INSTRUCTIONS FOR MODIFYING "LINDE"
SIGMA WELDING MACHINES (SWM-2,
SWM-3, FSM-2, AND FSM-1) FOR
USE OF WELDING WIRE ON 9-IN. SPOOLS

I. EQUIPMENT REQUIRED
A. Spindle Assembly

To mount welding wire on spools, machines must be equipped with a spindle
assembly, which replaces the spoke-type wire reel used for mounting wire wound
on 12-in. cardboard rims. Certain parts of the original wire reel can be com-
bined with the parts in Spindle Conversion Kit 38V68 (with which these instruc-
tions are packed) to make up a complete spindle assembly ready to mount on the
machine.

B. Bracket Adaptor

Since the wire on the nine-inch spool is coiled on a much smaller diameter
than the wire used on the small spoke-type wire reel, the mounting point used
for the spoke-type wire reel will usually be unsuitable for the spindle assem-
bly. The FSM-1 welder is the only exception to this rule among the machines
covered in this booklet. (See Sec. V.) On the SWM-2, SWM-3, and FSM-2 welders,
the spindle assembly must be mounted in a new position in which the wire can
be fed into the feed roll assembly from about the same angle at which the spoke-
type wire reel would feed wire. This is accomplished in the case of FSM-2 and
SWM-2 Sigma Welders by using a bracket adaptor (Part No. 07N94).

The bracket adaptor is not required for the SWM-3 Sigma Welder. A shorter
mounting bracket (Part No. 06N12) replaces the mounting bracket (Part No. 05N13)
used with the spoke-type wire reel.

II. MOUNTING THE SPINDLE ASSEMBLY ON THE FSM-2 AND SWM-2 (SERIES 1) SIGMA WELDERS FOR
USE WITH 9-INCH SPOOLS. (SEE FIG. 1)

A. Remove the small spoke-type wire reel from the machine support by withdrawing
the screws which hold it in place. Combine some of its parts with those of
the Conversion Spindle Assembly (Part No. 38V68) as directed in Sec. VI to
form a complete spindle assembly.

B. Attach the Bracket Adaptor (Part No. 07N94) to the hub of the machine support
in the position shown (see page 3), using 3 of the 5/16 in. - 18 x 1-1/4-in.
hex head cap screws provided with the bracket adaptor.

C. Attach the spindle assembly to the bracket adaptor as shown, using the four
5/16 in. - 18 x 7/8-in. socket head cap screws (S-C-95) and the Lock Washers
(W-L-4) which formerly held the spoke-type wire reel in place, and the four
hex nuts provided with the bracket adaptor.

III. MOUNTING THE SPINDLE ASSEMBLY ON THE SWM-2 (SERIES 2) SIGMA WELDER FOR USE WITH
9-INCH SPOOLS (SEE FIG. 2)

A. Remove the spoke-type wire reel from the machine frame assembly by unscrewing
the cap screws and nuts which hold it in place. Combine some of its parts with
those of the Conversion Spindle Assembly (Part No. 38V68), as directed in Sec. VI,
to form a complete spindle assembly.
B. Attach the bracket adaptor (Part No. 07N94) to the machine frame assembly as shown with the four 5/16-1. 18 x 1-1/4-in. hex head cap screws and hex nuts supplied with the bracket adaptor. Omit the spacer (05N88) which was formerly mounted behind the spoke-type wire reel. (See page 4 for sketch.)

C. Drill two 11/32-in. holes in the machine frame assembly as shown, to match the two right-hand holes in the bracket adaptor.

D. Attach the spindle assembly to the bracket adaptor, using the 5/16-in. socket head cap screws (S-C-99) and the hex nuts (N-H-40) which formerly held the spoke-type wire reel in place. The hex nut which fastens the upper left-hand cap screw will not clear the machine frame assembly. Either omit this screw entirely, or use a heavy flat washer under the hex nut.

IV. MOUNTING THE SPINDLE ASSEMBLY ON THE SWM-3 SIGMA WELDER FOR USE WITH 9-INCH SPOOLS

A. Remove the spoke-type wire reel from the mounting bracket by withdrawing the cap screws which hold it in place. Combine some of its parts with those of the Conversion Spindle Assembly (Part No. 38V68) as directed in Sec. VI to form a complete spindle assembly.

B. Remove the original mounting bracket (Part No. 06N13) by withdrawing the cap screws which hold it in place, and substitute the somewhat shorter, similarly shaped mounting bracket (Part No. 06N12), using the cap screws and washers which held the former bracket in place.

C. Attach the spindle assembly to the mounting bracket, using socket head cap screws and lock washers furnished with the new mounting bracket. Omit the spacer formerly mounted behind the spoke-type wire reel.

V. MOUNTING THE SPINDLE ASSEMBLY ON THE FSM-1 SIGMA WELDER FOR USE WITH 9-INCH SPOOLS

A. Remove the spoke-type wire reel from the machine support by withdrawing the screws which hold it in place. Combine some of its parts with those of the Conversion Spindle Assembly (Part No. 38V68) as directed in Sec. VI to form a complete spindle assembly.

B. Mount the spindle assembly in the same location in which the spoke-type wire reel was mounted, using the same mounting screws. No bracket adaptor is required.

VI. TO CONVERT A SMALL SPOKE-TYPE WIRE REEL INTO A SPINDLE ASSEMBLY

A. Remove the wire reel from its shaft. To do this, first unscrew the cap screw at the reel hub, and remove the spring guide and brake spring. Then remove the keyed washer from the shaft and pull off the reel.

B. Install the new spindle on the shaft assembly. (The keyed spindle assembly drawing shows the proper relationship of the parts.)

C. A keyed washer (Part No. 06N18) is supplied with the conversion assembly. Place this washer on the shaft, and seat it in the spindle socket so that its key enters the slot in the shaft.

D. Assemble the original cap screw and brake spring (removed in Step "A") and guide (Part No. 06N16, supplied with the conversion spindle assembly) as shown in the spindle assembly drawing. Place the guide on the screw, with the smaller diameter of the guide toward the threaded end of the screw, and seat the spring on the smaller diameter of the guide.
E. Insert the cap screw into the threaded hole in the shaft, and screw it in until the brake spring applies pressure to the keyed washer. Make sure that the washer key is not displaced from the shaft slot during this step.

F. The spindle assembly should now be identical to the one shown in the keyed assembly drawing, which should be retained for future reference.

VII. HOW TO MOUNT THE WELDING WIRE SPOOL ON THE SPINDLE

To install a spool of welding wire, simply slip the spool onto the spindle and engage the spindle lug in the hole in the spool. When the spool is fully seated, the spindle spring will engage the lip of the spool bore, to hold the spool in position.

Adjustment of brake tension is the same as for the spoke-type wire reel. The cap screw should be tightened until brake spring pressure is sufficient to prevent coasting of the reel, but not enough to cause binding of the wire coil.
Attach Bracket Adaptor - 07N94 - to machine frame assembly, using 4 hex. hd. cap screws and hex. nuts.

Bracket Adaptor - 07N94
Hex. nut which fastens this screw will not clear machine frame assembly. Either omit screw entirely or use a heavy flat washer under hex. nut.

Attach Spindle Assembly to Bracket Adaptor, using socket hd. cap screws, lock washers, and hex. nuts.

Drill 11/32 in. holes through machine frame assembly to permit insertion of these screws.

FIG. 2 - INSTALLATION OF SPINDLE ASSEMBLY ON SWM-2 (SERIES 2) SIGMA WELDER FOR 9-INCH SPOOLS

Bracket Adaptor - 07N94

Attach Bracket Adaptor 07N94 - to machine support, using 3 hex. hd. cap screws and hex. nuts.
Attach Spindle Assembly to Bracket Adaptor, using 4 socket hd. cap screws, lock washers, and hex. nuts.

FIG. 1 - INSTALLATION OF SPINDLE ASSEMBLY ON EGM-2 AND SWM-2 (SERIES 1) SIGMA WELDERS FOR 3-INCH SPOOLS
FLANGE AND SHAFT ASSEMBLY - 19V91  
(INCLUDES)  
P - R - 72 - PIN

(2) P - R - 36 - PIN

DISK - 18N25
LUG - 06N21

SPINDLE - 38V67  
(INCLUDES)

(2) S - B - B - 43 - SCREW
WASHER - 06N18

SPRING - 92W12
SPRING - 06N17
S - C - 232 - SCREW
GUIDE - 06N16

SLEEVE - 06N15
DISK - 06N19
INS. BUSHING - 06N20

PARTS SUPPLIED

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) S - C - 95</td>
<td>SCREW</td>
</tr>
<tr>
<td>(4) W - L - 4</td>
<td>WASHER</td>
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</table>

*PARTS WITH SYMBOL ARE INCLUDED IN 38V66 BUT NOT IN 38V68. THEY ARE IDENTICAL TO PARTS USED WITH SPOKE TYPE WIRE REEL 19V89.*

COMPLETE SPINDLE ASSEMBLY (SPOOL TYPE) - 38V66
CONVERSION KIT ASSEMBLY (SPOKE TYPE TO SPOOL TYPE) - 38V68
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-R-72</td>
<td>Roll Pin - Elastic Stop Nut Corp. #250 - .250 x 2&quot; Lg.</td>
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<tr>
<td>P-R-36</td>
<td>Roll Pin - Elastic Stop Nut Corp. #59-.040-187-.500 (2 used)</td>
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<tr>
<td>S-B-B-43</td>
<td>#4-.40 x 1/4&quot; Straightside Bnd. Hd. Brass Machine Screw (2 used)</td>
</tr>
<tr>
<td>S-C-232</td>
<td>1/2&quot; - 20 x 2&quot; Lg. Hex Head Steel Cap Screw</td>
</tr>
<tr>
<td>S-C-95</td>
<td>5/16 in. - 18 x 7/8 in. Socket Head Cap Screw (4 used)</td>
</tr>
<tr>
<td>W-L-4</td>
<td>5/16 in. x 1/8 in. x 1/16 in. Steel Lock Washer (4 used)</td>
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