

HUTTO Cylinder Grinding Equipment

RECOMMENDED FOR

HUDSON-ESSEX SERVICE STATIONS

BUILDING
GOOD WILL



MAKING
A PROFIT

With the HUTTO Portable Cylinder Grinder

A Precision Tool of Highest Quality and Remarkable Performance, giving the same high grade results in service as are being obtained with HUTTO Model KKS "Brake Type" production grinders at the factory

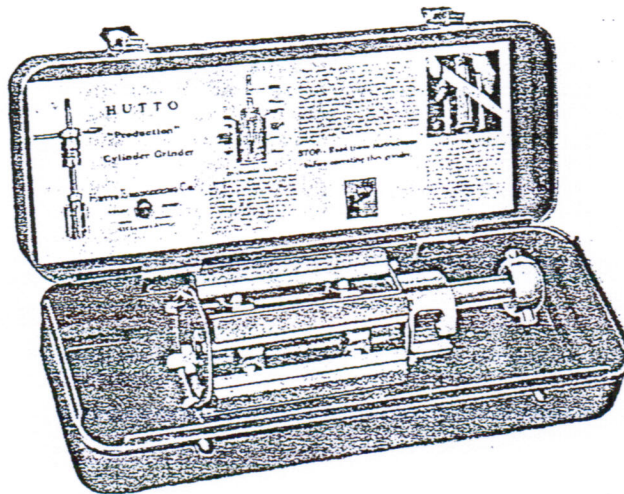
PROTECTION against accidental damage to the Hutto portable service grinder when not in use is afforded by the heavy metal box here shown, providing an inexpensive kind of insurance against the evil effects of the neglect to which some garage service tools of lesser importance from a precision point of view are commonly subjected. In supplying such a container the manufacturers emphasize a desire that users of Hutto grinders shall obtain from them the greatest possible amount of effective service as a result of taking proper care of the grinders at all times. With proper care Hutto grinders not only will last for a very long time but they will be found less troublesome in operation than any other cylinder reconditioning tools ever devised—much easier to handle, faster and more accurate in action, and of much greater profit—producing capacity on account of the time they save and quality of work they do. Whenever the results obtained are not satisfying to the highest degree in any particular, it is certain that the reason or cause for the diffi-

culty encountered will be found in a failure to use the grinder precisely as directed, notwithstanding that the directions for use are extremely simple and easily followed.

An extremely important item among these instructions, however, calls for the use of an electric drill sufficiently powerful to drive the grinder fast enough to insure high-grade results while doing

honest-to-goodness corrective grinding—not mere polishing or burnishing. Another point it is wise to observe carefully is, check accuracy of work done and don't be satisfied with anything outside the Hutto half-thousandth limit. This particular point should under no circumstances be overlooked if service satisfaction of a higher grade is to be guaranteed to the owner.

Car owners are an appreciative lot of folks to the man who entertains a thoroughly sincere desire to serve them efficiently. Good workmanship draws trade and holds it everywhere. Hutto grinders serve well in building profitable good will. They and the trade they build last.



Metal Box Serves to Protect Grinder Against Damage When Not in Use

HUTTO-GROUND BORES WEAR LONGER because the close-grained hard-finish surface produced is free from high or low spots, chatter marks, and the fuzziness, which is usually of coarse thread-like appearance, commonly found in bores finished by "dry" grinding done with small abrasive wheels rotating at high speed

HUTTO PRODUCTION GRINDER

Below is a picture of the Hutto Model KKS twin-three production grinder used for finishing cylinder bores at the factory, where the grinder is driven by an ordinary single-spindle drill press.

With the exception of the driving head, which is equipped with an automatic stone-adjusting mechanism of micrometer type, this grinder embodies exactly the same principles of construction as the Hutto twin - three grinder that we recommend for service regrinding, because

1. Any untrained shop hand can get results with it.
2. Impossible to grind bores out of parallel or out of round with it because stone setting is positive.
3. Cylinder bores can be ground with it in from five to twenty minutes, depending on amount of metal removed.

4. Accuracy limits for roundness and taper easily held by it to half a thousandth.
5. Quality of work done by it is better than that produced by highest grade stationary grinders costing fifty times more.

6. It is more accurate and much faster in operation than re boring or reaming and hand lapping.
7. Open - end cylinders can be reground with it without removing engine from chassis.

8. It satisfactorily replaces fixed or stationary grinding equipment and cylinder re boring tools.
9. It is self centering—non-chattering—easily adjusted—positive in setting—self-aligning.

10. It is usable wherever a lamp socket is available as a source of current.
11. It is driven by portable 5/8-inch electric drill or by ordinary drill press, using taper shank adapter and double universal drive shaft shown on next page.

12. "Charging" of cylinder walls with abrasive particles from stones is entirely impossible with it.

Model KKS Hutto "Brake Type" Production Grinder Used at Factory

13. The die-cast, metal-backed stones are serviceable even when cracked, chipped, or broken, being usable until worn out.
14. Quality of materials and workmanship guaranteed by the Hutto Engineering Co., Detroit, Mich., the manufacturers.
15. It pays for itself quicker than any other cylinder finishing tool ever produced.
16. Invaluable for making "trade-ins" move fast.

HUTTO SERVICE GRINDER

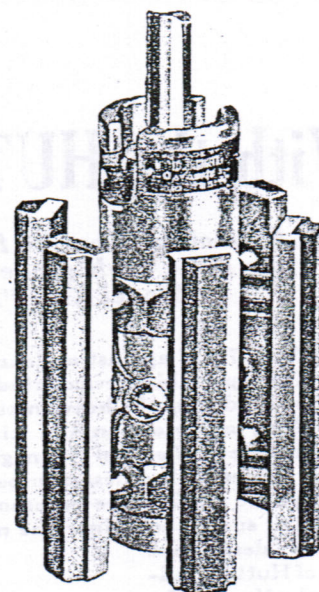
Details of Construction—The Hutto "twin-three" type of grinder for service work is constructed as indicated by the accompanying conventional vertical cross-sectional view, which shows the operative relationship of the various parts. One end of the driving spindle is designed for insertion in the chuck of the electric drill used for rotating the grinder, to the central or driving member of which the other end of the driving spindle is attached by means of a ball-and-pin type of universal, which permits of "offset" or out-of-line operation of the grinder without detrimental effect upon the quality of work done. This type of "universal" drive, with "bayonet" style of connection to the upper end of the grinder body, also provides for easy access to the stone-adjusting mechanism.

Under the driving spindle is the adjusting screw for drawing the upper and lower adjusting cones together so as to force the stoneholder pins, or jaws, outward and press the stones against the cylinder wall. The lower cone is slotted on one side to receive the end of a pin which prevents it from turning when the adjusting screw is turned.

When the adjusting screw is "backed off," or turned in an anti-clockwise direction, the adjusting cones are forced apart by the action of the coiled spring that surrounds the adjusting screw and bears on the small ends of the adjusting cones, and under the inwardly pulling influence of retaining springs provided for that purpose the stone-holder supporting pins or jaws move inward, relieving the stone pressure against the bore wall, thus permitting the grinder to be removed easily and without scratching the bore. The retaining springs keep the inner ends of the stone-holder supporting pins or jaws in contact with the adjusting cones at all times, so that whenever the adjusting screw is turned in a clockwise direction there is a positive outward movement of the pins or jaws towards the bore wall, against which the stone pressure developed, and hence the speed of grinding, depends on manipulation of the adjusting screw, a quarter turn of which sets out the stones approximately one thousandth of an inch.

Neither of the two adjusting cones is attached to the grinder body, within which both are therefore free to "float" to an extent sufficient not only to prevent binding of parts but to insure equalization of seating area and pin pressure on the two cones and thus make the stones self-aligning as well as self-centering.

Parts are proportioned to withstand hard, rough usage, also being hardened to resist wear, thus insuring long life in service—strength with durability.



Twin-Three Service Grinder
Price \$55.00
Extra Set Stones \$10.00

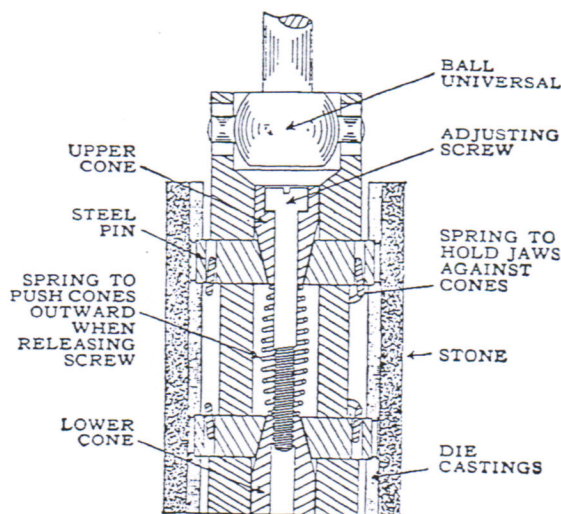
Purchase Grinders, Stones, and
Other Hutto Products
Through Your Jobber

Satisfactory Results are Easy to Get With Hutto Portable Service Grinders

Stones—The grinding elements or abrasive members of Hutto grinders for both service and production work are called stones. Service grinders have 4-inch stones set in die-cast metal run into steel holders having two ground steel pins or jaws whose outer ends are ground to conform to the angularity of the two oppositely positioned adjusting cones against which the pin, or jaw, ends are held in close contact by the strong inwardly-acting pull of retaining springs that tend always to force the stone holders towards the central driving body of the grinder.

Stones are made in four grades, namely: fine, for polishing only, removing not more than .0005, medium, and coarse, an extra-coarse or "roughing" stone also being made for use when a great deal of stock must be removed to true up a badly worn bore. When ordering stones be specific as to desired grade, selection of the latter depending on the amount of stock to be removed and character of finish desired.

Operating Instructions—Before proceeding with the work of regrounding, size up or gauge the cylinder



Cross Sectional View of Grinder Showing Principal Features of Construction

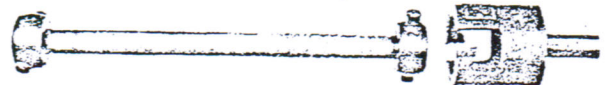
bore to find out to what size it will be necessary to grind them to suit whatever size of piston may be available. Be sure that all pistons used are of the same diameter and weight.

Wrap the crankshaft very thoroughly with rags to keep any abrasive or dirt from lodging in the bearings. Have plenty of clean kerosene on hand, also a can that will allow a generous flow of the kerosene into the cylinder while grinding.

Before starting to grind, decide whether the amount of stock to be removed demands the use of coarse, or "roughing," stones in order to remove stock quickly.

Before placing the grinder in bore of cylinder, examine the stones carefully to see if they have a "glazed" or polished appearance, because the presence of "glaze" destroys the cutting effect of the stones, which should have the dull grey appearance of cast iron. Glazing is caused by running the grinder too loosely in the cylinder bore, or may result from lack of enough kerosene. Glaze may be removed easily by using a "dressing stick" made for the purpose. The grinder must not be allowed to run in the cylinder bore loosely. Put the grinder in the smallest or least-worn part of the cylinder and

tighten the stone-adjusting screw. In other words, begin at the bottom of bore and work upward. Tighten the screw as much as possible and yet allow the motive power you are using to turn the grinder. Successful operation demands at least the power of the best $\frac{5}{8}$ -inch electric drill. If such a drill is being used, make it work to its limit. Work the grinder up and down, allowing it to grind at the tight spots, or where the work of the drill seems the hardest. When the grinder seems to speed up, STOP and again tighten the adjusting screw while the grinder is in the small or tight part of the bore. With a constant flow of kerosene while grinding and a continual repe-



Hutto Double Universal Drive Shaft and Special Fitting for Drill Chuck, Price \$8.50

tition of this process the bore will soon be straight and round. Keep in mind the fact that lack of kerosene or failure to keep the grinder tight in the bore will cause the stones to become glazed, when they will not cut. Keep them well dressed with a dressing stick or the edge of a file.

If the grinder is started when tight, and if the stones have been properly dressed, the grinder will remove about one-half thousandth of stock, the amount varying according to the softness or hardness of the cast iron in the block. Also it should be noted that the grinder will cut faster after the polished part of the old cylinder wall surface has been removed. The polished surface has the same effect as if very hard, so that unless the grinder is set up good and tight, as tight as a $\frac{5}{8}$ -inch drill will pull, getting through this hard skin will be slow.

There are a few items of caution that it is well to keep constantly in mind. Do not allow the grinder to extend beyond the cylinder bore, either top or bottom, farther than the center line of the outer pin. If in this respect care is not taken while the grinder is rotating, you are sure to wreck the grinder or break the stones.

After all the tight spots have been removed and the bore has the same "feel" from top to bottom, then the proper procedure is to make a light adjustment and work the grinder the full travel of the bore and as rapidly as possible, letting the grinder work itself to the point where it will not cut at any part of the cylinder. During this "finishing" process be sure to use plenty of kerosene. If this is done, the walls will have a wonderfully smooth finish and will be round, straight, or parallel, and will give the best of satisfaction in actual operation.

After one of the pistons has been fitted to the first bore in the block, the others may be used very much like plug gauges to which to grind and fit the other bores.



Double Universal Drive Shaft and Adapter for use in Drill Press. Adapter Shanks No. 2, No. 3, or No. 4 Morse Taper. Price of Adapter \$8.00. Double Ball Universal \$5.00

For regrounding cylinder bores of blocks removed from chassis, double universal drivers and adapters with No. 2, No. 3, or No. 4 Morse taper shanks, as here shown, are available for drill press operation of grinder.

Faster and Better than any other known method of Refinishing Cylinder Bores.

HUTTO Combined "Stroking" and Drill Stand

Easier, Faster Operation Than With Manual Control

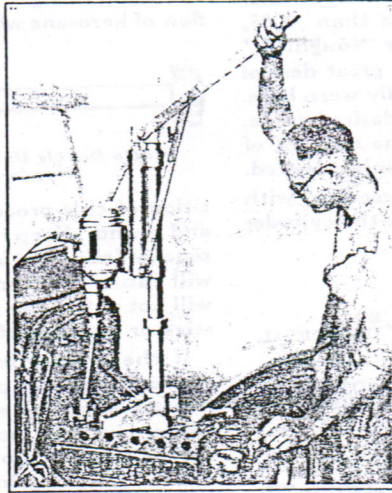
POSITIVE mechanical control of the stroking movement of Hutto Portable grinders is as essential to speed in getting desired results in accuracy, finish, and quantity of stock removed as is regulation of the pressure with which grinding stones bear against cylinder wall. The higher the wall pressure the greater the grinding load and the harder it becomes to hold the electric drill while moving the attached grinder up and down in the bore.

When the Hutto stroking stand is used, limitation of the up and down movement of the grinder, regardless of load on drill, is accomplished easily by setting stop collars on the column on which the drill-holding carrier, or fixture, is forced to slide up and down by manipulating the hand-lever control mechanism attached to the carrier.

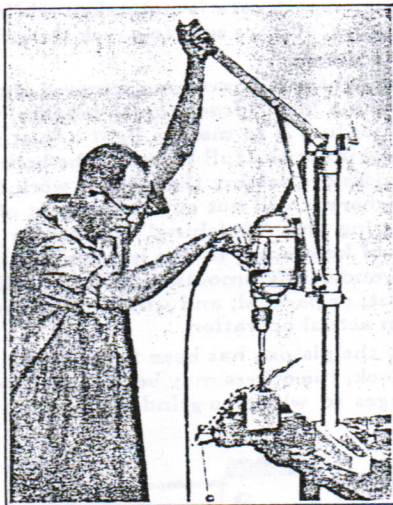
When the stroking movement is thus limited, the operator is relieved of any fear that he may push his grinder too far down or pull it too far out of the bore. As a consequence he feels freer to increase both wall pressure and stroking speed, with the result that the work of grinding is done more quickly and with less physical effort than when the operator depends entirely upon manual limitation of the stroking movement.

is attached, and with which it is "square," is solidly bolted to the top of the cylinder block in such a position as ordinarily to bring the drill chuck directly over, or in line with, the cylinder bore center. Drive shafts with ball-and-pin type "universal" ends are provided, to compensate for lack of alignment, even when extreme, between the driving and driven members of the grinding outfit. The "foot" is slotted to receive one of the studs by which the cylinder head is held in place and which, when head is removed, serves equally well to hold the foot in position on top of the block. The stand, which is 38 inches high and weighs 27 pounds, can easily be adapted for other uses, such as drilling.

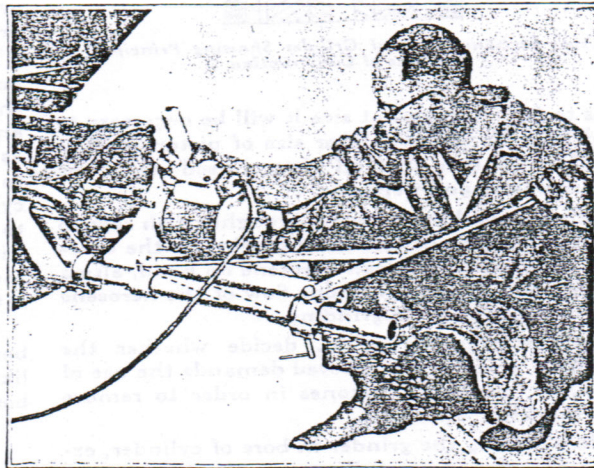
The accompanying illustrations serve to bring out the extreme adaptability of the stroking stand for purposes other than manipulation of the Hutto portable or service type of grinder to get quicker results with greater ease, ready attachment to bench or work being made possible by the supporting "foot." The operating handle may be used on either side of the column, all that is necessary to make the change being to remove the upper link bolt, throw handle over to other side, and reconnect link in new position, as indicated by dotted lines in cut below, which



View of Stroking Stand showing how use of "Double Universal" Drive Shaft solves grinding problem when cylinder bores are out of line with electric drill



Stroking Stand Used as Bench Drill



Use of Stroking Stand for Shop Drilling Operations

The Hutto stroking stand provides a degree of rigidity that is extremely favorable to quick grinding action. The "foot" to which the vertical column

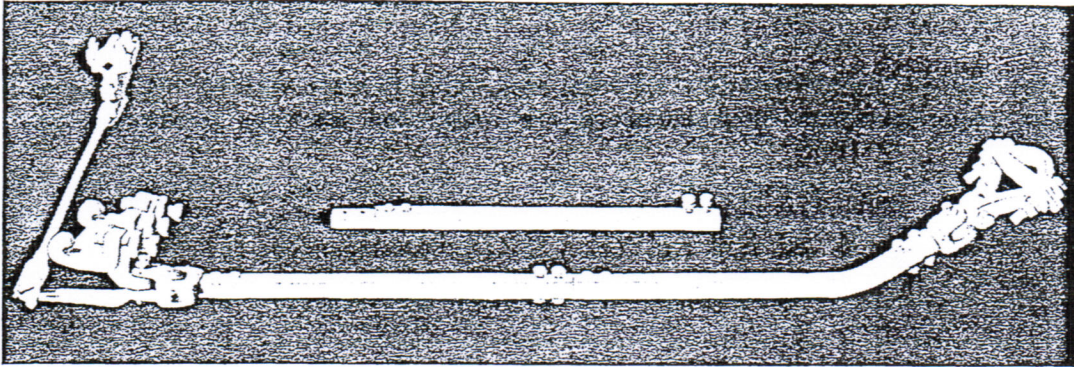
shows a shop drilling operation. Price, with double universal and drill chuck attachment \$41.00; stand alone \$32.50.

**SOLD BY AUTHORIZED HUTTO JOBBERS EVERYWHERE.
HUTTO FACTORY SERVICE MEN ALWAYS AVAILABLE.**

**For Further Information, Write Direct to Manufacturers, HUTTO ENGINEERING CO.
515 Lycaste Ave., Detroit, Mich.**

"WHITE MULE"

ONE MAN AUTO TOWER



**Reduces Delivery Costs From Factory and
Distributing Points**

50%

One Man Operates Two Cars at One Time

**White Mule Tower Can Easily be Carried in a Suit Case
Attached In Five Minutes**

Pays For Itself in One or Two Trips

The design and application of the White Mule Tower produces a positive operation which causes the second car to follow in the tracks of the first. It may be attached to the rear axle housing, spring shackles, bumper or any convenient connection of the leading car to the front axle and tie rod of the car behind. (If car to be towed has worm steering gear—disconnect one end of drag link, after the tower has been attached to cars.)

For use in driving new cars from the factory the White Mule Tower is an economical necessity. It is the only towing device of its kind which can be carried folded in a suit case.

The clearance between cars may be adjusted by adding or eliminating a middle section of tongue.

The savings in time and money pay for its first cost over and over again.

(OVER)

SPECIFICATIONS:

Construction—Steel throughout. Fittings are steel castings—Tongue is Steel U-Bar—Wearing bolts are hardened and fitted with oilers.

Connecting parts pivoting on hardened bolts are bushed with steel bushings.

Interlocking movable members are milled and machined to fit within $2/1000$ ".

Drag Link Assembly, connecting steering arm and tie rod clamp, is equipped with ball and socket fittings, the compression springs at both ends of which automatically compensate for road vibration and wear.

Length—Maximum 76 inches.

Length—Minimum 56 inches.* (One section omitted)

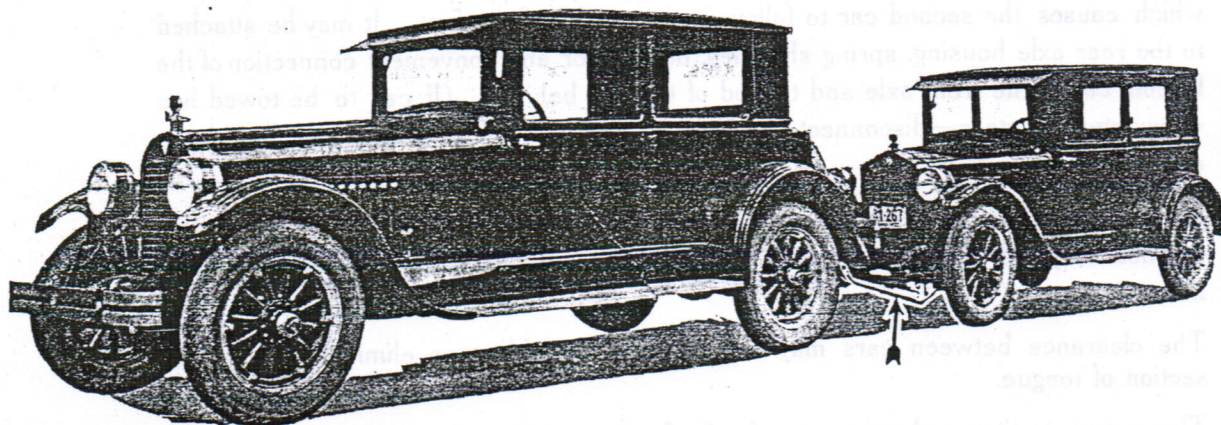
Weight—35 lbs.

Standard equipment applicable to all cars with I-beam front axle.

Every Service Car Should Have A

WHITE MULE TOWER

As a Part of Its Equipment



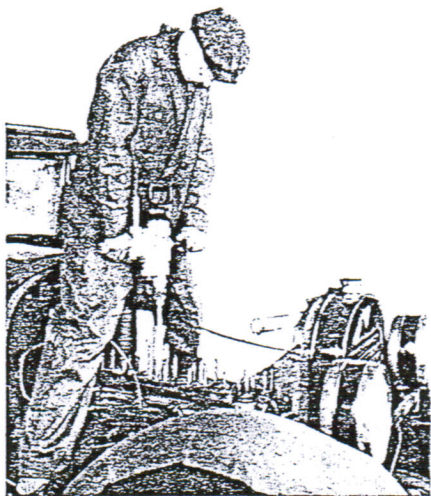
Manufactured by
Marion Auto Devices Co.
Marion, Ohio

PRINTED IN U. S. A.

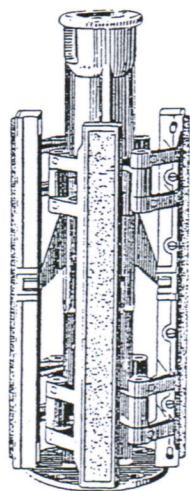
THE HALL CYLINDER HONE

RECOMMENDED FOR HUDSON-ESSEX SERVICE STATIONS

The Hall Hone is a combination long and short cylinder hone with which you can fit .005" oversize pistons in from one and one-half to two hours with little practice. The stones are held rigidly parallel by cantilevers that are actuated by one spring plunger which cause it to produce a round hole. ¶The hone can also be used as a solid hone for final paralleling by removing spring and adjusting to size required.



HONING HUDSON BLOCK IN CHASSIS, USING HALL HONE AND VAN DORN ELECTRIC DRILL



NO. 1 HONE HAS 4 LEVERS ONLY

For Hudson Super Six and Essex Four Cylinder Models

Standard No. 1 Hall Hone, range $2\frac{3}{16}$ " to $3\frac{1}{2}$ "
Price \$35.00

For Essex Six Cylinder Model order
1 set No. 1-AJ coarse stones and 1 set No. 1-CJ
fine stones. For use with the Standard No.
1 Hall Hone.

These stones handle down to Essex Diameters
of $2\frac{3}{8}$ " and $2\frac{1}{16}$ ".

Standard Equipment with each Hone.

- 1 Set Short Coarse Stones.
- 1 Set Finishing Stones.
- 1 Rubbing Stone.
- 1 Suspension Spring.
- 1 Ball Driving Joint and Extensions.

Standard No. 1 Hone Stones

1A	Short, Coarse Stones, set of 4	\$3.80
1B	Long, Coarse Stones, set of 4	4.50
1BM	Long, Medium Stones, set of 4	4.50
1C	Finish Stones, set of 4	4.50

No. 1 Jr. Hone Stones

1AJ	Short, Coarse, set of 4	\$3.80
1BJ	Long, Coarse, set of 4	4.50
1CJ	Long, Fine, set of 4	4.50

Driving Power

Electric Drills of $\frac{1}{2}$ " capacity with speed
from 475 R. P. M. up will handle both small
and large Hones $\frac{1}{2}$ " Heavy Duty preferred.
Drill Presses require a double Ball Joint.

Lubrication

Stones are Oil Treated before leaving Fac-
tory. Wash Cylinders and Stones with half
and half solution of Kerosene and Cylinder Oil.
Use Hall's Rubbing Stone to sharpen Stones.

Orders should be placed with your nearest Automotive Equipment jobber.

Manufactured By

The Hall Manufacturing Company Toledo, O.

THE HALL CYLINDER HONE

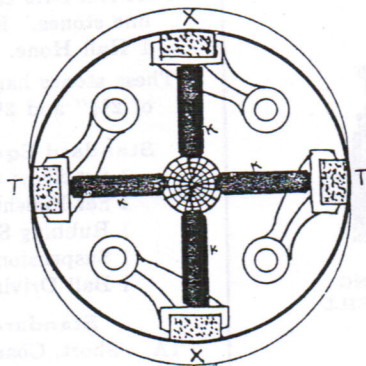
The first HALL Hones were put on the market in the Spring of 1923 and have been improved from time to time, the result being our present tool, which we believe to be the most practical Hone made.

The HALL Hone is made of a nickel zinc base alloy bearing metal, which has a tensile strength of 39,000 pounds, making it practically as rigid as cast-steel.

The stones are cemented into steel jackets, eliminating any trouble with stone breakage.

The internal construction consists of precision ground steel plungers, so connected that they actuate the cantilever dogs equally at all times, making the tool precision constructed.

The pressure being equal at all times, it is impossible for two Stones to grind in a larger diameter (See "X" on diagram) than the two Stones grinding in the smaller diameter (See "T" on diagram). If our operating instructions are followed carefully, any ordinary automobile mechanic can do a perfect job of resizing and fitting new pistons.



Condensed Instructions for operating Hall Hones

This Hone is a combination solid and spring pressure tool. Spring pressure follows up and cuts faster than solid pressure. To secure the solid pressure simply remove the internal spring from under the adjusting screw. Solid pressure is ideal for sizing cylinders up to .005", but over that amount spring pressure is better to save time and speed up cutting; especially on cylinders that show .010" to .020" tapers. Use the Hone in these cases with spring pressure, but remove spring, making hone solid to size accurately the last few thousandths. Cylinders having a tendency to become bell, mouthed at top or bottom can be rectified by making the hone Solid.

On closed blocks with no opening in top of cylinder, it is necessary to turn block upside down on the floor to do. Use the short coarse stones in the bottom of the hone and insert hone so these stones are in the largest part or worn part of the cylinder. The hone should be used solid for this type cylinder. Apply the pressure and gradually work the hone towards the mouth of the cylinder.

FAST CUTTING—The Hall Hone will at times reach a cutting speed of .007" in one minute, depending upon the hardness of the metal. The operator must be careful to run only 30 seconds at first and with only about half the pressure applied, until he finds how fast he is cutting and how hard the block is. Also, if he only has a few thousandths to remove, then he will require less pressure. But if he has .008" or more to take out he can apply all the pressure he wants after the first run. Screw the adjusting screw down, until you cannot turn the Hone in the Cylinder, by inserting a screw driver through the slot in the top of the hone; then let off very slightly just so the drill will drive the hone at a fair speed. Runs of 30 and 45 seconds are the best because the stones will fill up with metal and slide instead of cutting. Every time the tool is removed from hole, wash off with kerosene soaked brush and rub with Hall rubbing stone and wash again and continue honing.

CAN BE PURCHASED FROM YOUR NEAREST JOBBER.

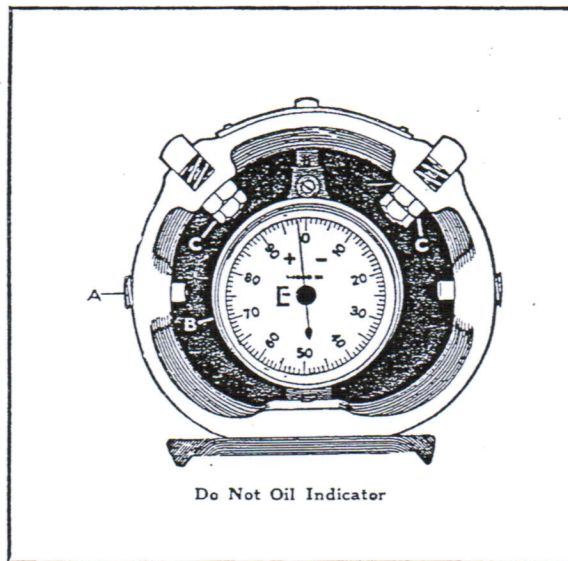
Manufactured By

The Hall Manufacturing Company, Toledo, O.

Instructions for Setting Microgauge

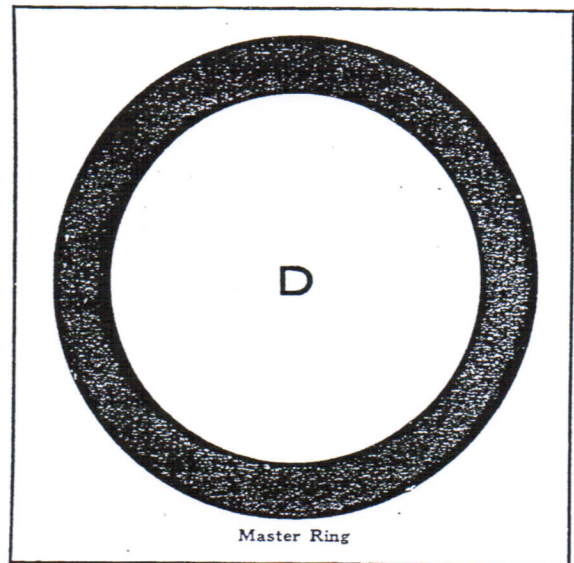
The gauge consists of an aluminum shell having a shoe on one side and pressure bars on the other. Inside the shell is a dial indicator reading in thousandths of an inch with its plunger projecting through the outside wall of the shell so that it will bear on the cylinder wall. A setting ring is provided with each gauge. The inside diameter of this ring is ground to the exact size of the new cylinder bore. In operation the gauge is placed inside the setting ring and the pointer on the indicator set at zero. This is done by turning the knurled rim of the indicator dial. Now when the gauge is inserted in the cylinder bore and moved up and down at full length, any variation from the standard will be shown in thousandths on the indicator dial.

Do not put more than .020 tension on the dial indicator when clamping it in the gauge shell, that is, do not clamp the indicator in position so that the pointer shows more than .020 movement when the gauge is inserted in the setting ring. Keep the gauge in the box when not in use.



Do Not Oil Indicator

A
C
C
U
R
A
C
Y



Master Ring

- 1st. Take gauge (A) insert it in master ring (D) which is ground to standard size.
- 2nd. Then, while (A) is in (D), take thumb and first finger and revolve dial (B) around until (O) zero comes directly under hand of indicator (E).
- 3rd. Be sure that jam nuts (C) have $\frac{1}{8}$ of an inch clearance between face of nuts and castings while gauge (A) is in master ring (D).
- 4th. Take gauge (A) out of master ring (B) and insert it in cylinder to be measured, any deviation either + or - from O registers the true condition of the cylinder in thousandths of an inch.

Prices Covering The "Walker Microgauge"

Complete Microgauge Set Includes—

Microgauge, Rings and Shoes for Hudson $3\frac{1}{2}$ ", Essex $4\frac{3}{8}$ ", Essex $6\frac{25}{8}$ " Essex $6\frac{21}{16}$ ".....\$35.00 net

Standard Microgauge Set Includes—

Microgauge, Ring and Shoes, any size.....\$22.75

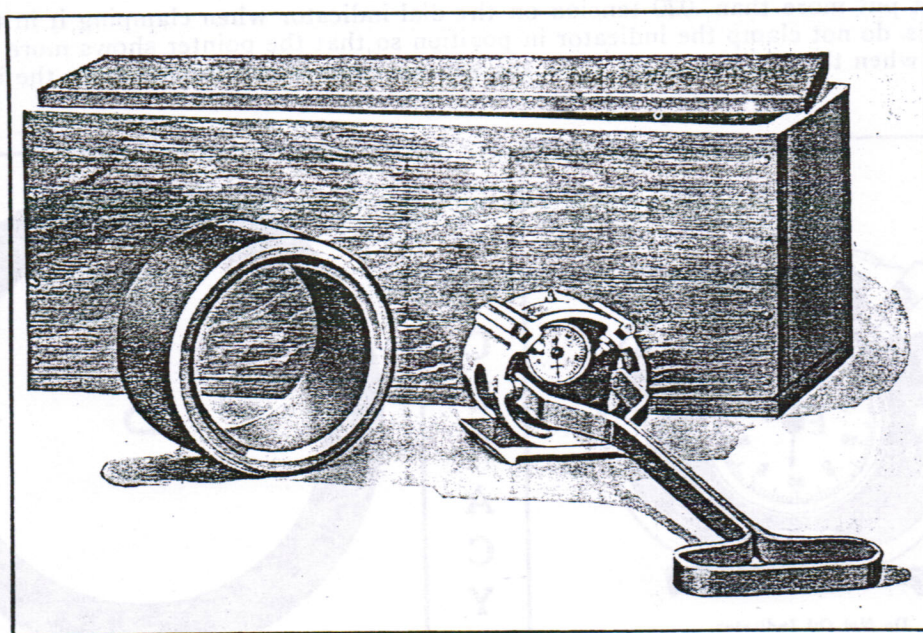
Fittings—

Master Ring Essex $6-2\frac{11}{16}$ "	\$3.25
Master Ring Essex $6-2\frac{5}{8}$ "	\$3.25
Master Ring Essex $4-3\frac{3}{8}$ "	\$3.25
Master Ring Hudson $-3\frac{1}{2}$ "	\$3.25
Shoe Essex $6-2\frac{11}{16}$ "	.98
Shoe Essex $6-2\frac{5}{8}$ "	.98
Shoe Essex $4-3\frac{3}{8}$ "	.98
Shoe Hudson $-3\frac{1}{2}$ "	.98

All orders must be placed direct with the Advance Pattern and Production Company, 3024 West Fort Street, Detroit, Michigan. Unless remittance accompanies order goods will be shipped on C. O. D. basis.

Recommended for HUDSON and ESSEX Service Stations

HUDSON



ESSEX

"WALKER MICROGAGE"

An Accurate Gauge For Measuring Cylinder Bores

By comparing the "Walker Microgage" with other methods of checking inside cylindrical measurements, its many advantages are obvious. When inside micrometers are used for measuring cylinder bores much depends upon the operator's skill and ability at using such instruments.

The "Walker Microgage" gives an accurate reading even though the operator be inexperienced. It is truly a time and labor saving device and a valuable addition to your shop equipment.

The Advance Pattern and Production Co.

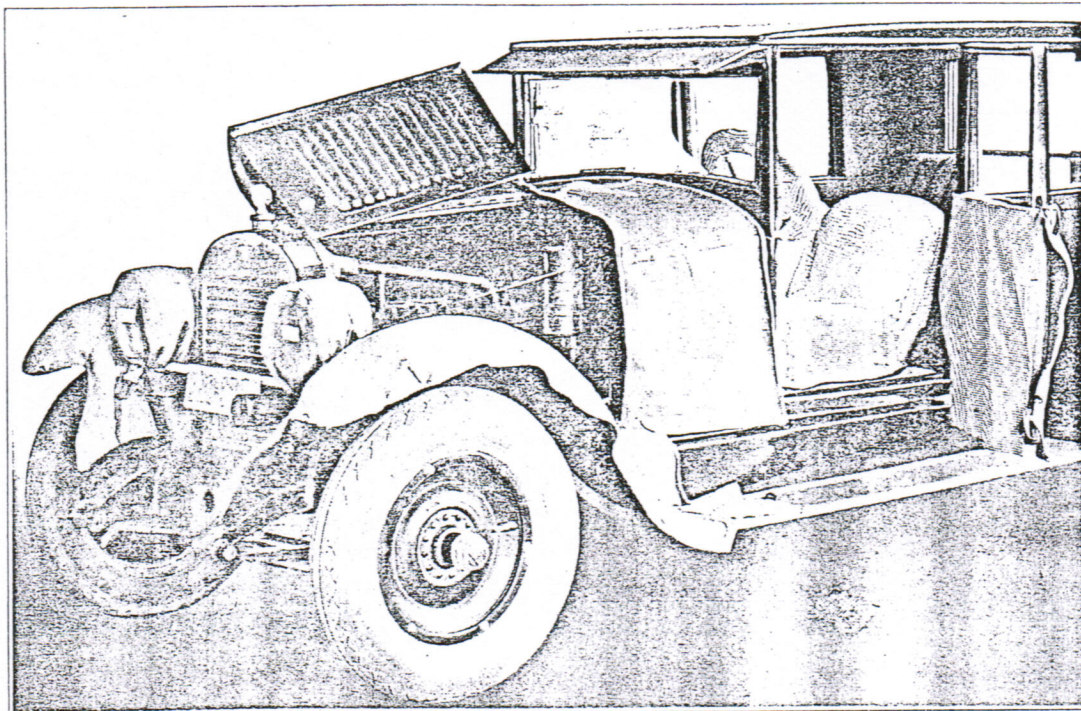
Manufacturers and Sole Distributors

3024 West Fort St.

DETROIT, MICH.

Recommended for HUDSON and ESSEX Service Stations

Kleenkar Shop Covers



Every Hudson-Essex Dealer Should Provide Himself With Car Covers

When the customer knows that covers are being used to protect his car, he appreciates the entire service of the station. This is particularly true of women drivers.

KLEENKAR cover equipment helps to popularize a service station, thereby increasing the volume of service work and stimulating sales.

WHEN THE JOB IS COMPLETED.

Tie a courtesy tag on the steering wheel. It tells your customer at a glance that KLEENKAR Shop Covers have protected his car's finish and upholstery.

Send for as Many as You Like

KLEENKAR fender, cowl, radiator, lamp and the outside of double door covers are made of a knit slate color Jersey cloth, extra heavy weight, with soft fleece lining.

KLEENKAR upholstery and interior covers are made of heavy blue and white striped fabric which is subjected to a hot-water shrinking process before cutting. Both materials are guaranteed non-shrinkable, and are easily laundered.

Careful workmanship is used in the construction of KLEENKAR shop covers. All seams are felled with good stout thread, and the tie tapes are securely sewn to the covers and are the proper length for rapid tying.

The cost of this equipment will be more than offset by the good will created through its use.

HUDSON-ESSEX KLEENKAR SHOP COVER PRICE LIST

FENDER COVERS—Interchangeable	Pair \$6.50
COWL COVERS	Each 3.00
RADIATOR COVERS	Each 2.50
LAMP COVERS	Pair 3.00
DOUBLE DOOR COVERS: Jersey Knit outside, Express Stripe inside, 30 inches wide	Pair 4.00
DOUBLE DOOR COVERS: 38 inches wide for Coach	Pair 4.50
WIDE FRONT SEAT COVERS—Interchangeable all models	Each 4.00
REAR SEAT COVERS—Interchangeable all models	Each 4.00
SINGLE SEAT COVERS: for Coach	Each 3.00
DOOR COVERS: INSIDE only, 30 inches wide	Pair 2.00
DOOR COVERS: Inside only, 38 inches wide for Coach	Pair 2.25
STEERING WHEEL COVERS	Each .75
CONTROL LEVER COVERS	Each .25

By agreement with Hudson Motor Car Company the manufacturer of Kleenkar Shop Covers will allow all HUDSON and ESSEX maintenance stations a DISCOUNT OF 25% from above prices. F. O. B. Milwaukee.

Orders Should Be Placed Direct With

AUTOMOTIVE FABRIC EQUIPMENT CO.

Exclusive Manufacturers

235 EAST WATER STREET - MILWAUKEE, WISCONSIN



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The repair work on your car has been completed, inspected and tested. We have honestly endeavored to do the work satisfactorily and hope it will please you.

To insure clean fenders, cowl, upholstery, steering wheel and control levers, your car has been protected with

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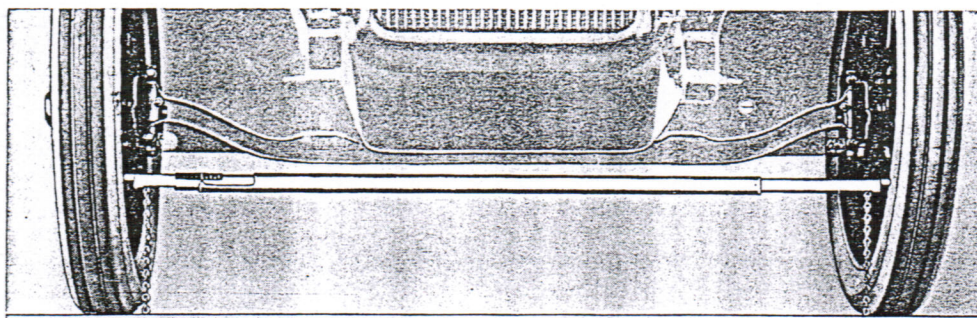
This is another phase of our constant effort to render satisfactory service at all times.

Manager of Service

THE IDEAL WHEEL ALIGNING GAGE

Can be used on all cars—balloon tires—four wheel brakes

- I**DEAL—Because it meets every requirement.
- D**URABLE—Years of service cannot affect its accuracy.
- E**ASILY OPERATED—An accurate test in ten seconds.
- A**CCURATE—Will register the slightest misalignment.
- L**OW COST—Much lower than other gages.



QUICK AND ACCURATE

Place the Ideal Gage between the wheels at the front with the chains just touching the floor. Set the pointer at Zero. A spiral spring presses the ends of the gage against the wheels holding it in this position.

The gage is then transferred to a corresponding position at the back of the wheels by moving the car forward. The chains will indicate where to stop. The spiral spring allows the gage to shorten or lengthen as the car is moved and if the wheels are closer together or farther apart at the back the pointer will register the amount on the scale.

The pointer and scale are plainly visible from the front of the car when the gage is in the second position.

No figuring, no forgetting, no chance for mistakes

A good feature of the gage which should not be overlooked is that both readings are taken from the same identical part of the wheels.

Conditions arising from disc wheels, wire wheels, balloon tires, front wheel brakes, different sized wheels, and the various forms of axle construction are all taken care of so that each car is automatically given the correct amount of toe in without making any special allowances.

The Ideal Gage saves time and tires. Insures easy steering.

Book on Wheel Alignment, Tire Wear, "Shimmy," etc. with each Gage

Price to Car Dealers - - - \$8.50

MANUFACTURED BY J. F. DUBY, 11 River Street, Mattapan, Mass.