locknuts (6). Note: locknuts cannot be removed easily. Breaker bar or high torque impact wrench may be required. Use new locknuts for reassembly.
11. Remove side rails (4), side rail hardware (34 & 39), and gaskets (33) from lower bearing housing (1). Use new gaskets for reassembly.
12. Remove lower bearing housing (1) from shafts (3 & 8). Some light tapping may be needed on the back side of housing for its removal.
13. Remove bushings (25). Inspect for wear and replace, if necessary.
14. Remove rotating seal faces with o-rings (21 & 38) and stationary seal faces with o-rings (18 & 37) and inspect the Tungsten Carbide faces for wear or damage. Discard the o-rings.
15. Remove cutters and spacers (31, 7 & 30). Evaluate cutting tolerances before reusing.
16. Remove hex head cap screws (32), lock washers (35), socket head cap screws (52) and high collar lock washers (53) from upper bearing housing cover (9) and retain for reassembly.
17. Remove upper bearing housing cover (9).
18. Remove gasket (11). Use new gasket for reassembly.

Note *Prior to installing new gasket thoroughly clean gasket mating surfaces with a residue-free cleaning solvent such as isopropyl alcohol and allow to dry.*

19. Examine lip seal (16). Use a new seal for reassembly.
20. Remove grease from upper bearing housing (2).
21. To remove gears (12 & 13) first remove snap rings (29). Use new snap rings for reassembly.
22. Remove large and small gears (12 & 13). Examine for wear. Retain keys (14) for reassembly.
23. Remove snap rings (27). Use new snap rings for reassembly.
24. Remove side rail hardware (34 & 39) from the upper bearing housing (2).

25. Remove upper bearing housing (2) from shafts (3 & 8). Some light tapping may be needed on the backside of housing for its removal.
26. Separate shaft assemblies.
27. Remove bushings (25).
28. Remove o-rings (38). Use new o-rings for reassembly.
29. Remove bearings (5) and use new bearings for reassembly.

7.6 Assembly

7.6.1 Gasket installation guide

The recommended gasket dressing is permatex form-a-gasket #3 aviation sealant. Apply a uniform thickness to both sides of the gasket. Allow to air dry 5-10 minutes prior to installation.

7.6.2 Bolt Torque

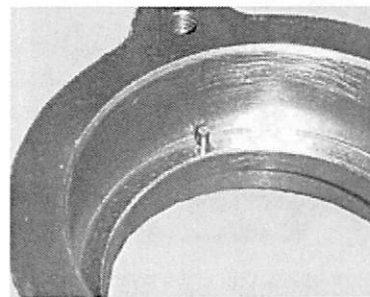
Utilize the bolt torque values shown in the bolt torque table (Fig. 4) for grinder assembly.

Once fasteners have been snugged down by hand, finish tightening them with an accurate torque wrench. Utilizing a criss-cross sequence begin with a torque value of approximately 30% of the torque value shown in the table. After all fasteners have been completed, follow with a value of approximately 60% of the torque value show in the table. Finally, complete the torquing sequence utilizing the full torque value as shown in the table.

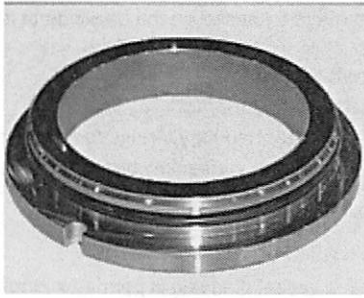
Item	Description	Torque Ft.-Lbs. (N-M)
6	L nut, esna, 1.25" - 12 STL	42 (56.9)
24	Hhcs, .31-18 x .75, 316ss	12 (16.3)
32	Hhcs, .31-18 x 2, 316ss	12 (16.3)
39	Shcs, 0.38"-16 x 1.25", 316ss	21 (28.5)
46	Hhcs, 1/2-13 x 1.50", 316ss	45 (61.0)
48	Hhcs, 0.38-0.16" x 1.50", 316ss	21 (28.5)
52	0.3125"-18 x 1.75" LG., Shcs, 316ss	12 (16.3)
54	Shcs, 0.25"-20X1", 316ss	7 (9.5)

Fig. 4 Bolt torque table

1. Check all components to Bill of Material to ensure you have all the correct parts.
2. Clean out and de-burr the bores on Upper Bearing Housing (2) and clean the pin holes using a 1/8" drill bit. Install 1/8" dowel pins unless existing are reused (20) into pin holes drilled in Upper Bearing Housing bore. Repeat on the Lower Bearing Housing (1).

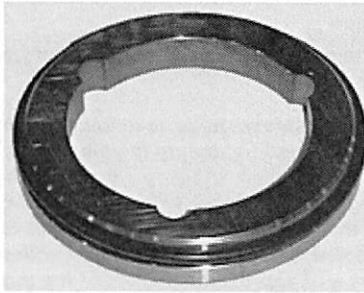


3. Install O-Ring (37) onto Stationary Seal Face (18).



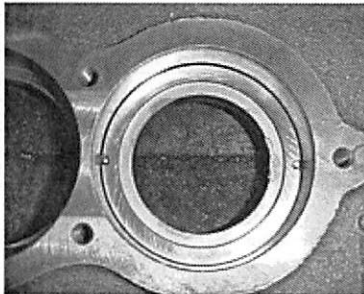
TM05 7851 0513

4. Install O-Ring (38) onto the Rotary Seal Face (21).



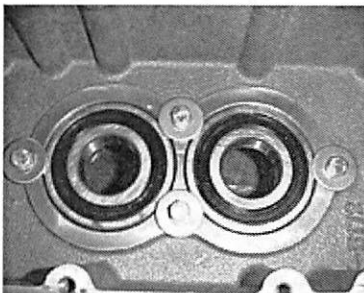
TM05 7852 0513

5. Install Stationary Seal Face (18) (with the O-Ring down into the smaller bore) into Upper Bearing Housing (2) by applying suitable lubricant to the O-Ring and gently pressing it into the bore. Make sure to engage the dowel pins into the notches and not to damage the O-Ring. Repeat in the second bore and on the Lower Bearing Housing (1) bores.



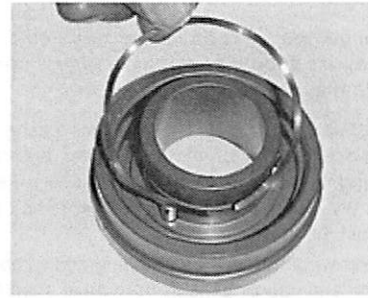
TM057853 0513

6. Install Bearings (5) into the bores of the Upper Bearing Housing (9) and hold them in place using the 5/16" Hex Head Cap Screws (24) and the Fender Washers (17). Repeat on the Lower Bearing Housing (1). (Bearings are bi-directional.)

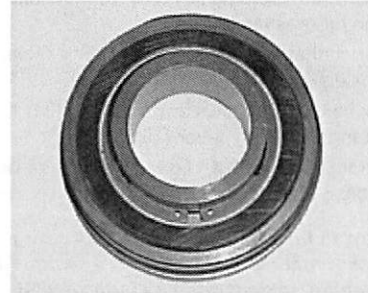


TM057854 0513

7. Place the Wave Spring (19) in the Bushing (25). Then, install the Rotary Seal Face (21), making sure to engage the driving lugs, and install the Retaining Ring (28). Apply suitable lubricant to the O-Ring for ease of assembly. Repeat on all four pieces.

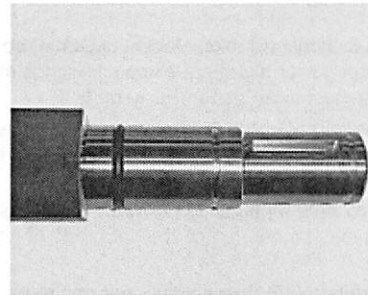


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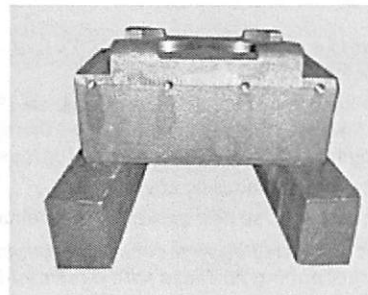
TM057856 0513

8. Test fit all keys and both gears on the shafts to ensure proper key fit prior to assembling into the unit.
9. Clean both shafts and install O-Rings (36) onto both the Driving Shaft (8) and Driven Shaft (3).



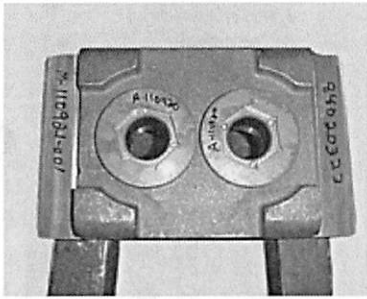
TM05 7857 0513

10. Turn the Upper Bearing Housing (9) upside-down and support it on 4x4 blocks. This will allow the shafts to be installed without any interference.



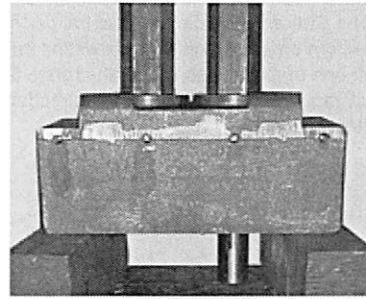
TM05 7858 0513

11. Clean both the stationary (18) and rotary seal faces (21) with alcohol and a clean rag. Make sure no residue or particles are present on seal faces.
12. Gently press the Bushing into the Upper Bearing Housing (9) seating the seal faces against each other.



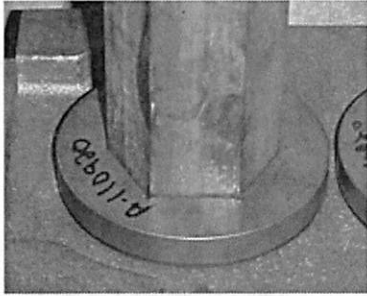
TM05 7859 0513

13. Slide each of the Shafts (3&8) into the Bushing (25) making sure that the hex engages into the Bushing.



TM05 7863 0513

21. Turn the shafts (3&8) to have the hex flats line up square to the front of the unit. This will allow the cutters (31) to line up with the spiral cutter pattern when being installed.



TM05 7860 0513

14. Lay the Upper Bearing Housing (9) and Shafts (3&8) down with the shafts away from you.

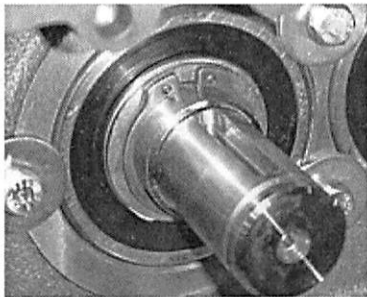
15. Install the Mechanical Seal Spacer (23) on the Shaft on top of the Bearing (5) (using a small dab of grease to help hold it in place) and install the Retaining Ring (27) into the retaining ring groove in the Shaft. [Repeat on the other Shaft].



TM05 7864 0513

22. Place the 005" Shim (22) onto the Driving Shaft (8) against the face of the Bushing (25).

23. Place a Spacer (30) on the Driven Shaft (3) against the face of the Bushing (25).

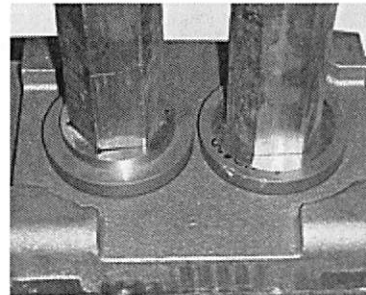


TM05 7861 0513

16. Apply a thin coat of Never-Seez to the machined end of the Shafts (3&8) where the gears (12&13) mount to allow for easier assembly (and future disassembly) of the gears.

17. Install the Keys (14) in each shaft and the Driving Gear (13) onto the Driving Shaft (8).

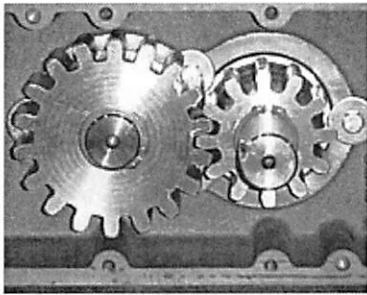
18. Install the Driven Gear (25) onto the Driven Shaft (3).



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24. Separate Cutters (31) into two stacks, one for the left shaft and one for the right shaft. The Cutters can be flipped to use on either shaft for the proper rotation.

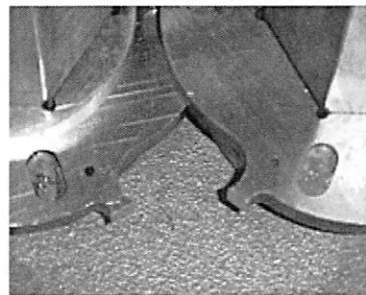
25. Identify the feed rotation of the unit before beginning to install cutters. Use the arrow on the Upper Bearing Housing Cover (9) to help determine which side of the unit will be the inlet. Each cutter has one timing dot located as shown here to be used when stacking the cutters and spacers on the shafts.



TM05 7862 0513

19. Install the Retaining Rings (29) onto the Shafts (3&8) over the gears making sure they seat in the retaining ring grooves.

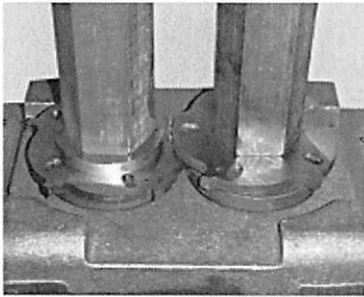
20. Return unit to previous position on the 4x4 blocks.



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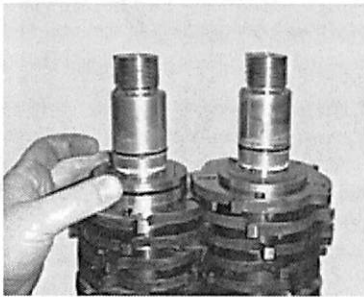
26. Begin stacking Cutters (31) and spacers (30) in the direction that will cause the cutters to pull from the inlet side and force

out on the outlet side. Pay particular attention to the stacking sequence. The Cutters should make a spiral pattern that is an opposite direction on each side that allows the cutting tips to meet at each pair of Cutters as the shafts rotate inward. The timing dot will move one flat opposite the direction of rotation for each cutter stacked.



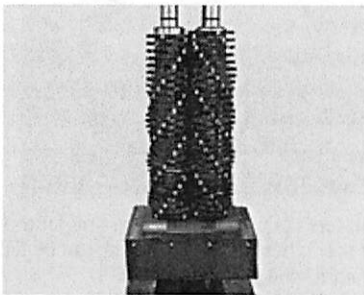
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27. The final spacer to be installed on the shaft is the 0.192" thick Spacer (7). There will be one Spacer on each shaft.



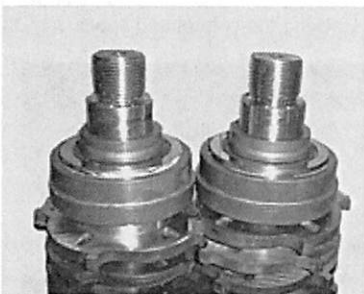
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28. Once completed with the stacking of the Cutters and Spacers, double check that the spiral pattern is correct before proceeding.



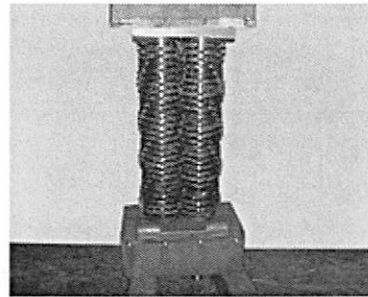
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29. Gently press the Bushings (25) onto the Shafts (3&8) making sure the Bushing engages the hex of the Shaft.



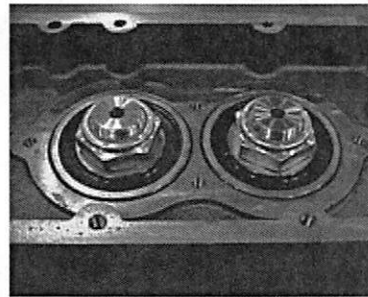
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30. Lower the Lower Bearing Housing (1) onto the shafts being cautious to avoid chipping the Stationary Seal Faces (18).



TM05 7872 0513

31. Install Locknuts (6) onto the Shafts tightening both Locknuts to hand tight prior to tightening to 125 ft.-lb (169 N-m). Remove the four 0.3125" hex head cap screws (24) and fender washers (17) from the lower housing only.

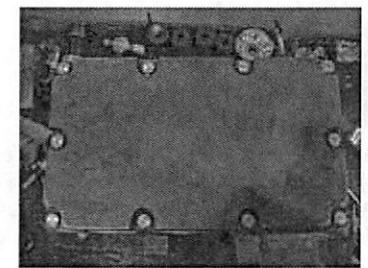


TM05 7871 0513

32. Verify the Cutters (31) are tight by attempting to rotate the individual Cutters (not the shaft). If they are tight there will be no movement. If they can be moved, retighten the Locknuts (6).

33. Rotate the Shafts (3&8) to ensure the Shafts turn without interference.

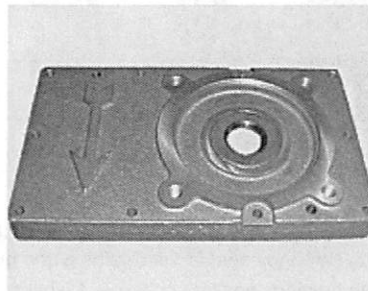
34. Install Gasket (11) (refer to 7.6.1 Gasket installation guide) onto lower Bearing Housing (1) and install the Lower Bearing Housing Cover (10) with the 5/16" Hex Head Cap Screws (24) and Lock Washers (35).



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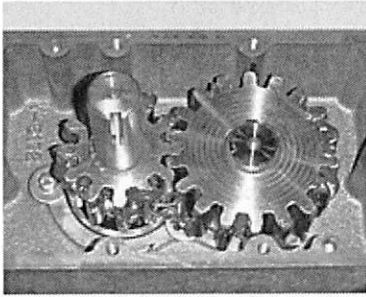
35. Install the Lip Seal (16) into the Upper Bearing Housing Cover (9) with the flat face of the steel facing out. The face of the Lip Seal should be flush with the face of the cover.

36. Turn unit onto its side.



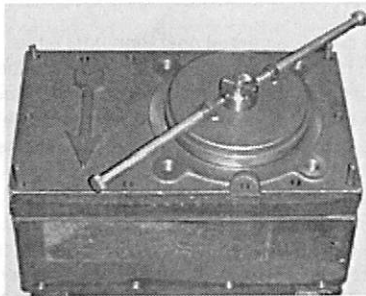
TM05 7874 0513

37. Add Grease (MYSTIC JT-6 CODE 5484 OR EQUAL) to coat the gears (12&13). Apply the grease along the gear teeth making sure to evenly grease the entire gear set.
38. Install the Gasket (11) (refer to 7.6.1 *Gasket installation guide*) then the Upper Bearing Housing Cover (9) onto Upper Bearing Housing (2). Be cautious not to damage the Lip Seal (16) when installing the Upper Bearing Housing Cover.



TM05 7875 0513

39. Visually make sure the Lip Seal (16) is aligned over the Driving Shaft (8) where the shaft comes through the Lip Seal.
40. Install the 3/8" Dowel Pins (15) into the two dowel pin holes and drive them into Upper Bearing Housing (2) dowel holes unless existing pins are to be reused. Install the 5/16 Hex Head Cap Screws (32), Lock Washers (35), 0.3125" socket head cap screws (52), and 0.3125" high collar lock washers (53)



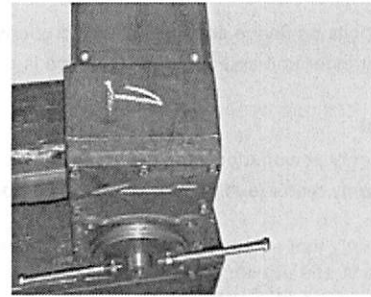
TM05 7876 0513

41. Install side-rail gaskets (33). Refer to 7.6.1 *Gasket installation guide*.



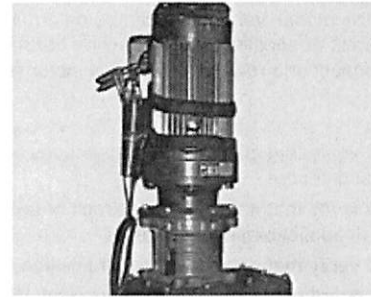
TM05 7877 0513

42. Install Side Rails (4) using the 3/8" Socket Head Cap Screws, (39) lock washers (34), 0.25" socket head cap screws (54) and 0.25" high collar lockwashers (55) with the arrow on the Side Rail pointing toward the Upper Bearing Housing (2).
43. Turn the shaft to verify the alignment and check for binding. If there is no binding, proceed. If the unit locks or binds, loosen the side rail bolts and re-align the shaft and re-tighten the bolts then repeat the verification. Perform this step on both Side Rails (4).



TM05 7878 0513

44. Turn unit over to upright position with the Upper Bearing Housing (2) on top.
45. Perform an Operational Run Test to verify the unit operates without binding.



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46. Install key (14) and Sewer Chewer half coupling using set screw in coupling. Place coupling insert on coupling half (standard type units). Refer to specific instructions on installing other drive arrangements.
47. Attached gear reducer pedestal to upper bearing housing cover (9) utilizing o-ring (45), hex head cap screws (46), and lock washers (47)
48. Replace gear motor with coupling attached on to motor pedestal using cap screws & washers (48 & 49).

Note Install appropriate o-ring (50) 3 hp or (51) 5 hp into o-ring groove on top of pedestal prior to mounting gear motor.

49. Reconnect field wiring in accordance with local electrical codes.

8. Start-up

8.1 Preparation and inspection

Warning
Severe injury may result if body parts, clothing, etc. come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use lockout device before maintenance or any operator adjustment to machine.

8.1.1 Mechanical

1. Inspect and verify that the Cutters are correctly stacked.
2. Inspect & verify that unit installation has the correct relative position. Refer to flow direction arrow located on the top bearing housing.
3. Inspect & verify that unit is properly secured and supported.

Channel and Wet-well Units

- Check that frame assembly is properly secured.
- Check that grinder unit properly fits into frame assembly.

In-Line units

- Check that bolts on flange connections are properly secured.
- Check that grinder unit and/or connecting pipe is properly supported.

8.1.2 Electrical

1. Inspect & verify power supply matches panel & motor set-up.
2. Inspect & verify motor leads are properly connected and secure.
3. Inspect & verify that all other electrical connections are properly made and are secure.
4. If remote starting feature is used, inspect & verify that leads are properly connected and secure.

8.2 Direction of rotation

When looking down on the top of the Sewer Chewer, the drive shaft (left shaft) will turn in a counter-clockwise direction. Depending on the model, verification can be determined by looking at the shaft or coupling. If the direction of rotation is incorrect, disconnect and re-wire any two (2) motor leads.

8.3 Start-up

1. Inspect and verify that all electrical connections are properly connected and secure.
2. Inspect and verify that panel internal circuit breaker/disconnect (if applicable) is open (off).
3. Inspect and verify that panel is in the off position.
4. Verify that control panel is closed and secured. **WARNING:** Electrical shock hazard exists if panel door is opened when the circuit breaker/disconnect is in the closed (on) position. Do not override the "through the door" circuit breaker handle.
5. Complete circuit to panel (connect the main power line) so that there is power to the "circuit breaker/disconnect."
6. Set the Circuit Breaker/Disconnect Switch to the "OFF" position.
7. Push "IN" the Emergency Stop button and refer to the Controller Manual for the type of control panel supplied.
8. When first operating the grinder, observe rotation of the shaft. Shaft rotation in normal forward operation will cause Cutters to rotate into each other on the inlet side of the grinder.
9. If grinder operation rotation is opposite of the described operation:
 - Switch "through the door" circuit breaker handle to the "OFF" position.
 - Switch the main power line to "OPEN" or "OFF."
 - Lock out and tag out main power line.
 - Switch any two of the motor power leads to allow opposite motor rotation. (3 Phase motors only. Refer to motor wiring diagram for single phase motors.)
 - Return to Step 1 of the Start-Up procedure to verify correct grinder operation rotation.

8.3.1 Changing grinder operation characteristics on control panels:

Many of the operating parameters of your Sewer Chewer grinding equipment may be changed to optimize system performance. This may be accomplished two ways. If your grinder controller is a PLC (Programmable Logic Controller) device, but has optional type buttons and warning lights on the panel face, you must contact your authorized Sewer Chewer representative to discuss the changes and schedule a service call. If your Sewer Chewer is a standard digital type controller, changes may be made by the end user, refer to your Digital Controller Operations Manual.

8.3.2 Complete the Start-Up Form and send to YCC.

Included in this O & M information packet is a form that describes the equipment, owner and other important installation information. Upon completion of the start-up procedure, it is required that the Start-Up Form be completed. Failure to complete this form may result in complications in obtaining proper warranty service or coverage. Upon completion of this form, a copy should be sent or faxed to:

Yeomans Chicago Corporation
 ATTN: Warranty & Service Dept.
 3905 Enterprise Court
 P.O. Box 6620
 Aurora, IL 60598-0620
 Warrant - YCC@grundfos.com
 Parts _ YCC@grundfos.com

8.4 Operation

After your Sewer Chewer Grinder has been through its proper start-up procedure, it is ready for standard operation. The grinder will operate continuously under normal operating conditions. This unit is designed for unattended operation, and will continue operation until power is shut down, the panel controls are stopped, or the unit has completed its reversal cycle (resulting in a grinder overload).

1. Switch "through the door" circuit breaker handle to the "ON" position.
2. Set for local or remote mode (refer to your Controller Operations Manual).
3. Grinder will continue normal operation until either the "STOP" push button is depressed or the grinder encounters a condition that runs the grinder through its complete reversal cycle. If the grinder completes a reversal cycle without clearing the obstruction, grinder operation will be stopped, and a "GRINDER JAM" alarm will display on the control panel face. To restore normal operation, the unit must be cleared of obstruction. Make sure to power down control panel, and use appropriate lockout procedures before any inspection or maintenance is made on the unit. After the obstruction has been cleared, refer to your Controller Operations Manual for power-up sequence.
4. If a "MOTOR OVERLOAD" alarm occurs, this may be a sign that the motor has been pulling higher loads than normal. This may be a sign of other problems such as excessive cutter wear, bearing or shaft failure, or the contactor has become damaged. To reset the motor overload, use the following procedure:
 - Switch "through the door" circuit breaker handle to the "OFF" position.
 - Switch the main power line to "OPEN" or "OFF."
 - Lock out and tag main power line.
 - Inspect to see if the motor overload has tripped.
 - Reset the motor overload switch (this may require moderate to heavy pressure to reset).
 - Return to Step 1 of the Start-Up procedure to verify correct grinder operation.

If the "MOTOR OVERLOAD" alarm occurs at any frequent interval, the adjustable current sensing relay may be set too low. This level may be raised slightly so that operation will reverse at a higher amp draw.

Note

Panel features and components can be found at us.grundfos.com/products/wastewater/sewer_chewer. Additional panel description can be found at the following web address;
[HTTP://www.youtube.com/watch?v=laborai8b2y&feature=youtu](http://www.youtube.com/watch?v=laborai8b2y&feature=youtu)

9. Service tools

There are no special tools required for servicing a Sewer Chewer.

10. Electrical data

Refer to the appropriate Digital Controller Installation Operation and Maintenance Instruction.

11. Fault finding (troubleshooting)

Your Sewer Chewer grinding machine has been designed and manufactured to provide you with long lasting and trouble free operation. If you do encounter abnormal operation or symptoms, this guide will provide you probable cause and solutions to remedy the problem.



Warning

Severe injury may result if body parts, clothing, etc. come in contact with the cutting elements or other rotating parts of this machine. Disconnect power to grinder controller and use lockout device before maintenance or any operator adjustment to machine.

Problem	Problem Cause	Corrective Actions
Grinder will not run	Improper wiring	Check wiring
	Low Voltage	Check voltage at contactor, starter or motor. Make certain it coincides with nameplate voltage.
	Blown fuse	Check fuses.
	Loose Connections	Check connections.
	Power cord may be grounded	Resistance between hot leads should be zero. Resistance between hot lead and ground (green) should be infinite.
	Grinder shaft may be locked	Check amps drawn at the motor
	High amp draw (over nameplate)	1. Motor bearings may be frozen 2. Material may be lodged in cutters. 3. Shaft may be bent
	Broken or removed shaft key	Check key, replace as required.
	Broken or removed gear key	Check key, replace as required.
	Broken or removed coupling	Check coupling, replace as required.
Speed reducer makes noise.	Broken or bent grinder shaft	Check shaft, replace as required.
	Broken or bent reducer shaft	Check reducer shaft, replace as required.
Speed reducer makes noise.	Lubrication.	Refer to 6. <i>Overhaul</i>
	Ground material makes noise	No correction required.
Grinder making noise	Cutters have burrs.	Inspect for burrs. Repair as required
	Cutters may be loose.	Inspect cutters for play. Tighten shaft locknut in lower bearing. If cutter slack is not eliminated, inspect cutters for wear or damage.
	Broken cutter or spacer	Inspect for broken cutter or spacer. Inspect other cutters and spacers for obvious signs of wear or damage. Replace as required.
	Material lodged in cutting zone	Inspect cutting zone for lodged material in the cutting zone. Remove obstruction.
	Seal contamination or failure.	Inspect seal for contamination or failure. Inspect bearings and seals for obvious signs of wear or damage. Replace as required.
	Bearing contamination or failure.	Inspect bearing for contamination or failure. Inspect seals and bearings for obvious signs of wear or damage. Replace as required.
	Broken or bent grinder shaft.	Check shaft, replace as required.
	Gears may require lubrication	Lubricate grinder gears per O&M manual
Play in shaft	Cutter stack has become loose.	Inspect cutter stack for play. Torque shaft nut in lower bearing housing. If cutter slack is not eliminated, inspect cutters for wear or damage.
	Broken or missing retaining snap rings.	Inspect and repair or replace as required.
	Bearing contamination or failure.	Inspect bearings for contamination and wear. Replace bearings and seals as required.
Grinder will not reverse.	Jam setting not properly adjusted.	Electric Drive: adjust pressure overload sensor.
Grinder is leaking.	Improper gasketing of side rails or flanged hoppers.	Inspect gasketing of flanged hoppers or side rails. Replace gasketing per O&M manual.
	Seal failure.	See below or O&M for proper installation procedure for replacing bearings & seals.
Seal failure.	Seal failure.	Inspect seal for contamination or failure. Inspect seals and bearings for obvious signs of wear or damage. Replace as required. It is recommended to completely inspect cutters, spacers and other critical parts for wear or damage and replace as required at the same time.
Grinder is reversing frequently.	Jam setting not properly adjusted.	Adjust current sensor. See the controller instruction.
	Cutter stack has become loose.	Inspect cutter stack for play. Torque shaft nut in lower bearing housing. If cutter slack is not eliminated, inspect cutters for wear or damage.

For other troubleshooting questions, contact your local SEWER CHEWER representative OR YCC Customer Service at:

Yeomans Chicago Corporation

3905 Enterprise Court

www.yccpump.com

P.O. Box 6620 Phone: 630-236-5500

Aurora, IL 60598-0620

E-mail - YCC@grudnfos.com

12. Start-up data sheet**Return copy To:**

Yoemans Chicago Corporation
 attn: Customer
 P.O. Box 6620
 Aurora, IL 60598-0620
 E-mail - YCC@grudnfos.com

Start up date: _____

S.O Number: _____

Project Information

Plant/Project Name: _____ Plant Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

Chief Operator: _____ Title: _____

Maint Supervisor: _____

Other Key Personnel: _____

Owner Information

Owner: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

Owner Contract: _____ Title: _____

Contractor Information

Contractor: _____ Phone: _____

Address: _____

City: _____ State: _____ Zip: _____

Title: _____

Contract: _____

Rep. Information

Rep Name: _____ Sales order: _____

Rep number: _____ Ship Date: _____

Sales person: _____ Quantity of Units: _____

Start-up Information

Start up ok? (Y or N) _____

If no explain: _____

Grinder Model: _____ Motor Model: _____

Control Panel Model: _____ Motor S/N: _____

Control Panel S/N: _____

Plant information

Briefly describe the application and location of the sewer Chewer being used

Plant info: _____

USA
GRUNDFOS Chicago
3905 Enterprise Court
P.O. Box 6620
Aurora, IL 60598-0620
Phone :(+1) 630 236 5500
Telefax: (+1) 630 236 5511

www.grundfos.us

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ECM: 1123525

