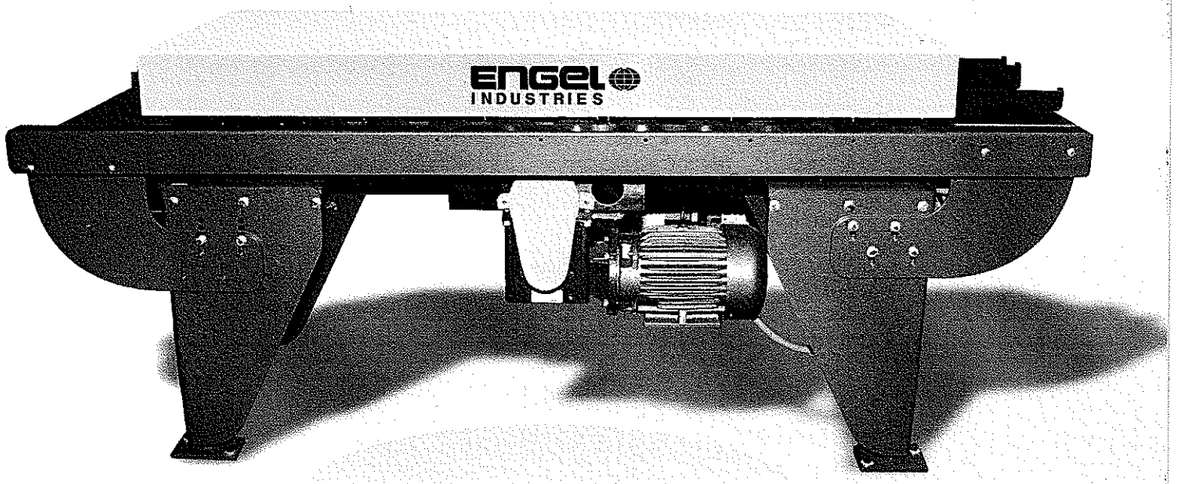
Engel Rollformer
HB-1246

ENGEL INDUSTRIES SINCE 1949



Ideal for use with CDS ®

Features

~ Twelve (12) forming stations with tooling mounted on turned, ground and polished 1-1/4", stress-proof spindles

~ Extra large bearings with inner races

~ 5 HP, 230-460 volt, 60 cycle motor standard, producing approximately 50 FPM speed

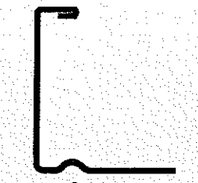
~ Hardened steel in-feed guides to handle rough plasma cut edges

~ No opening rolls required on any set of tooling

~ Dual head units available, POR

~ Requires crimping of corners

~ Small parts feeder included for minimum parts of 6-inch length



M-TDF®-18NB

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ENGEL INDUSTRIES
THE FUTURE OF METAL FORMING

Roll Machine Instruction
Single Head Roll former M-1246
Index

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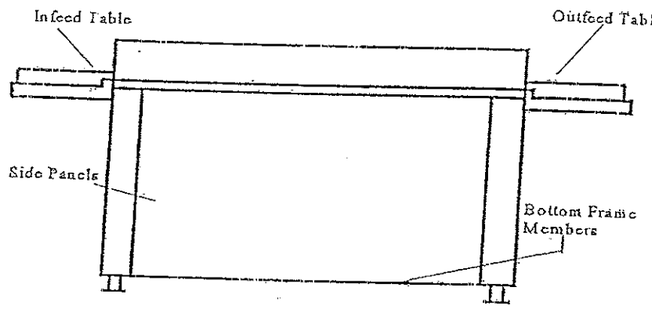
ENGEL INDUSTRIES, INC.

ROLL MACHINE INSTRUCTIONS

Receiving Machine

- Visibly check machine for possible shipping damage.
- When damage is evident, insist on the freight bill.
- If repairs are necessary, contact Engel Industries, Inc.

Unloading Procedure



- When it is necessary to lift the machine off the transport vehicle and lower it to the ground, lift or support the machine by using the skids or by removing the side panels and lifting the machine by the bottom frame members. (NOTE: Lifting the machine by the in-feed or out-feed table would result in extensive damage to the machine). If the machine is unloaded onto a loading dock, then rollers can be put under the skids, or the machine can be slid or dragged on the skids.

Positioning Machine

- Move the machine to its desired location.
- Remove the skids.
- Level machine before operation (leveling feet are provided). Once leveled, lock the jam nut at each corner or leg of the machine.

Electrical Connections

Supply electrical service to the starter box (located under the in-feed table) in accordance with local electrical codes. Refer to the connecting instructions on the inside of the starter box. (NOTE: If the machine is powered by a three (3) phase motor, it is possible to initially wire the motor in reverse. If this happens, switch two (2) of the three (3) supply wires. This will correct the rotation of the motor. Be certain that the machine is wired with a ground connection.)

Lubrication

After approximately every 400-500 hours of use, or every three (3) months, lubricate the machine in the following manner:

1. As a safety precaution, disconnect electrical supply.

2. Open the top roll cover (guard).

3. If the gears appear dry, apply open type gear grease to the exposed surfaces of all the gears. Recommended: Chem-A-Lube (made by National Chemsearch Corp., in Dallas, St. Louis, New York, Los Angeles and Montreal) or equivalent.

4. Apply light oil to the forming rolls to prevent galvanized build-up. This should be done as required.

5. Connect power, turn machine on, and with a pressure-type grease gun, and apply grease to lube fittings. (**NOTE:** Look under the right apron for access to fittings on side plate for idler gears). Recommended: Lubriko Grease (made by Master Lubricants Co., in Philadelphia, Boston, Chicago, San Francisco, Los Angeles, and Montreal) or equivalent.

6. For units with oil bath reducers, change oil at least every one (1) to two (2) years. Check gear reducer manufacture's recommendations.

Important: Do not use hypoid grease, as it will cause extensive damage to reducer gears.

Roll Capacities and Material requirements

Shape	Material Required	Capacity
TDF-NB	1 7/8"	18-26 Gauge
Clip Alternate	2 ¼"	20 Gauge

Operation

Press the start button on the starter control. The machine will start with an initial noise that of a slightly loud contact closure on the electric starter. It will then run very quietly.

1. Prepare sheet metal duct pieces as follows:

   A. Cut the flat sheet panel and notch it as required for the lock seam (Pittsburgh or Snaplock).

   CAUTION: The corner notch depth for the TDF-NB flange must be 2 ½" deep in order to keep double or triple thickness of metal from passing through the TDF-NB rolls. If this happens the machine can be damaged and also the warranty ends.

   B. Roll-form the lock seams on the sheets with the beads or cross breaks facing down.

2. Hold the ends to the formed against the in-feed guide and feed the metal into the rolls. Be sure to keep the metal securely against the in-feed guide as it is being formed. Support the metal as it comes out of the forming rolls so that it does not fall to the floor.

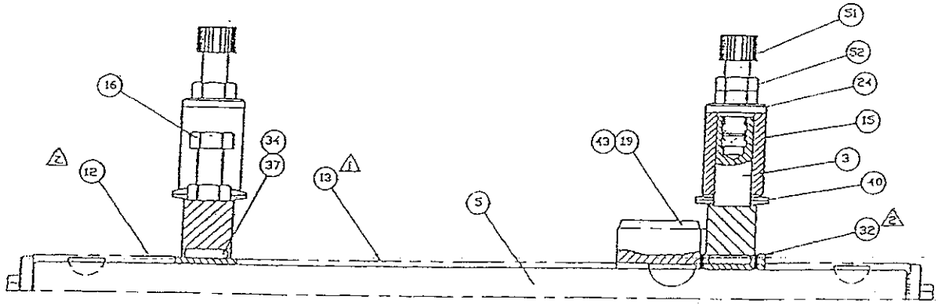
DANGER: Be sure to keep clear of the part as it forms. Harm could occur if you were in front of the part, as it would press into anything in its way with great force.

M-1246 Style Machine
And
Head Tension

The 1246 Roll former is factory set and should not require adjustment. Should it be necessary to adjust the machine, the following procedure should be used.

Head Tension

Spring deflection is designed into the machine for running 26-18 Gauge without the need for adjustment. To adjust head tension, loosen top jam nut #52. **(NOTE:** Do not make any adjustments by loosening or tightening socket head bolt #51.) After loosening top jam nut #52 tighten bottom jam nut #52 by hand using ¾" open or box end wrench. Tighten down as snug as possible. Back bottom jam nut off 3 flats. Use two (2) wrenches to lock jam nuts together.



1. Forming Heads:

The forming heads of all standard Engel Roll Forming machines are the same basic construction, and the lubrication procedure is common to all models. Roll shafts have Torrington Inner Races fitted on each end and rotate in Torrington Needle Bearing pressed into the side frames. These bearings are packed with the proper lubricant at assembly and need no further attention for approximately two thousand (2000) to three thousand (3000) hours of normal service

The roll shaft bearings can be repacked by removing the outboard rolls, sliding the inner races toward the ends of the shafts and filling the void between the shafts and the bearings with a proper bearing grease*, by means of a grease gun equipped with nozzle that can be inserted in this void. The inner races are then slid back into place and the roller dies reinstalled in their proper relation.

WARNING: It will be noted that the extended spindles on one side of the machine will be flushed with the outer face of the rolls, and also the end cap washers "bottomed out". Be sure that this is the case before attempting to operate the machine.

The idler, or transfer gears, that complete the gear train of the lower shafts rotate on Torrington Bearings and are lubricated through grease fittings located in the side-plate underneath the outboard rolls on the right (gear side) of the machine. These should be lubricated with the same grade of bearing grease* used on the roll shafts every forty (40) to every eighty (80) hours.

2. Speed Reduction:

All models come equipped with the open gear type speed reducer bolted to the forming head, are lubricated through grease fittings located in the sheet metal panel on the left side of the machine. These should be lubricated every (8) hours of operation with the same grease* used on roll shafts.

All models equipped with right angle oil bath reducers have oil level plug. This level should be maintained by adding, when necessary, manufacturer's recommended oil that contains no harmful additives. E.P. or hypoid grease is not to be used.

Power is transmitted from the reduce to a jackshaft mounted to the underside of the forming head by a roller chain. This chain should be lubricated sparingly with 10-20W engine oil when signs of dryness appear

The transfer shafts rotate in heavy-duty needle bearing assemblies and require the same lubrication schedule as the idler shafts.

3 General:

A. Keep all fasteners tight, with particular attention to cap-screw that retain rolls on shafts and vertical roll adjustments. Check clearance between top and bottom rolls and see that they are maintained

B. Keep all roller dies clean, with special attention to zinc and chip build-up.

C. Oil rolls daily with light machine oil. Keep all roller chains tensioned properly. Replace when excessively worn

D. Avoid impact or heavy loading on entrance and exit tables

4. Suggested Lubricants:

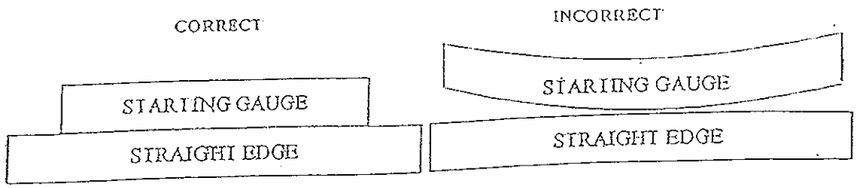
*Lubriko – density M-6 – for all shaft bearings
**Manufacturer's recommended oil – for all oil bath reducers
Melcolube for all open gears

In the event the above are not readily available, consult your local supplier for equivalents.

5. If trouble shooting is unsuccessful or additional information is needed, simply call the factory for assistance at (314) 638-0100

If material runs out along the edge being formed, proceed as follows:

1. Check the straightness of the sheared edge of the metal. Any bow or camber along the sheared edge will cause the material to run erratic through the rolls.
2. Check the starting gauge to be sure that it is straight and not bowed.



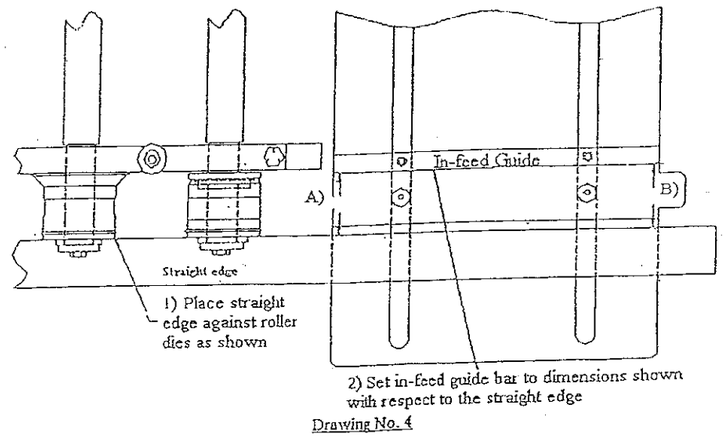
Drawing No. 3

Check the alignment of the starting gauge with the rolls.
(**Note:** Mis-alignment of the starting is the most common cause of

run-out. This gauge must be aligned to control the amount of metal as to width to be passed through the roller dies. It must also guide and hold the metal in a straight line as the metal is passing through the roller dies).

Instructions for aligning starting gauge: Refer to drawing No. 4

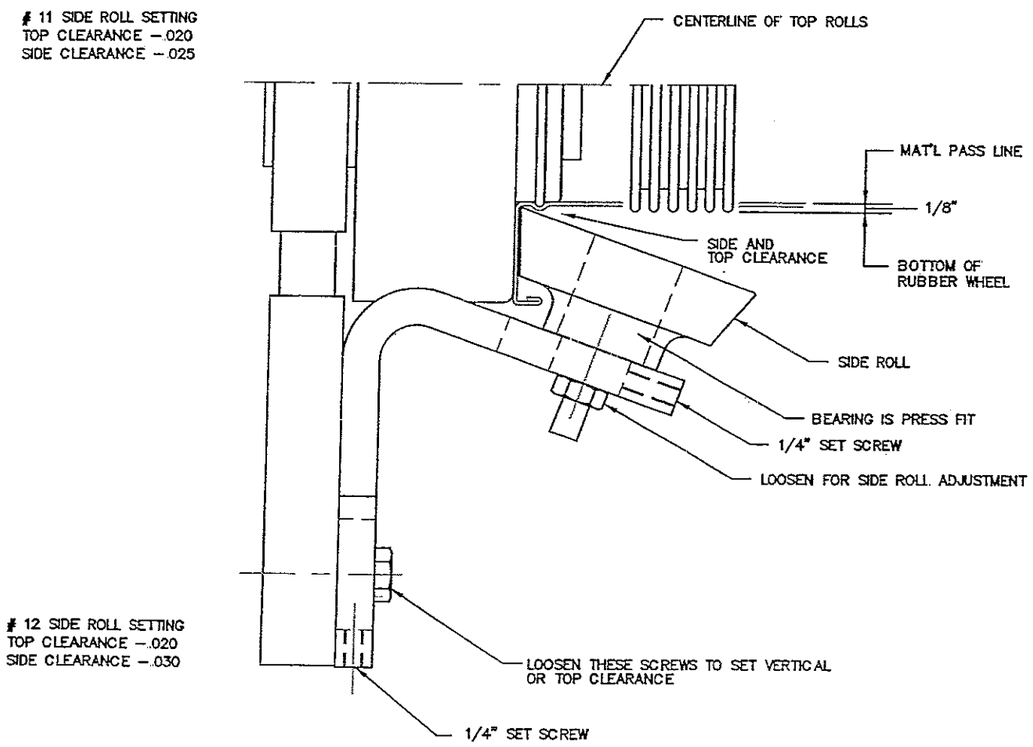
Set the in-feed guide off outside end of tooling using straight edge, Measure from straight edge to in-feed guide. **NOTE:** 2 9/16" for For dimension "A" and 2 19/32" for dimension "B".



Drawing No. 4

Settings for TDF Rolls

1. Set side rolls 11 and 12 as shown. If overhead runner cushion rolls are not adjusted properly (approximately .120) above the tie plate, you will not be able to obtain 90°



Note: Front of part is over bent approx. 2 degrees
Center should be 90 degrees
Rear of part is under bent 1–2 degrees

The 1246 TDF-NB comes from the factory equipped with a small-part-feed-system. A small part is anything less than 18 inches in length (direction of flow). (NOTE: Nothing less than 18 inches can be run independently of any TDF roll form machine).

1. To feed small parts through the 1246 TDF-NB, move small Parts feeder up to the in-feed guide on the tie plate.

2. Place small part on the feed assembly with the raw edge Against the in-feed guide.

3. Use two (2) clamps, one (1) at each end of small parts, always clamp small parts to small parts feeder as far away from the rolls as possible, to insure there will be no interference with guard or overhead rubber cushion rolls.

4. Push feeder and part into the first station. If part is smaller than eight (8) inches, you will need to push the part completely through from start to finish. If larger than eight (8) inches, you will have to help it out of station #15 and #16.

If overhead rubber cushion rolls are not adjusted properly (approximately .120) above tie plate, you will not be able to obtain 90° at point #5.

Troubleshooting

1. Metal runs away from in-feed guide

   A. Fasteners may have come loose

   B. Check in-feed guide adjustment (p.7)

   C. Machine must be level

   D. Roll adjustment (p.8)

2. Flanges are not 90º

   A. See page 8 for side rolls

   B. See page 8 for rubber cushion rolls

3. Hem is too short or too long

   Move the in-feed guide in accordance with instructions on page 7

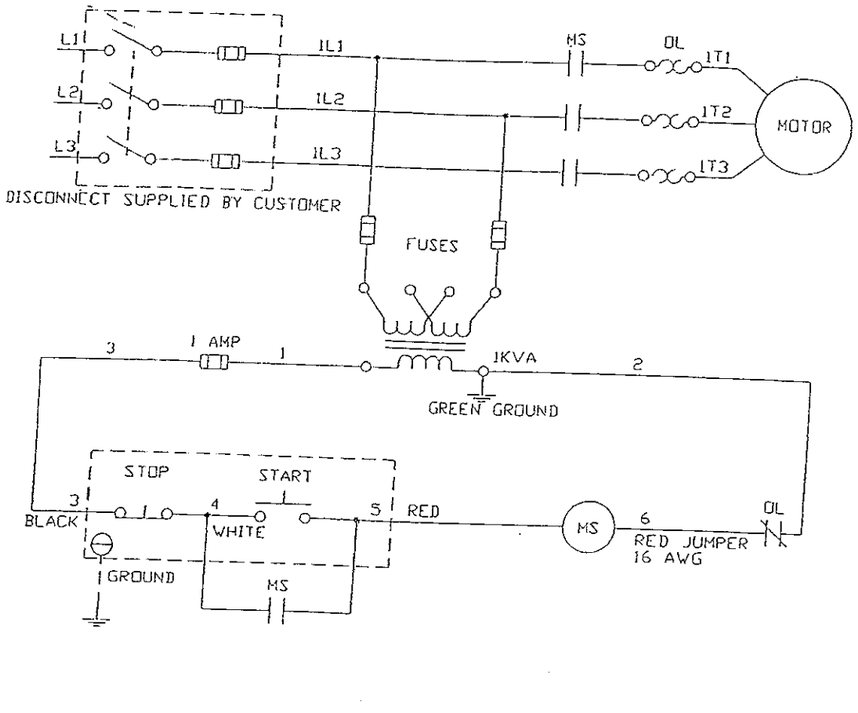
4. Machine will not start or motor makes loud humming noise

   See page 11

5. Severe jam occurs and parts are broken

   Call the factory for assistance

3 Phase Pre-wired Starter

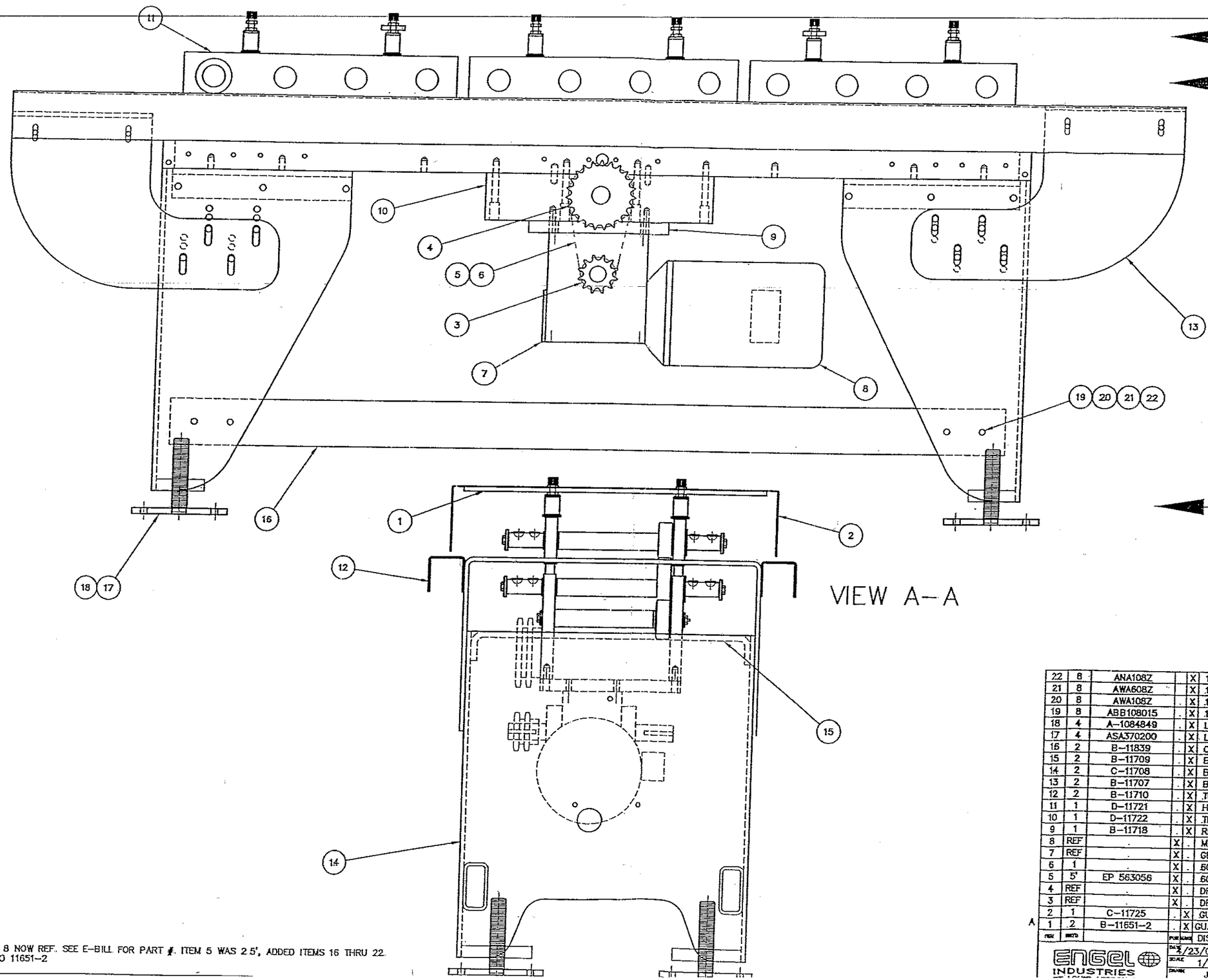


PENDANT CORD IS 16/4

WARNING

NEVER PUT YOUR HANDS IN THE POINT OF OPERATION OF ANY MECHANICAL OR ELECTRICAL DEVICE.

IF A MACHINE IS JAMMED, NEEDS ADJUSTMENTS, NEEDS DIE CHANGES, ETC., ALWAYS DO A LOCK-OUT/TAG-OUT PROCEDURE WHICH MEANS THE POWER MUST BE OFF AND LOCKED-OUT AND ANY RAMS OR BEAMS WILL BE BLOCKED TO ENSURE SAFETY. THIS IS A FEDERAL OSHA REQUIREMENTS AND MUST BE A WRITTEN AND TRAINING TYPE OF PROGRAM



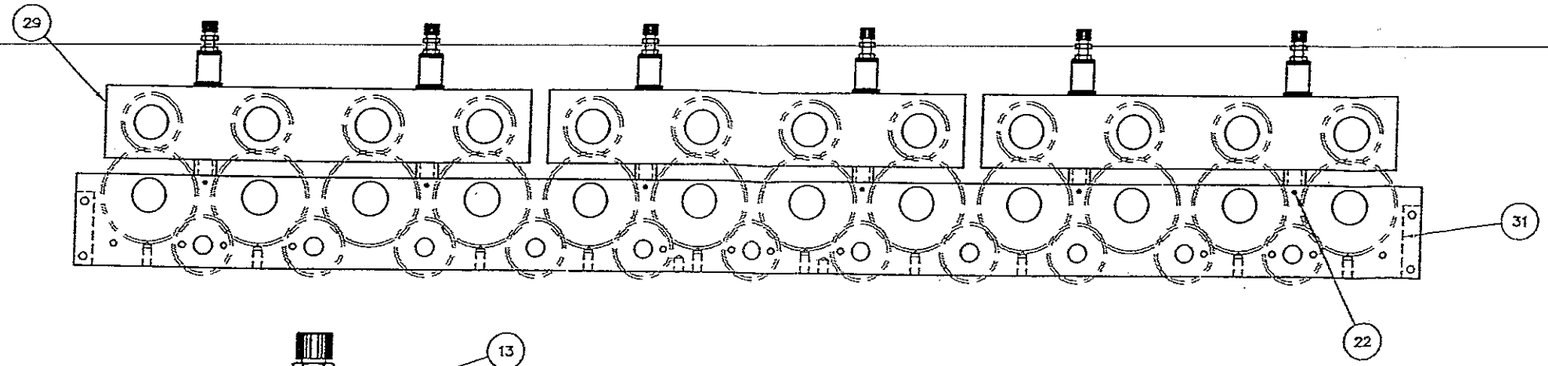
22	8	ANA108Z	.	X	1/2–13 NUT
21	8	AWA608Z	.	X	1/2" LOCK WASHER
20	8	AWA108Z	.	X	1/2" FLAT WASHER
19	8	ABB108015	.	X	1/2–13 X 1 1/2 LG. BOLT
18	4	A–1084849	.	X	LEVELING FOOT MOUNT PAD
17	4	ASA370200	.	X	LEVELING FOOT
16	2	B–11839	.	X	CROSS BRACE
15	2	B–11709	.	X	BENT MT. PLATE
14	2	C–11708	.	X	BENT LEG FRAME
13	2	B–11707	.	X	BENT INFEED AND OUTFEED TABLE
12	2	B–11710	.	X	TIE PLATE
11	1	D–11721	.	X	HEAD ASSEMBLY FOR 1246
10	1	D–11722	.	X	TRANSFER CAGE ASSEMBLY
9	1	B–11718	.	X	REDUCER MT. PLATE
8	REF		X	.	MOTOR
7	REF		X	.	GEAR REDUCER
6	1		X	.	60–2 OFFSET LINK (HALFLINK)
5	5'	EP 563056	X	.	60–2 DOUBLE ROLLER CHAIN
4	REF		X	.	DRIVEN SPROCKET
3	REF		X	.	DRIVE SPROCKET
2	1	C–11725	.	X	GUARD
1	2	B–11651–2	.	X	GUARD MT. BAR
ITEM	QNTY		PURCH	MANF	DESCRIPTION
					DISK# JF 29 REF SUPERDISK# JF1

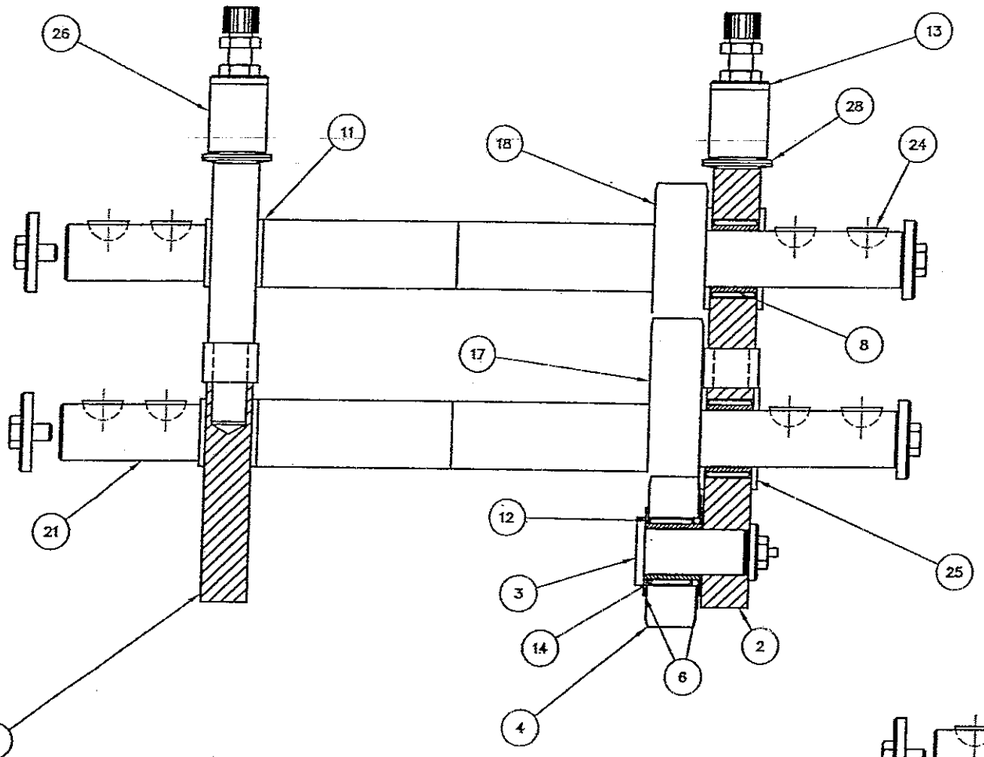
ENGEL INDUSTRIES

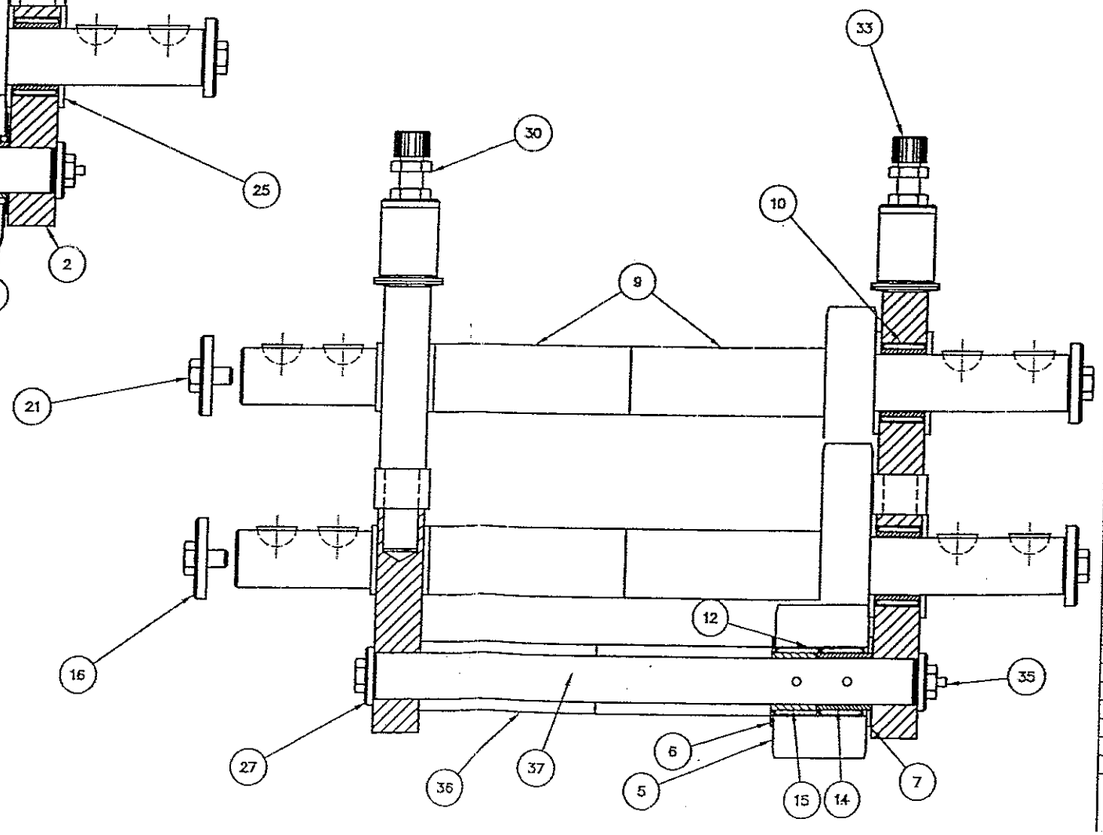
DATE 2/23/01 SCALE 1/4 DRAWN JF

FINAL ASSEMBLY FOR M–1246

REV. B 4/19/02 PLB ITEM 3,4,7,& 8 NOW REF. SEE E–BILL FOR PART #. ITEM 5 WAS 2.5', ADDED ITEMS 16 THRU 22.
REV 10/3/01 JF CHANGED ITEM 1 TO 11651–2







BOTH VIEWS ARE 2.5X SCALE

.	.	.	.	X	.
37	1	B-11714	.	X	TRANSFER IDLER SHAFT
36	2	A-11715	.	X	TRANSFER IDLER SHAFT SPACER
35	11	4165-1	.	X	3/4" GREASE BOLT
34	.	.	X	.	.
33	12	.	X	.	1/2-20 X 2" LG SHCS
32	.	.	X	.	.
31	2	4172	.	X	4" BOTTOM SPREADER BAR
30	24	.	X	.	1/2-20 JAM NUT
29	6	9821	.	X	UPPER BEARING CAGE
28	24	EP 571008	X	.	ROLEX DISC SPRING
27	12	EP 511195	X	.	1 1/4" END CAP WASHER
26	12	1075934-5	.	X	1 1/2" LG. SPACER 1"Hole x 3/4 Fr.
25	48	EP 511125	X	.	BRONZE THRUST WASHER (TT2304-2)
24	45	4171	.	X	3/16" WOODRUFF KEY (607)
23	24	4170	.	X	1/4" WOODRUFF KEY (808)
22	12	.	.	X	3/16 X 1" LG. SPRING PIN
21	48	.	X	.	3/8-24 X 3/4" LG HHCS GRADE5
20	3	9453	.	X	STA. # 6B, 11B, 12B SPINDLE
19	21	9452	.	X	1 1/4" SPINDLE ROLLER DIE
18	12	A-11711	.	X	UPPER SPINDLE GEAR
17	12	A-11711-1	.	X	LOWER SPINDLE GEAR
16	24	EP 511193	X	.	1 3/4" END CAP WASHER
15	1	EP 511019	X	.	IR 162016
14	11	EP 511076	X	.	IR 162020
13	12	4219-~~25~~ 21	X	.	1 1/2" END CAP FOR 1/2" BOLT
12	12	EP 511018-1	X	.	FULL COMPLIMENT 2016 BEARING
11	24	EP 511110	X	.	IR202420
10	48	EP 511115	X	.	BA2416-OH
9	48	A-11720	.	X	INBOARD SPACER
8	24	EP 511098	X	.	IR202416
7	1	EP 511196	X	.	TRC 2031 STEEL THRUST WASHER
6	21	EP 511108	X	.	TRB 2031 STEEL THRUST WASHER
5	1	A-11712-1	.	X	TRANSFER IDLER GEAR
4	10	A-11712	.	X	IDLER GEAR
3	10	B-9512	.	X	1 " DIA. STUB IDLER
2	1	D-11717	.	X	BOTTOM SPINDLE HOUSING (GEAR SIDE)
1	1	D-11717-1	.	X	BOTTOM SPINDLE HOUSING (NON GEAR SIDE)
ITEM	REQ'D	PART NUMBER			SUPERDISK # JF1 DESCRIPTION

ENGEL INDUSTRIES ST. LOUIS, MISSOURI

DATE 3/18/01 SCALE 1/4 DRAWN JF

HEAD ASSEMBLY FOR 12 STATION TDF M-1246