INSTRUCTIONS FOR REINFORCING LIBERTY CYLINDERS

(Power Plant Section)

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January 12, 1925

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May 17 2013

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INSTRUCTIONS FOR REINFORCING LIBERTY CYLINDERS

PREPARATION

In the selection of used cylinders to be reinforced, only those should be accepted whose appearance shows that the service to which they have been subjected has not been unduly severe. Cylinders which have been welded at any point to stop leaks, or whose bore is in poor condition, or more than 0.002 inch out of round should be rejected.

The valves and guides should be removed, as the welding necessary causes the guides to stick, making subsequent removal very difficult.

The top of the water jacket is next cut away as shown by Figure 4, using a hack saw on the two straight sides and a chisel on the curved edges.

A short hook, as shown in Figure 2, made of 3/8-inch cold-rolled steel serves to straighten the edges, which are out of shape due to chiseling.

The water outlet pipe is cut away, as shown in drawing No. SK-5040 (fig. 1), care being exercised that it is cut as short as possible to eliminate interference when welding in the tie. A short piece of hack-saw blade held in a suitable handle, seems very well suited for this purpose.

The tie and patch to be installed are shown in the drawing SK-5040 (fig. 1). The ties should be fitted to individual cylinders as the distance between the ports varies in different cylinders. They should fit near the upper corners of the ports.

The patch should be formed as nearly as possible to the original shape of the jacket, and the corners, if projecting, pounded down to the jacket. There should be 3/16 inch clearance between the straight sides of the patch and the cylinder jacket. This is to allow for expansion of patch as it is being welded in place.

WELDING

Before welding tie in place it should be arched upward in the middle from 3/16 to 1/8 inch, as shown by Figure 3.

It is next placed in position and welded in place, as shown by Figure 5, using 3/16-inch welding rod, and a Prest-O-Lite torch, or any type which will burn in such a restricted place. Practice has shown that it is best to weld the two forked ends first. Immediately after the ends are welded the flame should be applied to the tie until it is heated to a cherry red. With light blows the tie is then pounded down until it is straight.

The patch should be put in place at once. It is best done by spot welding in two places and the final welding done in one continuous operation from the starting point. Figure 6 shows the cylinder head with the patch welded in place.

At least 90 per cent of the cylinders reinforced in this manner should be less than 0.005 inch out of round in the cylinder bore if the instructions are followed carefully.
CUT CYLINDER HEAD ALONG HEAVY LINE AS SHOWN

CUT PIPE OFF HERE AS SHOWN

REINFORCEMENT PLATE SK-5040-1

NOTE: ALL CORNERS TO BE FINISHED WITH A 3/16 RADIUS

A.S. SPEC. NO. 10200 - SHEET STEEL
SK-5040-1

A.S. SPEC. NO. 10201 - SHEET STEEL
SK-5040-2

FIG. 1
Fig. 2.—Tool for straightening water jacket

Fig. 3.—Brace as bent before welding

Fig. 4.—Cylinder head ready for reinforcing with brace and patch
FIG. 5.—Cylinder with brace welded in place
Fig. 6.—Cylinder head with patch in place