

MODEL EJ ECCENTRIC VALVE SEAT GRINDER

OPERATING INSTRUCTIONS

525 West Sophia Street
Maumee, OH 43537-1847
(419) 893-4334
1-800-228-4255 (orders)
Fax: (419) 893-6492

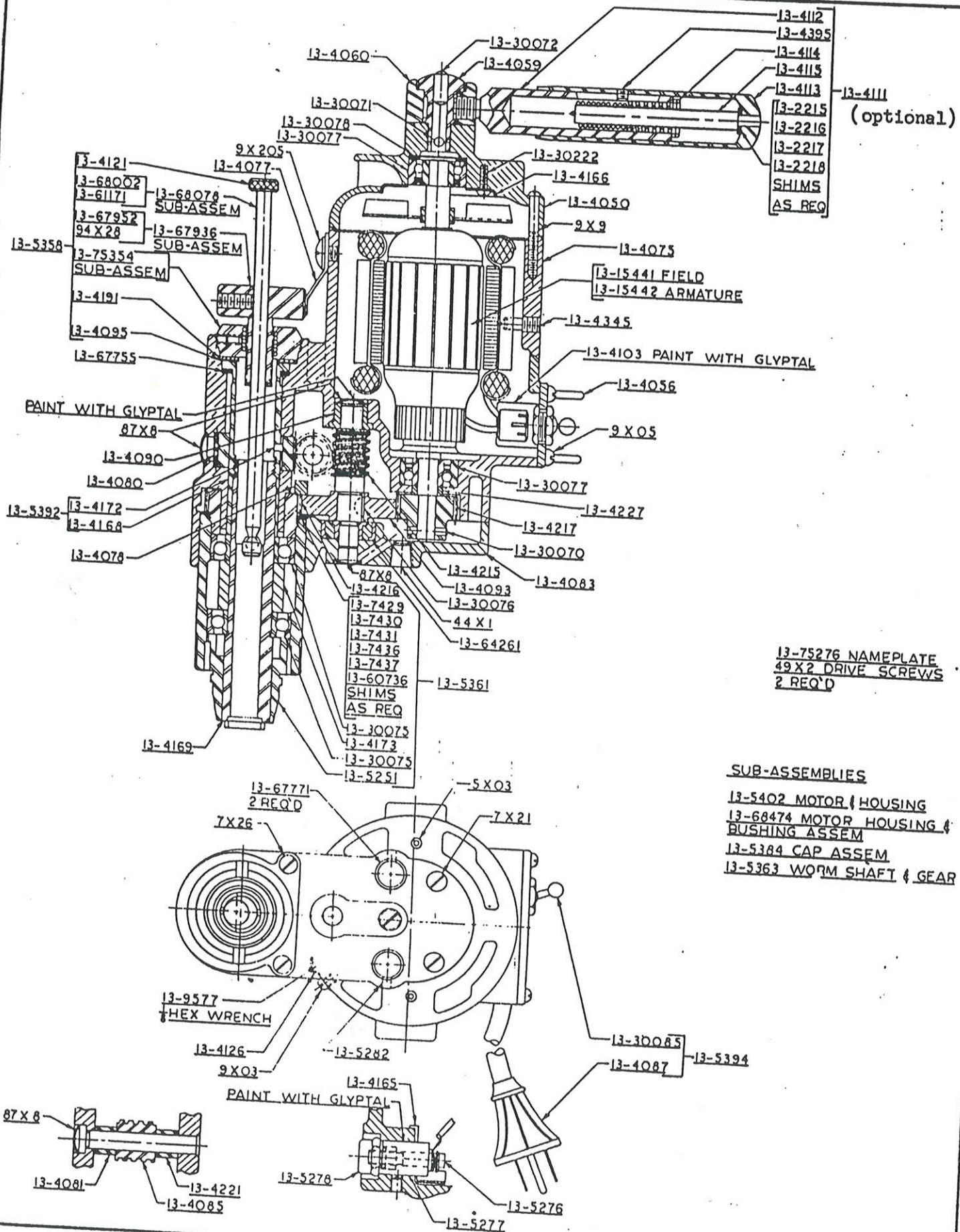
EJ GRINDER PARTS LIST - ALL MODELS

<u>PART NO.</u>	<u>NAME OF PART</u>
4056	Switch Plate
4075	Housing
4077	Spring
4078	Housing Tie
4080	Worm Gear
4081	Worm Gear
4083	Lower Cap
4085	Worm Gear
4087	Cord Set
4090	Bushing
4093	Fiber Gear
4094	Shim
4095	Shim
4096	Shim
4103	Insulator
83030	Handle
4121	Nut
4126	Wrench Clip
4165	Brush & Shield
4169	Eccentric Shaft
4179	Shim
4191	Washer
4215	Worm & Shaft
4217	Drive Gear
4221	Worm & Gear Shaft
4227	Grease Slinger
4234	Thrust Plug
5276	Brush & Spring
5277	Brush Holder
5278	Brush Cap
5282	Pin
5327	Shim
5361	Spindle & Gear Assembly
5384	Cap Assembly
5392	Eccentric Shaft Holder Assembly
9577	Allen Wrench
15439	Field 220V.
15440	Armature 220V.
15441	Field 110V.
15442	Armature 110V.
30070	Groove Pin
30071	Groove Pin
30072	Groove Pin
30075	Bearing

30076
30077
30078
30085
61077
62949
64261
67755
67771
67936
75276
75412
7 x 21
7 x 26
9 x 05
9 x 9
5 x 03
9 x 205
49 x 2
44 x 1
87 x 8
5 x 21
5 x 03

Key
Bearing
Spring
Switch
Feed Rod Assembly
Clip
Rubber Bearing
Loading Spring
Bushing
Adjusting Screw Knob
Name Plate
Adapter
Screw
Screw
Screw
Screw
Screw
Screw
Screw
Grease Plug
Expansion Plug
Screw
Screw

MODEL EJ GRINDER



GRINDING WHEELS

Proper dressing of the grinding wheel is accomplished as follows: Clean taper on grinder spindle and inside taper of wheel insert. Screw wheel onto grinding spindle. Place the grinder over the two pins in the dresser stand. NOTE: The diamond point should never protrude excessively from its support. This will impart a better and smoother dress to the wheel. Loosen the lock screw on the reverse side of the quadrant and set the diamond dresser to the proper angle of the valve seat. Tighten the lock screw. Carefully adjust the diamond tipped dressing screw until it barely touches the grinding wheel. Pull diamond off wheel with lever and re-adjust the diamond tipped dressing screw toward the grinding wheel so that approximately .005" stock will be removed from the wheel when dressed. Start the motor and pass the diamond back and forth across the face of the grinding wheel through the use of the lever. Continue this operation until the stone has been dressed across its entire width.

The operator must be certain that the valve seat angle matches the valve face angle in accordance with the engine manufacturer's specifications. Final adjustment to a specific angle, for example 45°, is obtained by blueing the valve to show proper contact with the valve seat. This should be done when installing new valves as well as when refacing present valves. Slight final adjustment of dresser angle to obtain proper valve to valve seat blue-in contact may be necessary. Once adjusted, the setting is permanent until the dresser quadrant is moved to another angle.

PILOTS

Select pilot which will be compatible to valve guide in cylinder head that work is to be performed on.

Wipe pilot with a clean cloth before using. Do not use oil on pilots except to aid in cleaning them. Be certain to wipe free of all oil. Oil on the pilot collects abrasive dust from the grinding operation, thus forming a lapping compound. This wears out the pilot and the eccentric shaft.

Place pilot in the valve guide using the special wrench furnished with this equipment. Do not wring or wind the pilot into the guide - just set it against the taper gently. Expand the pilot collet by turning the nut on the top of the pilot. Do not tighten this nut excessively, merely pull it up snug.

SETTING THE GRINDER

Remove the grinder from the dressing stand and place it over the pilot installed in the valve guide. Loosen the Allen screw, and push down the adjusting rod until it contacts the pilot. Tighten the set screw against the rod. Tighten handle by screwing clockwise at proper position desired by operator.

Turn the feed adjustment to the right (clockwise) at "release" stamped on top until the grinding wheel is free and clears the seat. Check this adjustment by rotating the grinder around the pilot with the handle. Another method sometimes used is to rotate spindle by hand to check whether or not it is clear of the seat.

GRINDING THE SEAT

First, be certain that the valves are accurate and properly faced. The complete valve job is dependent on both accurate seats and accurate valves. Second, grind the seats with your Model EJ grinder according to the following procedure:

Start motor. Hold handle as outlined. Turn the feed screw to the left (counter-clockwise). Feed one notch at a time until the seat is cleaned up. Generally, show of sparks around the entire seat during an eccentric revolution indicates a finished, true seat. This is one of the many advantages of Hall-Toledo Eccentric Grinding. Allow the grinding wheel to continue running until it grinds itself free. Turn the feed screw to the right (clockwise) to release the grinding wheel. Shut off the motor and allow the grinder to stop before removing it from the pilot.

If the valve seat must be narrowed, this can be done by using the 30° grinding wheel on 45° seats, narrowed from the top. Use 15° narrowing wheel on 30° seats. For choke narrowing, or narrowing from the inside of the seat, use a 60° wheel.

PREVENTIVE MAINTENANCE

The Model EJ is a "grinder". As such, there will necessarily be a certain amount of dry abrasive dust in the air when the tool is in operation. This abrasive dust will cause considerable damage and excessive wear if the tool and pilots are not cleaned frequently and well. After each job, the pilot should be carefully washed in a solvent solution and thoroughly wiped. This cleaning will prevent abrasive dust from being carried into the eccentric shaft

and avoid undue wear to either the pilot or the shaft. The eccentric shaft should be swabbed out occasionally with a clean cloth on the end of a stick or wire.

Pilots should always be kept clean and the collets should be removed from time to time from the pilot and thoroughly cleaned so that accurate centering is possible.

Grinding wheels, of course, should always be kept away from oil. If grinding wheels become oil soaked, they will not cut properly. If by accident some wheels do become oil soaked, allow them to stand in carbon tetrachloride for a few minutes, then screw the wheel onto the grinder and let it spin dry. This should be repeated several times and in most cases the oil will be washed from the wheel so that it will again cut freely.

The Hall-Toledo Model EJ Eccentric Grinder is equipped with a fan mounted on the upper end of the armature which blows air through the motor case and keeps the machine cool. Occasionally blow out the motor case with compressed air, directing the air into the motor case through the opening in the bottom of the motor housing. This will remove any dust which may have collected around the switch or brush holder. This cleaning will prevent possible shorting of the machine.

MAINTENANCE

The balance of these suggestions will pertain to the necessary care and maintenance of the Hall-Toledo Eccentric Valve Seat Grinder. Remember: A PRECISION INSTRUMENT CAN PRODUCE ACCURATE WORK ONLY WHEN IN GOOD CONDITION. The condition of the equipment in your shop depends entirely on the care and the attention it receives. In practically every case where trouble had been reported, it was traceable either to lack of proper understanding of the equipment or because the equipment had suffered through lack of proper care.

LUBRICATION

Do not add additional lubricant to the gear box if the machine begins to operate above normal temperature. Because of the high speed gear construction, excessive lubrication causes more heat to be generated. Each machine is sent out from the factory packed with lubricant to last for approximately 1,000 hours of operation. If lubricant must be added to the gear chamber, it should only be about a half teaspoon of the special lubricant Hall-Toledo #4475, No. 66 grease, furnished in 6 oz. tubes. This must be obtained from Hall-Toledo or your local jobber.

ECCENTRIC SHAFT REPLACEMENT

The eccentric shaft is very easily replaced in your shop simply by loosening the shaft with a flat piece of stock or the spanner wrench supplied with the grinder which will fit in the slot in the lower end of the eccentric shaft. The shaft can then be removed without disturbing the rest of the grinder unit. This eccentric shaft is replacement part #4169. When the eccentric shaft is replaced, it should be pulled up just snug and never tightened excessively.

When the eccentric shaft is removed from the grinder, the entire grinding wheel spindle may be removed simply by lifting it out of the case. The gear on top of the spindle may appear almost dry. This is a normal condition as the gear operates only on a film of lubricant. The outside of the spindle should be dry at re-assembly. If this spindle is coated with heavy oil or grease when re-assembled, it will rub the housing and, because of the very close fit, cause heating. It is important to remember that the housing of this machine does not serve as a bearing for the spindle.

When wear has caused the feed screw threads to become loose in the mating thrust plug, back the thrust plug out of the housing until the set screw through its side can be adjusted with an Allen wrench. All that is needed is a slight adjustment of this set screw to restore the proper fit to the mating threads of the feed screw. Re-tighten the thrust plug in the housing.

FACTORY REPAIRS

Sometimes it may be necessary to make repairs other than those described above. Our Maumee factory maintains complete service facilities with experienced workmen and special tools and test equipment. Your grinder may be returned through your jobber or from you directly for a free estimate of the cost of repair. Repairs to new operating condition are made only following your authorization to proceed at the estimated cost. All shipments must be made on a postage or freight prepaid basis to our factory at:

HALL-TOLEDO, INC.

525 W. SOPHIA

MAUMEE, OH 43537-1847

(419) 893-4334

1-800-228-4255 (orders)

Fax: (419) 893-6492

INFORMATION ON USING THE EJ GRINDER

A. INSTALLING THE PILOT

1. Wipe the pilot clean of all oil or grinding dust particles before installation.
2. Slide pilot into valve stem guide hole until pilot taper nests on top of guide hole. At this point do not force the pilot down since this tends to throw the pilot off center.
3. With pilot located, tighten hex nut on top of pilot until the collet takes up clearance in the guide hole. It is important not to over tighten the hex nut.

B. BEFORE GRINDING

1. Place grinder on pilot and lower until grinding wheel rests on the valve seat. Always support the motor end weight so that the machine does not tip the pilot. This support weight consists of a slight upward force on the unit's handle. When you have the proper force the grinder can be easily moved up and down the pilot with no drag.
2. With the wheel on the seat, release the feed rod so that it rests on the top of the pilot. Retighten feed rod and back off feed screw in "Release" direction for three or four clicks. The wheel should now rotate free of the seat.

C. GRINDING

1. With the compensating force still on the handle, turn on the machine and turn the feed in the "Grind" direction. Feed down until sparks appear around the entire valve seat. This means you are removing stock from the entire diameter of the seat. Maintain the grinder in this position until the sparks disappear. At this time the grind should be completed and the seat concentric within .002 in. T.I.R.
2. Move the feed in "Release" direction a few clicks before turning the machine off. This avoids possible damage to the seat as a result of the wheel stopping in contact with the newly ground seat.