

Why ENGINEERED SETS  
for REAL PERFORMANCE?

*presented by*

**KING QUALITY**



**PRODUCTS CO.**

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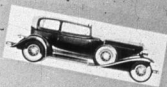
Why ENGINEERED SETS  
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**KING QUALITY**



**PRODUCTS CO.**



The same size piston rings fit all these cars.

3 x  $\frac{1}{8}$  compression rings and 3 x  $\frac{3}{16}$  oil rings fit  
the following cars:

AUBURN

HUPMOBILE

CADILLAC

NASH

GRAHAM

OLDSMOBILE

HUDSON

REO

TERRAPLANE



**These rings may work all right in these cars.**



These may work fairly well in these cars.



They may fail to work at all in these cars.

*Even though they're all the same size....*

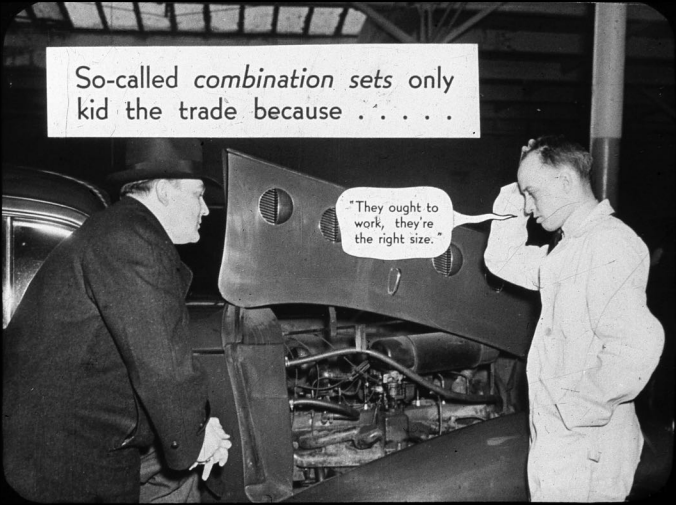
3 x 1/8

....the theory that rings operate properly in different motors because they're the same size, has been exploded.



So-called *combination sets* only  
kid the trade because . . . . .

"They ought to  
work, they're  
the right size."



They are merely open stock oil and compression rings of the right size gathered together and put in a single box.



**They make it easier to  
stock and order . . .**

**BUT . . .**



- They can't produce good results in all cars

There are two vast markets for Piston Rings

1. *The Slip-in and  
Rebore Market*

"...it will be an  
entirely re-con-  
ditioned job."



2. *The Re-ringing Market  
where wear conditions  
are extreme*

"...this includes  
all re-ringing-  
operations."



For each market it is necessary to engineer

The right ring

For the right groove

Of the right piston

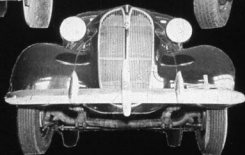
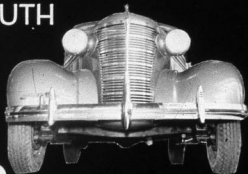
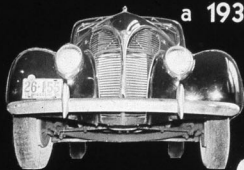
Of the right model

... and put these rings in sets.

That is just what  
**KING QUALITY**  
has done!

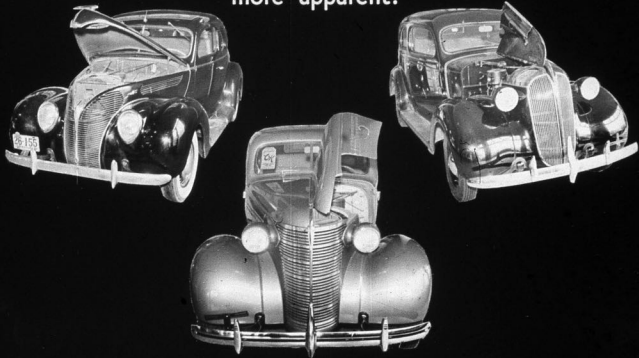


LET'S PROVE IT  
Here is a 1938 FORD, a 1938 CHEVROLET and  
a 1937 PLYMOUTH

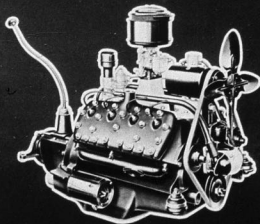


*Don't look much alike, do they? But....*

....under the hood the difference is even  
more apparent.



# Here is the 1938 FORD V8 Motor

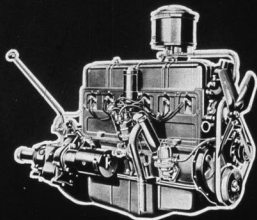


## 1938 FORD V8 MOTOR

$3\frac{1}{16}$  Bore X  $3\frac{3}{4}$  Stroke  
85 H.P. at 3800 R.P.M.  
Piston Displacement 221.0

Compression Ratio 6.12/1  
Pressure Oil System  
V-Type Motor

# Here is the 1938 CHEVROLET Motor

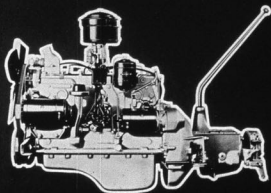


## 1938 Chevrolet 6 Motor

$3\frac{1}{2}$  Bore X  $3\frac{3}{4}$  Stroke  
85 H.P. at 3200 R.P.M.  
Piston Displacement 216.5

Compression Ratio 6.25 to 1  
Splash Oil System  
Valve-in-head Motor

# Here is the 1937 PLYMOUTH Motor

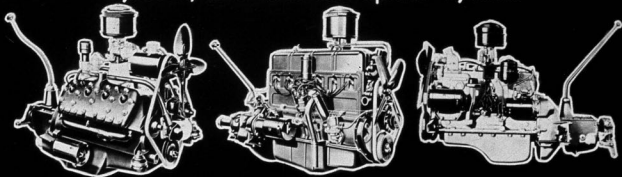


## 1937 Plymouth 6 Motor

$3\frac{1}{8}$  Bore X  $4\frac{3}{8}$  Stroke  
82 H.P. at 3600 R.P.M.  
Piston Displacement 201.3

Compression Ratio 6.70 to 1  
Pressure Oil System  
L-Type Motor

These motors are in the same price class; all made by fine engineering departments; yet the bore and stroke of each is different; the piston displacement is different; horse power ratings vary; two motors use the pressure oil system; one uses the splash system



*Let's look inside the motors where there is even a greater difference.*

Here are the piston, pin, valve, bearing,  
guide and spring in the  
1938 FORD V8 Motor

FOR FORD



**PISTON**  
CAST STEEL  
SOLID SKIRT  
3 RING GROOVES  
307 GRAMS  
GROOVE DEPTH .169



**PIN**  
TAPER REAMED  
68-69 GRAMS



**VALVE**  
MUSHROOM STEM  
AUSTENITIC  
NON-MAGNETIC  
STEEL



**BEARING**  
INSERT-RANGE TYPE  
STEEL BACK-CADMIUM LINED  
INSIDE AND OUTSIDE  
CRANKSHAFT TURNS INSIDE  
AND TWO ROBS TURN ON  
OUTSIDE OF BEARING



**VALVE GUIDE**  
TWO PIECE  
SPLIT TYPE



**VALVE SPRING**  
12 COILS UNIFORM  
PITCH  
LOADING WITH VALVE  
OPEN 48 TO 57  
POUNDS  
.1205 WIRE

# Here are the same parts for the 1938 CHEVROLET

## FOR CHEVROLET



**PISTON**

*GRAY IRON  
SLIPPER TYPE  
TIN PLATED  
3 RING GROOVES  
754 GRAMS MAX.  
GROOVE DEPTH CORR. 105° OIL .106*



**PIN**

*HEAVY CENTER  
124 GRAMS*



**VALVE**

*SINGLE GROOVE  
STRAIGHT STEM  
MAGNETIC  
SILICROME*



**BEARING**  
*POURD-IN-ROD  
BEARING*



**VALVE GUIDE**

*ONE PIECE  
PIN TYPE*



**VALVE SPRING**

*7 1/4 COILS  
TWO CLOSED COILS  
AT BOTTOM  
LOADING WITH VALVE  
OPEN 94 TO 102  
POUNDS  
.162 WIRE*

# And here they are for the 1937 PLYMOUTH

## FOR PLYMOUTH



**PISTON**  
HIGH SILICON ALUM.  
U-SLOT  
4-RING GROOVES  
400 GRAMS  
GROOVE DEPTH COMP. .162 OIL .182



**PIN**  
BARREL TYPE  
107 GRAMS



**VALVE**  
TWO GROOVE  
STRAIGHT STEM  
MAGNETIC  
SILCROME



**BEARING**  
THIN SHELL INSERT  
COPPER COATED BACK  
RABBIT LINED



**VALVE GUIDE**  
ONE PIECE  
TAPERED END



**VALVE SPRING**  
8 5/8 COILS  
TWO CLOSED COILS AT TOP  
LOADING WITH VALVE OPEN  
77 TO 83 POUNDS  
148 CADMIUM COATED  
WIRE



## THESE PARTS . . .

Make a Ford a Ford; a Chevrolet a Chevrolet;  
a Plymouth a Plymouth.

And the same engineering differences  
you have seen in the pistons, pins,  
valves, bearings, guides and springs  
are just as apparent in the piston rings.

Here are the rings used as standard  
equipment in this particular  
1938 FORD V8 model



Here are the standard rings used  
in the 1938 CHEVROLET



# Here are the rings used in the PLYMOUTH



King Quality engineers have followed car factory practice for designing rings for the "Slip-in" and rebore markets.

Here is the  
**KING QUALITY**  
*Factory Type Set*  
for this particular Ford model .  
identical with factory rings in  
every respect

**Ford  
Factory**

**King Quality  
Factory Type**



*TAPER FACE  
COMPRESSION*



*TAPER FACE  
COMPRESSION*



*VENTILATED  
HIGH UNIT  
TYPE OIL RING*



*TAPER FACE  
COMPRESSION*



*TAPER FACE  
COMPRESSION*



*VENTILATED  
HIGH UNIT  
TYPE OIL RING*

Here is a comparison  
of the  
**KING QUALITY**  
*Factory Type Set*  
for the Chevrolet with the  
Chevrolet factory rings

Chevrolet  
Factory

King Quality  
Factory Type



And here are the  
**KING QUALITY**  
*Factory Type* Set Rings  
for the Plymouth and the  
Plymouth factory rings . .  
the same in every respect

## Plymouth Factory



*INSIDE BEVEL  
COMPRESSION, COATED*



*INTERRUPTED SCRAPER  
GROOVE COMP, COATED*



*VENTILATED HIGH UNIT  
TYPE OIL RING, COATED*



*VENTILATED HIGH UNIT  
TYPE OIL RING, COATED*

## King Quality Factory Type



*INSIDE BEVEL  
COMPRESSION, ALUMINIZED*



*INTERRUPTED SCRAPER  
GROOVE COMP, ALUMINIZED*



*VENTILATED HIGH UNIT  
TYPE OIL RING, ALUMINIZED*



*VENTILATED HIGH UNIT  
TYPE OIL RING, ALUMINIZED*

These Ford, Plymouth and Chevrolet models are merely examples of the vast differences in motors of the same price range. Imagine a comparison with motors in totally different price ranges. There the difference is even greater.

King Quality has given **FACTORY TYPE** sets to the repair trade and car owner for the slip-in and rebore market, which are the same in every dimension and characteristic as the rings supplied by the car factory. Here is way they will be packed. .



KING QUALITY

ALUMINIZED

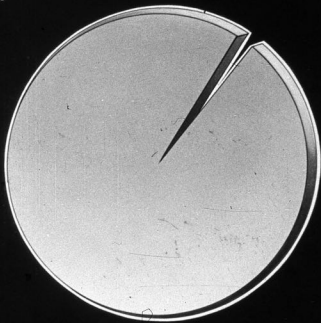
Factory Type Set

PISTON RINGS

12-3 1/2 X 1 1/8 COMP.  
8-3 1/2 X 3/16 OIL

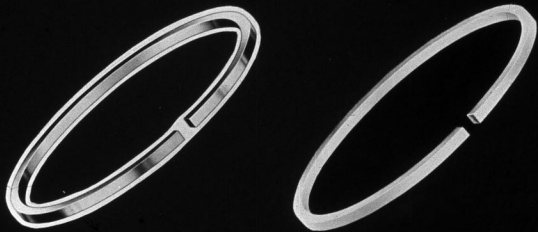
81 FOR CYLS.  
STD. TO .005

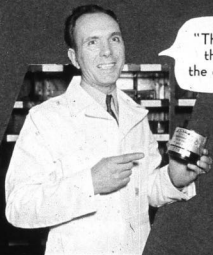
These **FACTORY TYPE** sets cover 99 percent of the market, the only exception being very old and small production cars, trucks and tractors.



KING QUALITY  
*FACTORY TYPE Rings*  
are Altinized

**ALTINIZING** is a coating of tin base bearing alloy electrically applied to the surfaces of a piston ring.





"They stop oil and  
they don't wear  
the cylinders, either."

Before *Altinizing* was developed it was impossible to produce rings that would work in badly tapered and worn cylinders without creating excessive wear and blowby

**Permanent blowby conditions are set up as a result of scuffing and premature wear during the running-in period.**



**This scuffing and rapid wear is caused by the hot blowby gases which escape past the ring before they are finally seated and break down the lubricating film.**

The *Altinized* surfaces of KING QUALITY piston rings create an immediate seal during the running-in period between the rings and the cylinder wall, thereby stopping the hot blow-by gases which break down the lubricating film.

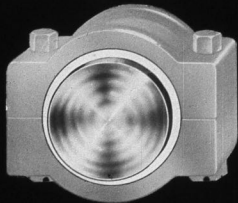
Thus, scuffing and rapid wear, which create permanent blowby, are eliminated



## ALTIMIZING

also reduces friction and subsequent wear because of its fine bearing surfaces.

Tin base bearings reduce friction and wear in high speed operation and *Altinizing* reduces friction and wear in piston ring operation.



*Altinizing* reduces wear on the cylinder wall and increases natural wear life of a ring  $33\frac{1}{3}$  per cent.



With **ALTINIZING** the ring moves in and out in the groove faster, maintaining cylinder wall contact at high speed in uneven and badly tapered cylinders.

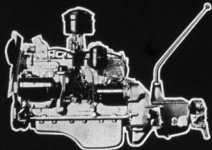
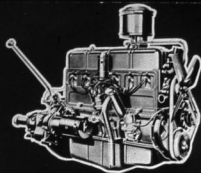
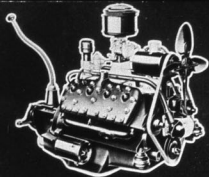
With the **ALTINIZED** finish King Quality engineers have now produced the finest rings available for badly worn and tapered cylinders.

If it is necessary to engineer rings for each groove of each piston when the car is new, it is doubly important to engineer rings for badly worn motors. The result is ENGINEERED SETS



*ENGINEERED SETS mean  
the Right Ring for the Right Groove  
of Each Piston of Each Model . . .*

Let's take another look at the three motors  
we have been discussing



Here is the  
**KING QUALITY  
ENGINEERED SET**  
for the  
**FORD V8 motor**



*ALTINIZED TAPER FACE COMPRESSION RING*



*ALTINIZED EXPANDER COMPRESSION RING*



*ALTINIZED STEEL OIL RING*



The top groove ring is an  
*Altinized Taper Face Compression Ring*



No Expander is used behind this ring

The second groove ring is an  
*Altinized Expander Compression Ring*



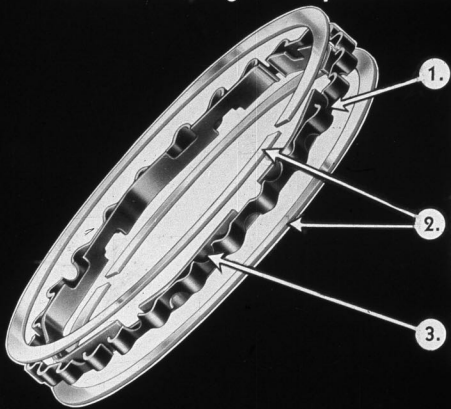
A special type of Expander is used

In the third groove  
an *Altinized Steel Oil Ring* is used --  
an exclusive KING QUALITY development.

*It's all steel!*



This steel oil ring is composed of four parts.



1.

Double vented, non-breakable, feather-weight steel spacer.

2.

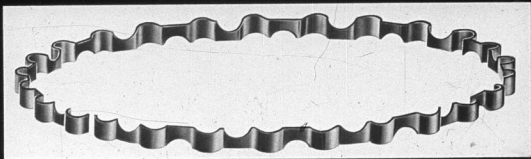
Two independent, double acting, high pressure steel scraping sections.

3.

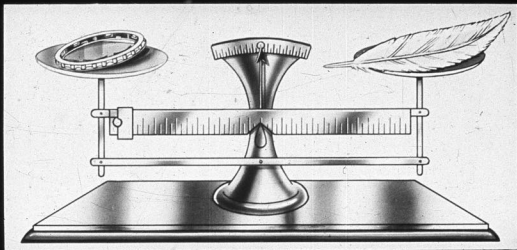
Controlled tension steel expander.

The double-vented non-breakable feather-weight steel spacer has oil vents both top and bottom.

Twice the number of vents drain  
twice the amount of oil.



**THIS SPACER IS FEATHER-WEIGHT.**

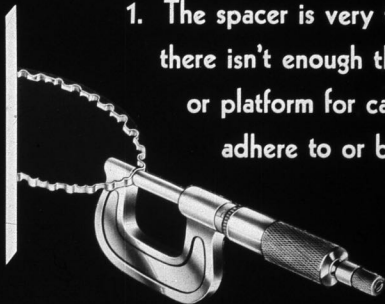


**It weighs only one-third as much as the iron separator used in so-called steel rings.**

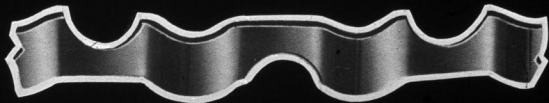
This steel spacer is non-breakable in installation and operation. It is heat treated under extremely high temperatures never approached in engine operation so that it permanently retains its tension, hugs the bottom of the ring groove and cannot work out against the cylinder wall.

**This steel Oil Ring is carbon free for two reasons:**

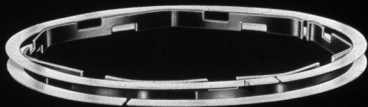
- 1. The spacer is very thin and there isn't enough thickness or platform for carbon to adhere to or build on.**



- 
2. The steel section which forms one side of each oil vent moves in and out in the ring groove and breaks up any carbon that has a tendency to form.

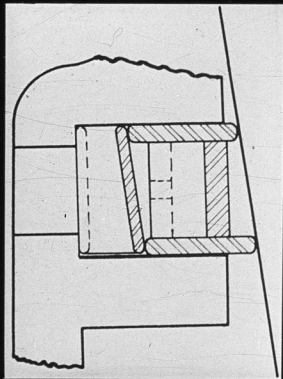


The bearing surface of each independent double-acting high pressure steel scraping section is very small. They exert tremendous high unit pressure against the cylinder wall.



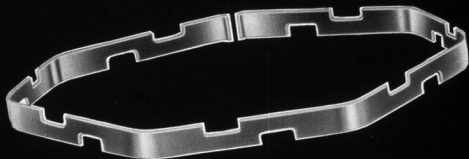
The entire pressure of the controlled tension expander is exerted behind these sections.

The sections work independently of each other and are double-acting.



This double action allows the sections to follow extremely tapered cylinder walls with both sections always in contact with the cylinder wall.

## THE CONTROLLED TENSION STEEL EXPANDER



is made of Swedish steel and heat treated for the greatest possible tension. Oil ports are staggered, top and bottom, allowing oil to flow freely.

The **ALTINIZED** finish on the two sections reduces cylinder wall wear and reduces friction between the steel spacer and the two steel sections and allows them to move rapidly in and out in the piston groove. No steel ring can operate properly without blowby and excessive cylinder wall wear unless it has the **ALTINIZED** finish.

Here is the  
**ENGINEERED SET**  
for  
**CHEVROLET**



TOP  
GROOVE



*ALTINIZED  
TAPER FACE COMPRESSION RING*



2 ND.  
GROOVE



*ALTINIZED  
EXPANDER COMPRESSION RING*

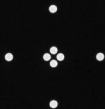


3 RD.  
GROOVE



*ALTINIZED  
STEEL OIL RING*

And here is the  
**ENGINEERED SET**  
for  
the **PLYMOUTH** model  
we've been discussing



TOP  
GROOVE



*ALTINIZED  
BEVEL BACK COMPRESSION RING*



2 ND.  
GROOVE



*ALTINIZED  
EXPANDER COMPRESSION RING*



3 RD.  
GROOVE



*ALTINIZED  
STEEL OIL RING*

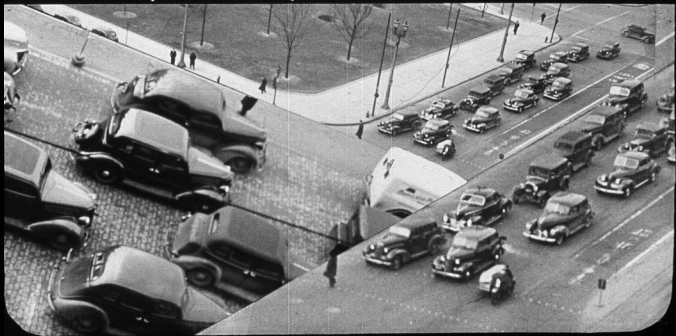


4 TH.  
GROOVE



*ALTINIZED  
EXPANDER OIL RING*

These three motors are merely examples.  
*Engineered Sets* are necessary for all models  
of all cars, and each *Engineered Set* contains  
a special blue print instruction sheet.

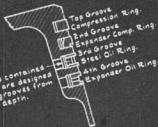


Here is a sample of the blue print contained in each Engineered Set

Install rings on pistons as explained on instruction disc furnished with each ring.

**NOTE:**

Steel Oil Rings contained in this package are designed to operate in grooves from  $\frac{3}{16}$  to  $\frac{7}{32}$  in depth.



**MATERIAL SPECIFICATIONS**

**Rings** - ELECTALLOY.  
Hardness - 24-30 Rockwell C scale.  
Finish - ALTIMIZED.

**Segments** - Swedish Steel.  
Width tolerance  $\pm .001$ .  
Thickness tolerance  $\pm .0004$ .  
Heat treat & temper to a hardness of 49-52 Rockwell C scale.  
Finish - ALTIMIZED.

**Expanders** - Swedish Steel.  
Width tolerance  $\pm .001$ .  
Thickness tolerance  $\pm .0004$ .  
Heat treat & temper to a hardness of 43-47 Rockwell C scale.  
Finish - Straw or Blue color.

**Expanders** - Swedish Steel.  
Width tolerance  $\pm .001$ .  
Thickness tolerance  $\pm .0004$ .  
Heat treat & temper to a hardness of 49-52 Rockwell C scale.  
Finish - Straw or Blue color.

Part No. **ENGINEERED SET NO 224**  
FOR OLDSMOBILE 6,1935 AFTER  
Motor No. 493977.

D			
C			
B			
A			
1	Checked	Dr.	Rev.

Drawn By *[Signature]* Date: 12-3-38  
 Checked By *[Signature]* Drawing No. **224**  
 Approved By *[Signature]*

Here is the other side

## NECESSARY OPERATIONS FOR ENGINEERED MOTOR RERINGING

**Operation:** Reverse  
order in cylinder of the  
and down of ring level.



2 Clear carbon from ring  
grooves and oil drain holes



3 Rotate wrist or collapsed  
rings



4 Install piston and rings  
in advance position



5 In pressure lubricated  
holes in the side where the  
rod bearings are not replaced



6 Check piston assembly



7 Fit rings to the smallest  
cylinder diameter with a  
margin of clearance of .001"  
over each of cylinder diameter.



8 Install Piston using a  
rod ring compressor that will  
fit into the cylinder  
without force.



9 Always use new gaskets.  
The price of gaskets is cheap  
insurance against combustion.



10 Clean and drill pin  
holes for additional oil  
lubrication.

11 Reinstall Valves —  
small wire guides in  
valve guides.

12 Clean radiator and cool-  
ing system.  
13 Clean and Service Air  
14 Service Oil Filter or Oil  
for element.

15 Check and Correct Cam  
Overlap.  
16 Check Valve and Igni-  
tion Timing.

The piston expander mentioned in the  
blue print is the

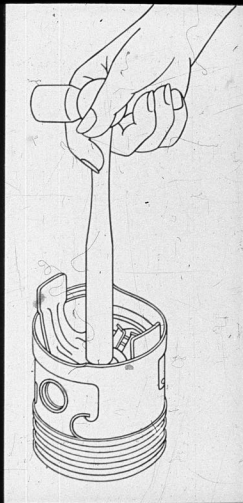
**KING QUALITY**

*Cushion Lock*

**Piston Expander**



This  
**EXPANDER**  
can be installed  
without special tools,  
drilling or grooving



It not only prevents skirt collapse but compensates for wear as well.



King Quality piston expanders are engineered for each individual piston.

The blue print instruction sheet differs with  
each King Quality engineered set.

Truly these rings are engineered even  
to the last detail.

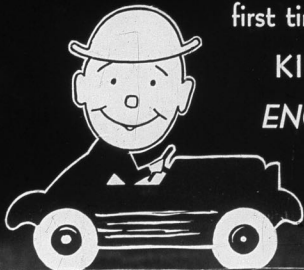
The same suit doesn't fit both men and the same piston rings don't operate properly in all models of motors.



THEREFORE . . .

Complete customer satisfaction with re-ringing jobs, together with the necessary re-ringing operations is now, for the first time, possible only with

**KING QUALITY  
*ENGINEERED SETS***



KING QUALITY has taken the ballyhoo and speculation out of the ring business by the introduction of these two lines of piston rings



For Slip-in jobs  
and rebore jobs



For re-ringing jobs  
with only necessary  
re-ringing operations

# Now . . . .

no matter what kind of job comes into the shop, the repairman has the right answer



Now . . .

the repairman can buy and stock  
piston rings by Stock Numbers



# Now . . . .

The ring business has changed from a confusing system of sizes to one of Engineered Sets and Factory Type Sets

$3 \frac{1}{2} \times \frac{1}{8}$        $3 \frac{9}{16} \times \frac{1}{8}$        $3 \frac{1}{8} \times \frac{3}{32}$        $3 \frac{5}{8} \times \frac{3}{32}$        $3 \frac{3}{4} \times \frac{1}{8}$   
 $2 \frac{15}{16} \times \frac{1}{8}$        $2 \frac{11}{16} \times \frac{1}{8}$        $2 \frac{3}{4} \times \frac{3}{32}$        $3 \frac{1}{4} \times \frac{3}{32}$        $3 \times \frac{3}{32}$   
 $3 \frac{3}{8} \times \frac{3}{32}$        $3 \frac{1}{16} \times \frac{3}{32}$        $3 \frac{7}{16} \times \frac{1}{8}$        $2 \frac{15}{16} \times \frac{3}{32}$        $3 \frac{3}{16} \times \frac{3}{32}$   
 $3 \frac{5}{16} \times \frac{3}{32}$        $2 \frac{5}{8} \times \frac{3}{16}$        $3 \frac{3}{32} \times \frac{3}{32}$        $2 \frac{7}{8} \times \frac{3}{32}$        $3 \frac{11}{16} \times \frac{1}{8}$

STOCK  
NUMBERS

200  
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**Now . . . .**

all the guesswork is eliminated

*In Ordering*




*In Filling Orders*



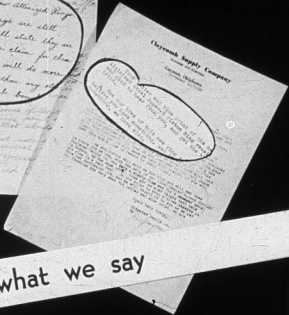
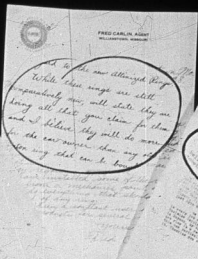
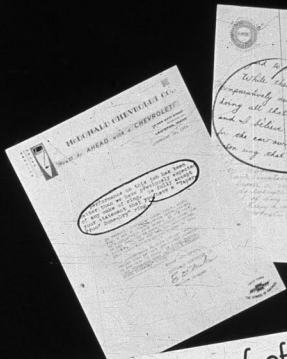
NOW . . . .

All the bunk and red ink claims are gone—  
King Quality has based the piston ring  
business on sound engineering facts.



"...and she runs  
like new!"

Even the first *Engineered Set* he installs  
will convince the most skeptical repairman



Here's proof of what we say

**PETERSON'S BRAND**  
 General Automobile Service  
 1234 Main Street  
 Detroit, Michigan

Dear Sirs:

After installing your all of these parts and a new valve pop off in the admission side of engine cylinder. I think you have a fine that in car class of the class of top money performers. I am for this new fine one.

Very truly yours,  
 Peterson's Brand

FROM PEOPLE ON UP WHEN COSTS GO DOWN

**ROGERS' SHOP**  
 GENERAL AUTOMOBILE AND GARAGE WORK  
 BUILD UP SERVICE SERVICE  
 Newark, Mo.

27-12-58

to my opinion of the new all  
 I want to say I think you have  
 something beyond comparison because  
 the all-stated as a ring where there is  
 no leakage or cracking on installation  
 for its performance, it has  
 that when you  
 motion and used a very fine  
 do it myself they are doing it for  
 and all the same to the very best  
 1234 Main Street  
 Newark, Mo.

**HELMORE'S GARAGE**  
 1234 Main Street  
 Detroit, Michigan

Dear Sirs:

After installing your all of these parts and a new valve pop off in the admission side of engine cylinder. I think you have a fine that in car class of the class of top money performers. I am for this new fine one.


Very truly yours,  
 Helmore's Garage

Here are a few more

The car owner will buy *Engineered Sets* and *Factory Type Sets* because they're engineered like the rest of his car



Sell your first *Engineered* re-ringing job today ... and ...



"Boy, am I glad to see  
you - - I need more  
Engineered Sets!"

...you'll make a satisfied and permanent customer

The End



.. *produced by* ..

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