TO BE NOTED AND INITIALED BY	

PACKARD MOTOR CAR COMPANY

DETROIT MICHIGAN

May 8, 1925.

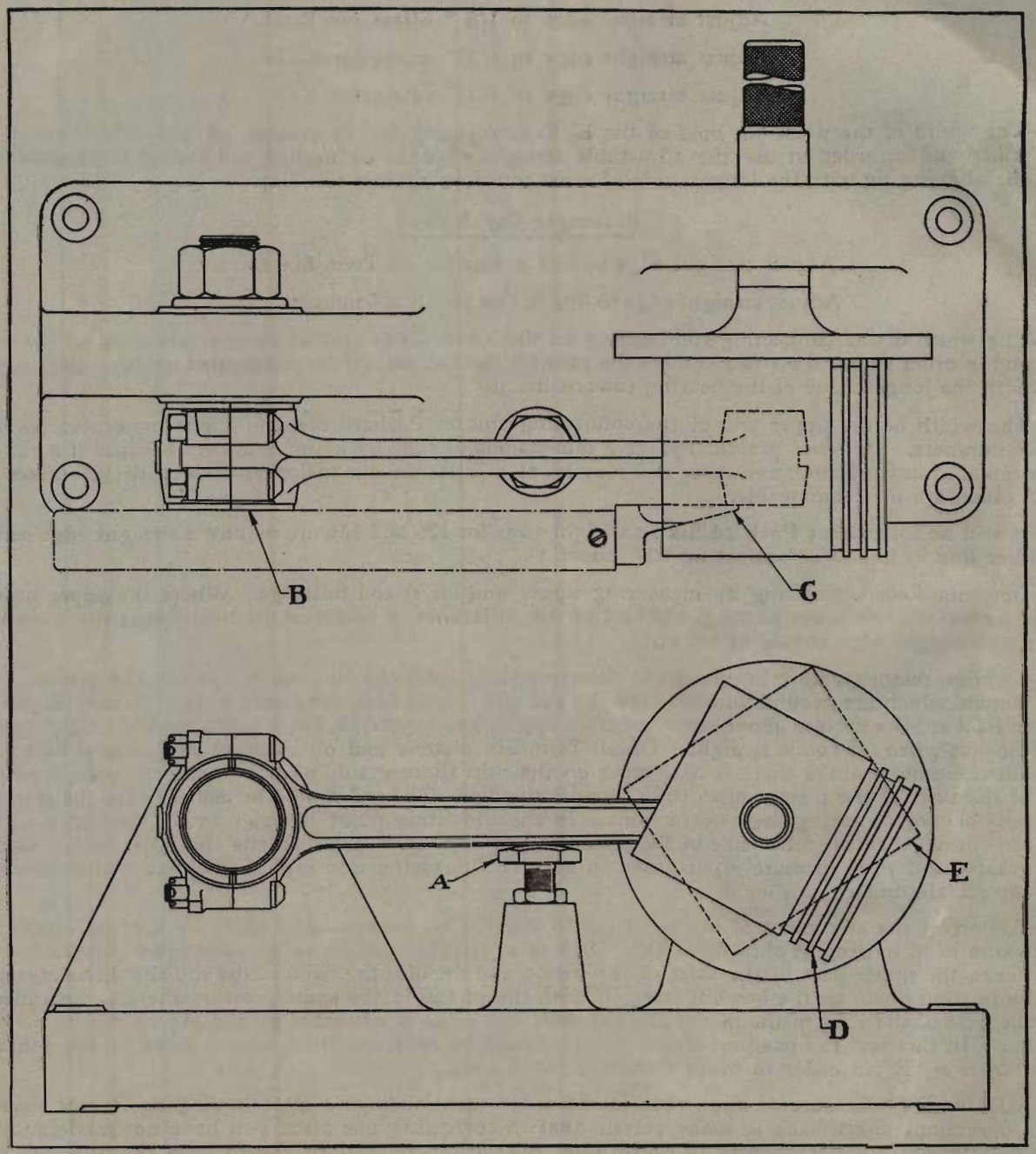
To Packard Distributers:

Subject, Instructions for Aligning Connecting Rods.

This letter supersedes Technical Letter No. 1755 on the same subject.

There are three distinct points to be checked in aligning a piston and connecting rod assembly.

1—The correct alignment of the wrist pin bearing in relation to the lower connecting rod bearing, which is accomplished by the use of the straight edge.



Connecting Rod Aligning Jig—ST-87—ST-108

2—The correct alignment of the piston in relation to the crankshaft.

3—The relative alignment of the wrist pin to the crankshaft, or what is usually termed as the twist in a connecting rod.

Mount the connecting rod on the proper arbor, adjust the center rest "A" until the center of the wrist pin is the same height as the center of the arbor or the center of the disc.

1—Hold the straight edge firmly against the rod bearing as shown at "B".

2—Slide straight edge along bearing until the point is opposite wrist pin end of rod. Perfect alignment is to have straight edge against face of wrist pin end of rod as shown at "C". If the two faces do not line up the rod should be first offset as near the piston as possible and then offset in the opposite direction near the lower end of the rod. The result of this operation should be checked by means of the straight edge.

3—The adjustable type of straight edge, S. T. 84, can be used on all Packard Truck and Passenger car motors. In doing so, however, it is imperative that the following directions be carried out.

Truck Motors

Adjust straight edge to 1/8 " offset for E. C.

Adjust straight edge to 1/32" offset for E. D.

Adjust straight edge to 5/32" offset for E. F.

4—The width of the wrist pin boss of the E. F. connecting rod is greater on one side than on the other and in order to use the adjustable straight edge the connecting rod should be assembled on the aligning jig with the longest side of wrist pin boss against the disc.

Passenger Car Motors

Adjust straight edge to line in line for all Twin-Six motors.

Adjust straight edge to line in line for all 116 motors.

5—The width of the connecting rod bearing on the Twin-Six is greater on one side than on the other and in order to use the straight edge the connecting rod should be assembled on the aligning jig with the longest side of the bearing toward the jig.

The width of the upper end of the connecting rod on Packard Six and Eight motors varies with motor numbers. It is not practical to give dimensions of rods by motor numbers because if a rod has been replaced in the motor the upper end may be of a different dimension as rods with 1/8" offset and 3/32" offset are interchangeable.

It will be found that Packard Six and Eight rods for 126 and 136 up, require a straight edge setting of either line in line, 3/32" offset or 1/8" offset.

Determine correct setting by measuring upper and lower rod bearings. Where the upper bearing is not as wide as the lower bearing, one-half of the difference in width of the bearings is the amount of offset the staight edge should be set at.

1—To align pistons square in relation to the crankshaft pull the disc tight against the piston. All pistons which are ground without taper on the skirt, such as pistons used in the Packard Eight and in Packard Six motors above motor number approximately 29100, the piston should fit tight against the disc when the rod is straight. On all Twin-Six pistons and on Packard Six pistons below the above number where there is .002 taper on the skirt there should be .001 clearance at the upper end of the skirt of the piston when tight against the disc. The rod should be bent as near the piston as possible when making these corrections. In checking this point the rod should be removed and remounted with the other side of the piston to the disc. On large pistons the taper of the skirt is greater and it is absolutely necessary to reverse the piston and test in order to make certain of correct alignment.

2—To correct the alignment of the wrist pin in the rod or the possible twist in the rod, allow the piston head to drop as shown in "D". If in this position there is an abnormal clearance between the upper part of the skirt of the piston and the disc the twist in the rod should be corrected by bearing down on the bending bar. If with the piston in the same position there is clearance at the base of the skirt of the piston and the disc, the twist is corrected by pulling up on the bending bar. In this test the position of the piston should be reversed from one extreme to the other as shown at "E" in order to make certain of your tests.

SUMMARY—Be sure to align rods in the order mentioned and after having performed each of these operations check back to make certain that in correcting one error you have not made another. Use the straight edge frequently in performing the various operations and make it the final check on inspection.

Some rods bend easily, some stubbornly. It is advisable to straighten rods by sudden jars or quick bends on the bending bar, rather than by a slow bend as the rod is apt to bend and go out of alignment just where you do not want it to.

The aligning jig complete and the various size arbor plugs and adjustable straight edge S. T. numbers and prices are given in the following list:

S. T. 87—Connecting rod aligning jig, complete	$39.75
Includes jig assembly, bending bar, adjustable straight edge and arbor plugs, 2½" for improved Packard Six and Eight	
S. T. 80—Arbor plug—1st series Twin-Six	4.50
S. T. 81—Arbor plug—116-126-226	4.00
S. T. 84—Adjustable straight edge—all models	9.85
S. T. 85—Arbor plug—ED-EF Truck	4.75
S. T. 86—Arbor plug—EC-EX Truck	4.50
S. T. 88—Arbor plug—2nd and 3rd series Twin-Six	4.00
S. T. 89—Arbor plug—Packard Six and Packard Eight 136-236	4.00

Yours very truly,

PACKARD MOTOR CAR COMPANY.

H. N. Davock.

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Technical Service Department.