MODEL RA
MODEL RA-A

Instruction Manual

- SAFETY
- GENERAL INFORMATION
- INSTALLATION
- OPERATION
- MAINTENANCE
- PARTS

URSCHEL
LABORATORIES INCORPORATED

The addendum is placed in the front of the manual to alert the user to revisions in the manual's contents. Addendum page numbers have an "A" prefix.

Models RA, RA-A Dicers
Addendum to Manual L1635 MAR 97
L2083 OCT 06 (supersedes L1933)

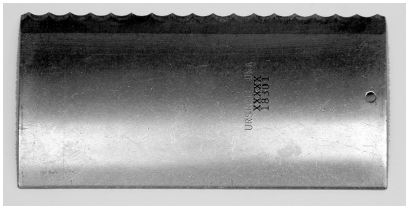
The following revisions apply to this manual:

Page 14 — **Specifications, Model RA-A:** In January 1998 the United States Department of Agriculture discontinued its Equipment Acceptance Program in lieu of a processor based Hazard Analysis & Critical Control Point system. By ruling, all U.S.D.A., Meat & Poultry Division approvals of equipment, including those of Urschel® machines, have been eliminated.

Page 16 — Under **SIZES OF CUTS**, **Crosscut knives:** the first line should read **.05"**–3" (**1.3mm**–76.2 mm)

Page 50 — "NOTE" at the end of the page pertaining to the amplifier exchange program is now deleted. **63737 Amplfier Warranty**: Urschel Laboratories no longer offers an exchange program for the 63737 amplifiers. As of July 1, 2002, there is a warranty on the amplifier of two years from the date the unit is shipped to the customer. An amplifier that fails in the warranty period must be returned to Urschel Laboratories to receive a replacement.
Bottom paragraph on left: (40 inch ounces or .28 newton meters). should read **5.0 inch pounds (80 inch ounces) or 0.56 newton-meters.**

Page 65 — **Slicing Unit:** add under item 10, **18301 Knife, slicing, scalloped.** This knife is used for bread and other products with skin or a tough outer layer.



Page 71 — **Circular Knife Spindle Assembly:** Item 1 - **48075 Spindle,** *bronze* is now obsolete and replaced by **48280 Spindle,** *stainless steel.* All bronze circular knife spindle assemblies are also obsolete and replaced by the stainless steel assemblies listed in the chart.

Page 73 — **Feed Spindle Assembly:** Item 1 - **48075 Spindle,** *bronze* is now obsolete and replaced by **48280 Spindle,** *stainless steel.* All bronze feed spindle assemblies are also obsolete and replaced by the stainless steel assemblies listed in the chart.
Feed Spindle Assemblies, Note in second section of Heavy Duty Parts, the **3/8" size of cut** should read **(9.5 mm)**.

Page 77 — **Crosscut Knife Spindle Assembly:** add the following to the chart below the 3/16" (4.8 mm) size of cut:

7/32" (5.6 mm)	—	19666	18133	19667	14

(continued)

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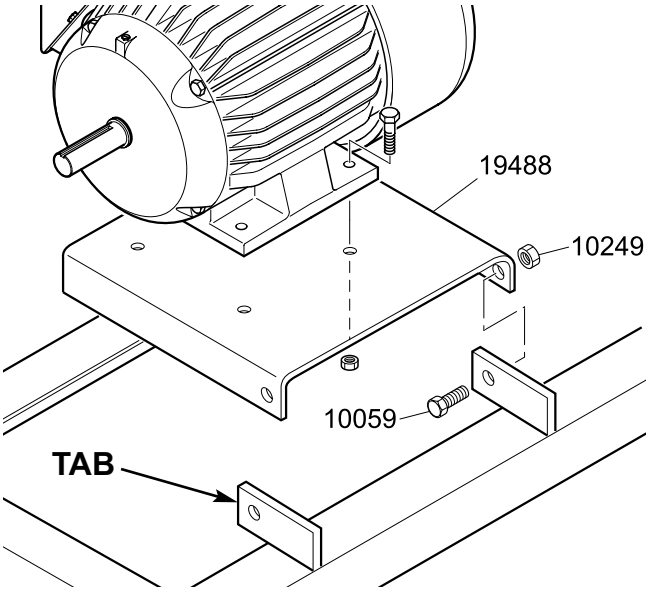
Pages 80–89 **Electrical Assembly:** see pages A4 & A5 for the Electrical Assembly currently in use. Earlier assemblies are shown on pages A6–A9. Repair parts are available for earlier assemblies except as noted below.
Pages 84 & 85:
Item 18 12774 Disconnect Switch Handle is replaced by **21276 or 21280 Disconnect Switch Handle Retrofit Assembly**.
Item 19 12775 Disconnect Switch is replaced by **12985 Disconnect Switch Retrofit Assembly**. Consult the factory for retrofit information.

Page 91 **Motor With Drive Parts:** Item 1, Motor - add the following part numbers:
19412, Motor, 5 H.P., *200-208 volts*
19410, Motor, 5 H.P., *220/380-240/415 volts*
19409, Motor, 5 H.P., *230/460 volts*
19411, Motor, 5 H.P., *575 volts*
55423, Motor, 5 H.P., *200–208 volts, stainless steel*
55422, Motor, 5 H.P., *220–240/380–415 volts, stainless steel*
55408, Motor, 5 H.P., *230/460 volts, stainless steel*
55421, Motor, 5 H.P., *575 volt, stainless steel*

The tabs on the machine frame for attaching the motor base have been changed (see the figure at the right). Items 3, 6 & 7 have been replaced by:
19488, Motor Base, *184T frame*
10059, Hex Head Cap Screw, *3/8-16 x 1-1/4", s.s.*
10249, Hex Nut, *3/8-16, s.s., locking, thin.*
Items 3, 6 & 7 listed on page 91 are available for repair.



Page 95 **Optional Parts**: Item 1, 19392 is no longer sold as an assembly. Individual parts are available as listed.
Item 6 should read: **10041** Hex Head Cap Screw, 1/4-20 x **1-3/4"**, s.s.
Item 19 should read: **10114** Socket Head Cap Screw, 1/4-20 x **1-1/2"**, s.s.

Add **19400 Spindle Assembly, slicing only**, includes items listed below:
18033, Spacer, *3/4", 2" O.D., .025 thk knife*, quantity: 8
48280, Spindle, *circular knife, s.s.*, quantity: 1
19233, Socket Set Srew, *3/8-24 x .55, Nylok, s.s.*, quantity: 2
48281, Spindle Nut, *s.s.*, quantity: 1

Add **18865 Knife,** *circular, 3", plain, double bevel, .058" thick* (optional knife for 18803).

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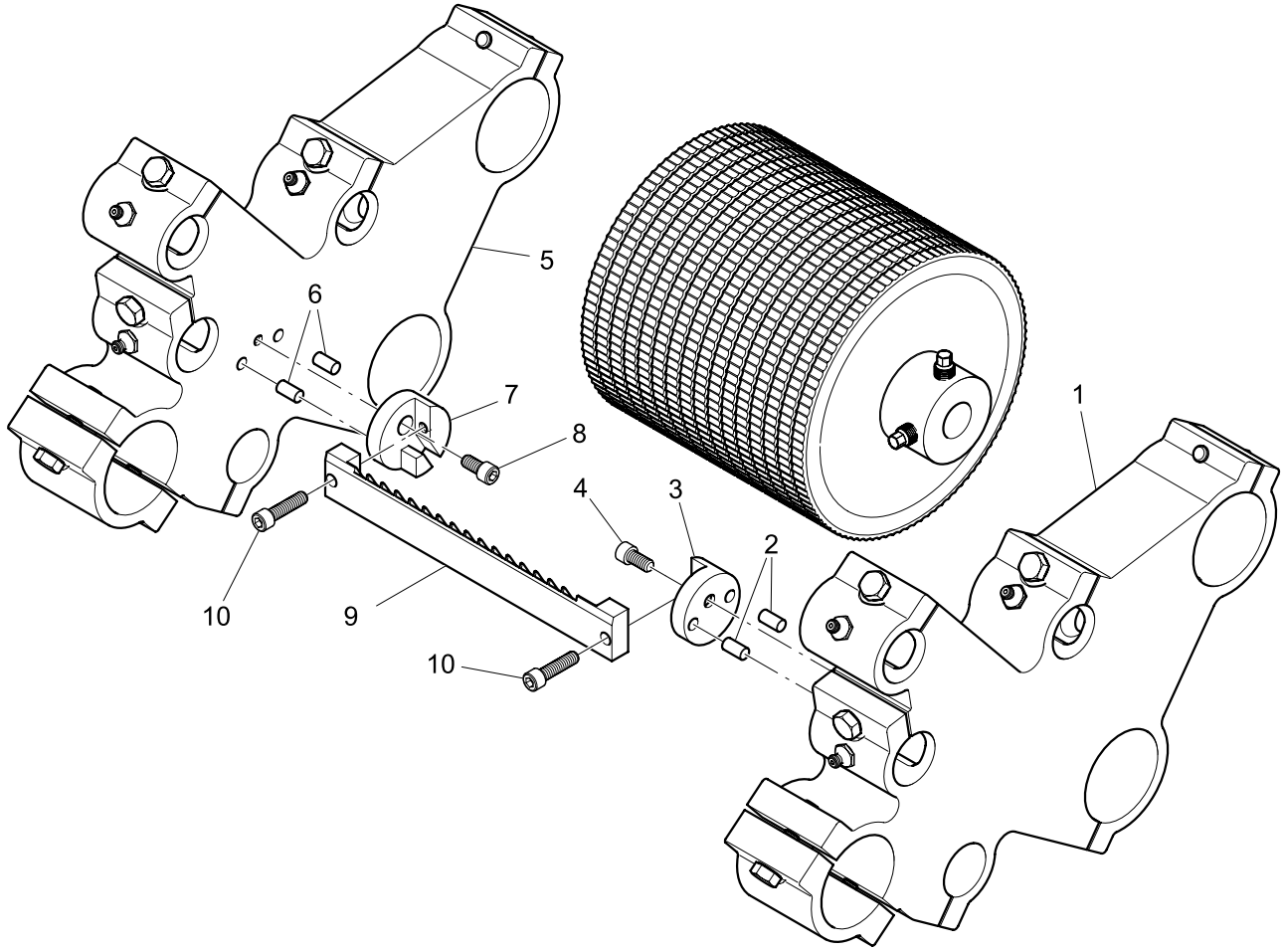
(continued)

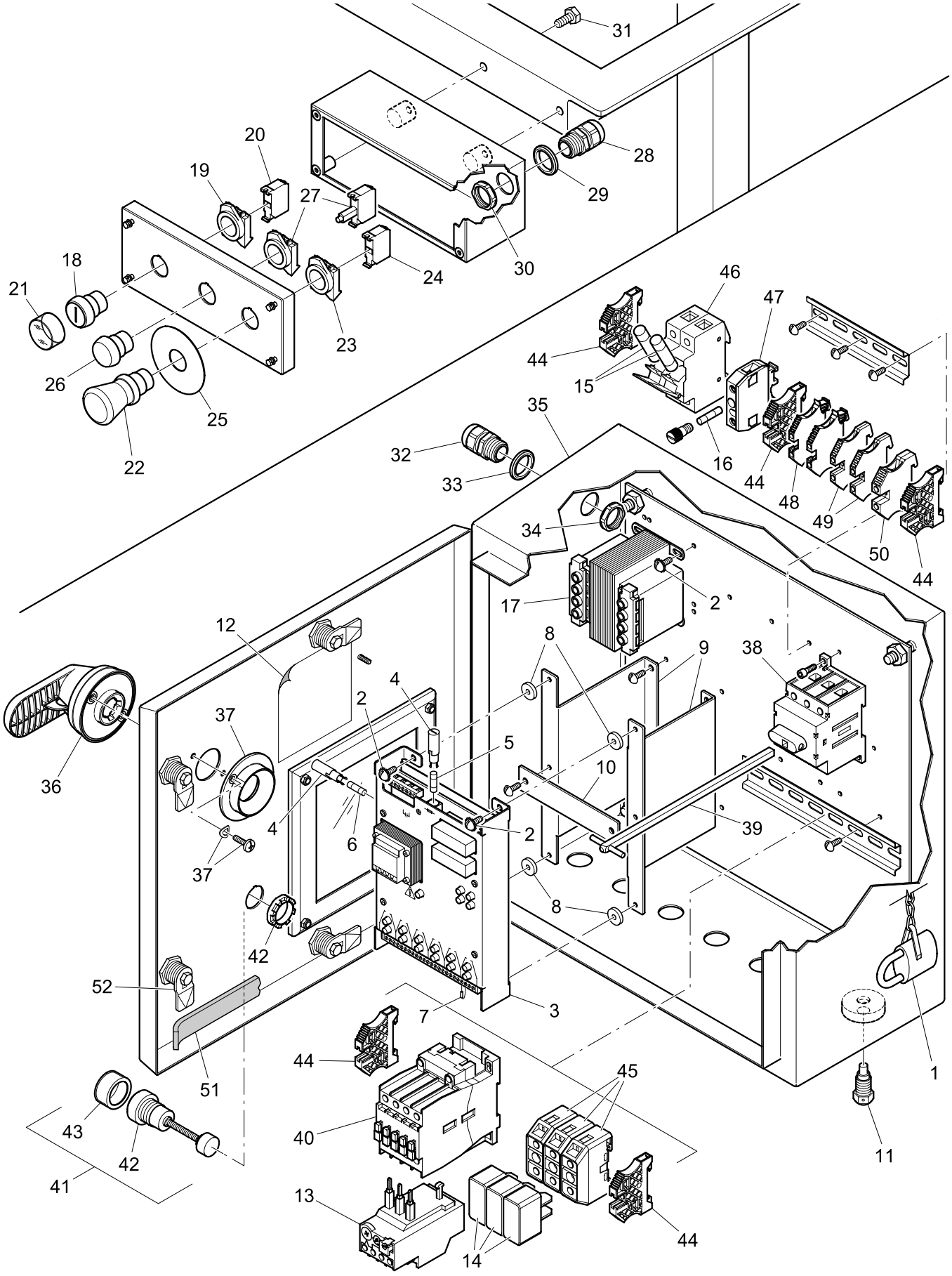
Optional Parts: Add **Stripper Plate for Feed Drum** and related parts. The stripper plate helps remove sticky products from the grooves in the feed drum.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	19701	**Side Frame,** *right, feed drum stripper, (includes items 2–4)*	1
2	10221	**Dowel Pin,** *1/4" x 1/2", s.s.*	2
3	19699	**Stripper Plate Mount,** *right*	1
4	10089	**Socket Head Cap Screw,** *1/4-20 x 1/2", s.s.*	1
5	19702	**Side Frame,** *left, feed drum stripper, (includes items 6–8)*	1
6	10221	**Dowel Pin,** *1/4" x 1/2", s.s.*	2
7	19700	**Stripper Plate Mount,** *left*	1
8	10089	**Socket Head Cap Screw,** *1/4-20 x 1/2", s.s.*	1
9	19704	**Stripper Plate,** *feed drum, 5/32"*	1
	19705	**Stripper Plate,** *feed drum, 1/8"*	1
	19706	**Stripper Plate,** *feed drum, 3/16"*	1
	19707	**Stripper Plate,** *feed drum, 5/16"*	1
	19708	**Stripper Plate,** *feed drum, 1/4"*	1
	19709	**Stripper Plate,** *feed drum, 5/16", wide slot*	1
	19710	**Stripper Plate,** *feed drum, 3/8", (shown below)*	1
10	10094	**Socket Head Cap Screw,** *1/4-20 x 1", s.s.*	2



PARTS

Electrical Assembly



ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19718	**Electrical Assembly,** *RA-A, 200-575 volts, (includes items 1–34)*	1
1	13408	**Padlock With Chain**	1
2	10625	**Round Head Mach Screw with Washer,** *10-32 x 1/2"*	8
3	63737	**Amplifier,** *(includes items 4–7)*	1
4	13673	**Adapter,** *fuse*	2
5	13671	**Fuse,** *.630 amp.*	1
6	13672	**Fuse,** *.125 amp.*	1
7	63755	**Resistor,** *22K ohms*	2
8	12633	**Rubber Washer,** *3/16 x 5/8 x 1/8" thick*	4
9	*	**Amplifier Bracket**	2
10	*	**Amplifier Bracket Brace**	1
11	11593	**Breather Drain,** *1/4"*	1
12	19719	**Wiring Diagram,** *RA-A*	1
13	**	**Overload Relay,** *(OL1)*	1
14	**	**Fuse,** *main, (FU1)*	3
15	**	**Fuse,** *primary, (FU2)*	2
16	12923	**Fuse,** *secondary, .50 amp, (FU3)*	1
17	**	**Control Circuit Transformer**	1
–	19712	**Control Station Enclosure Assembly,** *(includes items 18–30)*	1
–	21424	**Push Button Assembly,** *start, (includes items 18–21)*	1
18	21425	**Push Button,** *start*	1
19	21432	**Latch,** *push button*	1
20	21430	**Contact Block,** *n/o*	1
21	21431	**Boot,** *push button*	1
–	21426	**Push Button Assembly,** *stop, (includes items 22–25)*	1
22	21427	**Push Button,** *stop*	1
23	21432	**Latch,** *push button*	1
24	21429	**Contact Block,** *n/c*	1
25	21428	**Legend Plate,** *yellow, round*	1
–	21433	**Pilot Light Assembly,** *(includes item 26 & 27)*	1
26	21434	**Pilot Light**	1
27	21435	**Pilot Light Lamp Module with Latch**	1
28	11877	**Cord Connector,** *straight, .236/.472*	1
29	11900	**Seal Washer,** *3/16" x 7/8" x 1-9/32"*	1
30	11611	**Lock Nut,** *1/2"*	1
31	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8, s.s.*	2
32	11877	**Cord Connector,** *straight, .236/.472*	1
33	11900	**Seal Washer,** *3/16" x 7/8" x 1-9/32"*	1
34	11611	**Lock Nut,** *1/2"*	1
35	19713	**Electrical Enclosure,** *(includes items 36–52)*	1
36	21241	**Disconnect Switch Handle,** IEC	1
37	21460	**Disconnect Rod Guide**	1
38	12942	**Disconnect Switch,** *3 pole, non-fusible, 40amp*	1
39	12779	**IEC Extended Shaft,** *10.43"*	1
40	21444	**Contactor,** *40 amp*	1
41	21436	**Reset Button Assembly,** *(includes items 42 & 43)*	1
42	21437	**Reset Button**	1
43	21431	**Boot,** *push button*	1
44	21439	**End Anchor**	5
45	21324	**Fuse Base,** *60 amp, cube*	3
46	12930	**Modular Fuse Holder,** *2 pole*	1
47	21481	**Fuse Terminal,** *5 x 20 mm*	1
48	21438	**Terminal Block**	2
49	21442	**Grounding Block,** *size 4*	2
50	21443	**Grounding Block,** *size 10*	1
51	*	**Door Gasket,** *(fitting and adhesive required)*	1
52	21270	**Quarter Turn Latch Assembly,** *(Industrial Enclosures)*	4
	21271	**Quarter Turn Latch Assembly,** *(Hoffman Enclosures)*	4

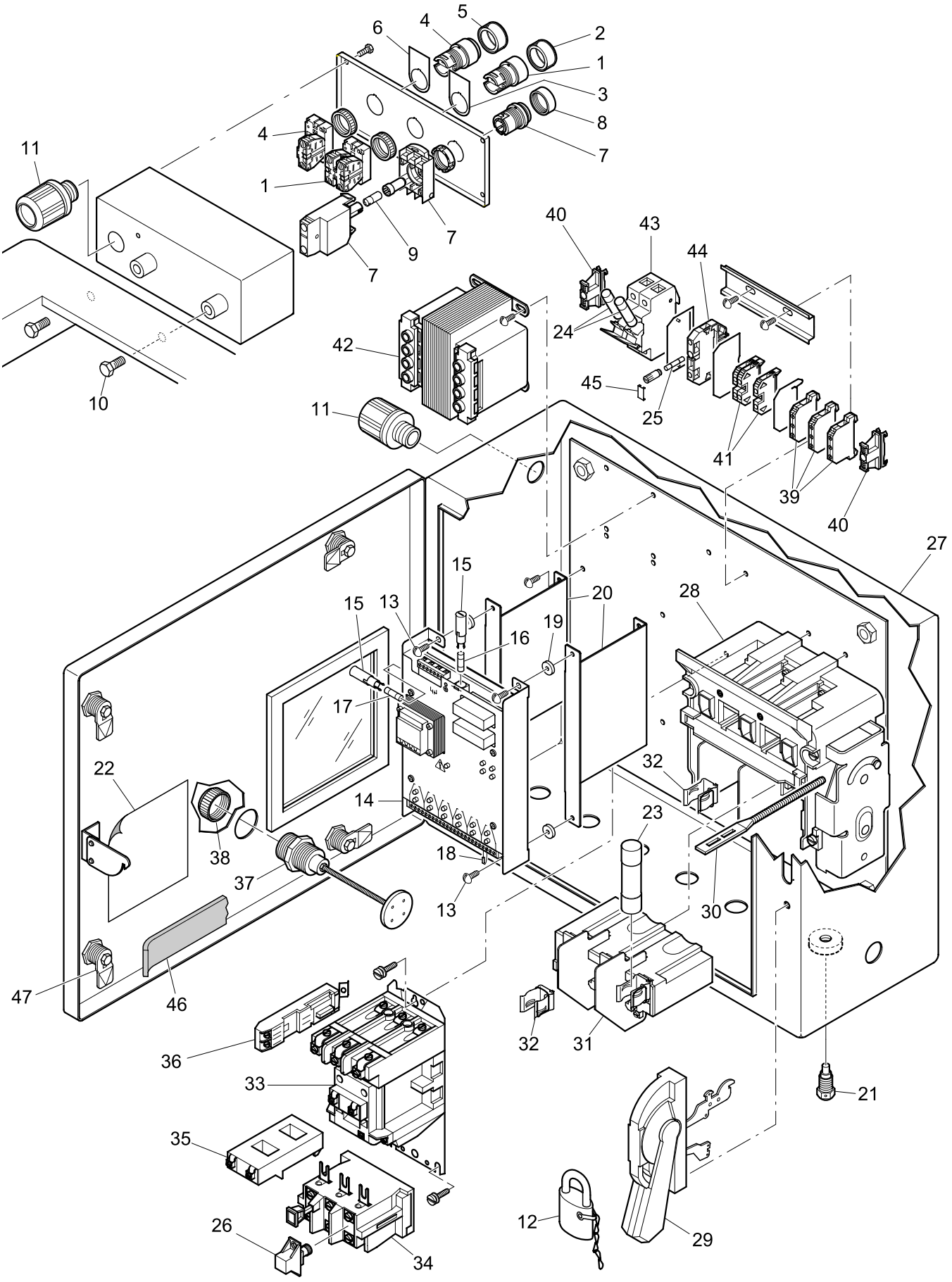
* Consult the factory.

** See charts on page A12.

Electrical assemblies also include safety switches and related parts; see pages A10 & A11.

PARTS

Electrical Assembly (NEMA)



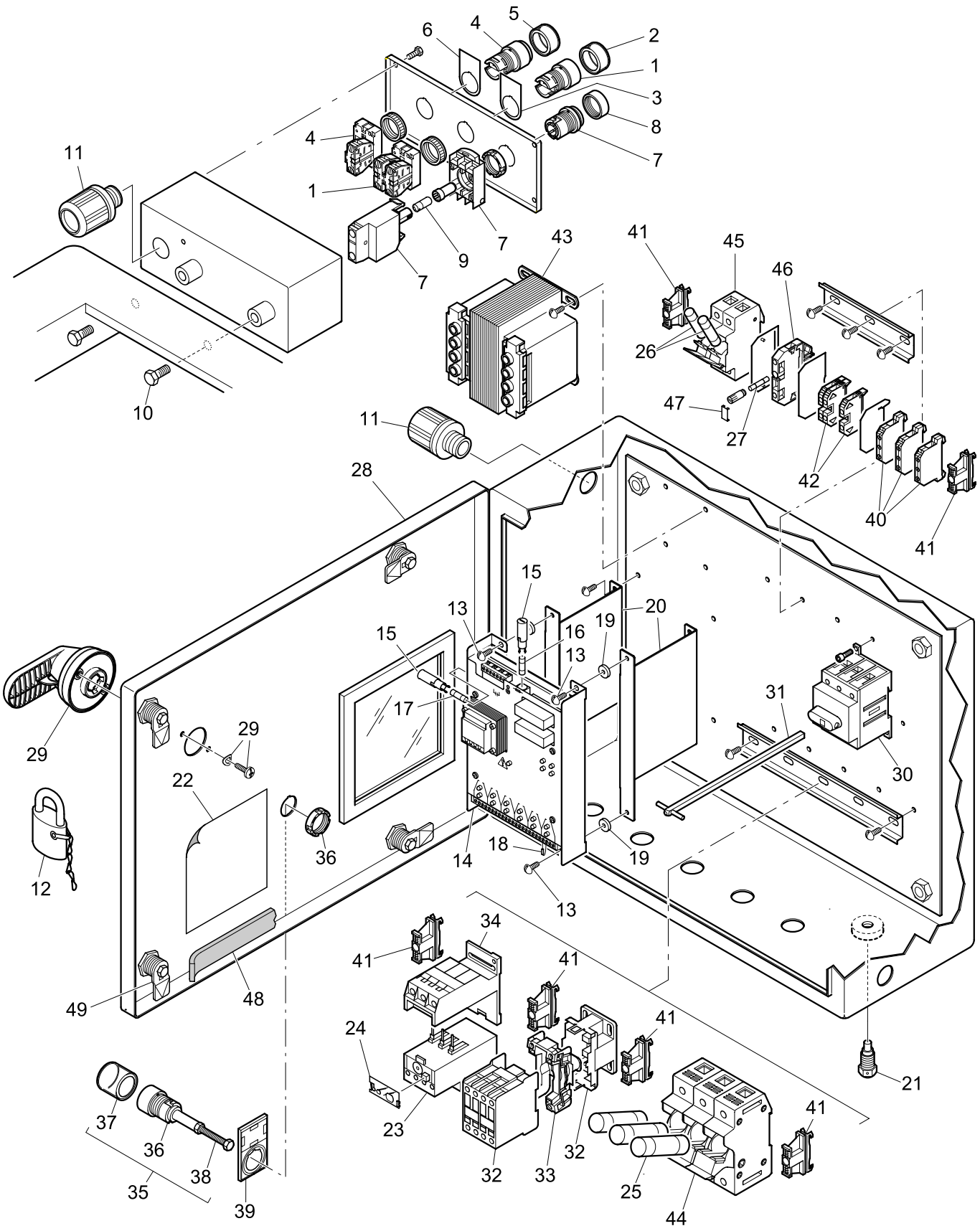
These electrical assemblies where used prior to the assembly currently supplied on new machines. Repair parts are available except as noted. See previous pages for the assembly currently supplied on machines.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19687*	**Electrical Assembly,** *200-240/460 volt, (includes items 1–26)*	1
—	19690*	**Electrical Assembly,** *575 volt, (includes items 1–26)*	1
—	19679*	**Control Station Enclosure Assembly,** *(includes items 1–9)*	1
1	12975	**Start Button Assembly,** *(includes item 2)*	1
2	12977	**Protective Boot,** *flush head, IEC*	1
3	12978	**Name Plate,** *(I) start, IEC*	1
4	12976	**Stop Button Assembly,** *(includes item 5)*	1
5	12977	**Protective Boot,** *flush head, IEC*	1
6	12979	**Name Plate,** *(O) stop, IEC*	1
7	12757	**Pilot Light,** *IEC, (includes items 8 & 9)*	1
8	12758	**Pilot Light Lens,** *IEC*	1
9	12599	**Bulb,** *pilot light, IEC*	1
10	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8", s.s.*	2
11	11613	**Conduit Connector,** *1/2", straight*	2
12	13408	**Padlock,** *with chain*	1
13	10625	**Round Head Machine Screw With Washer,** *10-32 x 1/2"*	4
14	63737	**Amplifier,** *(includes items 15–18)*	1
15	13673	**Adapter,** *fuse*	2
16	13671	**Fuse,** *.630 amp.*	1
17	13672	**Fuse,** *.125 amp.*	1
18	63755	**Resistor,** *22K ohms*	2
19	12633	**Rubber Washer,** *3/16 x 5/8 x 1/8" thick*	4
20	***	**Amplifier Bracket**	2
21	11593	**Breather Drain,** *1/4"*	1
22	19692	**Wiring Diagram**	1
23	**	**Fuse,** *FU1, (class J)*	3
24	**	**Fuse,** *FU2, (primary)*	2
	12691	**Fuse,** *FU2, (primary), .60 amp, (575 volt only)*	2
25	21285	**Fuse,** *FU3, (secondary), 1.0 amp, (all voltages)*	1
26	**	**Heater Element**	3
27	19677*	**Combination Starter,** *size "1", (includes items 28–47)*	1
28	13604	**Disconnect,** *30 amp.*	1
29	63383	**Operating Handle**	1
30	63384	**Connecting Rod**	1
31	13605	**Fuse Trailer Block,** *(includes item 32)*	1
32	13381	**Fuse Clip Kit,** *(set of 6)*	1
33	63281	**Starter,** *size "1", (includes items 34–36)*	1
34	12667	**Overload Relay**	1
35	13548	**Operating Coil,** *for size 0 &1 starter*	1
36	63579	**Auxiliary Contact,** *normally open*	1
37	12603	**Reset Button,** *(includes item 38)*	1
38	12604	**Rubber Boot,** *reset*	1
39	12750	**Earthing Terminal,** *IEC*	3
40	12751	**End Anchor,** *IEC*	2
41	12760	**Terminal,** *IEC*	3
42	21267	**Control Circuit Transformer**	1
43	12930	**Modular Fuse Holder,** *2 pole*	1
44	12763	**Fuse Terminal,** *5 x 20 mm, IEC, (includes item 45)*	1
45	12781	**Transparent Cover**	1
46	***	**Door Gasket,** *(fitting and adhesive required)*	1
47	21270	**Quarter Turn Latch Assembly,** *(Industrial Enclosures)*	4
	21271	**Quarter Turn Latch Assembly,** *(Hoffman Enclosures)*	4

* Not for sale; part numbers supplied for reference only.
** See charts on page A13.
*** Consult the factory.
Electrical assemblies also include safety switches and related parts; see pages A10 & A11.

PARTS

Electrical Assembly (CE Compliant)



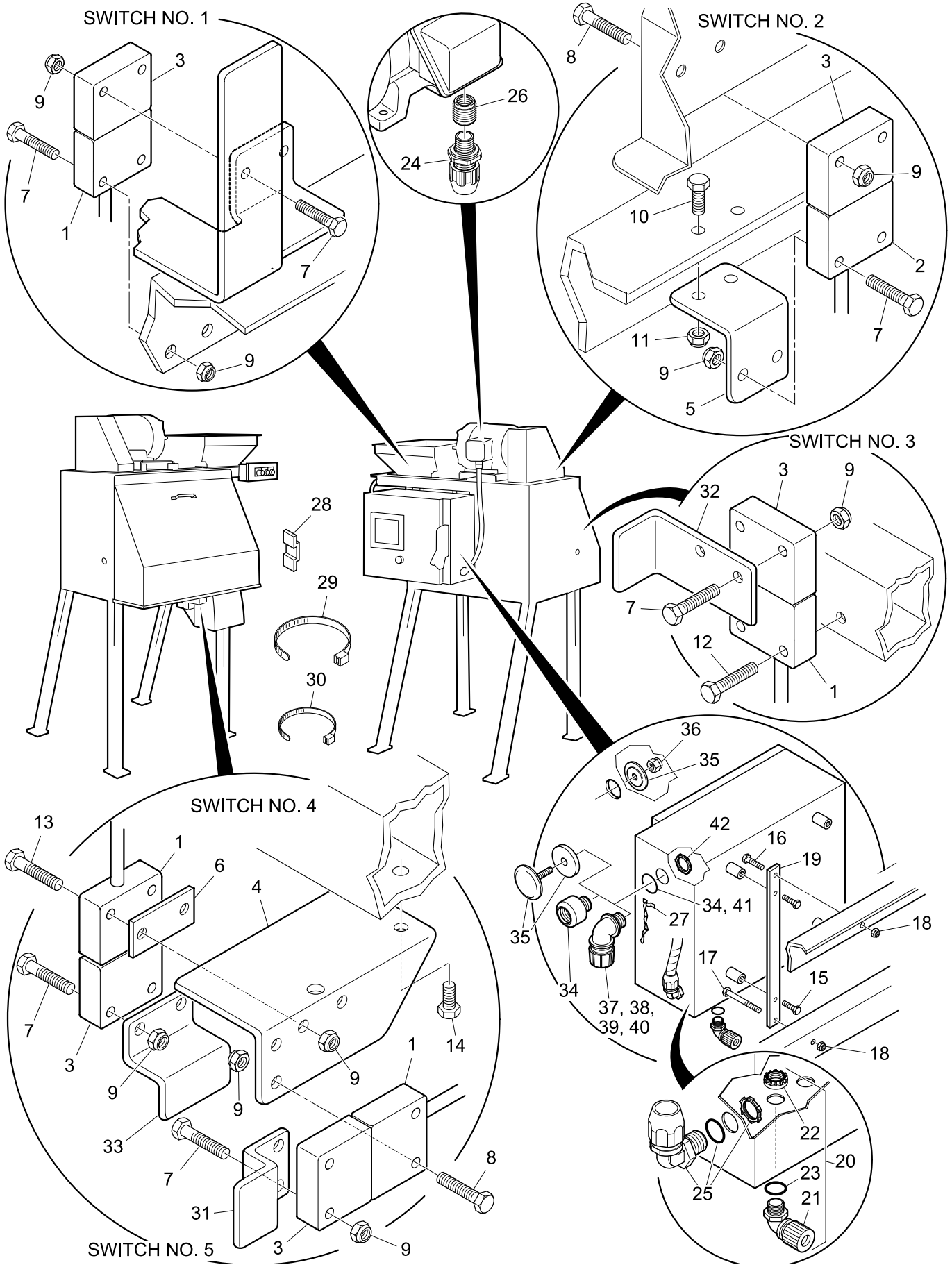
This electrical assembly was used prior to the assembly currently supplied on new machines. Repair parts are available except as noted. See previous pages for the assembly currently supplied on machines.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19684*	**IEC Electrical Assembly,** *(includes items 1–27)*	1
—	19680*	**Control Station Enclosure Assembly,** *(includes items 1–9)*	1
1	12975	**Start Button Assembly,** *(includes item 2)*	1
2	12977	**Protective Boot,** *flush head, IEC*	1
3	12978	**Name Plate,** *(I) start, IEC*	1
4	12976	**Stop Button Assembly,** *(includes item 5)*	1
5	12977	**Protective Boot,** *flush head, IEC*	1
6	12979	**Name Plate,** *(O) stop, IEC*	1
7	12757	**Pilot Light,** *IEC, (includes items 8 & 9)*	1
8	12758	**Pilot Light Lens,** *IEC*	1
9	12599	**Bulb,** *pilot light, IEC*	1
10	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8"*	2
11	11613	**Conduit Connector,** *1/2", straight*	2
12	13408	**Padlock,** *with chain*	1
13	10625	**Round Head Machine Screw,** *w/washer, 10-32 x 1/2"*	4
14	63737	**Amplifier,** *(includes items 15–18)*	1
15	13673	**Adapter**	2
16	13671	**Fuse,** *.630 amp.*	1
17	13672	**Fuse,** *.125 amp.*	1
18	63755	**Resistor,** *22K ohms*	2
19	12633	**Rubber Washer**	4
20	***	**Amplifier Bracket**	2
21	11593	**Breather/Drain,** *1/4"*	1
22	19686	**IEC Wiring Diagram,** *5 H.P. motor*	1
23	**	**Overload Relay,** *(use with item 34 Overload Base Adapter)*	1
24	12871	**Transparent Cover for Adjustment Dial**	1
25	**	**Fuse,** *FU1, (class J)*	3
26	12924	**Fuse,** *FU2, (primary), .50 amp*	2
27	12923	**Fuse,** *FU3, (secondary), .50 amp*	1
28	19678*	**Combination Starter,** *IEC, 22 amp with lugs, (includes items 29–49)*	1
29	21241	**IEC Disconnect Switch Handle,** *red/yellow*	1
30	12942	**Disconnect Switch,** *3 pole, non-fusible, 40A*	1
31	12779	**IEC Extended Shaft,** *10.43", (cut to length)*	1
32	12753	**Contactor,** *22 A., IEC, (includes item 33)*	1
33	12754	**Coil,** *110/120 volts, 50/60 Hertz, IEC*	1
34	13677	**Overload Base Adapter**	1
35	12747	**Reset Button Assembly,** *IEC, (includes items 36–38)*	1
36	12744	**Reset Button,** *IEC*	1
37	12748	**Protective Cap,** *flush head, IEC*	1
38	12745	**Reset Extender,** *IEC*	1
39	12746	**Reset Insert with Holder**	1
40	12750	**Earthing Terminal,** *IEC*	3
41	12751	**End Anchor,** *IEC*	6
42	12760	**Terminal,** *IEC*	3
43	12928	**Control Circuit Transformer,** *50 VA, (380-415 primary voltage)*	1
	12927	**Control Circuit Transformer,** *50 VA, (200-240 primary voltage)*	1
44	12973	**Modular Fuse Holder,** *3 pole*	1
45	12930	**Modular Fuse Holder,** *2 pole*	1
46	12763	**Fuse Terminal,** *5 x 20 mm, IEC, (includes item 47)*	1
47	12781	**Transparent Cover**	1
48	***	**Door Gasket,** *(fitting and adhesive required)*	1
49	21270	**Quarter Turn Latch Assembly,** *(Industrial Enclosures)*	4
	21271	**Quarter Turn Latch Assembly,** *(Hoffman Enclosures)*	4

* Not for sale; part numbers supplied for reference only.
** See charts on page A13.
*** Consult the factory.
Electrical assemblies also include safety switches and related parts; see pages A10 & A11.

PARTS

Electrical Assembly (switches)



Electrical assemblies include the following items 1–30.

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	63738	**Sensor,** *6' lead*	4
2	63739	**Sensor,** *12' lead*	1
3	63741	**Actuator**	5
4	19363	**Sensor Bracket**	1
5	19364	**Sensor Bracket**	1
6	12802	**Spacer,** *3/16"*	1
7	10233	**Hex Head Cap Screw,** *10-24 x 1", s.s.*	12
8	10351	**Hex Head Cap Screw,** *10-24 x 7/8", s.s.*	4
9	10231	**Hex Nut,** *10-24, s.s.,locking*	18
10	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
11	10230	**Hex Nut,** *1/4-20, s.s., locking, thick*	2
12	10232	**Hex Head Cap Screw,** *10-24 x 5/8", s.s.*	2
13	10348	**Hex Head Cap Screw,** *10-24 x 1-1/4", s.s.*	2
14	10037	**Hex Head Cap Screw,** *1/4-20 x 1/2", s.s.*	2
15	10045	**Hex Head Cap Screw,** *5/16-18 x 3/4", s.s.*	4
16	10047	**Hex Head Cap Screw,** *5/16-18 x 1", s.s.*	2
17	10054	**Hex Head Cap Screw,** *5/16-18 x 2-3/4", s.s.*	2
18	10306	**Hex Nut,** *5/16-18, s.s.,locking*	4
19	19403	**Bracket**	2
20	11548	**Cord Connector,** *90 degree, 7/32", .250/.375, (includes items 16–18)*	5
21	11609	**Cord Connector,** *90 degree, .250/.375*	1
22	11611	**Lock Nut,** *1/2"*	1
23	11900	**Seal Washer,** *3/16" x 7/8" x 1-9/32"*	1
24	11613	**Conduit Connector,** *straight, 1/2", (for cast iron motor)*	3
	11614	**Conduit Connector,** *90 degree, 1/2", (for stainless steel motor)*	3
25	11614	**Conduit Connector,** *90 degree, 1/2"*	1
26	11502	**Reducing Bushing,** *1/2" x 3/4"*	1
27	13424	**Clip,** *chain*	1
28	13465	**Clip,** *cable tie*	21
29	11513	**Cable Tie**	21
30	11534	**Cable Tie,** *small, 99 mm long*	10
31	24247	**Actuator Bracket,** *(included with discharge chute)*	1
32	19362	**Actuator Bracket,** *(included with front panel)*	1
33	24247	**Actuator Bracket**	1

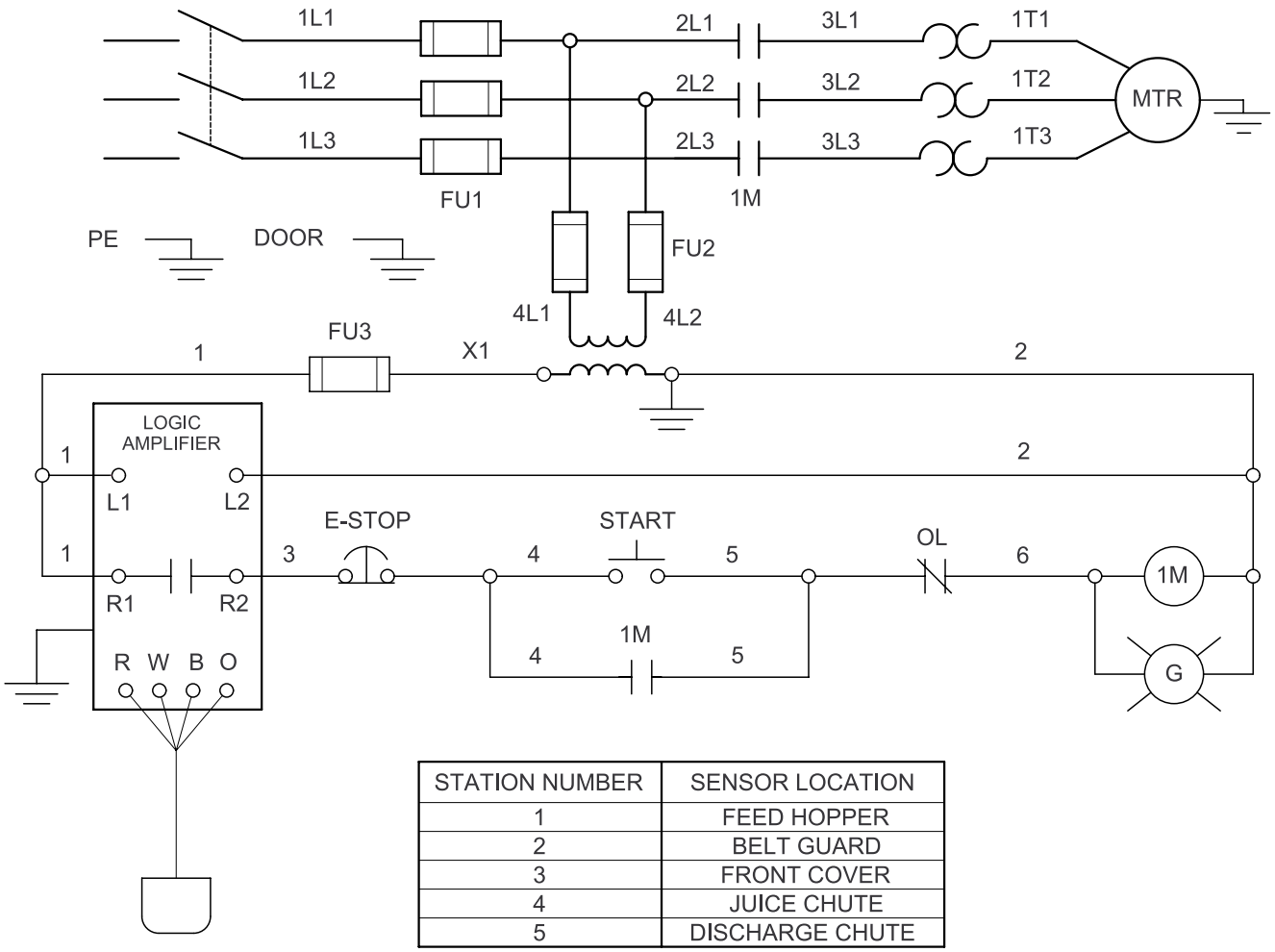
THE FOLLOWING ITEMS ARE NOT INCLUDED WITH THE ELECTRICAL ASSEMBLY. CHOOSE ONE FOR USE AT THE POWER SOURCE ENTRY POINT.

34	11582	**Conduit Hub,** *1", (includes washer and lock nut)*	1
35	11591	**Hole Seal,** *1-3/8"*	1
36	10231	**Hex Nut,** *10-24, s.s., locking*	1
—	11626	**Cord Connector Assembly,** *90 degree, .437/.562, (includes items 37, 41 & 42)*	1
37	11625	**Cord Connector,** *90 degree, .437/.562*	1
—	21370	**Cord Connector Assembly,** *90 degree, .62/.75, (includes items 38, 41 & 42)*	1
38	21368	**Cord Connector,** *90 degree, .62/.75*	1
—	21371	**Cord Connector Assembly,** *90 degree, .75/.88, (includes items 39, 41 & 42)*	1
39	21369	**Cord Connector,** *90 degree, .75/.88*	1
—	21372	**Cord Connector Assembly,** *90 degree, .88/1.0, (includes items 40, 41 & 42)*	1
40	11972	**Cord Connector,** *90 degree, .88/1.0*	1
41	11966	**Seal Washer,** *3/16" x 1-5/16" x 1-3/4"*	1
42	11624	**Lock Nut**	1

PARTS

Electrical Schematics

WIRING DIAGRAM

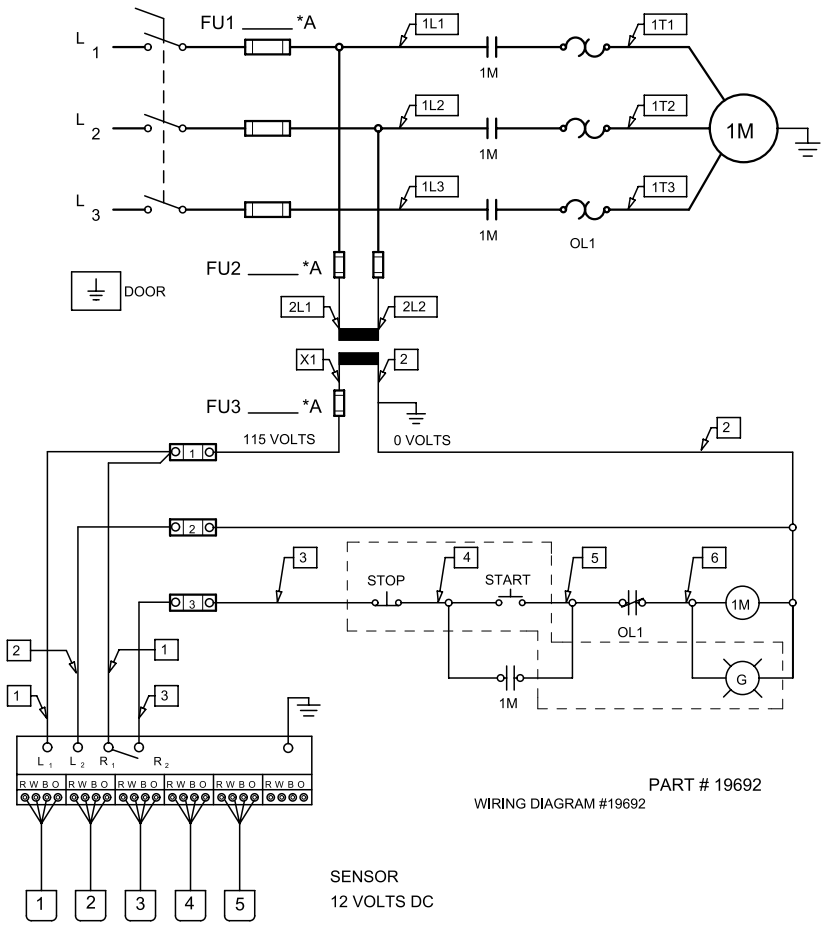


STATION NUMBER	SENSOR LOCATION
1	FEED HOPPER
2	BELT GUARD
3	FRONT COVER
4	JUICE CHUTE
5	DISCHARGE CHUTE

Motor Full Load Amperage	Overload Relay Part Number
.63 - .99	21446
1.00 - 1.29	21447
1.30 - 1.69	21448
1.70 - 2.19	21449
2.20 - 2.79	21450
2.80 - 3.49	21451
3.50 - 4.49	21452
4.50 - 5.99	21453
6.00 - 7.49	21454
7.50 - 9.99	21455
10.00 - 12.99	21456
13.00 - 17.99	21457
18.00 - 23.99	21458
24.00 - 32.00	21459

Motor Full Load Amperage	"Cube" Fuse Part Number	Fuse Size
0 - 1.71	21384	3
1.72 - 3.42	21341	6
3.43 - 5.71	21339	10
5.72 - 8.57	21325	15
8.58 - 10.00	21326	17.5
10.01 - 11.42	21327	20
11.43 - 14.28	21328	25
14.29 - 17.14	21329	30
17.15 - 20.00	21330	35
20.01 - 22.85	21331	40
22.86 - 25.71	21332	45
25.72 - 28.57	21333	50
28.58 - 32.00	21334	60

Where Used	Transformer Part Number	Primary Voltage	Primary Fuse		Secondary Fuse 110-120 volt		Secondary Fuse 24 volt	
			Size	Part Number	Size	Part Number	Size	Part Number
N. America	12927	200-240	1.00	12925	.50	12923	2.50	12922
Elsewhere	12927	200-240	1.00	12929	.50	12923	2.50	12922
N. America	12927	440-480	.50	12926	.50	12923	2.50	12922
Elsewhere	12928	380-415	.50	12924	.50	12923	2.50	12922
N. America	21310	575	.50	12926	.5	12923	2.50	12922



PART # 19692
WIRING DIAGRAM #19692

* SEE SCHEMATIC INSIDE STARTER ENCLOSURE FOR FUSE AMPERAGE.

Use with 19692 & 19686 schematics.

OVERLOAD RELAY BLOCK	
MOTOR FULL LOAD AMPS	PART NO.
.25 - .41	13694
.40 - .65	13695
.65 - .99	13696
1.00 - 1.29	13698
1.30 - 1.71	13699
1.72 - 1.79	13699
1.80 - 2.49	13679
2.50 - 2.85	13680
2.86 - 3.42	13680
3.43 - 3.99	13680
4.00 - 4.57	13681
4.58 - 5.49	13681
5.50 - 5.71	13682
5.72 - 7.99	13682
8.00 - 8.57	13683
8.58 - 10.00	13683
10.01 - 11.42	13684
11.43 - 14.49	13684
14.50 - 17.49	13685
17.50 - 20.99	13686

Use with 19692 & 19686 schematics.

MOTOR FULL LOAD AMPS	HEATERS		FUSE (FU1) CLASS J (AJT) FUSE	AMPS
1.60 - 1.75	W33	12640	12785	3
1.76 - 1.93	W34	12680	12786	4
1.94 - 2.12	W35	12641	12786	4
2.13 - 2.33	W36	12642	12786	4
2.34 - 2.56	W37	12643	12787	5
2.57 - 2.81	W38	12580	12787	5
2.82 - 3.09	W39	12581	12787	5
3.10 - 3.40	W40	12582	12788	6
3.41 - 3.74	W41	12583	12788	6
3.75 - 4.11	W42	12584	12789	8
4.12 - 4.52	W43	12585	12789	8
4.53 - 4.97	W44	12586	12789	8
4.98 - 5.46	W45	12587	12790	10
5.47 - 6.01	W46	12588	12790	10
6.02 - 6.60	W47	12589	12791	12
6.61 - 7.26	W48	12590	12791	12
7.27 - 7.98	W49	12644	12792	15
7.99 - 8.78	W50	63355	12792	15
8.79 - 9.65	W51	63356	12793	17-1/2
9.66 - 10.60	W52	63357	12793	17-1/2
10.61 - 11.70	W53	63358	12974	20
11.71 - 12.80	W54	63359	12974	20
12.81 - 14.10	W55	63360	12975	25
14.11 - 15.40	W56	63361	12975	25

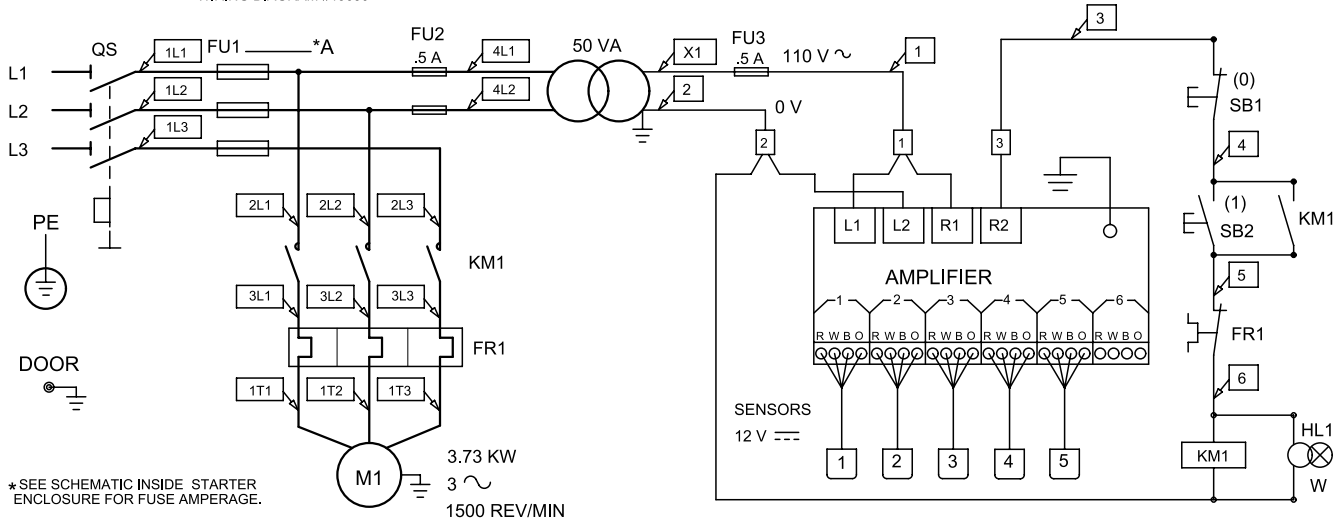
Use with 19692 schematic.

LOCATION	VOLTAGE	FUSE (FU2) PART NO.	AMPS
NORTH AMERICA	208 - 230	12697	1.50
	460	12692	.8
	575	12691	.6
OUTSIDE N. AMERICA	200 - 208	12994	2.00
	220 - 240	12929	1.00

Use with 19692 & 19686 schematics.

SWITCH LOCATIONS	
SWITCH NUMBER	LOCATION
1	FEED HOPPER
2	BELT GUARD
3	FRONT COVER
4	JUICE CHUTE
5	DISCHARGE CHUTE

WIRING DIAGRAM #19686



* SEE SCHEMATIC INSIDE STARTER ENCLOSURE FOR FUSE AMPERAGE.

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MODELS RA & RA-A

Instruction Manual

1635 MAR 97
(supersedes 1319 MAR 88)

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With subsidiaries and sales offices in principal cities worldwide.

This instruction manual contains the most current information available at the time of publication. Urschel Laboratories reserves the right to make changes at any time without notice. This manual represents the machine as it is currently manufactured at the time of publication. If your machine contains parts not shown, or if there are any questions regarding the safe operation of this machine, contact Urschel Laboratories.

FOREWORD

This manual must be read by or to each person before that person operates, cleans, repairs, adjusts, installs, supervises the operation of, or uses this machine in any way.

You must learn and follow all the safety rules and operating principles set forth in this manual. This means:

1. Follow all warnings, cautions, and other safety messages in this manual and on the machine. Recognize the safety alert symbol ⚠ , which indicates a potential personal safety hazard.
2. Never work beyond defined safety skills.
3. Insist on thorough and proper safety training.
4. Notify your supervisor of any machine condition which may create a hazard in its operation.
5. Notify Urschel Laboratories immediately of any accidents that have occurred on this machine.

If there are any questions regarding the safe operation of this machine, contact Urschel Laboratories.

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(continued)

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SAFETY

READ AND PRACTICE SAFETY RULES IN THIS MANUAL:

1. DANGER! This machine contains sharp knives and rotating parts. Never operate this machine if any guard or safety device has been removed or modified; doing so can result in serious injury or amputation.

2. When guards are removed, sharp edges and pinch points are exposed. Use extreme caution to avoid touching or striking these areas with your hands or body.

3. Always **disconnect and lock out the power source** before doing any work on this machine.

4. DANGER! Never put your hand or any foreign object into the feed opening or discharge area. Serious personal injury and/or damage to the machine may result.

5. NEVER attempt to assist the feeding or discharging of product with your hands.

6. Only qualified trained personnel should attempt to clean, adjust, repair or maintain the machine. Proper cleaning and maintenance procedures are found in the maintenance section of this manual.

7. Prior to operating the machine, the safety switches must be checked by qualified trained personnel. Complete information on checking safety switches is found in the operation section of this manual. If machine operates with any of the protective guards removed, this machine is not safe to operate. Call a qualified electrician immediately to locate and repair the fault.

8. Should the machine become overloaded or jammed, DO NOT attempt to correct the problem with the power source on. **Disconnect and lock out the power source.** Detailed instructions for correcting product jamming are found in the operation section of this manual and should be read and understood by all maintenance, service, or operation personnel.

Safety signs and safety switches are placed on Urschel® machines to help you avoid personal injury. ***They are there for your protection.*** *If your machine does not have these signs or switches, you must not operate the machine. Notify your supervisor and contact Urschel Laboratories, Inc. For the part numbers, languages and locations of safety signs, see "Machine Labels" in the parts section of this manual.*

Figure 1 — Caution label

⚠ **A caution label** (Figure 1) is provided to remind you of safety rules which must be followed to avoid personal injury.

Figure 2 — Danger label, feed opening

⚠ **Danger labels** (Figure 2) are placed at or near the feed opening to warn you and anyone near the machine to keep hands and all other foreign objects away from the feed opening.

Figure 3 — Danger label, discharge chute

⚠ **Danger labels** (Figure 3) are placed on or near the discharge chute to warn you and anyone near the machine that this opening is an access to sharp rotating parts and pinch points which can cause serious injury. Never insert your hand, a tool, or any foreign object into the discharge chute.

Figure 4 — Danger label, removed guard

⚠ **Danger labels** (Figure 4) are visible when a protective cover or guard has been opened or removed. This label warns you that the machine is unguarded and must not be restarted until all covers and guards are replaced.

Figure 5 — Danger and hazard alert labels

⚠ **A danger label and a hazard alert label** (Figure 5) are placed on the starter enclosure to warn you that this is a source of electrical hazard. The enclosure must be opened and serviced by a qualified electrician only and the installation must meet applicable codes. The number on the hazard alert label indicates the voltage requirements of the machine.

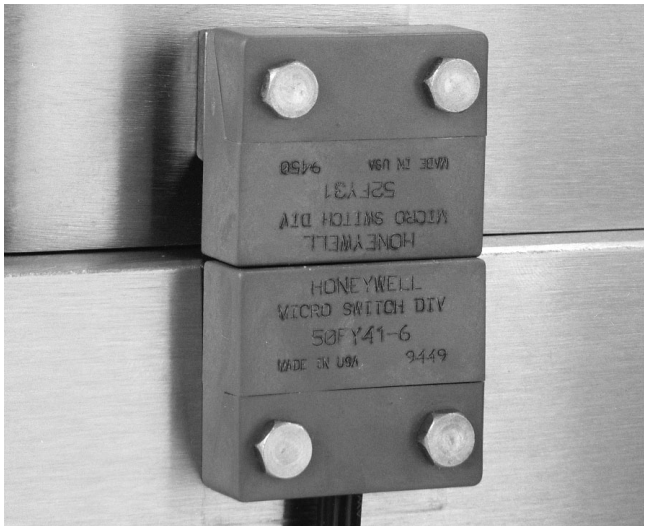


Figure 6 — Safety switch

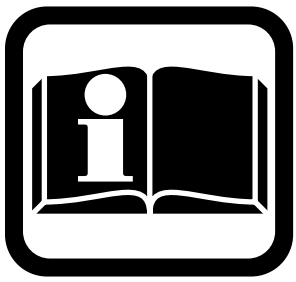
Figure 7 — Power disconnect/lockout switches

⚠ **Safety switches** (Figure 6) are provided to prevent operation of the machine when certain protective covers or guards have been removed. These switches must be checked before operating the machine and repaired or replaced if they do not work properly. Never rely solely on these safety switches. Always push the "**O**" (STOP) button then **disconnect and lock out the power source** before removing any part from the machine.

⚠ **Power disconnect/lockout switch** (Figure 7), located on the starter enclosure, will eliminate the danger of accidental start-up when locked in the "**O**" (OFF) position.

⚠ **Covers and guards** protect potentially dangerous machine areas. These covers and guards are of utmost importance to safe machine operation. ***Never attempt to operate the machine with a cover or guard removed or serious injury may occur!***

Covers and guards, safety signs and safety switches are standard equipment on newly manufactured machines and are available for placement on older machines that may not have had them at the time of original manufacture. Contact Urschel Laboratories for complete information.



GENERAL INFORMATION

See the addendum for updated information

SPECIFICATIONS

MODEL RA: Generally equipped with **manganese aluminum bronze** product contact parts.
MODEL RA-A: Equipped with **stainless steel** product contact parts. The machine is approved by the United States Department of Agriculture, Meat and Poultry Division.

⚠ **WARNING:** ***Do not modify this machine! Any modification or omission of parts could compromise the safety and sanitation of this machine and invalidate USDA approval.***

Length: .....39.32" (999 mm)
Width: .....36.56" (929 mm)
Height: .....62.68" (1592 mm)
Net Weight: .....740 lbs. (336 kg)
Gross Weight Crated: .....940 lbs. (426 kg)
Gross Weight Export Box: ...1125 lbs.(510 kg)
(See "Dimensional Drawing", page 98.)

Motor: 5 H.P., totally enclosed, fan-cooled. See motor specifications plate and motor manufacturer's instructions for more information.

PRODUCT LIMITATIONS

MAXIMUM INPUT PRODUCT SIZE is 3-1/2" (88.9 mm) in any dimension. Precut product if necessary.

PROCESSING STICKY OR CANDIED PRODUCT will cause friction in the slicing unit.

THE MODEL RA, RA-A IS NOT SUITED TO CUT HARD FROZEN PRODUCT. Frozen product should be tempered prior to cutting.

PRODUCTS WHICH ARE EXPLOSIVE or create a potentially explosive atmosphere should not be processed by this machine.

NOISE EMISSION

The amount of noise generated by this machine in use will vary depending on the type, condition and volume of product being cut, the size of cut and the acoustical characteristics of the room in which the machine is installed. A machine in good condition will register approximately 76 dB(A) in a free field over a reflecting plane when run without product and set to produce 1/8" (3.2 mm) dices. At a height of 63" (1600 mm) from the floor and 39.37" (1000 mm) from the machine, maximum sound position occurs at a point in front of the electrical enclosure on a standard height machine (Figure 8). Machines set for larger dicing or used without a crosscut spindle will generate less noise when measured under similar conditions.

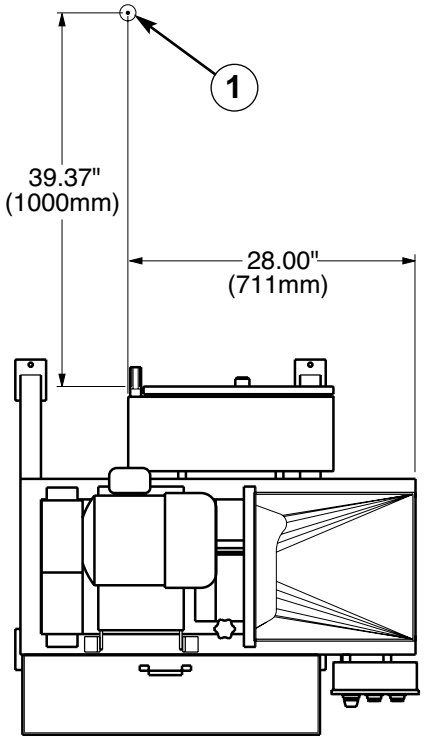


Figure 8 — Top view showing maximum sound position. (1) Measurement Position, 63" (1600 mm) from floor.

APPLICATIONS

The Models RA and RA-A will cut fruits, vegetables, products for relish, nuts, and processed meats into cubes or rectangular pieces. Restrictions limit the cutting of nuts to the model RA, and processed meats to the model RA-A. Interchangeable cutting parts in a wide range of sizes along with interchangeable drive parts provide maximum versatility and optimum cutting results in the small to intermediate size range.

OPERATING PRINCIPLE

Product delivered to the feed hopper continues into a rotating impeller (Figure 9). Centrifugal force holds the product against the inside of the slice case as the impeller paddles carry the product past the slicing knife. An adjustable case gate at the front of the case allows the product to move outward across the edge of the slicing knife. The opening between the end of the case gate and the slicing knife edge determines the slice thickness.

Slices then drop onto a revolving feed drum. The drum and an opposing feed spindle transfer the slices to the circular knife spindle where the product is cut into strips. The strips then move directly into the rotating crosscut knives, producing cubes or rectangular pieces of predetermined size.

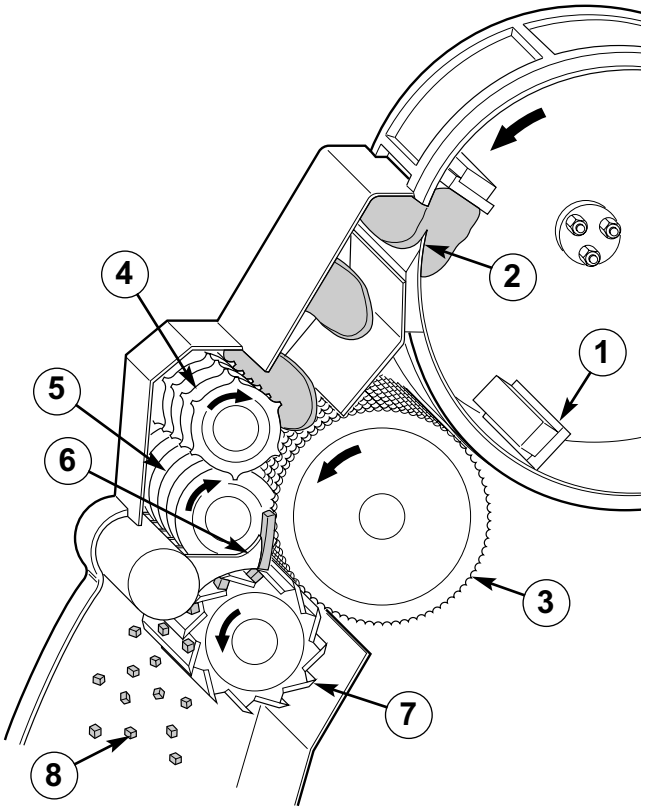


Figure 9 — Cutaway view of cutting unit. (1) Impeller, (2) Slicing Knife, (3) Feed Drum, (4) Feed Spindle, (5) Circular Knives, (6) Shear Plate, (7) Crosscut Knives, (8) Product. See chart on page 16 for cutting part speeds.

GENERAL INFORMATION

Machine Speed and Sizes of Cuts

See the addendum for updated information

OPERATING SPEED

Variations in product hardness and texture as well as size of cut desired, may require a change in the cutting speeds of the slicing and dicing units. See “Speed Control”, below.

Refer to the operating speeds chart listing below for the 5 operating speeds: high, high intermediate 900, high intermediate, medium and slow.

NOTE: *Product damage or incomplete cuts may indicate a need for a speed change.*

SPEED CONTROL

The nature of the product and size of cut will determine the speed at which the machine should be operated. See chart below.

The following five items will vary depending on the operating speed desired: motor pulley, drive pulley and adjacent gear, “V” belts and impeller drive gear. Refer to Drive Chart, page 91, for appropriate gears, pulleys and belts required for the desired operating speed.

SIZES OF CUTS

Many sizes of cuts can be made using combinations of adjustable slice thickness, circular knife spacing and interchangeable crosscut knife spindles. Slice thickness should not exceed the size of cut of the circular or crosscut knife spindles.

Slice thickness:

1/16"–3/8" (1.6–9.5 mm). This dimension is controlled by adjusting the case gate. See “Adjustments”, page 36.

Circular knives:

1/8"–1" (3.2–25.4 mm). This dimension is changed by substituting a specified number of knives and spacers on your existing spindle. See “Circular Knife Spindle Assembly”, pages 70–71.

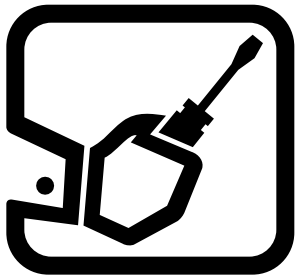
NOTE: *It may also be necessary to change feed spindle, feed drum and shear plate as size of circular knife cut changes.*

Crosscut knives:

1/16"–3" (1.6–76.2 mm). To change the size of this cut, different crosscut knife spindles must be installed. See “Crosscut Knife Spindle Assembly”, pages 76–79.

OPERATING SPEEDS AND PRODUCT APPLICATIONS

Speed	Impeller RPM	Circular Knives RPM	Crosscut Knives RPM	Feed Drum RPM	Feed Spindle RPM	Typical Application
High	450	900	2463	386	771	Firm products such as relish, dices less than 1/4" (6.4 mm)
High Intermediate 900	292	900	2463	386	771	Brittle products such as potatoes, dices less than 1/4" (6.4 mm)
High Intermediate	287	575	1589	249	498	Brittle products such as potatoes, dices 1/4" (6.4 mm) or larger
Medium	193	900	2463	386	771	Tough fibrous products
Slow	123	575	1589	249	498	Soft fragile products



INSTALLATION

INSTALLATION

Shipment, Pre-installation, Location, Lifting

MACHINE SHIPMENT

Every Urschel machine is fully inspected and test-run before it is shipped. Models RA and RA-A are shipped completely assembled and ready for installation. Spare parts, required tools, an instruction manual and other important information are packed in separate boxes and shipped in the crate with the machine. Remove the feed hopper and visually check the impeller area for objects which may have entered the machine during shipping.

PRE-INSTALLATION PLAN

Before installation, prepare a plan to make the use of this machine safe and efficient. This plan should consider location, electrical power source and method of feeding and collecting product. Installation should comply with all applicable safety codes and regulations.

LOCATION

Choose a location that provides machine stability, ample space, and a clear path on all sides of the machine. Provide easy access to the stop/start controls and the main power disconnect switch on the starter enclosure, and also allow room for cleaning and maintenance. The location should provide level footing, adequate lighting and ventilation and provisions for excessive noise levels. Never locate machine in an area with a potentially explosive atmosphere.

Urschel Laboratories recommends that this machine be installed at floor level. If elevating the machine is unavoidable, all operation, cleaning, maintenance and safety features of a floor level installation must be maintained.

LIFTING THE MACHINE

Remove bottom grid and front panel before lifting machine. Lifting forks must be at least 36" (91 cm) long. Insert forks from the corner opposite the dicing unit (Figure 10).

⚠ **WARNING:** ***Secure machine frame to lifting forks with a chain or strap to prevent tipping. If the machine tips and falls from lifting forks, bodily injury from crushing and damage to the machine may result.***

⚠ **CAUTION:** ***Always use the frame to lift or move the machine, never the starter enclosure, motor, covers or guards. Do not crush electrical cords beneath frame when lifting machine!***

⚠ **WARNING:** ***Bottom grid must be reinstalled before operating the machine! The grid restricts access to potentially dangerous machine areas. Placing hands in these areas when the machine is running could result in amputation!***

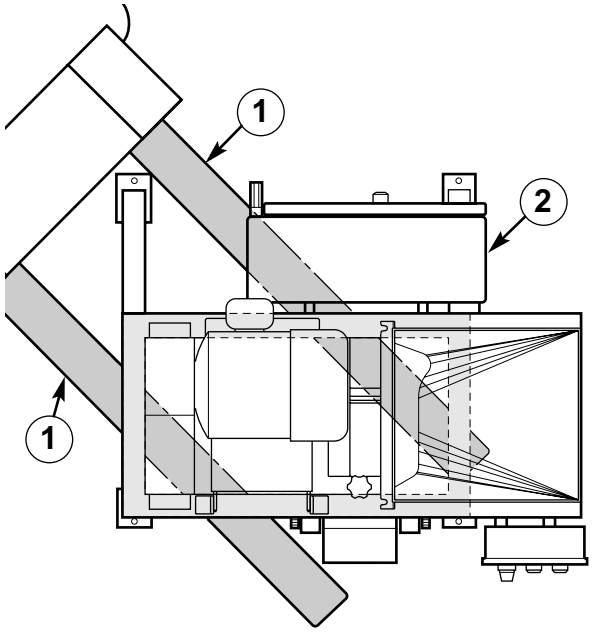


Figure 10 — Top view showing the position of lifting forks. (1) Lifting Forks, (2) Starter Enclosure.

ELECTRICAL POWER

The electrical installation must be performed by a *qualified electrician* in accordance with all applicable electrical codes. Refer to Figure 11, and proceed as follows:

1. **Connect the outside power source** to the terminals on top of the disconnect in the starter enclosure. The hazard alert label on the front of the starter enclosure specifies proper voltage for this machine.

   NOTE: *If voltage is not at least 95% of specified voltage, the motor may become overloaded during operation.*

   To maintain the watertight feature of the starter enclosure, use “liquid tight” or rigid conduit and appropriate fittings at the power source entry point on the side of the starter enclosure.

   NOTE: *Additional holes added to the starter enclosure may lessen the watertight features of the enclosure and lead to electrical failures.*

2. **Connect grounding conductor** (green or green and yellow striped wire) to the earth termination point located on the back panel inside the starter enclosure.

⚠ WARNING: ***This machine can be electrified with voltages dangerous to life if not properly grounded! Always maintain an earth ground to the earth termination point on this machine.***

3. **Connect the wiring** so that the impeller turns counterclockwise when viewed through the feed opening.

4. **Securely tighten screws** on the starter enclosure door when finished with installation.

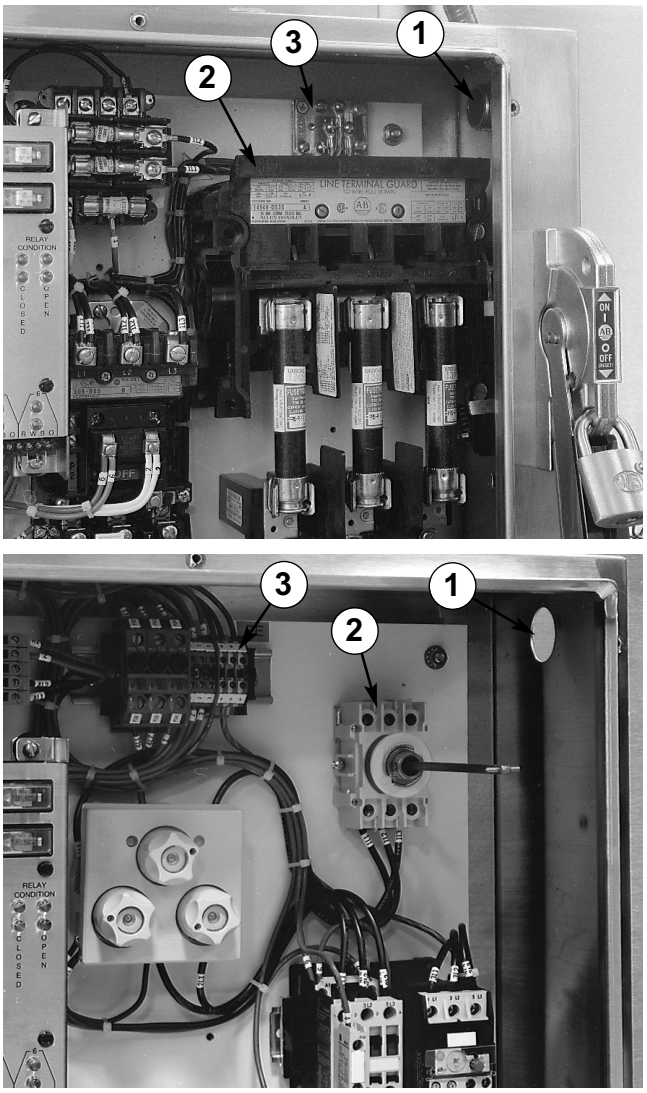
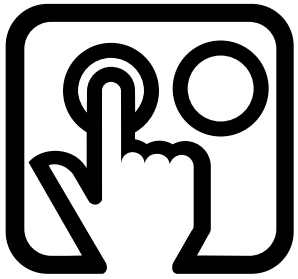


Figure 11 — Connect outside power source to the terminals on the disconnect; connect ground conductor to the earth termination point. (NEMA enclosure, top, and IEC** enclosure, bottom). (1) Power Source Entry Point, (2) Disconnect, (3) Earth Termination Point.*

** National Electrical Manufacturers Association*
*** International Electrotechnical Commission*



OPERATION

⚠ **WARNING:** ***This machine contains sharp knives and rotating parts. Only qualified trained personnel should operate this machine. Follow all safety rules and instructions outlined in this manual, or serious injury such as amputation could result!***

PRE-START CHECKLIST

After all requirements in this checklist have been met, the machine is ready for operation.

1. **Safety:** All operators must have a thorough understanding of the safe operation of this machine (Figure 12). See Safety section starting on page 9.

2. **Location:** Machine must have ample space on all sides so that operators can move safely and easily in a clean, dry work area. See “Location”, page 18.

3. **Electrical power:** Machine must be properly wired and the starter enclosure door screws securely fastened. See “Electrical Power”, page 19.

4. **Safety switch system:** The system must be tested and in working order. All covers and guards must be securely in place. See “Safety Switch Test”, page 24.

⚠ **WARNING:** ***A qualified trained person must check the safety switch system for proper function before operating the machine. If the machine can be started with any cover or guard removed that is equipped with a safety switch, there is a problem with the safety switch system. Do not operate the machine in this condition. Serious injury such as amputation could result!***

⚠ **DANGER:** ***KEEP HANDS AWAY FROM FEED OPENING***

⚠ **DANGER:** ***KEEP HANDS AWAY FROM DISCHARGE OPENING***

Figure 12 — Read and obey all danger and warning instructions and symbols in this manual and on the machine.

SAFETY SWITCH SYSTEM

The safety switch system has an amplifier which utilizes prewired safety switches on certain covers and guards to prevent the machine from operating when these covers or guards are removed.

SAFETY SWITCH

The safety switch consists of two parts, the sensor and the actuator (Figure 13). The sensor is attached to certain fixed components on the machine and sends a signal to the amplifier. The actuator is attached to certain removable covers and guards and must be aligned within 1/16" (1.6 mm) of the sensor.

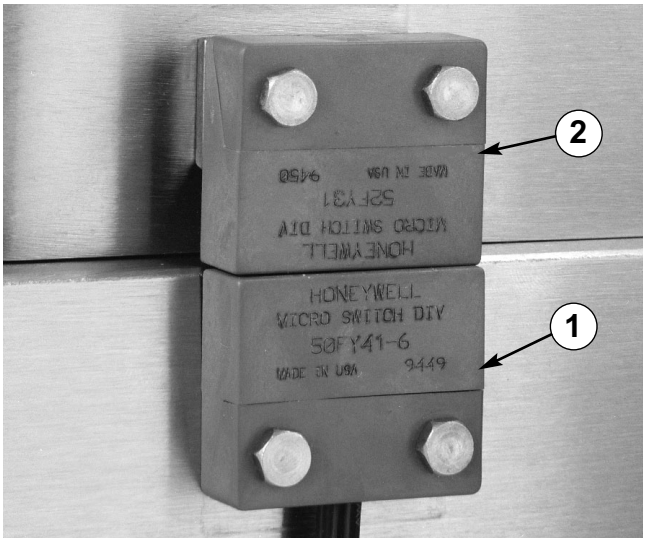


Figure 13 — Safety switch, (1) Sensor, (2) Actuator.

AMPLIFIER

The amplifier, viewed through the starter enclosure window, is an electronic device that processes the sensor signal (Figure 14). Based on the sensor signal, the amplifier will either allow or not allow the machine to start. The amplifier LEDs help identify possible problems with the safety switches.

Function of the amplifier LEDs is as follows: when the green “relay condition” LEDs are illuminated, the guards and covers equipped with switches are in place and properly aligned. When one or both of the red “relay condition” LEDs are illuminated, a safety switch circuit is open. When the red “switch output” LEDs are illuminated, they indicate which corresponding safety switch is open.

When the red “attention” LED is flashing, the amplifier has gone into a reset condition. With all sensors and actuators properly aligned, the power to the machine must be turned off and then on again to reset the amplifier. If the amplifier will not reset, call a qualified electrician to locate and repair the fault (see “Amplifier”, page 50).

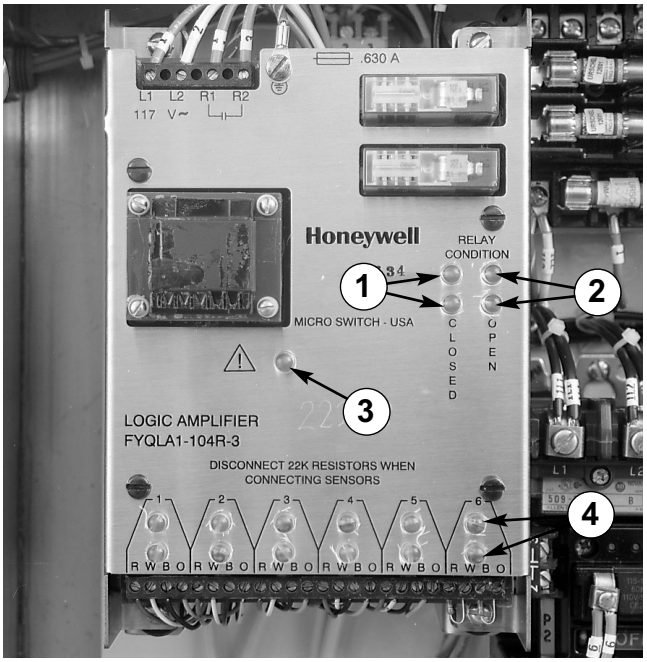


Figure 14— Amplifier. (1) Green “Relay Condition” LEDs, (2) Red “Relay Condition” LEDs, (3) Red “Attention” LED, (4) Red “Switch Output” LEDs.

SAFETY SWITCH TEST

⚠ **WARNING:** ***There is a problem in the safety switch circuit if the LEDs are not lit as indicated or if, having removed a cover or guard equipped with switch, the machine can be started. DO NOT operate the machine in this condition! Operating the machine in this condition could result in serious injury such as amputation! Call a qualified electrician to locate and repair the fault. See "Electrical Assembly", page 48.***

1. **With all covers and guards in place,** turn the power disconnect switch to "**I**" (ON). Only the green "relay condition" LEDs on the amplifier should be lit (Figure 15, page 25). Turn power disconnect switch to "**O**" (OFF).

⚠ **WARNING:** ***Be careful to avoid contact with cutting parts and sharp edges exposed during the safety switch test.***

2. **Remove or open one cover or guard equipped with switch.** Turn power disconnect switch to "**I**" (ON). Only the red "relay condition" LEDs and the red "switch output" LEDs corresponding to the switch on the removed or open cover should be lit on the amplifier. If LEDs are lit correctly, push the "**I**" (START) button. The safety switch circuit has been interrupted and machine should NOT start. If the machine does start, that safety circuit has failed. Push the "**O**" (STOP) button, then **disconnect and lock out power source.** Call a qualified electrician to locate and repair the fault immediately.

3. **Turn the power disconnect switch to "O" (OFF)** and replace or close the cover or guard.

4. **Individually remove or open each additional cover or guard equipped with switch** and repeat steps 2 and 3. Make sure all covers and guards are securely in place after all switches have been tested.

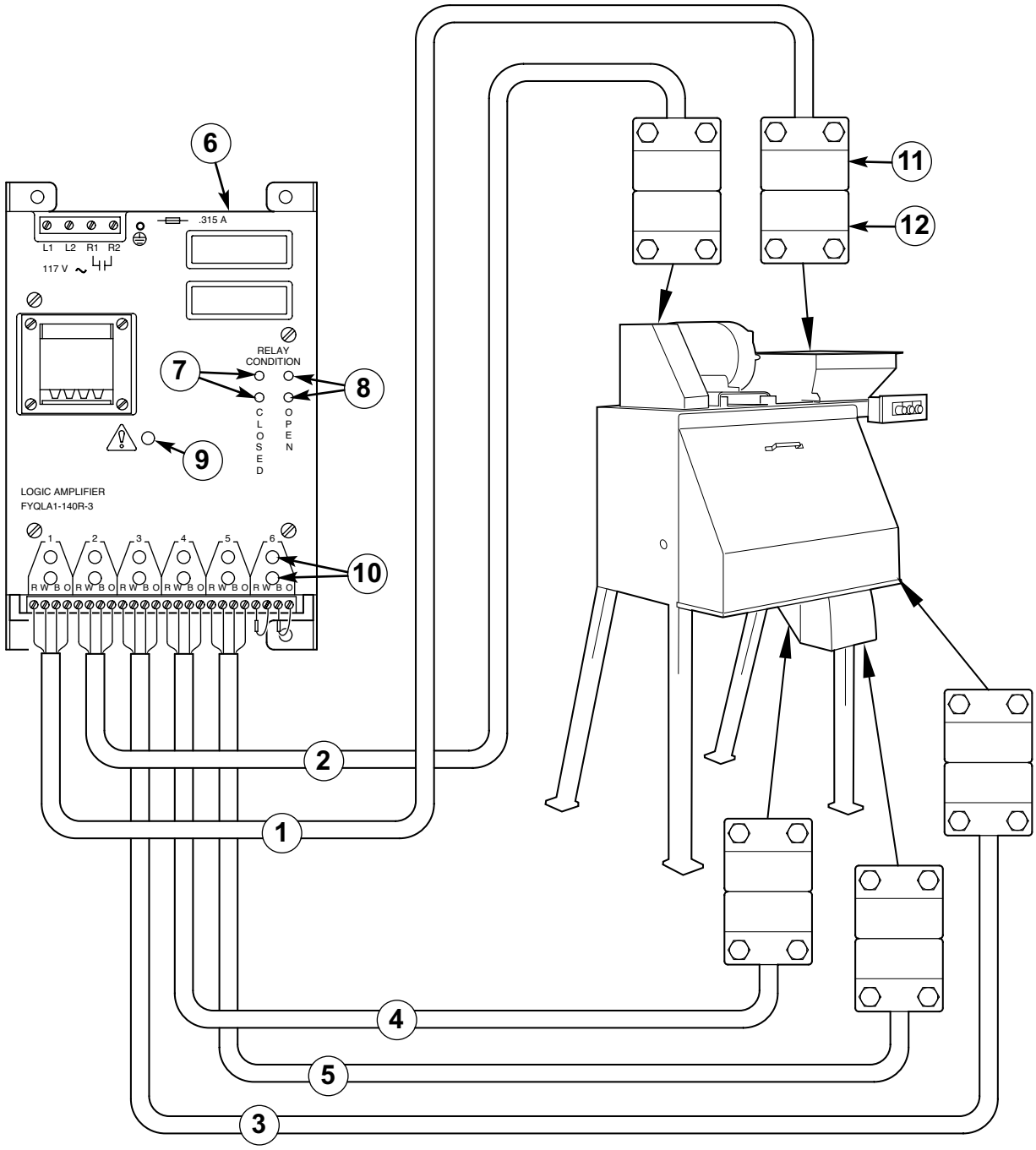


Figure 15 — Amplifier and safety switches with corresponding covers and guards. (1) Feed Hopper, (2) Belt Guard, (3) Front Panel, (4) Juice Chute, (5) Discharge Chute, (6) Amplifier, (7) Green "Relay Condition" LEDs, (8) Red "Relay Condition" LEDs, (9) Red "Attention" LED, (10) Red "Switch Output" LEDs, (11) Sensor, (12) Actuator.

OPERATION

Start-up,Stopping and Feeding

START-UP PROCEDURE

1. **Make sure all foreign objects and product** have been removed from the feed area.

2. **Unlock power disconnect switch.**

3. **Turn the power disconnect switch to "I" (ON).** Only the green "relay condition" LEDS on the amplifier should be lit**.**

4. **Press "I" (START) button.**

5. **Let machine reach full operating speed** before feeding product.

6. **If machine fails to start,** see "Troubleshooting", page 54.

STOPPING PROCEDURE

⚠ **WARNING:** ***Never remove covers or guards while machine is running! Contact with exposed rotating parts may cause severe injury.***

1. **Stop feeding product.** This allows remaining product to be cut and discharged.

2. **Flush the feed area thoroughly** with a generous amount of water BEFORE stopping the machine. See page 32 for complete cleaning procedures.

3. **Push "O" (STOP) button** then disconnect and lock out power source.

FEEDING METHOD

⚠ **CAUTION:** ***Do not allow foreign material such as tools, hardware, stones, wood, bottles or cans to enter the feed area. The cutting parts will be damaged or destroyed and the product contaminated.***

The feeding method affects the quality and capacity of the finished product. A *steady, uniform flow of product* from a conveyor or similar feeding system yields the best quality and greatest capacity. Dumping large quantities of product into the feed opening will produce undesirable cuts and can over-load the motor, clog the feed opening or jam the cutting unit. Continuous overfeeding or jamming will also cause premature damage and failure of cutting parts and drive train.

⚠ **DANGER:** ***Never place hands into feed opening. Doing so can result in serious injury such as amputation!***

MOTOR OVERLOAD

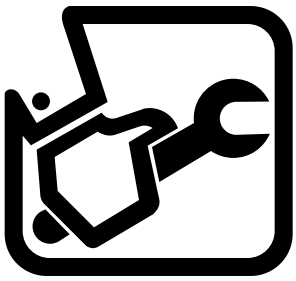
If the motor shuts off during operation, it is likely that it has been overloaded. After maintenance personnel have corrected the problem (allowing at least five minutes for thermal overloads to cool) machine may be restarted by first pressing the “RESET” button on the starter enclosure then starting in the normal manner. If motor again shuts off, see “Troubleshooting’’, page 55.

CORRECTING MACHINE OVERLOAD OR JAM

⚠ **DANGER:** ***Never try to remove jammed product while the machine is running! You may come into contact with cutting parts which could cause severe injury!***

1. **Push “O” (STOP) button then disconnect and lock out power source.**
2. **Only qualified trained personnel should proceed to step 3.**
3. **Remove or open guards** to expose jammed area and visually verify that all parts have stopped.
4. **Remove the obstruction.** ***Keep hands away from cutting parts.***
5. **Remove all product from the feed area** and replace or close all covers and guards.
6. **Machine is ready to restart** and resume feeding product. If proper feeding procedures are followed, product will flow evenly into feed areas.

⚠ **CAUTION:** ***If product continues to jam in the feed or discharge areas, DO NOT operate the machine. Contact your supervisor.***



MAINTENANCE

⚠ **WARNING:** ***This machine contains sharp knives, rotating parts, and voltages dangerous to life. Only qualified trained personnel should perform maintenance duties on this machine. Always disconnect and lock out the power source and visually verify that the machine has come to a complete stop before removing any cover or guard. Follow all safety rules and instructions outlined in this manual, or serious injury, amputation, or death could result!***

REMOVAL

⚠ **WARNING:** ***Disconnect and lock out power source and visually verify that machine has come to a complete stop before removing any cover or guard. Do not operate this machine if any cover or guard is removed. Operating machine with covers or guards removed may result in serious injury such as amputation!***

Remove the following covers and guards to service the various areas of the machine (Figure 17, page 31).

Front panel: remove to service slicing unit, dicing unit, and to lubricate machine.

Slice guide cover: remove to service slicing unit and dicing unit.

Right end panel, back panel, and belt guard: generally do not require removal.

Feed hopper: remove to service slicing unit.

Slice guide: remove to service dicing unit and drive train.

End panel: remove to service slicing unit.

Bottom grid: generally does not require removal.

Juice chute: remove to service slicing unit.

Discharge chute: remove to service slicing unit and dicing unit.

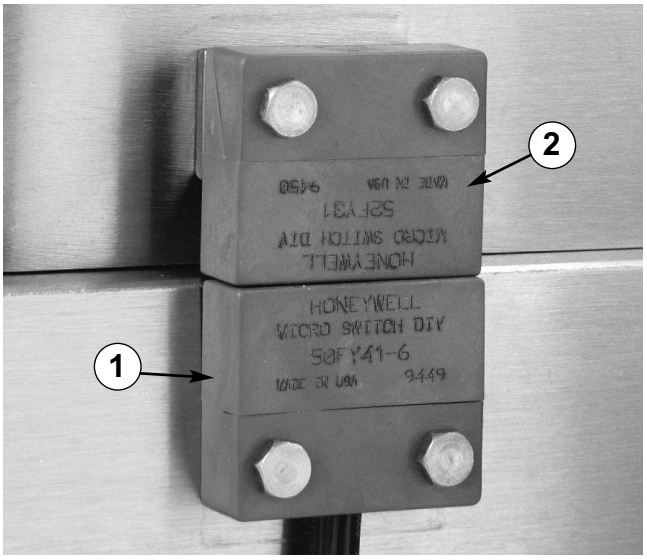


Figure 16— Safety switch sensors and actuators must be aligned and within 1/16" (1.6 mm). (1) Sensor, (2) Actuator.

INSPECTION

Inspect all covers and guards for damage. Bent or twisted parts will not fit on the machine properly and may prevent safety switches from lining up. Straighten parts or replace if necessary.

INSTALLATION

Replace all covers and guards in their proper locations; replace fasteners and tighten securely. Covers and guards equipped with safety switches must have actuators within 1/16" (1.6 mm) of sensors to complete safety switch circuit (Figure 16).

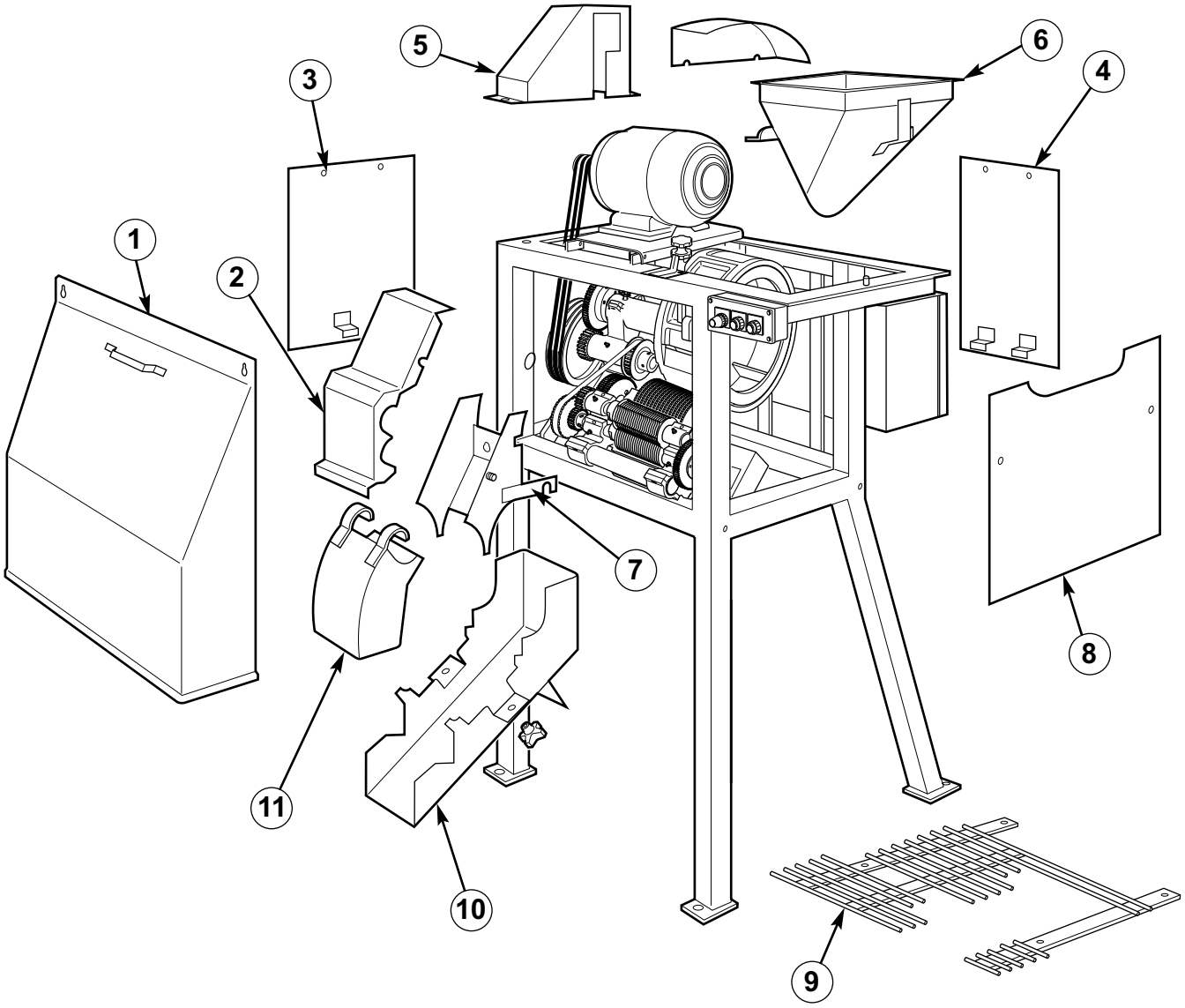


Figure 17 — Covers and guards. (1) Front Panel, (2) Slice Guide Cover, (3) Right End Panel, (4) Back Panel, (5) Belt Guard, (6) Feed Hopper, (7) Slice Guide, (8) End Panel, (9) Bottom Grid, (10) Juice Chute, (11) Discharge Chute.

IMPORTANCE OF DAILY CLEANING

Stainless steel and manganese aluminum bronze parts will eventually corrode if salty and acidic product juices are not removed completely. Also, product that remains in the cutting unit may harden making future cleaning difficult and encouraging bacterial growth. Heavy product build-up on cutting parts can reduce cutting efficiency and cause the loss of critical tolerances and clearances.

CLEANING AGENTS

The selection of cleaning agents or their solution strength will depend on the application or process in which the machine is involved. Consult your cleaning materials supplier for selecting and using the proper cleaning agent to meet the sanitizing requirements for your process. Cleaning supplies should be suitable for use with 300 and 400 series stainless steel and manganese aluminum bronze alloy. Excessive solution strength and soaking time or excessive soaking time alone may chemically harm or destroy these and other materials.

DAILY CLEANING PROCEDURES

Only qualified trained personnel should clean the machine. Consult your company policy regarding proper cleaning/sanitizing solutions and required frequency of cleaning.

NOTE: *Never use abrasives, metal tools, wire brushes or sandpaper to clean any parts. Scrape with wooden or plastic tools if necessary.*

1. **Clean outside of machine with water.**

   NOTE: *Do not direct a high pressure stream of water at the starter enclosure or electrical connections. Water entering the starter enclosure could cause electrical failure.*

2. **Flush product from cutting parts.** Direct a stream of water or cleaning solution into feed opening while machine is running.

   ⚠ **WARNING:** ***Make certain that all covers and guards are in place while machine is running! Maintain a safe distance from machine. Do not insert hose or cleaning tools into feed opening!***

3. **Stop the machine.** Disconnect and lock out power source. Remove and thoroughly wash all sheet metal covers. (See “Removal”, page 30.)

4. **Remove and disassemble all cutting parts.** See “Disassembly”, pages 34 and 40. Rinse cutting parts thoroughly with water or appropriate cleaning solution. If cleaning solutions are used, rinse thoroughly with water.

5. **Clean remaining portion of machine.** A forceful stream of water will remove most of the product. Use cleaning solutions when necessary and rinse thoroughly.

RECOMMENDED LUBRICANT

Use a food grade lubricant that is non-toxic, sanitary and approved for incidental food contact. The lubricant recommended for this machine, except motor, is Haynes® Lubri-Film (listed as H-1 by the U.S.D.A.). Lubricant may be purchased from Urschel Laboratories in spray cans for gears and grease cartridges for bearings. See “Tools”, page 61.

LUBRICATION POINTS

The machine has a total of twelve (12) lubrication points. The dicing unit has eight (8) grease fittings and the drive bracket has three (3) (Figure 18). Some machines have a shear pin hub, which also has a grease fitting. Lubricate the bearing in the slice adjustment with a drop of oil immediately after the machine has been cleaned (Figure 19).

LUBRICATION SCHEDULE

Disconnect and lock out power source.

Lubricate as follows:

1. **Every four hours** of operating time.
2. **After cleanup** to force cleaning solutions from bearings.
3. **After maintenance** to replace any grease lost during these procedures.

GEAR LUBRICATION

Lubricate all gears daily or when the coating of lubricant has worn away from tooth faces. Use the spray lubricant or grease supplied with machine.

MOTOR LUBRICATION

Lubricate according to instructions furnished by motor manufacturer.

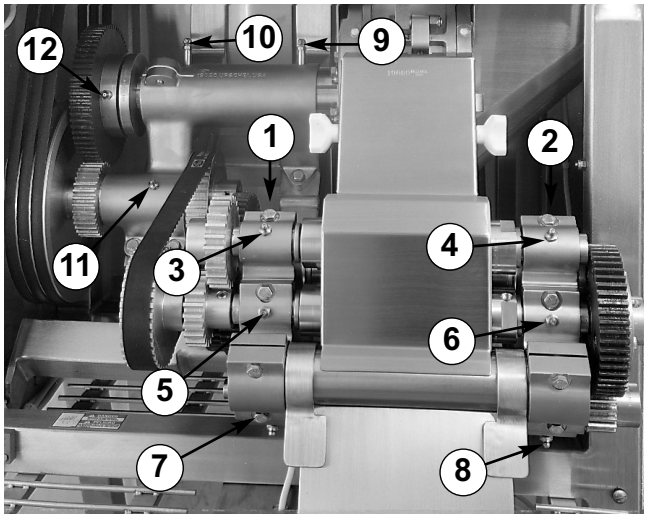


Figure 18 — Lubrication points for dicing unit (1–8) and drive bracket (9–11). Points (1) and (2) are on the backs of side frames. Point (12) is on the shear pin hub.

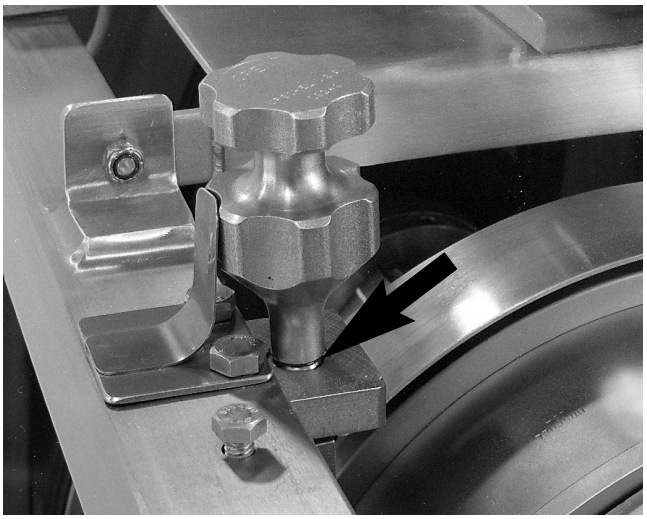


Figure 19 — Slice adjustment bearing

DISASSEMBLY

The slicing unit includes the impeller, slicing case, slicing knife and clamp, and slice adjustment knob. Refer to Figure 20 and proceed as follows:

1. **Disconnect and lock out power source.** Remove front panel, feed hopper, juice chute, slice guide cover, discharge chute and end panel. See pages 30–31.

2. **Remove slicing knife clamp.** Loosen socket set screw and slide clamp out.

3. **Remove slicing knife.** Slide the slicing knife out of the slicing case. A small hole in the end of the knife can aid in its removal.

4. **Remove slice guide.** Loosen the cap screw that holds the slice guide to the slicing case. Lift the slice guide up from the locating studs on the slicing case and remove.

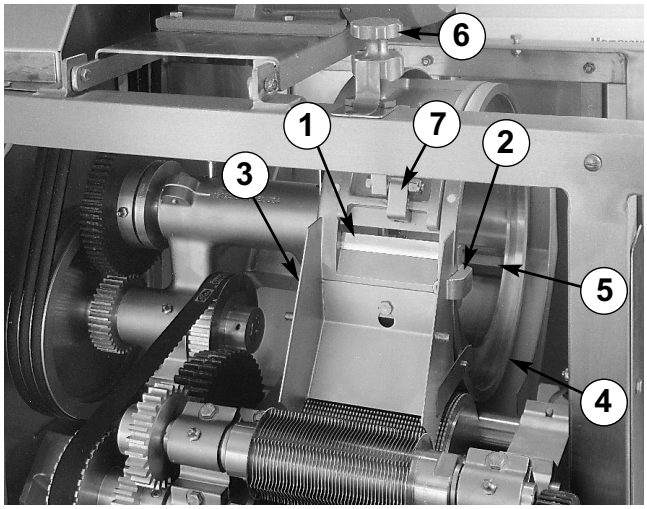


Figure 20 — Slicing Unit. (1) Slicing Knife, (2) Slicing Knife Clamp, (3) Slice Guide, (4) Slicing Case, (5) Impeller, (6) Slice Adjustment Knob, (7) Gate Bracket.

5. **Remove impeller.** Impeller is held in place by three lock nuts fastened to studs on impeller shaft. *Carefully* lift impeller out of the machine.

At this point, the slicing unit can be cleaned thoroughly and inspected. If it is necessary to remove the slicing case, proceed as follows:

6. **Remove slicing case.** Disconnect slice adjustment assembly by loosening set screw in gate bracket and swinging slice adjustment assembly clear of slice gate. Six cap screws and lock washers hold the slicing case to the impeller shaft housing.

INSPECTION

All parts should be cleaned, inspected for serviceability, and repaired or replaced if necessary.

Impeller shaft: Make sure all mating surfaces are clean and free of burrs.

Seal: Inspect grease seal in slicing case for cracking and wear. Replace if necessary; see “Reassembly”, page 35.

Impeller: Inspect removable impeller paddle inserts. Repair or replace if necessary. Make sure mating surfaces are clean and free of burrs. Bent impellers should be straightened or replaced if necessary.

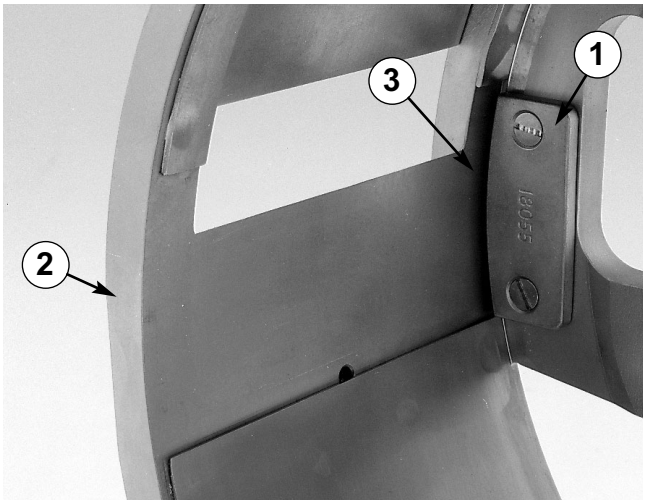


Figure 21 — Slicing knife area. (1) Slicing Knife Holder, (2) Slicing Case, (3) Slot.

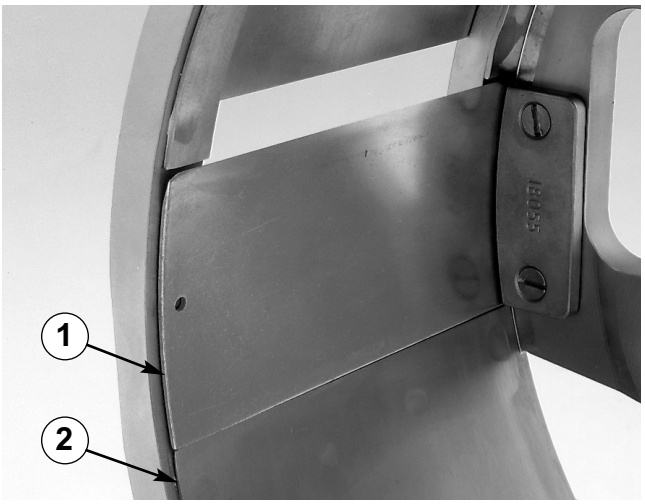


Figure 22 — Slicing knife properly seated. (1) Slicing Knife, (2) Inner Band of Slicing Case.

Slicing case: Clean inside of slicing case. The slot between the slicing knife holder and the inner wall of the slicing case must be cleaned thoroughly to allow the slicing knife to seat properly (Figure 21). Inspect exit portion of slicing case for nicks or burrs. File or hone flat.

Slicing knife: Inspect knife edge for nicks, burrs, or bends; sharpen or replace if necessary. For detailed information on knife care and sharpening, see page 51 and refer to the "SHARP" bulletin provided with the machine.

REASSEMBLY

1. **Install slicing case.** If grease seal in slicing case needs replacement, first tap or press out worn seal. Lay slicing case on a flat surface, impeller opening up. Position the seal *with the open end face up* and tap or press in until flush with inside of slicing case. Carefully position the slicing case, and slide onto impeller shaft. Replace and tighten the six cap screws and lock washers.

2. **Reconnect slice adjustment assembly.** Position gate bracket on slice gate and tighten set screw.

3. **Install impeller.** Impeller paddle inserts must be properly seated on impeller paddles. Be careful not to damage studs on impeller shaft. Fasten with the three lock nuts.

   NOTE: *If the locking effect on nuts has worn off and the nuts can be turned by hand, they should be replaced.*

4. **Install slice guide.** Place slice guide in position by slipping the keyhole slot over the retaining screw and aligning slots in side supports with locating studs on each side of the slicing case. Make sure slice guide is properly seated. Tighten cap screw.

5. **Install slicing knife.** Slide knife into seat in slicing case. Knife is fully seated when outer edge of knife lines up with the edge of the inner band of slicing case and the back edge of the knife is against the end of the inner band (Figure 22).

("Reassembly", continued on page 36)

("Reassembly", continued from page 35)

6. **Install slicing knife clamp.** Slide clamp into position and tighten set screw.

7. **Replace covers and guards.**

ADJUSTMENTS

Slice guide: Clearance between the slice guide and feed drum should be 1/16" to 1/8" (1.59 to 3.18 mm). To adjust, loosen the pinch bolt on the drive bracket which holds the impeller shaft bearing housing and rotate the slicing case until the clearance is correct. Retighten the pinch bolt (Figure 23). When slicing case is rotated, the slice thickness indicator arm will need to be recalibrated. Measure opening between slicing knife and case gate. Bend indicator arm so pointer corresponds accordingly.

Slice thickness: Turn slice adjustment knob to desired slice thickness as shown by indicator arm and scale (Figure 24). Scale is in 1/16" (1.59 mm) increments.

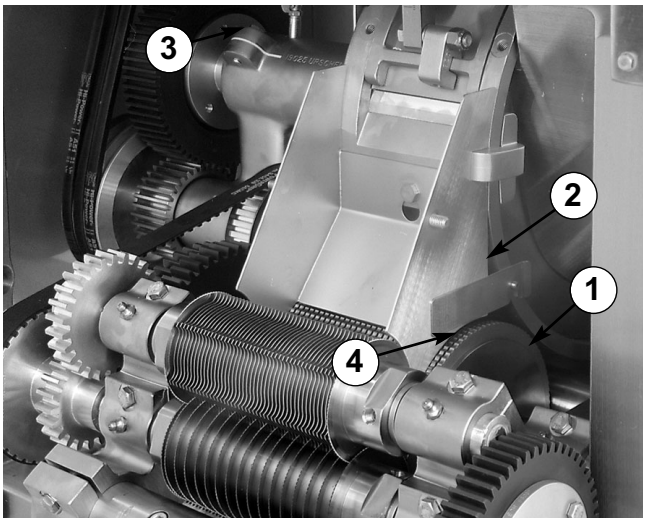


Figure 23 — Maintain 1/16 to 1/8" (1.59 to 3.18 mm) clearance between slice guide and feed drum. (1) Feed Drum, (2) Slice Guide, (3) Pinch Bolt, (4) Clearance.

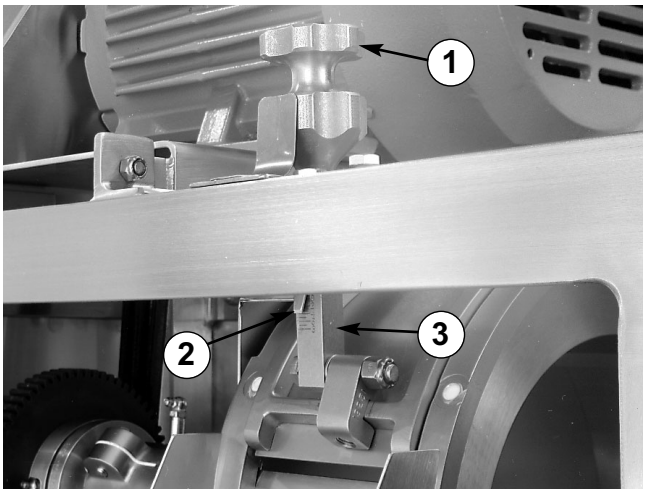


Figure 24 — Slice thickness adjustment. (1) Slice Adjustment Knob, (2) Indicator Arm, (3) Scale.

DISASSEMBLY

Refer to Figure 25 and proceed as follows:

1. **Disconnect and lock out power source.** Remove slicing unit. See “Disassembly”, page 34. Remove drive belts.

2. **Remove all pulleys, gears and keys** from the impeller shaft and dicer drive shaft.

3. **Remove shafts.** Slide impeller shaft and thrust washer from housing. Remove thrust washer and slide dicer drive shaft from support casting.

4. **Remove impeller shaft housing.** First remove the lubrication fittings that extend through the holes in the top of the support casting and into the impeller shaft housing. Loosen pinch bolt and slide housing out.

5. **Remove roller bearings and bearing spacer** from support casting.

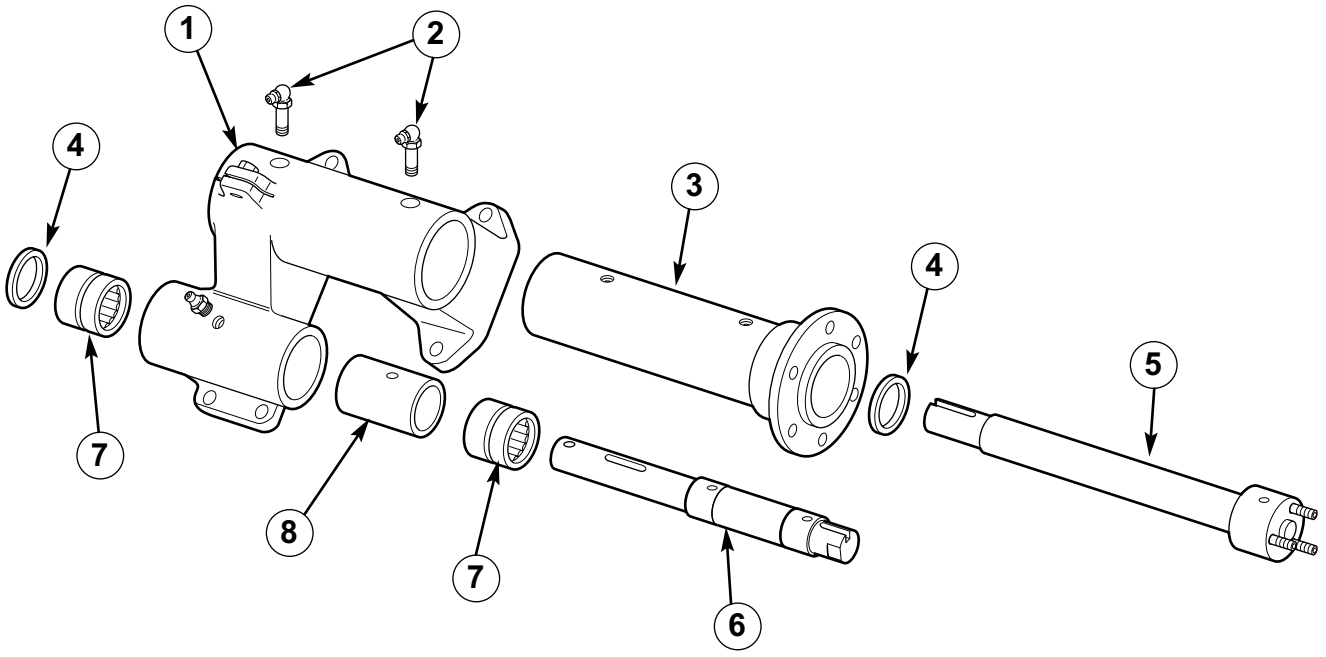


Figure 25 — Drive train assembly. (1) Drive Bracket Support Casting, (2) Lubrication Fittings, (3) Impeller Shaft Housing, (4) Thrust Washer, (5) Impeller Shaft, (6) Dicer Drive Shaft, (7) Roller Bearing, (8) Bearing Spacer.

INSPECTION

All parts should be cleaned, inspected for serviceability, and repaired or replaced if necessary.

Bearings: In the event of any bearing failure, all bearings in the drive train should be replaced at the same time. Bearing replacement insures maximum performance and saves on maintenance time in the long run. Inspect and discard if there is rust, scoring or flat spots on rollers. *Install new bearings if there is any doubt about serviceability.* Bearings in the impeller shaft housing are installed with a hydraulic press and align reamed to 1.1265–1.1270" (28.613–28.626 mm) diameter. If proper equipment is unavailable, the impeller shaft housing should be returned to the factory for repairs.

Shear pin hub: A shear pin hub is provided to reduce damage to the cutting parts if foreign material enters the impeller. The shear pin is located in a two-part hub assembly near the end of the impeller shaft. If the pin shears, turn the gear so that the two parts of the pin are aligned, then loosen the two set screws that hold the pin in the hub and drive the pin out with a punch. Holes in the gear allow the punch to be inserted into the hub. Install a new shear pin and retighten the set screws. Keep the hub lubricated through the grease fitting so that the parts will turn freely if a pin is sheared. Standard and heavy duty shear pins are available (see “Drive Train”, page 67 and “Optional Parts”, page 95).

Impeller shaft housing: Check mounting surfaces for nicks or burrs. Hone if necessary.

Shafts: Inspect for wear such as scoring, pits, etc. Hone off any burrs.

Thrust washers: Check for excessive wear or scoring and replace if necessary.

Gears: Check for worn or damaged teeth.

REASSEMBLY

1. **Clean holes in drive bracket support casting** to remove remaining grease and foreign matter.

2. **Install impeller shaft housing** firmly against drive bracket. Center holes for lubrication fittings in bearing housing and support casting. Tighten pinch bolt. Install lubrication fittings.

   NOTE: *Overtightening pinch bolt may distort the housing or crack the casting!*

3. **Install impeller shaft.** Lubricate and place thrust washer on impeller shaft; then lubricate shaft and slide into bearing housing.

4. **Install impeller drive gear and hub with key.** Use a feeler gauge to set a .004" (.102 mm) clearance between gear hub and impeller shaft housing (Figure 26). Tighten set screw.

5. **Lubricate and install bearing spacer.**

   NOTE: *Spacer must be installed or bearings may shift and fail to support shaft.*

6. **Lubricate and install roller bearings.** The bearings have a seal in one end. Make certain that the seals face out when installed.

7. **Lubricate and install drive shaft.** Install remaining thrust washer. Slide gear with key and pulley onto drive shaft. Align counterbored hole in shaft with the hole in pulley hub. Insert cap screw and tighten to 45–50 foot pounds (61–68 newton meters). Install pulley assembly. Use a feeler gauge to set a .004" (.102 mm) clearance between gear and pulley (Figure 26). Tighten set screws in pulley assembly.

8. **Replace drive belts** and lubricate drive train assembly. See “Lubrication”, page 33.

9. **Reassemble slicing unit.** See “Reassembly”, page 35 and “Adjustments”, page 36.

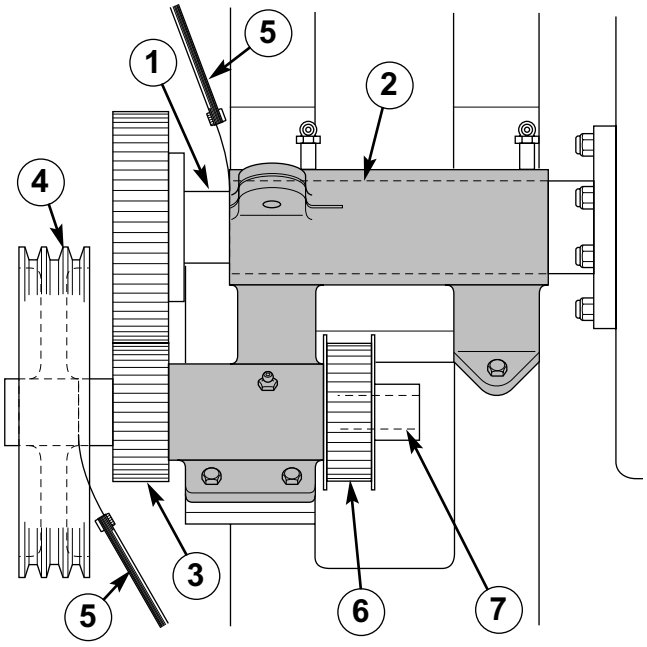


Figure 26 — Set a clearance of .004" (.102 mm) between gear hub and bearing, and between gear and pulley. (1) Gear Hub, (2) Impeller Shaft Housing, (3) Gear, (4) Pulley, (5) Feeler Gauge, (6) Pulley Assembly, (7) Drive Shaft.

DISASSEMBLY

1. **Disconnect and lock out power source.** Remove front panel, discharge chute, slice guide cover, and slice guide. Remove timing belt from pulleys.

   ⚠ **WARNING:** ***Spindles contain sharp knives! Wear protective gloves (provided with machine) when handling cutting parts. See "Tools", page 61.***

NOTE: *Disassembling the machine in the following sequence allows the circular knife spindle shaft and feed spindle shaft to be removed without removing the left gears and timing pulley.*

2. **Remove crosscut knife spindle.** Loosen set screws in spindle. Hold spindle while removing shaft and gear (Figure 27). Lower spindle from machine and set aside on a surface that will not damage the knives, bracing it to prevent it from rolling.

3. **Remove circular knife spindle shaft.** Loosen set screws and remove gear and hub opposite timing pulley and gear. Loosen set screws in circular knife spindle and while supporting one end of spindle, remove the shaft. Carefully rest spindle on shear plate.

4. **Remove feed spindle.** Loosen set screws in feed spindle and while holding feed spindle firmly, remove shaft (Figure 28). Rotation of gears may be necessary to align teeth as required for shaft removal. Lift spindle from machine and set aside on a surface that will not damage the knives, bracing it to prevent it from rolling.

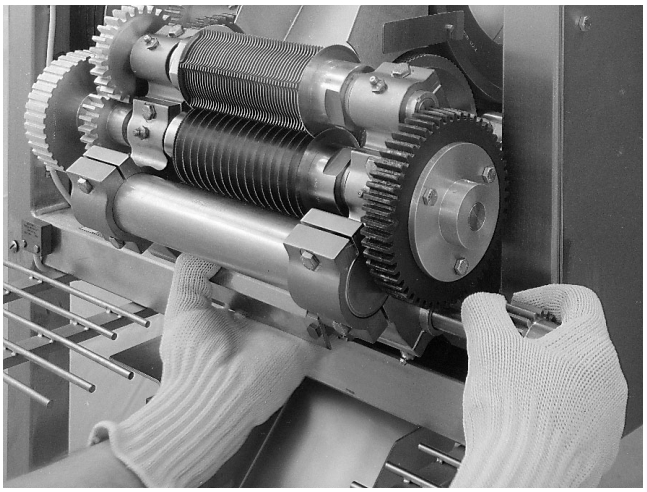


Figure 27 — Removing crosscut knife spindle

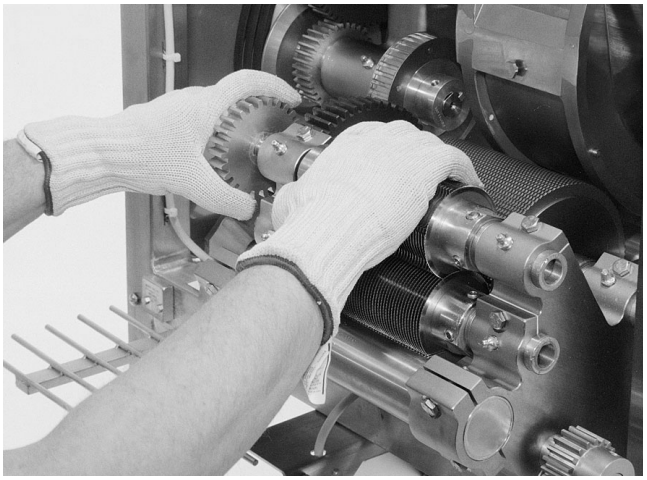


Figure 28 — Removing feed spindle

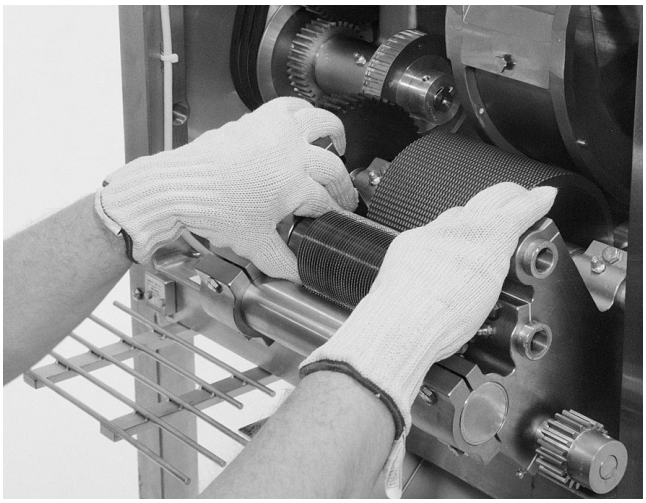


Figure 29 — Removing circular knife spindle

5. **Remove circular knife spindle.** Holding spindle by the ends, lift up from shear plate and remove from machine (Figure 29). Set aside on a surface that will not damage the knives, bracing it to prevent it from rolling.

At this point, dicing unit can be cleaned thoroughly and inspected. If it is necessary to remove the shear plate and feed drum, proceed as follows:

6. **Remove shear plate and feed drum.** The shear plate is held by two side frame caps. Remove one and loosen the fasteners in the other. Rotate the shear plate to clear and slide it out of the loose cap. Loosen set screws and remove gear assembly with hub from feed drum shaft. Loosen set screws in feed drum and remove shaft while supporting the drum. Set drum aside, bracing it to prevent it from rolling.

INSPECTION

All parts should be cleaned, inspected for serviceability, and repaired or replaced if necessary.

Shafts: Check for wear in bearing areas. Excessive wear may indicate that bearings are not aligned with grease fittings and not receiving lubricant (Figure 30, page 42). If shafts do not slide in or out of bearings easily, check for nicks or burrs; file or hone as needed.

Bearings: Check for excessive wear and/or scoring and replace if necessary.

Circular knife spindle: Clean product from between knives and inspect for damage or wear. See “Disassembly”, page 45.

Feed spindle: Clean product from between feed discs and inspect for damage or wear. See “Disassembly”, page 45.

Feed drum: Clean product from grooves and check for damage. File or hone off any nicks or burrs on ends of hub.

Crosscut knife spindle: Clean product from around knives and inspect for damage or wear. See “Disassembly”, page 46.

Set screws: Replace if nylon is worn and screw can be turned by hand.

Shear plate: Clean all product from between fingers, making sure none are bent, damaged or loose. Return to factory for repair or replace if necessary. Replace shear plate if shear edge becomes worn and rounded, producing incomplete cuts.

NOTE: *An exchange program is available should the 1/8" (3.2 mm) shear edge need replacement; contact Urschel Laboratories for complete information.*

REASSEMBLY

⚠ **WARNING:** ***Spindles contain sharp knives! Wear protective gloves (provided with machine) when handling cutting parts. See "Tools", page 61.***

1. **If bearings need replacement,** loosen pinch bolts in side frames and remove bearings. Install new bearings with the thrust caps against the side frames, aligning notch with grease fitting (Figure 30). The notch indicates location of grease hole in bearing.

   NOTE: *Shafts must slide in and rotate freely.*

2. **Install feed drum**. Lift feed drum into position and replace shaft. Tighten set screws in drum. Install gear assembly with hub and tighten set screws. See "Adjustments", Bearing clearance, page 43.

   NOTE: *Set screws must always seat into the pockets on the shafts. Pockets in shafts are in line for part-to-part reference.*

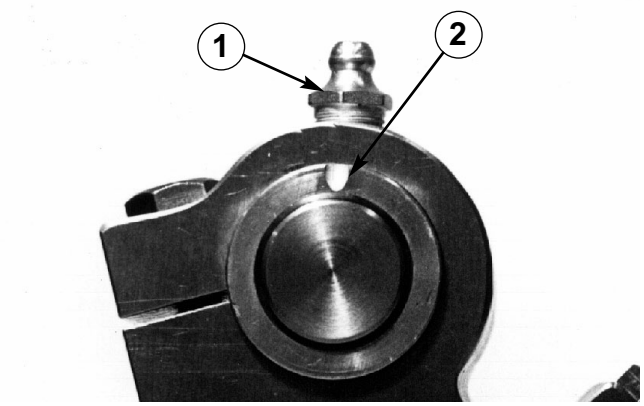


Figure 30 — Aligning notch on bearing with grease fitting. (1) Grease Fitting, (2) Notch.

3. **Install circular knife spindle.** Slide shaft partially into left side frame. Position the circular knife spindle between bearings with the knives in the slots of feed drum and install shaft. Do not tighten set screws at this time. See "Adjustments", Bearing clearance, page 43.

4. **Install shear plate.** Center fingers of shear plate between circular knives and rotate shear plate up until fingers touch the knife spacers. Tighten the side frame caps moderately, keeping the top and bottom spaces between caps and side frame castings equal. Remove circular knife shaft and allow spindle to rest on shear plate.

5. **Install feed spindle.** Install feed spindle shaft partially into left side frame. Position spindle between bearings with feed discs between circular knives and install feed spindle shaft. Reinstall the circular knife shaft. See “Adjustments”, Bearing clearance, below. Tighten screws in circular knife spindle and feed spindle.

6. **Set shear plate clearance.** See “Adjustments”, Shear plate, page 44.

7. **Install crosscut knife spindle.** Install shaft partially into right side frame. Position spindle between bearings and install shaft. Tighten set screws. See “Adjustments”, Bearing clearance, below.

8. **Replace timing belt** and lubricate the dicing unit. See “Lubrication”, page 33.

9. **Replace covers and guards.**

ADJUSTMENTS

Bearing clearance: The end play for the feed drum, feed spindle and circular knife spindle — .004" (.102 mm), crosscut knife spindle — .010" (.254 mm), to adjust:

1. **With bearing pinch bolts loose, slide bearings against spindle** with proper feeler gauge between one end of spindle and bearing thrust cap.

2. **With the tip of a screwdriver behind the bearing thrust cap, move spindle, both bearings, shaft and feeler gauge until centered.** Tighten pinch bolts to 5 foot pounds (6.78 newton meters) and remove feeler gauge (Figure 31).

   NOTE: *Overtightening pinch bolts may distort the bearings or crack the casting. Shafts must rotate freely.*

   Align as follows:
   Feed drum — centered between side frames.
   Circular knife spindle — circular knives centered in slots of feed drum.
   Feed spindle — feed discs centered between circular knives.
   Crosscut knife spindle — align gear with circular knife spindle gear.

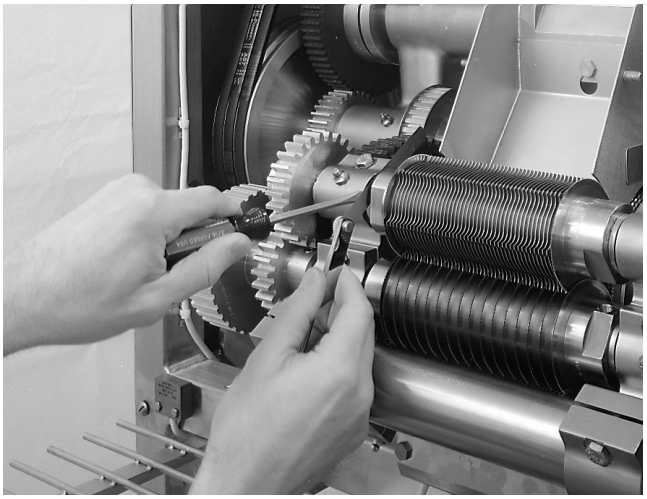


Figure 31 — Setting clearance between spindle and bearing

(“Adjustments”, continued on page 44)

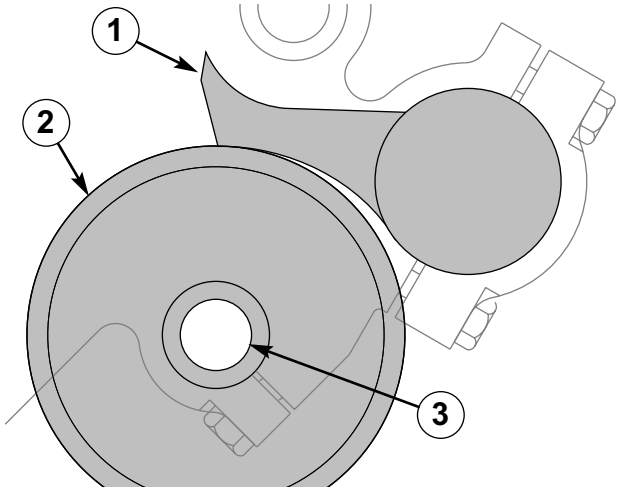


Figure 32 — Setting clearance between crosscut knife spindle and shear plate using clearance gauge. (1) Shear Plate, (2) Clearance Gauge, (3) Crosscut Spindle Shaft.

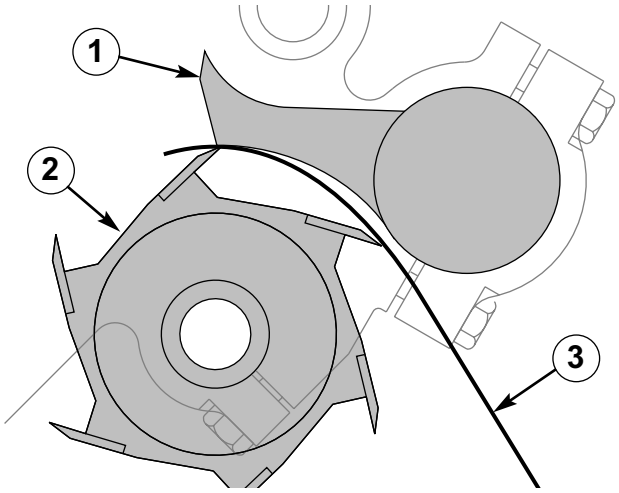


Figure 33 — Setting clearance between crosscut knife spindle and shear plate using feeler gauge. (1) Shear Plate, (2) Crosscut Knife Spindle, (3) Feeler Gauge.

("Adjustments", continued from page 43)

Shear plate: The clearance gauge is designed to give the correct shear plate setting of .010" (.254 mm) when all knives on the crosscut knife spindle are new. As knives are sharpened clearance will increase. Quality of cut will usually be acceptable with increased clearance, but if cuts are unacceptable, the feeler gauge method should be used to set the proper clearance.

CLEARANCE GAUGE METHOD

1. **Remove crosscut knife spindle from the machine** (see "Disassembly", page 40). Install clearance gauge on the crosscut spindle shaft (Figure 32).

2. **Loosen side frame caps and rotate shear plate** until edge touches clearance gauge. Circular knives must be centered in slots of shear plate.

3. **Tighten side frame caps down evenly**. Alternate between fasteners turning each one a small amount. Slide gauge the full length of shear plate to ensure even contact. Remove clearance gauge and install crosscut knife spindle.

4. **Rotate dicing unit *backwards* by hand** one full revolution using the drive pulley and listen for metal to metal contact in the cutting parts. If contact is detected, check crosscut knives for proper installation (see "Reassembly", page 47).

FEELER GAUGE METHOD

1. **Insert .010" (.254 mm) feeler gauge** between crosscut knives and shear plate (Figure 33).

2. **Rotate spindle *backwards* by hand** to avoid damage to knife edges. Use the drive pulley and turn one full revolution. Some drag should be felt as knives pass shear plate edge. To decrease clearance, adjust shear plate down by slightly loosening bottom bolts in side frame caps and tightening top bolts. To increase clearance, slightly loosen top bolts and tighten bottom ones. Check clearance at both ends of knives as well as the middle. Circular knives must be centered in slots of shear plate.

DISASSEMBLY

1. **Remove spindles**, see “Disassembly”, pages 40 and 41.

2. **Clamp end of spindle** in a *soft jaw vise.* (Soft jaws are necessary to protect the precision parts.)

3. **Remove spindle nut,** turning counter-clockwise. Use spindle wrench provided with machine (Figure 34).

Figure 34 — Use spindle wrench to loosen and tighten the spindle nut. Shown above is a clamping method to align the feed discs while tightening the spindle nut.

INSPECTION

All parts should be cleaned, inspected for serviceability, and repaired or replaced if necessary.

Spacers, spindle and spindle nut: Check for burrs and hone if necessary, but be *careful to remove only the burr.*

Knives: Replace or straighten any that are bent. Inspect edges for nicks or burrs; sharpen or replace if necessary. For detailed information on knife care and sharpening, see pages 51 and 52 and refer to the “SHARP” bulletin provided with the machine.

Feed discs: Replace any that are bent or have large nicks.

REASSEMBLY

1. **Alternate knives and spacers** on the circular knife spindle, beginning with a knife. Serrations on knives must face the same direction. The feed spindle begins with a starter spacer and circular knife. Next, alternate spacers and feed discs. The spindle ends with a circular knife. See “Circular Knife Spindle Assembly” and “Feed Spindle Assembly”, pages 70–73.

2. **Replace nut on spindle** and tighten securely. Two pieces of flat stock clamped to the feed spindle will keep fingers aligned while tightening spindle nut (Figure 34). *Do not overtighten clamp!* Install spindle on machine or store in a safe place until needed on a surface that will not damage the knives, bracing it to prevent it from rolling.

Crosscut knife spindles are available in standard and heavy duty designs that differ in the number of knives and the manner in which the knives are attached to the spindle.

DISASSEMBLY

⚠ **WARNING:** ***Spindles contain sharp knives! Wear protective gloves (provided with machine) when handling cutting parts. See "Tools", page 61.***

NOTE: *Place spindles on a work surface that will not damage the knife edges.*

STANDARD CROSSCUT KNIFE SPINDLE

1. **Remove crosscut knife spindle** from machine. See "Dicing Unit", Disassembly, page 40.

2. **Remove retaining ring.** Two retaining rings hold knives in place on the spindle. Remove retaining ring *opposite* the set screw end of spindle (Figure 35).

3. **Remove knives.** *Carefully* pull knives from slots.

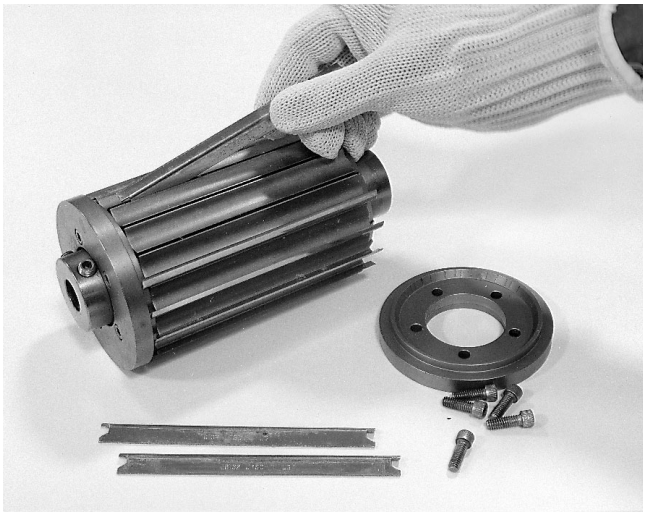


Figure 35 — Standard crosscut knife spindle disassembly

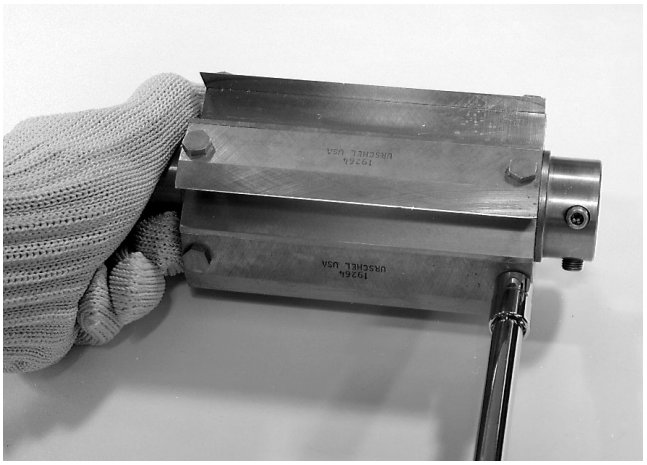


Figure 36 — Heavy duty crosscut knife spindle (stainless steel) disassembly

HEAVY DUTY CROSSCUT KNIFE SPINDLE

1. **Remove crosscut knife spindle** from machine. See "Dicing Unit", Disassembly, page 40.

2. **Remove fasteners and knives** (Figure 36).

INSPECTION

All parts should be cleaned, inspected for serviceability, and repaired or replaced if necessary.

Spindles: Check for burrs on all mating surfaces, especially the knife seats and the ends of the hubs. Hone if necessary, but *be careful to remove only the burr.*

Retaining rings: Inspect for burrs and swelling; hone if necessary.

Knives: Replace or straighten any that are bent. Inspect edges for nicks or burrs; sharpen or replace if necessary. For detailed information on knife care and sharpening, see pages 51 and 52 and refer to the "SHARP" bulletin provided with the machine.

NOTE: *Some knives are manufactured with a slight bow to insure proper seating.*

REASSEMBLY

STANDARD CROSSCUT KNIFE SPINDLE

1. **Check retaining ring.** Screws in attached retaining ring should be fully tightened.

2. **Install knives.** *Carefully* slide knives into slots.

3. **Install retaining ring.** Gradually and alternately tighten screws.
   NOTE: *This retaining ring does not seat tightly against spindle as on opposite end. Tighten screws firmly, but* ***do not overtighten.***

HEAVY DUTY CROSSCUT KNIFE SPINDLE

1. **Install knives.** Knives must be seated tight against back of knife seat. Use wooden block supplied with machine to hold knife against seat while tightening fasteners (Figure 37).

2. **Check knife installation.** A .0015" (.038 mm) feeler gauge should not slip in behind back edge of knife (Figure 38).

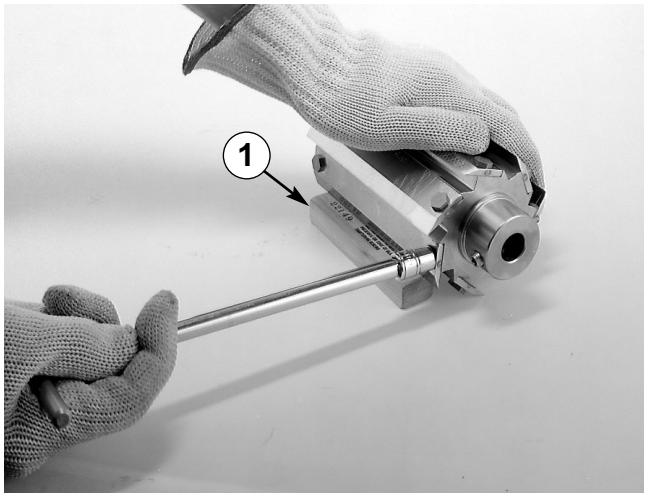


Figure 37 — Using wooden block to hold knife against seat. (1) Wooden Block

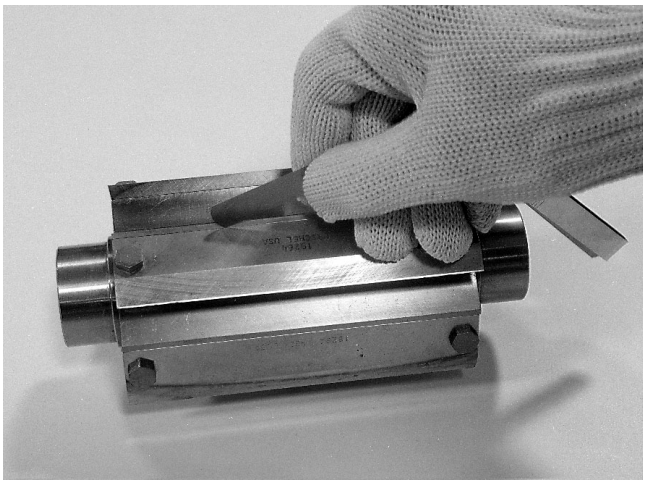


Figure 38 — Check with feeler gauge between knife and knife seat.

INSPECTION

⚠ **WARNING:** ***In the event of an electrical problem, only a qualified electrician should inspect or repair the fault. Voltages dangerous to life exist in the starter enclosure! Always disconnect and lock out power source before beginning electrical inspection or repair.***

The electrical assembly must be in good working condition before operating this machine. For a description of amplifier and safety switch operation and method for checking this system, see pages 22–25. Electrical schematics are located in the starter enclosure and on pages 88 and 89. Inspect the following items in the electrical assembly:

Starter enclosure: Inspect interior of starter enclosure for corrosion. If a significant amount of water accumulates in the bottom of the starter enclosure, check the breather drain. Breather drain should be free from obstruction. Excess water could also indicate an opening or loose fitting that allows water to enter the enclosure. Check gasket around door and window. Inspect **"O"** (STOP) and **"I"** (START) push button assemblies and pilot light assembly for damage or corrosion. Replace rubber boots and pilot light lens if damaged.

Fuses: Remove main fuses and transformer fuses (Figures 39 and 40). Transformer fuses in the IEC enclosure are located in fuse blocks on the DIN bar. Check with an ohmmeter or continuity light. If one fuse is replaced, all others of that type fuse should also be replaced. Remove and inspect amplifier fuses (Figure 42, page 50). Replace if necessary.

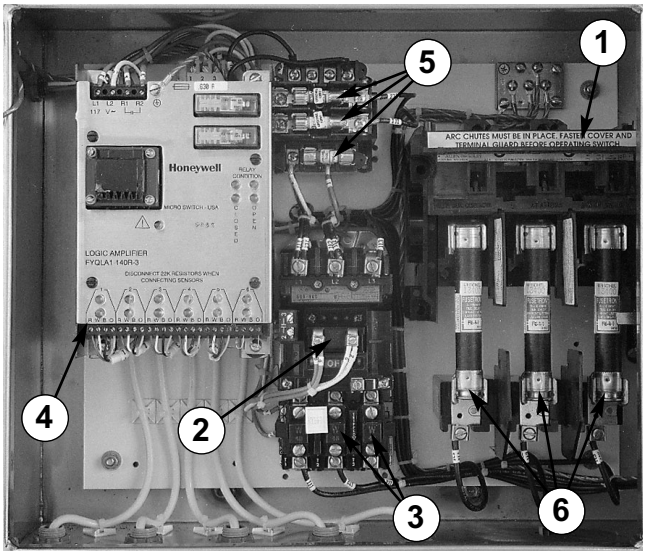


Figure 39 — Typical starter enclosure interior (NEMA). (1) Disconnect, (2) Starter Coil, (3) Heaters, (4) Amplifier, (5) Transformer Fuses, (6) Main Fuses, (7) Overload Relay.

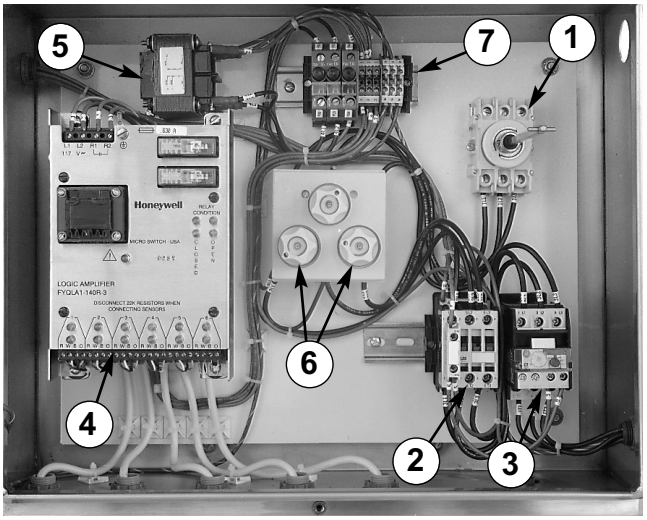


Figure 40 — Typical starter enclosure interior (IEC). (1) Disconnect, (2) Contactor, (3) Overload Relay, (4) Amplifier, (5) Transformer, (6) Main Fuses, (7) DIN Bar.

Heaters (NEMA enclosure): If heaters (thermal overloads) have been tripped several times they may fail to reset. If one heater fails, all heaters in that starter or overload relay should be replaced. Check for proper motor current draw if heaters continue to trip.

Starter coil (NEMA enclosure): Disconnect leads from coil at front of motor starter and check with an ohmmeter. Replace if necessary.

Overload relay (NEMA enclosure): If overload relay fails to reset, it must be replaced.

Contactor (IEC enclosure): Disconnect leads from coil on top of contactor and check with an ohmmeter. Replace coil or contactor if necessary.

Overload relay (IEC enclosure): If overload relay has been tripped several times, it may fail to reset and must be replaced. Check for proper motor current draw if overload relay continues to trip.

Safety switches: Terminals should be tight and free from corrosion. Recommended torque is 2.5 inch pounds or 0.28 newton meters. Check sensors, actuators and cords for damage. *Switches should be replaced if any defect or damage is detected.* Check switch alignment. Actuator must be within 1/16" (1.6 mm) of sensor to complete safety switch circuit (Figure 41).

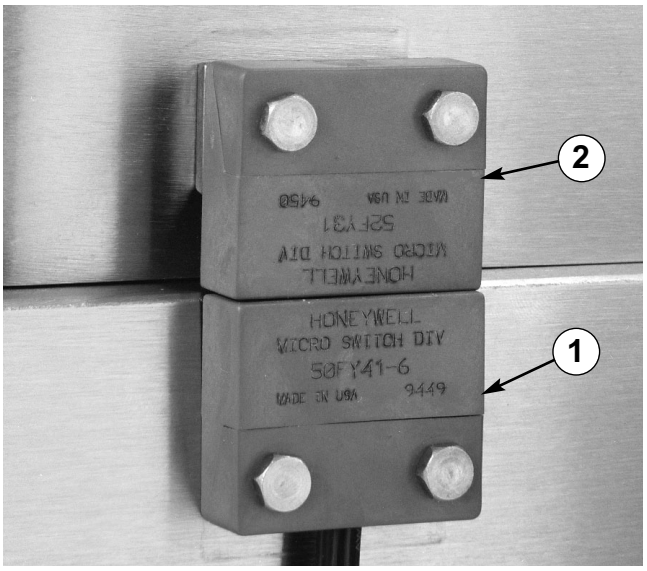


Figure 41 — Safety switch sensors and actuators must be aligned and within 1/16" (1.6 mm). (1) Sensor, (2) Actuator.

("Inspection", continued on page 50)

See the addendum for updated information

(“Inspection”, continued from page 49)

Amplifier: The amplifier and safety switches incorporate self-diagnostic features to help identify the source of problems. The LEDs on the amplifier (Figure 42) will indicate the status of the system:

⚠ **WARNING:** ***The amplifier must be properly wired to function correctly. If the amplifier or sensor is replaced, consult the manufacturer’s literature for complete wiring instructions.***

Both green “relay condition” LEDs are illuminated: all circuits are closed and machine is ready for operation.

No LEDs are illuminated: verify power to terminals L1 and L2. If there is power and the LEDs are not illuminated, turn the power disconnect to “**O**” (OFF) and lock out power source. Remove fuses (see Figure 42) and check with ohmmeter. Replace faulty fuse. If problem continues, contact Urschel Laboratories.

Red “relay condition” LEDs and any of the red “switch output” LEDs are illuminated: the circuit for the sensor or resistor assigned to that location is open. If red “switch output” LEDs which correspond to a sensor are illuminated, disconnect and lock out the power source, and perform the safety switch inspection (see “Safety switches”, page 49). If red “switch output” LEDs which correspond to a resistor are illuminated, disconnect and lock out the power source, verify the resistance value of the resistor and check the connection for tightness (40 inch ounces or .28 newton meters). Turn power disconnect to “**I**” (ON). If LEDs remain lit, contact Urschel Laboratories.

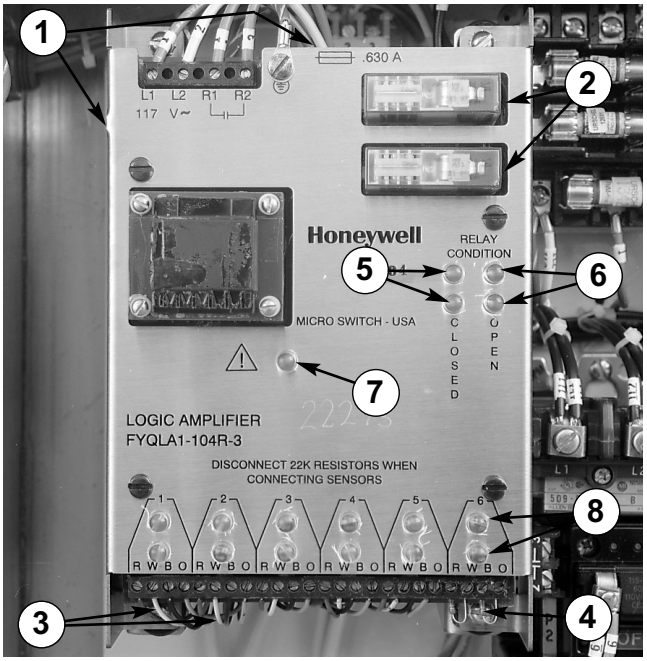


Figure 42 — Amplifier. (1) Fuses, (2) Relays, (3) Sensor Leads, (4) Resistor, (5) Green “Relay Condition” LEDs, (6) Red “Relay Condition” LEDs, (7) Red “Attention” LED, (8) Red “Switch Output” LEDs.

Both red “relay condition” LEDs are illuminated and the red “attention” LED is flashing: the amplifier has detected a fault. To reset the system, turn the power disconnect to “**O**” (OFF) and lock out power source. Perform safety switch inspection (see “Safety switches”, page 49). Turn power disconnect to “**I**” (ON). If problem continues, contact Urschel Laboratories.

⚠ **WARNING:** ***Always perform the safety switch test before operating the machine. See “Safety Switch Test”, page 24.***

NOTE: *An exchange program is available should the amplifier need replacement; contact Urschel Laboratories for complete information.*

KNIFE CARE GUIDELINES

Knives should be inspected and sharpened or replaced at regular intervals depending upon operating conditions, type of product and hours of operation. Follow these guidelines for best results:

1. **DO NOT attempt to remove all defects from the knife edge by sharpening.** This practice results in shortened knife life. Small defects will not affect knife performance.

2. **Maximum metal removal through sharpening should not exceed recommended limits** (see chart). If excessive metal is removed, knives become more blunt making sharpening difficult and reducing cutting efficiency. Some users may be able to continue sharpening knives longer if the quality of cuts remains acceptable.

3. **New knives should not be installed beside worn knives.** This arrangement may result in poor quality cuts. Keep all the knives from one spindle in a set and sharpen them together. Periodically check knife width or diameter to make sure all the knives in a set are the same size.

SHARPENING EQUIPMENT

Urschel Laboratories manufactures machines to quickly and efficiently sharpen knives. The Model CKG honing machine is used to place the best possible edge on circular knives. The Model WG honing machine is used to sharpen slicing and crosscut knives. See the “SHARP” bulletin or contact Urschel Laboratories for additional information.

RECOMMENDED MINIMUM DIMENSIONS

The following minimum dimensions are intended to give satisfactory results for most applications. However, each customer must look at the quality of cut on his product to determine at what point knives are resharpened beyond usefulness. The minimum dimensions stated are intended to give satisfactory results for most applications. Some customers may be able to get satisfactory results from knives ground smaller, but some may notice a deterioration in quality of cut before the minimum size is reached. Measure slicing and crosscut knives from the cutting edge to the back of the knife unless otherwise noted; measure the diameter of circular knives unless otherwise noted.

Type of Knife	Knife No.	Minimum Size
SLICING	18054 18068 18216	2.416" (61.37 mm) 2.416" (61.37 mm) 2.450" (62.23 mm)
CROSSCUT	18132 19264 48105 48115	*.125" (2.24 mm) 1.264" (32.11 mm) .938" (23.83 mm) 1.392" (35.36 mm)
CIRCULAR	18134 18135 18803	bottom of serrations 2.938" (74.63 mm) bottom of serrations

** .125" of primary bevel should remain after sharpening.*

(“Knife Care”, continued on page 52)

(“Knife Care”, continued from page 51)

BUFFING

⚠ **WARNING:** ***Only qualified trained personnel should buff knives. Use adequate eye and respiratory protection, and a properly guarded buffing wheel. Hold knife securely; the use of a knife buffing clamp is recommended. Never attempt to catch a dropped knife! Should you drop a knife during the buffing operation, move away and let it fall.***

When slicing or crosscut knives are sharpened by grinding, filing or honing, a slight wire edge may be produced. Buffing will remove this wire edge.

Install two to four 10" (254 mm) diameter buffing wheels side by side between flanges at least 2" (50 mm) in diameter. Buffing wheels and bars of buffing compound are available from Urschel Laboratories; see “Tools”, page 61. Turn on the buffer (3600 RPM) and hold the bar of buffing compound firmly against the outside diameter of the buffing wheels to apply a light coating of compound. Apply compound frequently to obtain sharp edges quickly.

NOTE: *If excess compound is applied, the wheel will harden, making it ineffective. Should this occur, use a buffing wheel rake, available from an industrial supplier, to soften the wheel.*

For safety reasons, use a knife buffing clamp (see “Tools”, page 61). If knives are hand held, be cautious and use a firm grip. Hold the knife firmly with the bevel side up, parallel with and just below the center line of the shaft of the buffer (Figure 43).

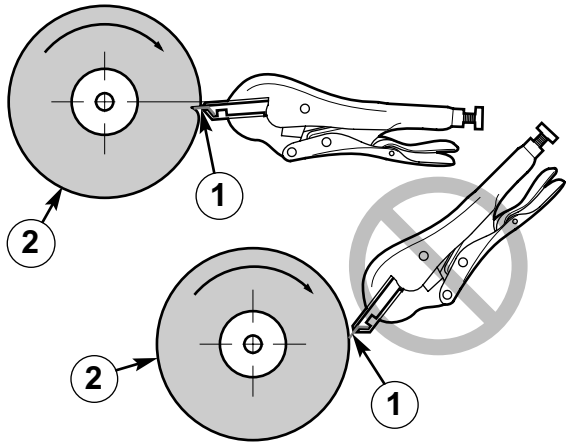


Figure 43 — Correct position (top) and incorrect position (bottom) for knife during buffing. (1) Knife, (2) Buffing Wheel.

Push the knife edge into the buffing wheel, penetrating the wheel 1/16"–1/8" (1.5–3 mm). Move the knife endwise and buff the entire edge across the buffing wheel with a steady rapid movement in each direction. Several rapid passes are better than one or two slow ones. Do not hold the knife in one area of the buffing wheel too long as the edge may heat and burn.

Failure to obtain sharp edges by buffing may be caused by the following:

1. Edges may be too dull or blunt. Blunt edges must always be ground or filed to restore a bevel width and angle similar to that found on a new knife.

2. Knives must be correctly held against the buffing wheel (Figure 43).

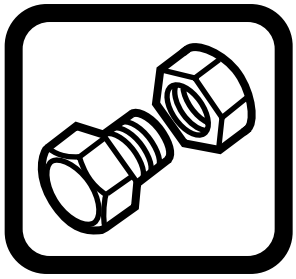
3. Too little or too much buffing compound on the wheel.

4. Undersize buffing wheels. Discard the buffing wheels when they are worn to 8-3/4" (222 mm) diameter.

PROBLEM	CAUSE	CORRECTION
Incomplete Cuts	Circular or crosscut knives dull or undersized from sharpening	Replace knives as required. Avoid using undersized and new knives together. See “Knife Care Guidelines”, page 51.
	Worn shear edge	See “Shear plate”, page 44.
	Shear plate to crosscut knife clearance incorrect	See “Shear plate”, page 44.
	Incorrect speed for type of product	See “Speed Control”, page 16.
Crushed Product	Excessive slice thickness	Adjust slice thickness. See “Sizes of Cuts”, page 16.
	Dull knives	Sharpen or replace knives as required. See “Knife Care Guidelines”, page 51.
Harsh, Metallic Grinding Sound	Impeller rubbing against slicing case	Inspect for loose impeller nuts. Improperly seated impeller paddle inserts. See “Reassembly”, page 35. Inspect for worn impeller shaft and/or bearings. Replace as required. See “Inspection”, page 38.
	Circular knives rubbing against slots in feed drum	Check that circular knives are centered in slots of feed drum and adjust as required. See “Adjustments”, Bearing clearance, page 43. Check for worn bearings on spindle shaft. See “Inspection”, page 41.
	Circular knives rubbing against shear plate	Adjust so shear plate fingers are centered between circular knives. See “Adjustments”, Bearing clearance, page 43.
	Worn motor bearings	Run motor with belts removed to verify. Replace bearings. Consult motor manufacturer.
	Slicing guide hitting feed drum	Rotate slicing case back to proper position. See “Adjustments”, Slice guide, page 36.

PROBLEM	CAUSE	CORRECTION
Regular or Intermittent Clicking Sound	Crosscut knives striking shear plate	Check for loose knives and/or proper shear plate clearance. See “Adjustments”, Shear plate, page 44. Check for excessive wear in bearings for crosscut knife spindle shaft. Replace as required. See “Inspection”, page 41.
	Sheet metal guard or cover contacting rotating part	Straighten or reposition sheet metal.
	Impeller paddle inserts hitting slicing knife	Improperly seated impeller paddle inserts. See “Reassembly”, page 35.
		Slicing knife installed incorrectly. See “Inspection”, pages 34 & 35 and “Reassembly”, page 35.
	Bent slicing case or cracked liner	Return to factory for straightening, relining or replacement as required.
Irregular Chattering Sound	Backlash in gears	Check for worn or broken gears and replace. Rapid gear wear can be caused by worn bearings and/or shafts. Check for obvious looseness when installing new gears.
Machine Does Not Start	Covers and guards not securely attached	Make sure covers and guards are securely attached. Check for bent or twisted covers or guards that will prevent switches from lining up. See “Covers and Guards”, page 30 and “Safety switches”, page 49.
	Blown fuses	Check main fuses, transformer fuses and amplifier fuses. See “Inspection”, pages 48–50.
	Amplifier malfunction	Check amplifier. See “Inspection”, pages 48 & 50 or “Electrical Schematic”, pages 88 & 89.
	Overload relay tripped	Wait 5 minutes. Press “RESET” button. See “Inspection”, pages 48 & 49.
	Electrical system malfunction	Inspect electrical system. See “Inspection”, pages 48–50.

PROBLEM	CAUSE	CORRECTION
Motor Frequently Becomes Over-loaded	Machine overload or jam	See “Machine Overload or Jam”, page 27.
	Power source too low	Incoming power must be at least 95% of specified voltage.
	Dull knives	Sharpen or replace as required.
	Motor problem	Contact Urschel Laboratories for location of nearest authorized motor service center.
	Feed rate too high	See “Feeding Method”, page 26.
Slow, Sluggish Operation	Drive or timing belts slipping	Replace worn or frayed belts. Adjust drive belt tension. Make sure belts are clean, dry and free of grease. Check for worn pulley grooves or teeth.
	Lack of lubrication or improper lubricant	See “Lubrication”, page 33.
	Loss of one phase of power	Perform electrical check on motor starter. See “Electrical Schematic”, pages 88 & 89.
	Feed rate too high	See “Feeding Method”, page 26.
	Galled bearings or shafts	Replace bearings and shafts.
Motor Runs, But Slicing Unit Does Not	Broken shear pin in slicing unit pulley hub	Replace shear pin. See page 38.
	Loose or broken drive belts	Replace broken belts and tension properly.



PARTS

ORDERING PARTS

When ordering parts be sure to include the following information:

- **Machine Model and Serial Number**
- **Quantity**
- **5 Digit Part Number**
- **Part Description**

The serial number of your machine is on the name plate located on the machine frame above starter enclosure. Orders are accepted by mail, telephone or facsimile. Do not use illustration numbers when ordering parts.

RETURNING PARTS FOR REPAIR

1. Pack part(s) securely to avoid damage during shipping.
2. Enclose purchase order number and letter of instruction for repair work. Note any special instructions.
3. Include name and phone number of person to contact if further information is required by repair department.

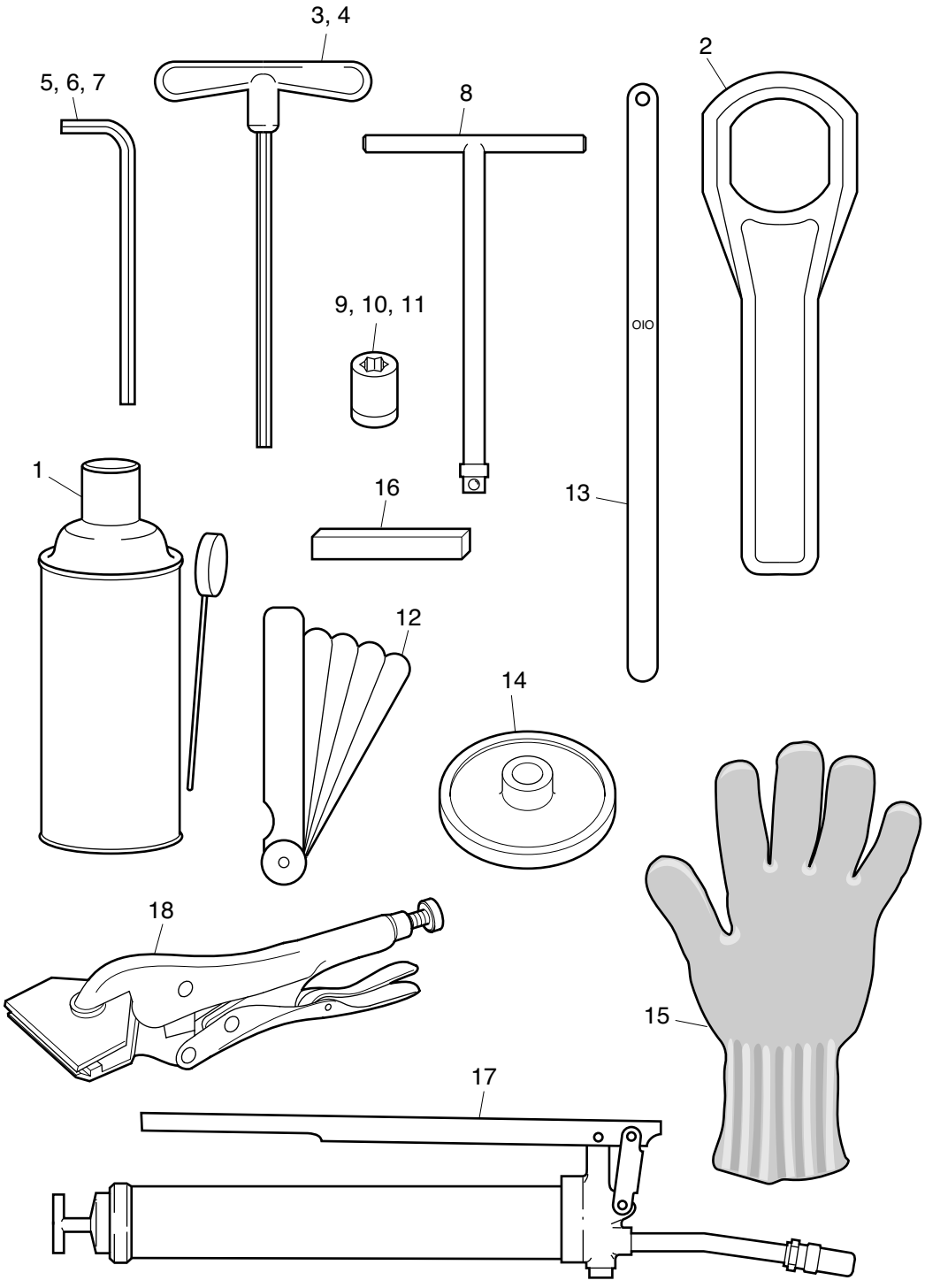
Customers in U.S.A.: It is not necessary to inform Urschel Laboratories, Inc. by phone that you are returning parts for repair as long as complete instructions are included in package.

Customers Outside U.S.A.: Contact your nearest Urschel representative. If repair services are not available from your representative, you may wish to inquire by fax about shipping and related expenses to determine if repair at the Valparaiso factory is cost effective. The country code for dialing the U.S.A. is 1.

Urschel Laboratories, Inc.
2503 Calumet Avenue
Valparaiso, Indiana 46383 U.S.A.
Telephone: 219/464-4811
Fax: 219/462-3879

PARTS

Tools



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	11001	**Spray Lubricant,** *(can not be air freighted)*	1
2	48293	**Spindle Wrench,** *(circular knife)*	1
3	11056	**Allen Wrench "T" Handle,** *3/16" hex*	1
4	11050	**Allen Wrench "T" Handle,** *5/32" hex*	1
5	11053	**Allen Wrench,** *5/16", long*	1
6	11054	**Allen Wrench,** *1/4", long*	1
7	11058	**Allen Wrench,** *1/8", long*	1
8	17389	**"T" Wrench**	1
9	11011	**Socket,** *9/16"*	1
10	11032	**Socket,** *7/16"*	1
11	11021	**Socket,** *1/2"*	1
12	11042	**Feeler Gauge**	1
13	11670	**Feeler Gauge,** *.010" thick*	1
14	19350	**Clearance Gauge,** *.010" clearance*	1
15	17453	**Protective Glove,** *medium, fits hand sizes 7, 8 & 9*	2
16	22149	**Block for Clamping Knives**	1
17	11070	**Grease Gun**	1
—	11045	**Grease Cartridge,** *Haynes® Lubri-Film, USDA Class H1 lubricant, (not shown)*	2
—	11071	**Tool Box,** *(not shown)*	1

OPTIONAL TOOLS (NOT SUPPLIED WITH MACHINE)

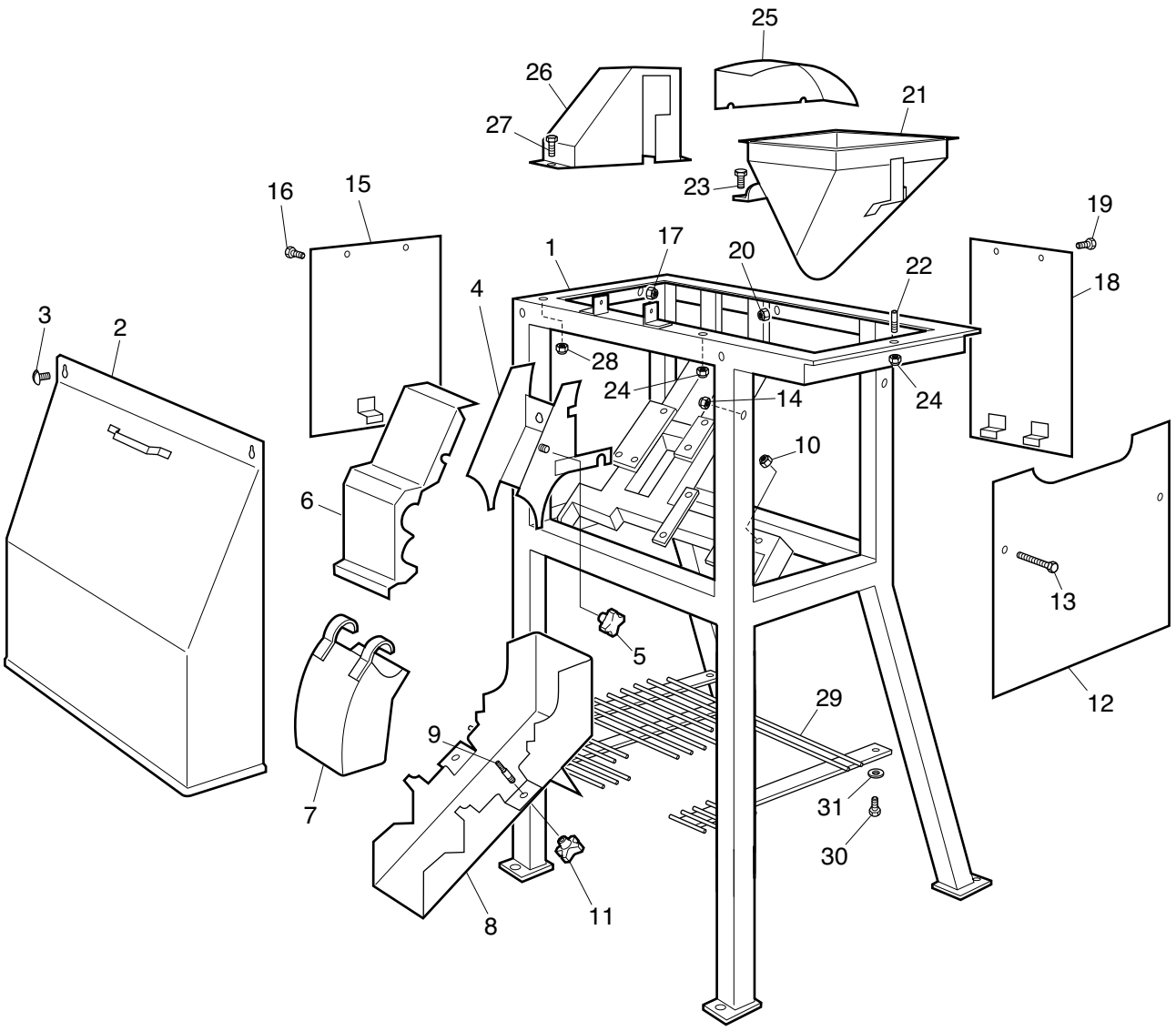
—	17497	**Protective Glove,** *small, fits hand sizes 5, 6 & 7, (not shown)*
—	17498	**Protective Glove,** *large, fits hand sizes 9, 10 & 11, (not shown)*

TOOLS FOR KNIFE SHARPENING

—	11004	**Buffing Wheel,** *10" diameter, (not shown)*
—	11005	**Buffing Compound,** *3 pound bar, (not shown)*
18	11082	**Knife Buffing Clamp,** *for 18132*

PARTS

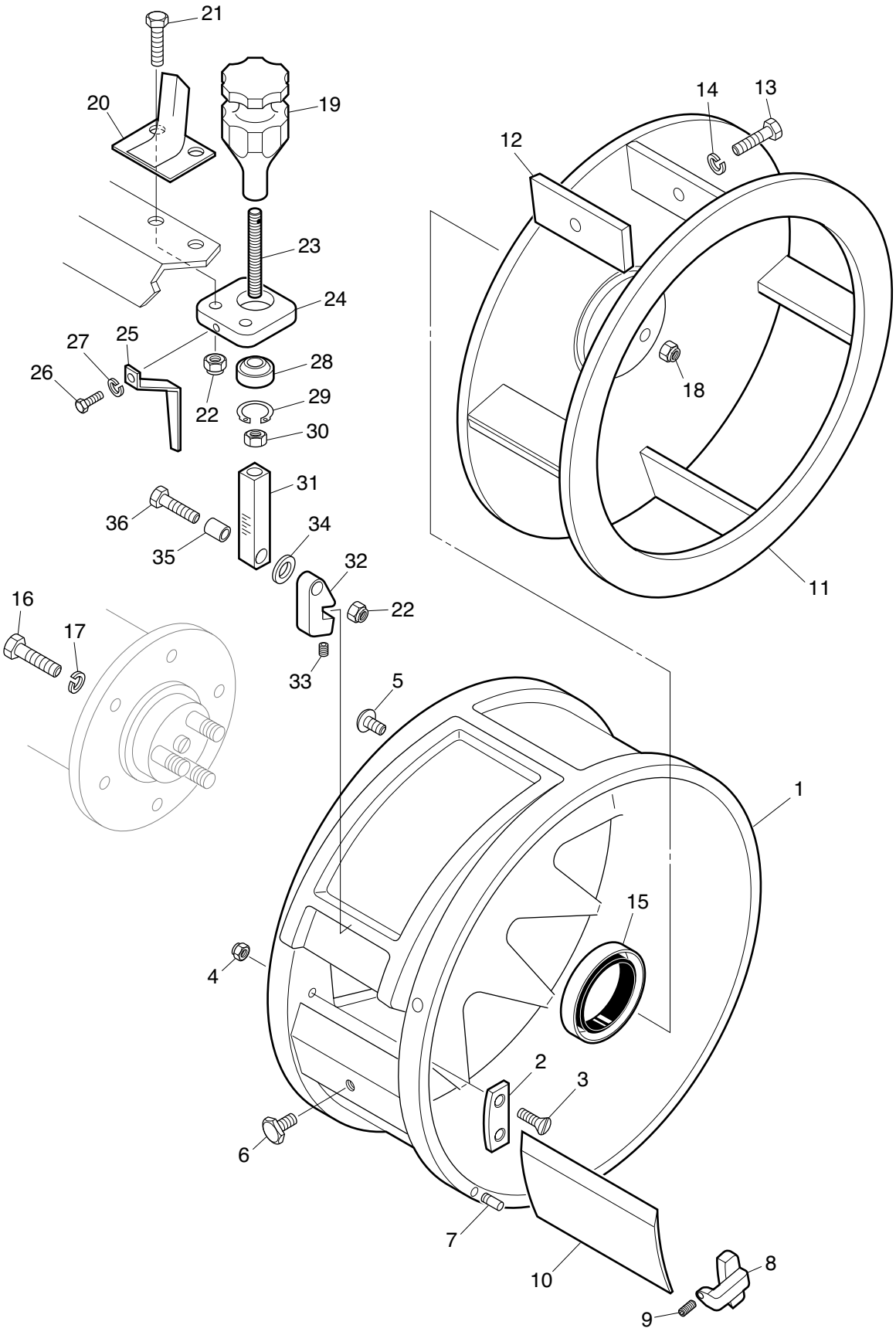
Frame, Covers and Guards



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	19053	***Frame,** *23.5" discharge height*	1
2	19082	**Front Panel**	1
3	10214	**Truss Head Machine Screw,** *1/4-20 x 3/8", s.s.*	4
4	19064	**Slice Guide**	1
5	62052	**Hand Knob,** *5/6-18*	2
6	19080	**Slice Guide Cover**	1
7	19072	**Discharge Chute**	1
8	19342	**Juice Chute**	1
9	25018	**Stud**	2
10	10020	**Hex Nut,** *1/4-20*	2
11	16538	**Hand Knob,** *3/8-16*	2
12	19105	**End Panel**	1
13	10268	**Hex Head Cap Screw,** *1/4-20 x 2-1/2", s.s.*	2
14	10230	**Hex Nut,** *locking, 1/4-20*	2
15	19100	**Right End Panel**	1
16	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
17	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	2
18	19368	**Back Panel**	1
19	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
20	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	2
21	19063	**Feed Hopper**	1
22	35037	**Stud,** *5/16-18 x 1-1/8"*	1
23	10046	**Hex Head Cap Screw,** *5/16-18 x 7/8", s.s.*	2
24	10306	**Hex Nut,** *locking, 5/16-18, s.s.*	3
25	19075	**Spray Shield**	1
26	19076	**Belt Guard**	1
27	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
28	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	2
29	19393	**Bottom Grid**	1
30	10308	**Hex Head Cap Screw,** *Nylok, 1/4-20 x 5/8", s.s.*	4
31	10007	**Flat Washer,** *1/4", s.s.*	4

* Not sold separately.

NOTE: *s.s. denotes stainless steel*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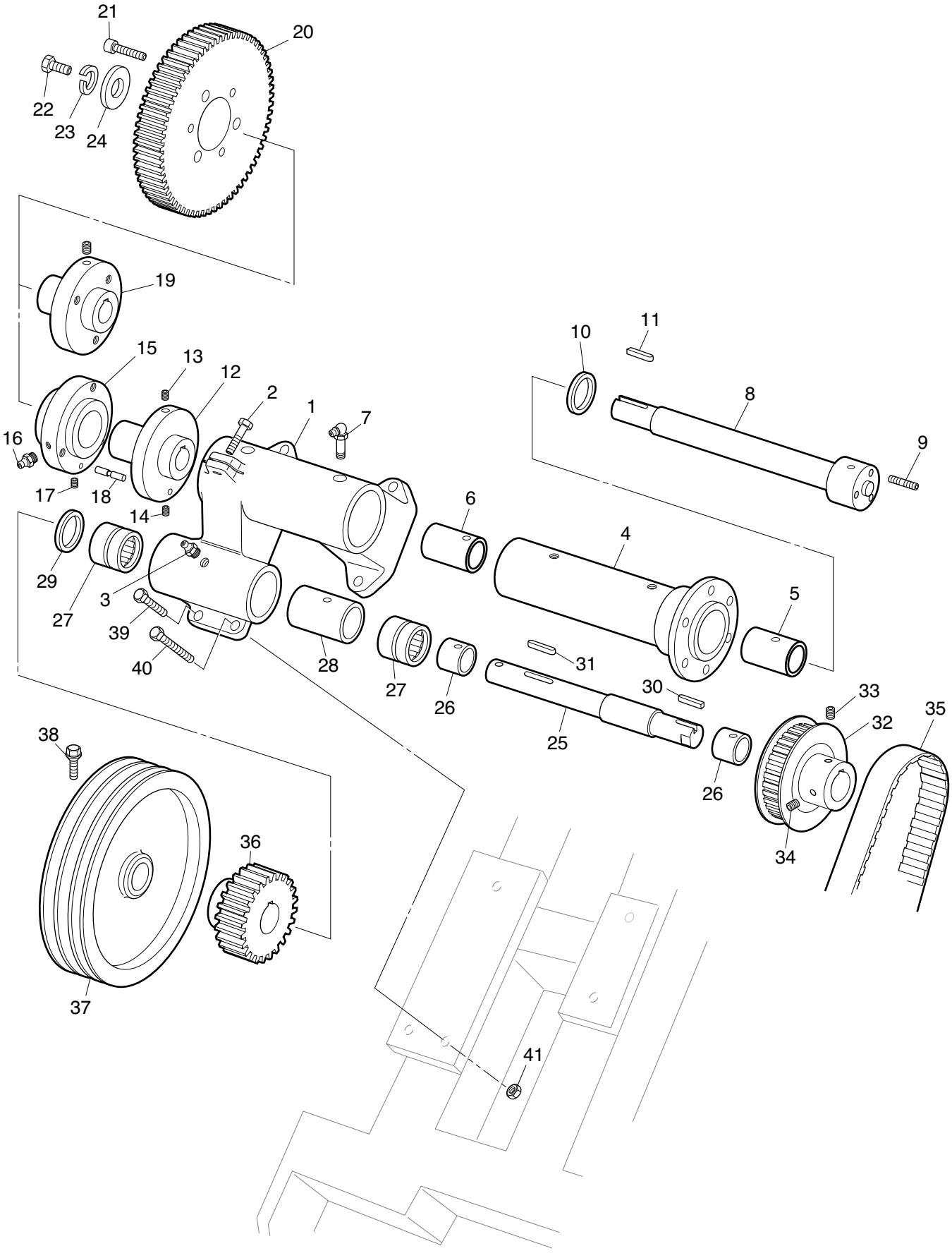
ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19292	**Slicing Case Assembly,** *(includes items 1–7)*	1
1	—	**Slicing Case,** *(not sold separately)*	1
2	18055	**Slicing Knife Holder**	1
3	10158	**Flat Head Machine Screw,** *10-24 x 1", s.s.*	2
4	10231	**Hex Nut,** *locking, 10-24, s.s.*	2
5	10214	**Truss Head Machine Screw,** *1/4-20 x 3/8", s.s.*	2
6	19406	**Hex Head Screw,** *special, 1/4-20 x 3/8", s.s.*	1
7	38159	**Panel Stud**	2
8	18056	**Slicing Knife Clamp,** *(includes item 9)*	1
9	10142	**Socket Set Screw,** *5/16-18 x 5/8", s.s.*	1
10	18054	**Knife,** *slicing*	1
—	18216	**Knife,** *slicing, heavy duty, (replaces item 10)*	1
—	19275	**Impeller Assembly,** *four paddle, (includes items 11–14)*	1
11	—	**Impeller,** *four paddle, (not sold separately)*	1
12	19034	**Impeller Paddle Insert**	4
13	10045	**Hex Head Cap Screw,** *5/16-18 x 3/4", s.s.*	4
14	10014	**Lock Washer,** *5/16", s.s.*	4
15	19271	**Seal**	1
16	10058	**Hex Head Cap Screw,** *3/8-16 x 1", s.s.*	6
17	10015	**Lock Washer,** *3/8", s.s.*	6
18	10249	**Hex Nut,** *locking, 3/8-16, s.s.*	3
—	19254	**Slice Adjustment Assembly,** *(includes items 19–36)*	1
19	19249	**Adjustment Knob,** *slice gate*	1
20	19424	**Slice Adjustment Knob Lock**	1
21	10060	**Hex Head Cap Screw,** *3/8-16 x 1-1/2", s.s.*	2
22	10249	**Hex Nut,** *locking, 3/8-16, s.s.*	3
23	13221	**Stud,** *3/8-16 x 2 3/8"*	1
24	19252	**Support,** *slice adjustment*	1
25	19253	**Indicator Arm**	1
26	10037	**Hex Head Cap Screw,** *1/4-20 x 1/2", s.s.*	1
27	10013	**Lock Washer,** *1/4", s.s.*	1
28	17021	**Spherical Bearing**	1
29	13237	**Retaining Ring**	1
30	10022	**Hex Nut,** *3/8-16, s.s.*	1
31	19250	**Adjustment Nut,** *slice gate*	1
32	19251	**Gate Bracket,** *(includes item 33)*	1
33	10149	**Socket Set Screw,** *locking, 3/8-16 x 3/8", s.s.*	1
34	10009	**Flat Washer,** *3/8", s.s.*	1
35	13238	**Bushing,** *25/64 x 1/2 x 41/64"*	1
36	10062	**Hex Head Cap Screw,** *3/8-16 x 2", s.s.*	1

NOTE: *s.s. denotes stainless steel*

PARTS

Drive Train

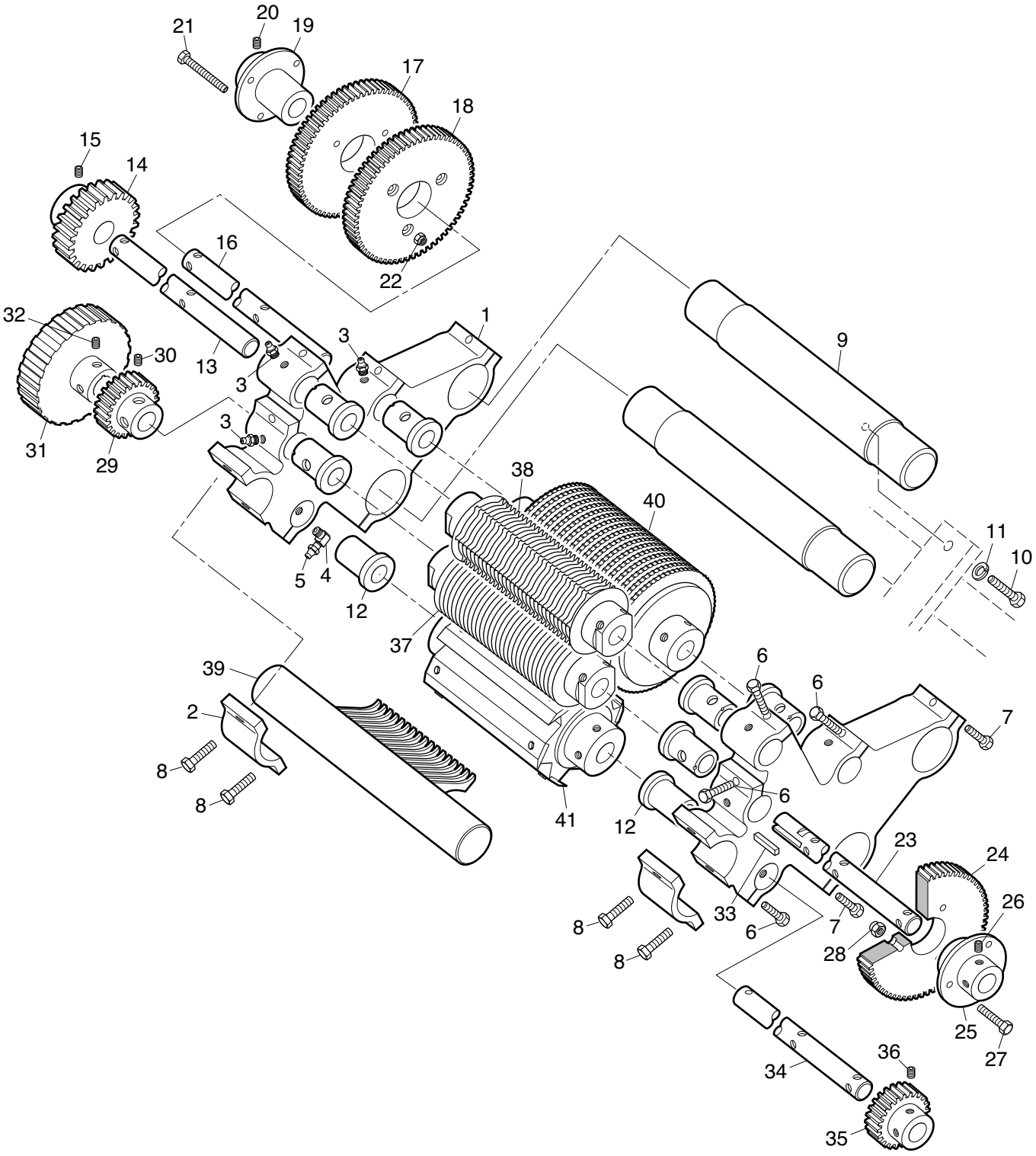


ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19025	**Drive Bracket Assembly,** *slicer, (includes items 1–3)*	1
1	—	**Slicer Drive Bracket,** *(not sold separately)*	1
2	10060	**Hex Head Cap Screw,** *3/8-16 x 1-1/2", s.s.*	1
3	11401	**Grease Fitting,** *1/8", straight*	1
—	18049	**Impeller Shaft Housing Assembly,** *(includes items 4–7)*	1
4	—	**Impeller Shaft Housing,** *(not sold separately)*	1
5	18061	**Bearing,** *1.125 I.D., 1.377 O.D., 2.50" long*	1
6	18062	**Bearing,** *1.125 I.D., 1.377 O.D., 2.50" long*	1
7	11436	**Grease Fitting,** *1/8", 90°*	2
8	19272	**Impeller Shaft Assembly,** *(includes item 9)*	1
9	62193	**Stud,** *3/8-16 x 1-7/16"*	3
10	18063	**Thrust Washer**	1
11	19182	**Key**	1
12	19017	**Hub,** *shear pin, (includes items 13–14)*	1
13	10135	**Socket Set Screw,** *1/4-20 x 1/4", s.s.*	1
14	10141	**Socket Set Screw,** *5/16-18 x 1/2", s.s.*	1
15	19019	**Gear Hub,** *shear pin, (includes items 16–17)*	1
16	11401	**Grease Fitting,** *1/8", straight*	1
17	10135	**Socket Set Screw,** *1/4-20 x 1/4", s.s.*	1
18	19018	**Shear Pin,** *3/16 x 1-1/8"*	1
19	19262	**Hub,** *heavy duty, w/set screw, (optional, replaces items 12–18)*	1
20	*	**Gear**	1
21	10103	**Socket Head Cap Screw,** *5/16-18 x 1-1/4", s.s.*	3
22	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8", s.s.*	1
23	10014	**Lock Washer,** *5/16", s.s.*	1
24	19020	**Retaining Washer**	1
25	19647	**Drive Shaft,** *(includes item 26)*	1
26	19032	**Bearing,** *inner race*	2
27	19031	**Roller Bearing**	2
28	19027	**Bearing Spacer**	1
29	19026	**Thrust Washer**	1
30	19029	**Key**	1
31	19030	**Key**	1
32	19005	**Pulley Assembly,** *timing belt, 38 teeth, (includes items 33–34)*	1
33	10139	**Socket Set Screw,** *5/16-18 x 5/16", Nylok*	1
34	10140	**Socket Set Screw,** *5/16-18 x 3/8", Nylok*	1
35	19004	**Timing Belt,** *345L-100*	1
36	*	**Gear**	1
37	*	**Pulley**	1
38	19648	**Hex Head Screw,** *shouldered, s.s.*	1
39	10060	**Hex Head Cap Screw,** *3/8-16 x 1-1/2", s.s.*	1
40	10068	**Hex Head Cap Screw,** *3/8-16 x 3-1/2", s.s.*	4
41	10249	**Hex Nut,** *locking, 3/8-16, s.s.*	5

* See Drive Chart, page 91.

NOTE: *s.s. denotes stainless steel*

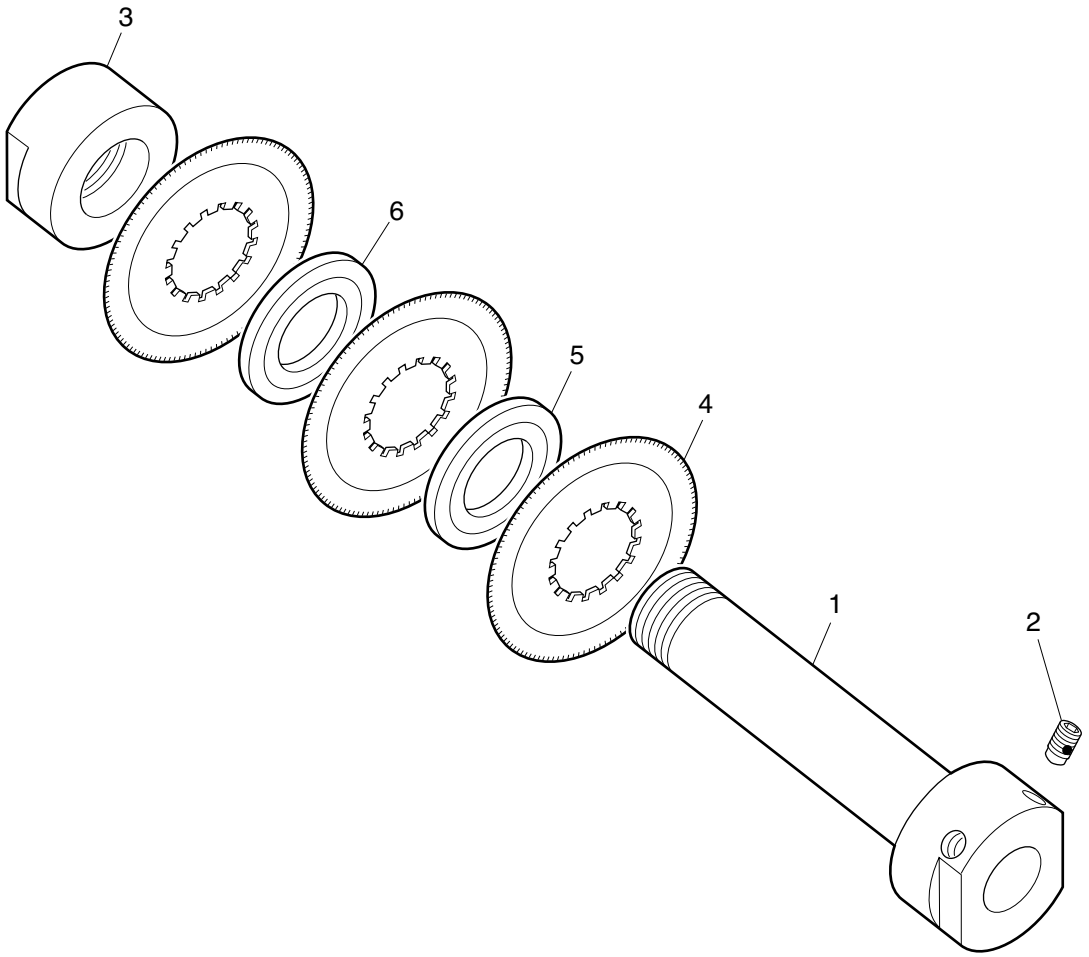
PARTS
Dicing Unit



ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	18001	**Side Frame Assembly,** *(includes items 1–8)*	2
1	—	**Side Frame,** *(not sold separately)*	1
2	18141	**Cap for Side Frame**	1
3	11401	**Grease Fitting,** *1/8", straight*	3
4	11410	**Elbow,** *1/8", 90°, male–female*	1
5	11435	**Grease Fitting,** *1/8", straight*	1
6	10047	**Hex Head Cap Screw,** *5/16-18 x 1", s.s.*	4
7	10048	**Hex Head Cap Screw,** *5/16-18 x 1-1/4", s.s.*	2
8	10049	**Hex Head Cap Screw,** *5/16-18 x 1-1/2", s.s.*	2
9	18029	**Spacer Bar**	2
10	10058	**Hex Head Cap Screw,** *3/8-16 x 1", s.s.*	4
11	10015	**Lock Washer,** *3/8", s.s.*	4
12	48041	**Bearing With Thrust Washer,** *3/4 x 1-1/8 x 2-9/16"*	8
13	18019	**Shaft,** *feed roll*	1
14	18026	**Gear,** *26 teeth, bronze, (includes item 15)*	1
15	19233	**Special Set Screw,** *locking*	2
16	18020	**Shaft,** *feed drum*	1
—	18022	**Gear Assembly,** *(includes items 17–22)*	1
17	18023	**Gear,** *49 teeth, nylon*	1
18	18024	**Gear,** *52 teeth, nylon*	1
19	18025	**Hub,** *(includes item 20)*	1
20	19233	**Special Set Screw,** *locking*	2
21	10041	**Hex Head Cap Screw,** *1/4-20 x 1-3/4", s.s.*	3
22	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	3
23	18021	**Shaft,** *circular knife spindle*	1
—	48038	**Gear Assembly,** *(includes items 24–28)*	1
24	48099	**Gear,** *52 teeth, nylon*	1
25	48098	**Hub,** *(includes item 26)*	1
26	19233	**Special Set Screw,** *locking*	2
27	10040	**Hex Head Cap Screw,** *1/4-20 x 1-1/4", s.s.*	3
28	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	3
29	18027	**Gear,** *21 teeth, bronze, (includes item 30)*	1
30	19233	**Special Set Screw,** *locking*	2
31	19007	**Pulley,** *timing belt, 38 teeth, (includes item 32)*	1
32	10140	**Socket Set Screw,** *5/16-18 x 3/8", Nylok*	2
33	18067	**Key**	1
34	48049	**Shaft,** *knife spindle*	1
35	48040	**Gear,** *19 teeth, s.s., (includes item 36)*	1
36	19233	**Special Set Screw,** *locking*	2
37	*	**Circular Knife Spindle Assembly**	1
38	*	**Feed Spindle Assembly**	1
39	*	**Shear Plate**	1
40	*	**Feed Drum**	1
41	*	**Crosscut Knife Spindle Assembly**	1

* See pages 70 thru 79.

NOTE: *s.s. denotes stainless steel*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ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	*	**Circular Knife Spindle Assembly,** *(includes items 1–6)*	1
1	48075	**Spindle,** *bronze, (includes item 2), Model RA only*	1
	48280	**Spindle,** *s.s., (includes item 2)*	1
2	19233	**Special Set Screw,** *locking*	2
3	48281	**Spindle Nut,** *s.s.*	1
4	*	**Knife,** *circular*	*
5	*	**Spacer**	*
6	*	**Spacer**	*

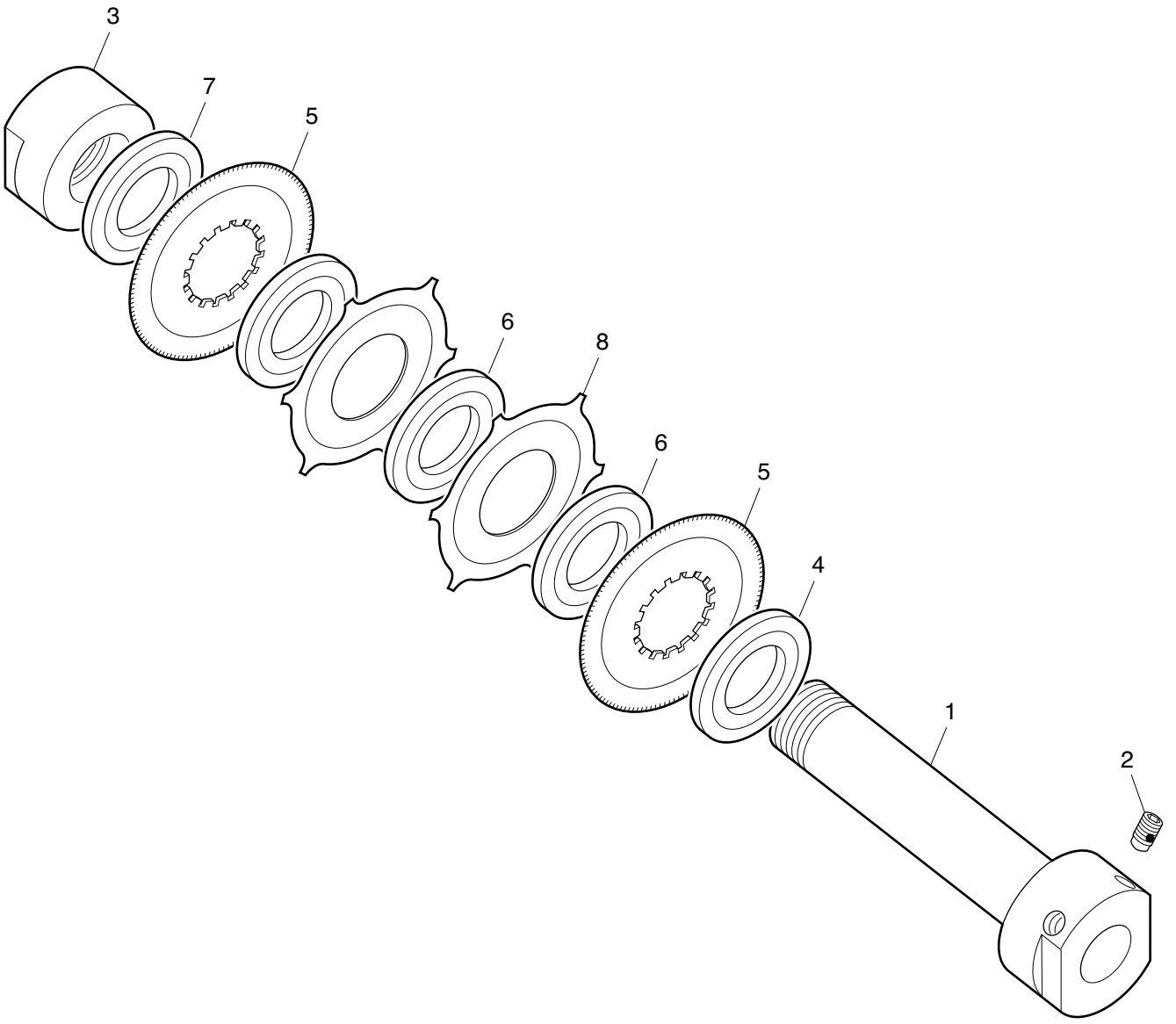
* See chart.
NOTE: *s.s. denotes stainless steel*

STANDARD PARTS								
Size of Cut	**Circular Knife Spindle Assembly No.**		**Item 4 Knife No. and Qty.**		**Item 5 Spacer No. and Qty.**		**† Item 6 Spacer No. and Qty.**	
	Bronze	**Stainless**						
1/8" (3.2 mm)	18102	18245	18134	47	18035	46	—	—
5/32" (4.0 mm)	18104	18246	18134	38	18036	37	—	—
3/16" (4.8 mm)	18105	18247	18134	31	18037	30	—	—
1/4" (6.4 mm)	18106	18248	18134	24	18038	23	—	—
5/16" (7.9 mm)	—	18283	18134	19	18237	18	—	—
3/8" (9.5 mm)	18107	18249	18134	17	18039	15	18035	1
1/2" (12.7 mm)	18109	18250	18134	13	18034	11	18038	1
3/4" (19.1 mm)	18110	18251	18134	9	18033	7	18034	1
1" (25.4 mm)	18218	18252	18134	7	18219	5	18033	1
HEAVY DUTY PARTS								
5/32" (4.0 mm)	—	18692	18803	37	18288	36	—	—
3/16" (4.8 mm)	18852	18596	18803	31	18042	30	—	—
1/4" (6.4 mm)	18853	18597	18803	24	18836	23	—	—
5/16" (7.9 mm)	—	18292	18803	19	18291	18	—	—
3/8" (9.5 mm)	18854	18598	18803	16	18814	15	—	—
1/2" (12.7 mm)	18860	18600	18803	13	18861	11	18836	1
9/16" (14.3 mm)	18855	18599	18803	11	18837	10	—	—
3/4" (19.1 mm)	18605	18661	18803	9	18568	7	18861	1

† Final spacer to be placed on spindle between last two knives at spindle nut end when indicated.

PARTS

Feed Spindle Assembly



ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	*	**Feed Spindle Assembly,** *(includes items 1–8)*	1
1	48075	**Spindle,** *bronze, (includes item 2), Model RA only*	1
	48280	**Spindle,** *s.s., (includes item 2)*	1
2	19233	**Special Set Screw,** *locking*	2
3	48281	**Spindle Nut,** *s.s.*	1
4	*	**Starter Spacer**	*
5	*	**Knife,** *circular*	2
6	*	**Spacer**	*
7	*	**Spacer**	*
8	*	**Feed Disc**	*

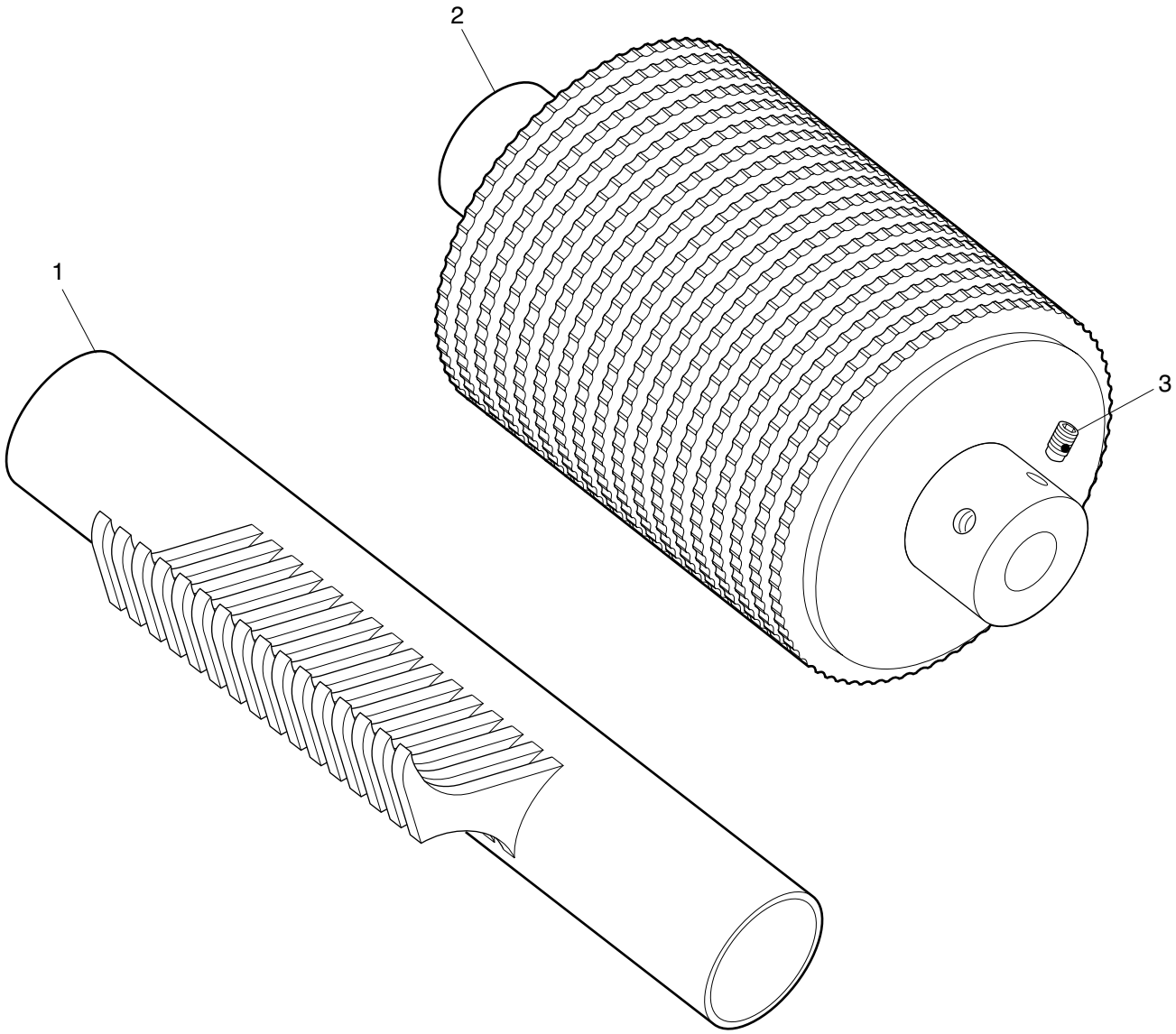
* See chart
NOTE: *s.s. denotes stainless steel*

Size of Cut	Feed Spindle Assembly No. Bronze	Feed Spindle Assembly No. Stainless	Item 4 Starter Spacer No. and Qty.	Item 5 Knife	Item 6 Spacer No. and Qty.	† Item 7 Spacer No. and Qty.	Item 8 Feed Disc No. and Qty.
STANDARD PARTS							
1/8" (3.2 mm)	18111	18242	18043 1	18134	18035 45	— —	18003 44
5/32" (4.0 mm)	18112	18243	18044 1	18134	18036 36	— —	18003 35
3/16" (4.8 mm)	18114	18244	18045 1	18134	18037 30	— —	18003 28
1/4" (6.4 mm)	18111	18242	18043 1	18134	18035 45	— —	18003 44
3/8" (9.5 mm)	18111	18242	18043 1	18134	18035 45	— —	18003 44
1/2" (12.7 mm)	18111	18242	18043 1	18134	18035 45	— —	18003 44
3/4" (19.1 mm)	18111	18242	18043 1	18134	18135 45	— —	18003 44
1" (25.4 mm)	18111	18242	18043 1	18134	18035 45	— —	18003 44
HEAVY DUTY PARTS							
3/16" (4.8 mm)	18592	18595	18043 1	18803	18042 30	— —	18012 28
1/4" (6.4 mm)	18851	18594	18043 2	18803	18836 22	18043 1	18012 21
5/16" (7.9 mm)	—	18293	18045 1	18803	18291 18	— —	18012 17
3/8" (7.9 mm)	18592	18595	18043 1	18803	18042 30	— —	18012 28
1/2" (12.7 mm)	18851	18594	18043 2	18803	18836 22	18043 1	18012 21
9/16" (14.3 mm)	18592	18595	18043 1	18803	18042 30	— —	18012 28
3/4" (19.1 mm)	18851	18594	18043 2	18803	18836 22	18043 1	18012 21

† Final spacer to be placed on spindle between last knife and spindle nut when indicated.

PARTS

Shear Plate and Feed Drum



ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	*	† **Shear Plate**	1
2	*	**Feed Drum,** *(includes item 3)*	1
3	19233	**Special Set Screw,** *locking*	2

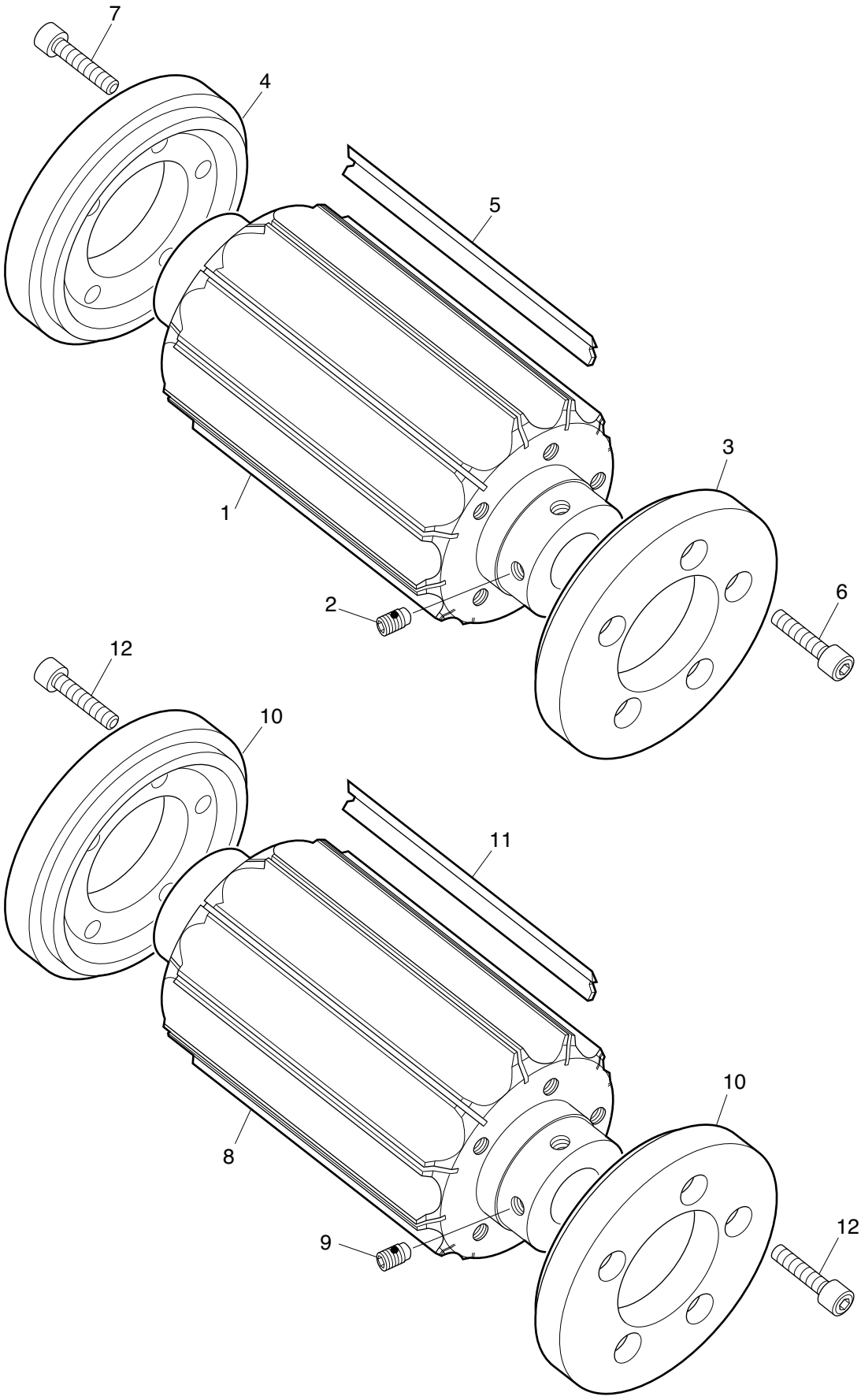
* See chart.

† There is an exchange program on this item (18115 only). For further details, contact Urschel Laboratories, Inc.

Circular Cut	SHEAR PLATE		FEED DRUM	
	Standard	Heavy Duty	Standard	Heavy Duty
1/8" (3.2 mm)	18115	—	18119	—
5/32" (4.0 mm)	18116	18290	18120	18693
3/16" (4.8 mm)	18117	18117	18121	18589
1/4" (6.4 mm)	18115	18810	18119	18582
5/16" (7.9 mm)	18116	18290	18120	18693
3/8" (9.5 mm)	18115	18117	18119	18589
1/2" (12.7 mm)	18115	18810	18119	18582
9/16" (14.3 mm)	18117	18117	18121	18589
3/4" (19.1 mm)	18115	18810	18119	18582
1" (25.4 mm)	18115	—	18119	—

PARTS

Crosscut Knife Spindle Assembly



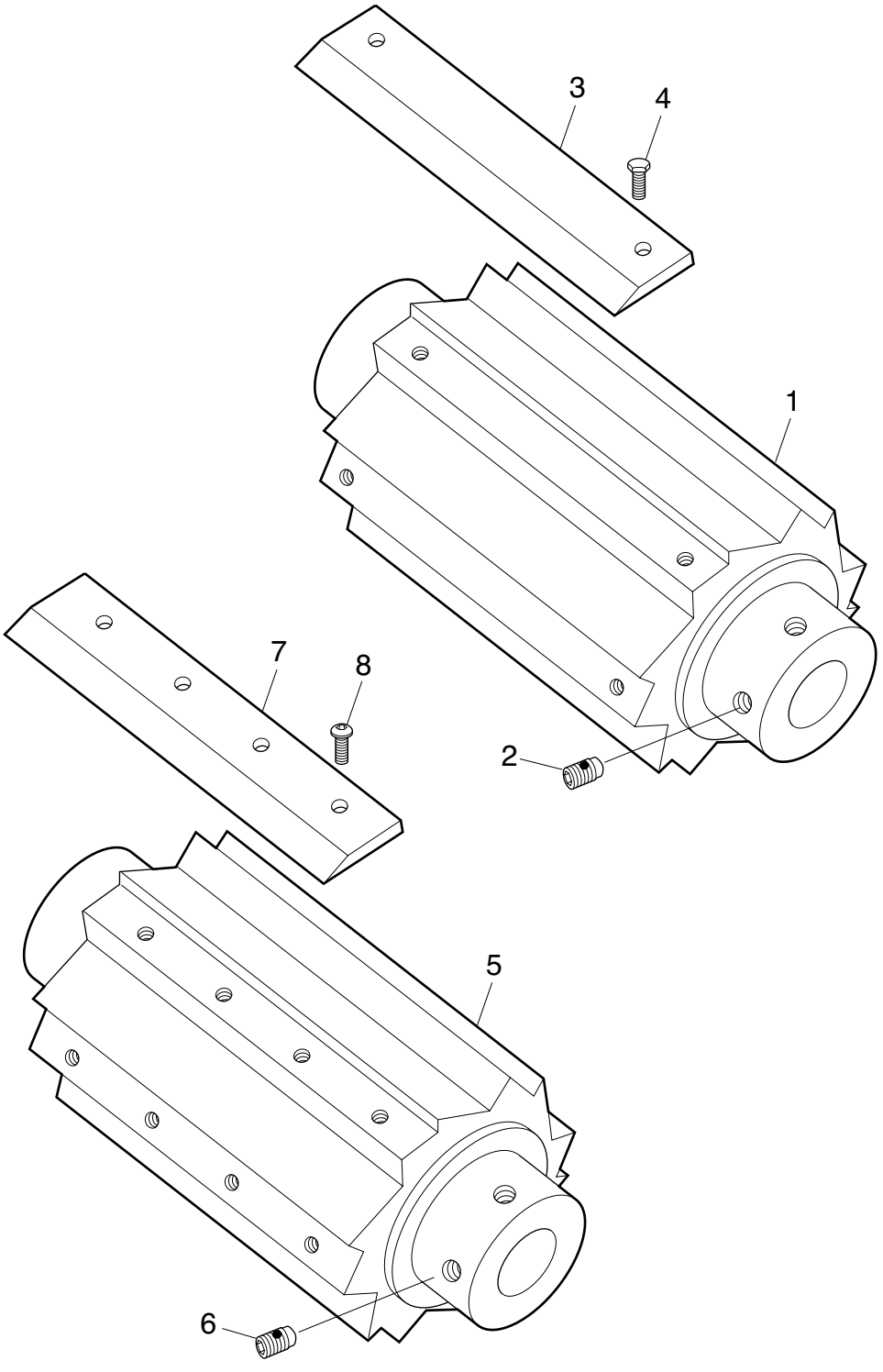
ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	*	**Crosscut Knife Spindle Assembly,** *plated bronze, (includes items 1–7),*	1
1	*	**Spindle,** *plated bronze, (includes item 2)*	1
2	19233	**Special Set Screw,** *locking*	2
3	18129	**Retaining Ring,** *plated bronze, drive end*	1
4	18130	**Retaining Ring,** *plated bronze*	1
5	18132	**Knife,** *crosscut*	*
6	10089	**Socket Head Cap Screw,** *1/4-20 x 1/2", s.s.*	5
7	10091	**Socket Head Cap Screw,** *1/4-20 x 3/4", s.s.*	5
—	*	**Crosscut Knife Spindle Assembly,** *s.s., (includes items 8–12)*	1
8	*	**Spindle,** *s.s., (includes item 9)*	1
9	19233	**Special Set Screw,** *locking*	2
10	19653	**Retaining Ring,** *s.s.*	2
11	18132	**Knife,** *crosscut*	*
12	10091	**Socket Head Cap Screw,** *1/4-20 x 3/4", s.s.*	10

* See chart.
NOTE: *s.s. denotes stainless steel*

Size of Cut	Assembly No.		Spindle		Knife Qty.
	Plated Bronze	Stainless Steel	Item 1 Plated Bronze	Item 8 Stainless Steel	
.050" (1.3 mm)	18294	—	18295	—	60
1/16" (1.6 mm)	18224	19655	18223	19656	48
1/8" (3.2 mm)	18122	19657	18126	19658	24
5/32" (4.0 mm)	18282	19659	18281	19660	20
3/16" (4.8 mm)	18123	19661	18131	19662	16
1/4" (6.4 mm)	18239	19663	18238	19664	12

PARTS

Crosscut Knife Spindle Assembly (Heavy Duty)



Crosscut Knife Spindle Assembly (Heavy Duty)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	*	**Crosscut Knife Spindle Assembly,** *heavy duty, (includes items 1–4)*	1
1	*	**Spindle,** *s.s., (includes item 2)*	1
2	19233	**Special Set Screw,** *locking*	2
3	19264	**Knife,** *crosscut*	*
4	17370	**Hex Head Screw for Crosscut Knife,** *s.s.*	†
—	‡	**Crosscut Knife Spindle Assembly,** *heavy duty, (includes items 5–8)*	1
5	‡	**Spindle,** *plated bronze, (includes item 6)*	1
6	19233	**Special Set Screw,** *locking*	2
7	‡	**Knife,** *crosscut*	‡
8	48106	**Button Head Screw for Crosscut Knife,** *s.s.*	§

* See Chart No. 1.
† Two (2) screws required for each crosscut knife.
‡ See Chart No. 2.
§ Four (4) screws required for each crosscut knife.
NOTE: *s.s. denotes stainless steel*

Chart No. 1

MODELS RA, RA-A			
Size of Cut	**Assembly No.**	**Item 1 Spindle**	**Knife Qty.**
5/16" (7.9 mm)	19384	19383	9
3/8" (9.5 mm)	19268	19267	7
1/2" (12.7 mm)	19270	19269	5
3/4" (19.1 mm)	19283	19284	4
1" (25.4 mm)	19329	19330	3
1-1/2" (38.1 mm)	19286	19287	2
3" (76.2 mm)	19429	19428	1

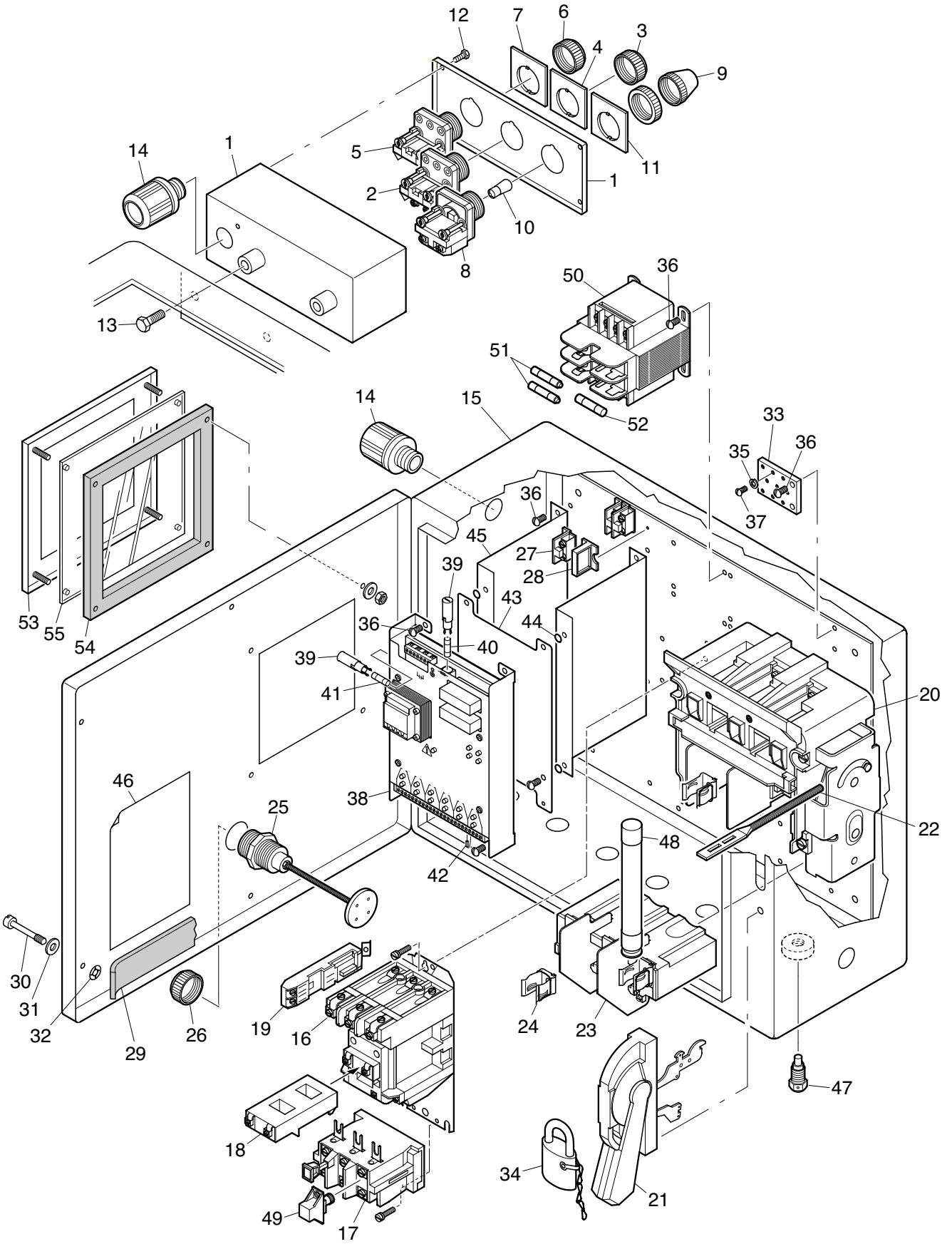
Chart No. 2

MODEL RA ONLY				
Size of Cut	**Assembly No.**	**Item 5 Spindle**	**Item 7 Knife**	**Knife Qty.**
1/4" (6.4 mm)	48155	48154	48105	12
3/8" (9.5 mm)	48157	48156	48115	7
1/2" (12.7 mm)	48160	48159	48115	5

PARTS

Electrical Assembly (NEMA)

See the addendum for updated information



ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19630	**Electrical Assembly,** *(includes items 1–87)*	1
—	19365	**Control Station With Pilot Light,** *(includes items 1–12)*	1
1	19367	**Control Station Enclosure**	1
2	13449	**Push Button,** *start (includes item 3)*	1
3	60218	**Rubber Boot,** *start*	1
4	12605	**Legend Plate,** *(I) for start*	1
5	13450	**Push Button,** *stop (includes item 6)*	1
6	60219	**Rubber Boot,** *stop*	1
7	12606	**Legend Plate,** *(O) for stop*	1
8	12597	**Pilot Light** *(includes items 9–10)*	1
9	12598	**Lens,** *pilot light*	1
10	12599	**Bulb,** *pilot light*	1
11	12600	**Legend Plate,** *blank grey*	1
12	10381	**Hex Head Cap Screw,** *10-32 x 1/2", s.s.*	4
13	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8", s.s.*	2
14	11613	**Conduit Connector,** *1/2", straight*	2
15	19395	**Combination Starter,** *size "1", (includes items 16–33)*	1
16	16676	**Starter,** *size "1", (includes items 17–19)*	1
17	12667	**Overload Relay**	1
18	13548	**Operating Coil,** *for size 0 &1 starter*	1
19	63579	**Auxillary Contact,** *normally open*	1
20	13604	**Disconnect,** *30 amp.*	1
21	63383	**Operating Handle**	1
22	63384	**Connecting Rod**	1
23	13605	**Fuse Trailer Block,** *(includes item 24)*	1
24	13381	**Fuse Clip Kit,** *(set of 6)*	1
25	12603	**Reset Button,** *(includes item 26)*	1
26	12604	**Rubber Boot,** *reset*	1
27	11606	**Terminal Block**	3
28	11607	**End Section,** *terminal block*	2
29	12882	**Door Gasket,** *(fitting and adhesive required)*	1
30	13596	**Fastener For Enclosure**	4
31	13602	**Nylon Washer**	4
32	13618	**Retainer**	4
33	13518	**Earthing Bar**	1
34	13408	**Padlock,** *with chain*	1
35	10012	**Lock Washer,** *3/16", s.s.*	7
36	10625	**Round Head Machine Screw With Washer,** *10-32 x 1/2"*	14
37	10276	**Round Head Machine Screw,** *10-24 x 5/16", s.s.*	9
38	63737	****Amplifier,** *(includes items 39–42)*	1
39	13673	**Adapter,** *fuse*	2
40	13671	**Fuse,** *.630 amp.*	1
41	13672	**Fuse,** *.125 amp.*	1
42	63755	**Resistor,** *22K ohms*	1
43	63747	**Adapter Plate**	1
44	12633	**Rubber Washer,** *3/16 x 5/8 x 1/8" thick*	4
45	13561	**Amplifier Bracket**	2
46	19632	**Wiring Diagram**	1
47	11593	**Breather Drain,** *1/4"*	1
48	*	**Fuse**	3
49	*	**Heater Element**	3
50	*	**Transformer,** *(includes items 51 & 52)*	1
51	12691	**Fuse,** *.6 amp.*	2
52	13426	**Fuse,** *.6 amp.*	1
53	13599	**Window Replacement Kit,** *(includes items 54 & 55)*	1
54	13713	**Window Gasket**	1
55	—	**Window,** *(not sold separately)*	1

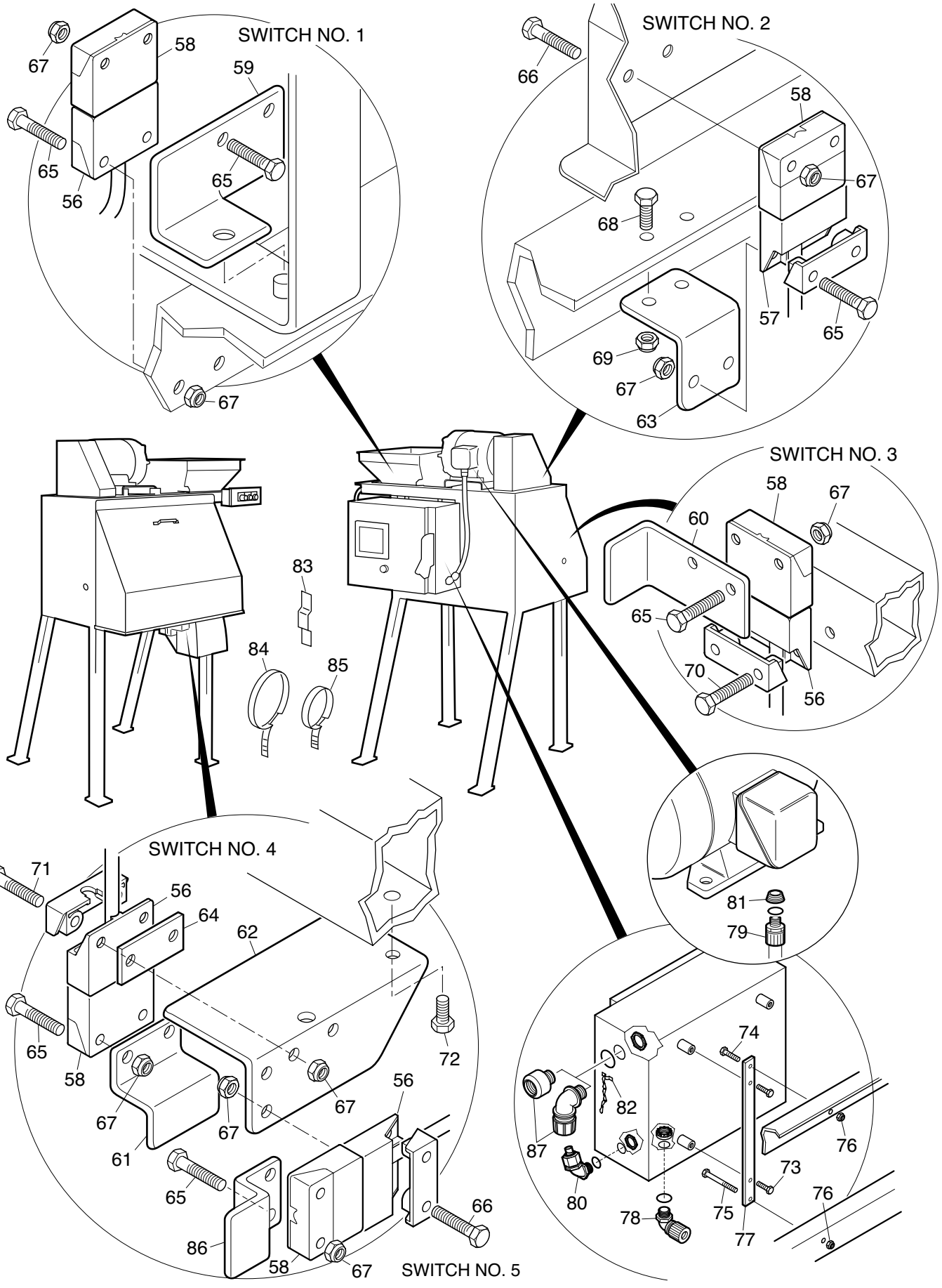
* Consult factory.

** A retrofit assembly (part no. 63756) is required to adapt 63737 amplifier to machines currently using 63068 amplifier. Consult factory for further information.

(continued on page 83)

PARTS

Electrical Assembly (NEMA)

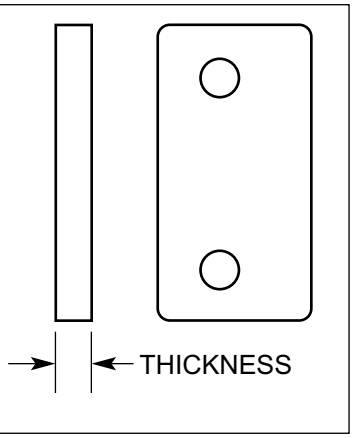


(continued from page 81)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
56	63738	**Sensor,** *6' lead*	4
57	63739	**Sensor,** *12' lead*	1
58	63741	**Actuator**	5
59	19361	**Actuator Bracket**	1
60	19362	**Actuator Bracket**	1
61	24247	**Actuator Bracket**	1
62	19363	**Sensor Bracket**	1
63	19364	**Sensor Bracket**	1
64	*	**Spacer**	1
65	10233	**Hex Head Cap Screw,** *10-24 x 1", s.s.*	12
66	10351	**Hex Head Cap Screw,** *10-24 x 7/8", s.s.*	4
67	10231	**Hex Nut,** *locking, 10-24, s.s.*	18
68	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
69	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	2
70	10232	**Hex Head Cap Screw,** *10-24 x 5/8", s.s.*	2
71	10348	**Hex Head Cap Screw,** *10-24 x 1-1/4", s.s.*	2
72	10037	**Hex Head Cap Screw,** *1/4-20 x 1/2", s.s.*	2
73	10045	**Hex Head Cap Screw,** *5/16-18 x 3/4", s.s.*	4
74	10047	**Hex Head Cap Screw,** *5/16-18 x 1", s.s.*	2
75	10054	**Hex Head Cap Screw,** *5/16-18 x 2-3/4", s.s.*	2
76	10306	**Hex Nut,** *locking, 5/16-18, s.s.*	4
77	19403	**Bracket**	2
78	11548	**Cord Connector,** *7/32", 90°*	5
79	11613	**Conduit Connector,** *1/2", straight*	1
80	11614	**Conduit Connector,** *1/2", 90°*	1
81	11502	**Conduit Bushing,** *1/2 x 3/4"*	1
82	13424	**Clip**	1
83	13465	**Clip**	21
84	11513	**Cable Tie**	21
85	11534	**Cable Tie,** *small*	20
86	24247	**Actuator Bracket,** *(included with discharge chute)*	1
87	11582	**Conduit Hub**	1
	11626	**Cord Connector,** *90°*	1

* See chart below to select spacer so that sensor and actuator are aligned.
NOTE: *s.s. denotes stainless steel*

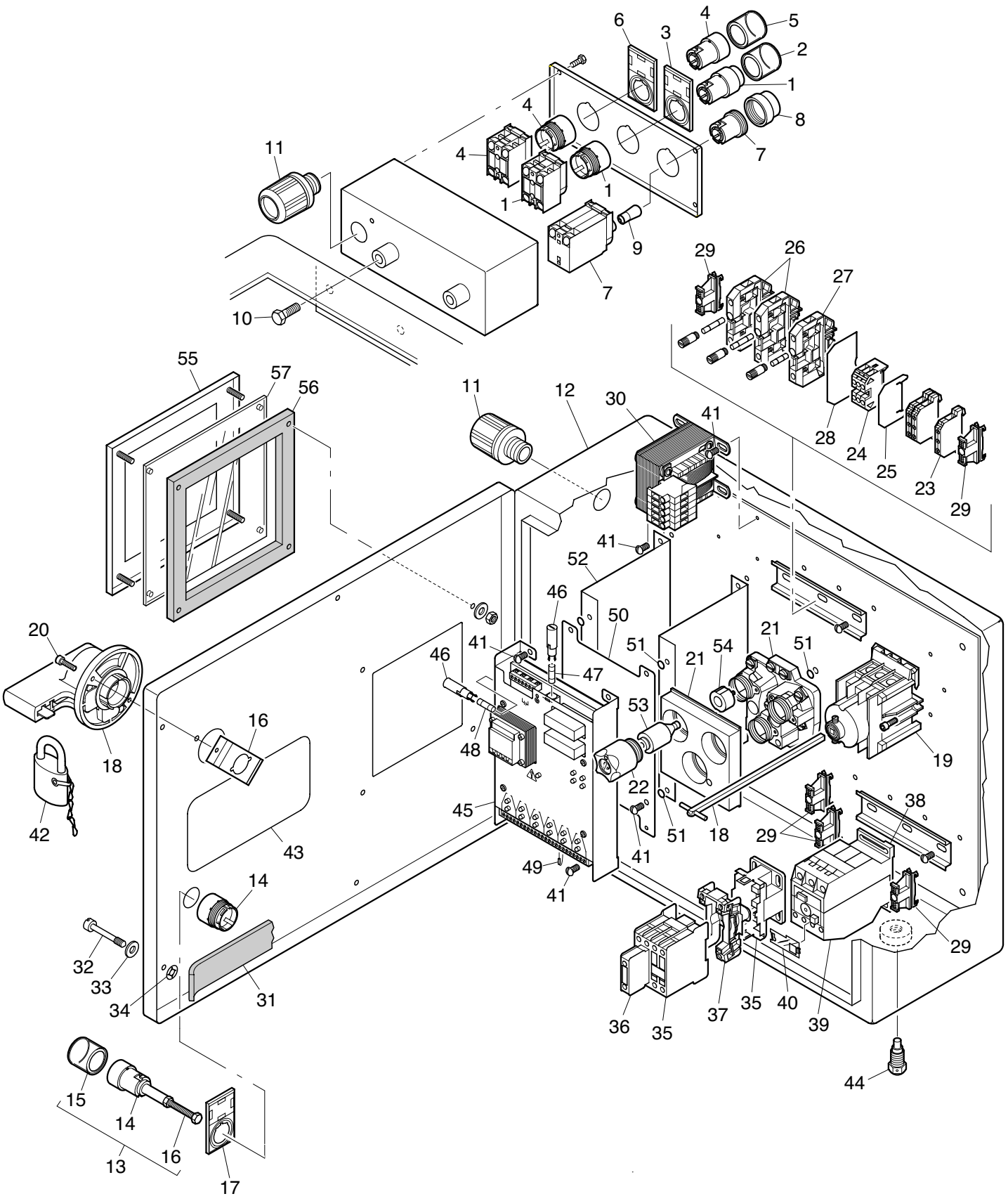
SWITCH SPACER CHART		
Item 64 Part No.	Thickness	
	inches	mm
63084	.037	.094
12799	.062	1.57
12800	.093	2.36
12801	.125	3.18
12802	.187	4.75
12803	.250	6.35
12804	.312	7.92
12805	.375	9.53
12806	.437	11.10
12807	.500	12.70



PARTS

Electrical Assembly (IEC)

See the addendum for updated information



ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19640	**IEC Electrical Assembly,** *(includes items 1–87)*	1
—	19627	**Control Station Enclosure Assembly,** *(includes items 1–9)*	1
1	12740	**Start Button Assembly,** *(includes item 2)*	1
2	12748	**Protective Cap,** *flush head, IEC*	1
3	12742	**Name Plate,** *(I) start, IEC*	1
4	12741	**Stop Button Assembly,** *(includes item 5)*	1
5	12749	**Protective Cap,** *extended head, IEC*	1
6	12743	**Name Plate,** *(O) stop , IEC*	1
7	12757	**Pilot Light,** *IEC, (includes items 8 & 9)*	1
8	12758	**Pilot Light Lens,** *IEC*	1
9	12599	**Bulb,** *pilot light*	1
10	10044	**Hex Head Cap Screw,** *5/16-18 x 5/8"*	2
11	11613	**Conduit Connector,** *1/2", straight*	2
12	19634	**Combination Starter,** *IEC, 22 amp with lugs, (includes items 13–38)*	1
13	12747	**Reset Button Assembly,** *IEC, (includes item 14–16)*	1
14	12744	**Reset Button,** *IEC*	1
15	12748	**Protective Cap,** *flush head, IEC*	1
16	12745	**Reset Extender,** *IEC*	1
17	12746	**Reset Insert with Holder**	1
18	12774	**IEC Disconnect Switch Handle**	1
19	12775	**IEC Disconnect Switch**	1
20	12782	**Machine Screw,** *4 mm x 16 mm*	2
21	13491	**Fuse Base,** *25 amp., (E27 thread)*	1
22	13489	**Screw Cap,** *(E27 thread)*	3
23	12750	**Earthing Terminal,** *IEC*	3
24	12760	**Terminal,** *IEC, (includes item 25)*	3
25	*	**Barrier,** *IEC*	1
26	12764	**Fuse Terminal,** *6.3 x 32 mm, IEC, (uses fuse 13675; includes item 28)*	2
27	12763	**Fuse Terminal,** *5 x 20 mm, IEC, (uses fuse 13674; includes item 28)*	1
28	*	**Barrier and Spacer,** *IEC*	1
29	12751	**End Anchor,** *IEC*	5
30	*	**Control Circuit Transformer**	1
31	12882	**Door Gasket,** *(fitting and adhesive required)*	1
32	13596	**Fastener for Enclosure**	4
33	13602	**Nylon Washer**	4
34	13618	**Retainer**	4
35	12753	**Contactor,** *22 A., IEC, (includes items 36–37)*	1
36	12755	**Front-Mount Auxiliary Contact,** *N.O.*	1
37	12754	**Coil,** *110/120 volts, 50/60 Hertz, IEC*	1
38	13677	**Overload Base Adapter**	1
39	*	**Overload Relay**	1
40	13678	**Transparent Cover for Adjustment Dial**	1
41	10625	**Round Head Machine Screw,** *w/washer, 10-32 x 1/2"*	14
42	13408	**Padlock,** *with chain*	1
43	19639	**IEC Wiring Diagram,** *5 H.P. motor*	1
44	11593	**Breather/Drain,** *1/4"*	1
45	63737	****Amplifier,** *(includes items 46–49)*	1
46	13673	**Adapter**	2
47	13671	**Fuse,** *.630 amp.*	1
48	13672	**Fuse,** *.125 amp.*	1
49	63755	**Resistor,** *22K ohms*	1
50	63747	**Adapter Plate**	1
51	12633	**Rubber Washer**	6
52	13561	**Amplifier Bracket**	2
53	*	**Fuse**	3
54	*	**Fuse Adapter**	3
55	13599	**Window Replacement Kit,** *(includes items 56 & 57)*	1
56	13713	**Window Gasket**	1
57	—	**Window,** *(not sold separately)*	1

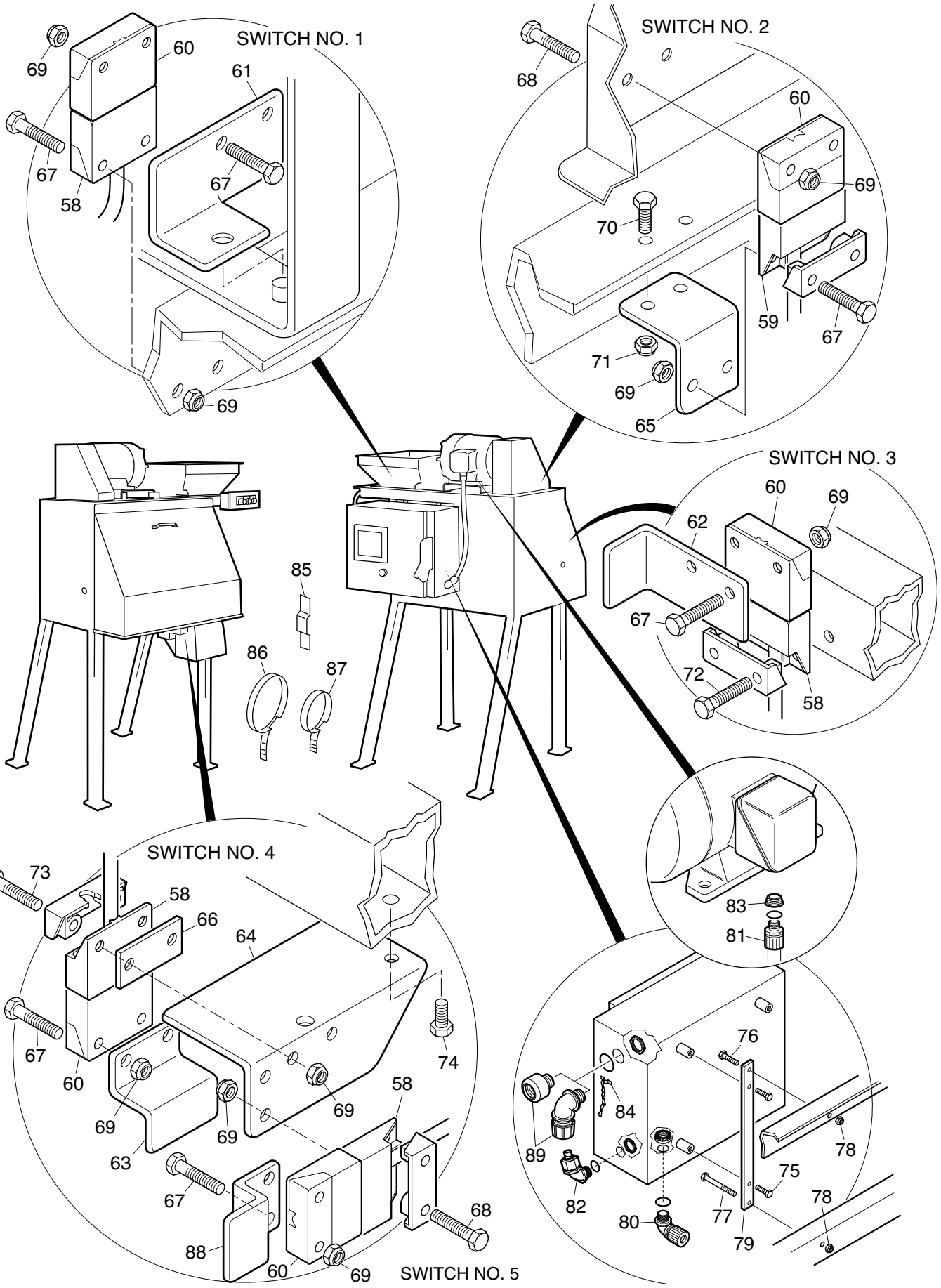
* Consult factory

** A retrofit assembly (part no. 63756) is required to adapt 63737 amplifier to machines currently using 63068 amplifier. Consult factory for further information.

(continued on page 87)

PARTS

Electrical Assembly (IEC)

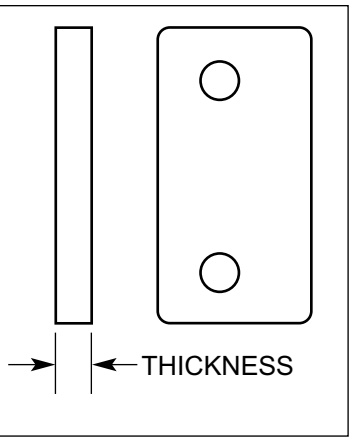


(continued from page 85)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
58	63738	**Sensor,** *6' lead*	4
59	63739	**Sensor,** *12' lead*	1
60	63741	**Actuator**	5
61	19361	**Actuator Bracket**	1
62	19362	**Actuator Bracket**	1
63	24247	**Actuator Bracket**	1
64	19363	**Sensor Bracket**	1
65	19364	**Sensor Bracket**	1
66	*	**Spacer**	1
67	10233	**Hex Head Cap Screw,** *10-24 x 1", s.s.*	12
68	10351	**Hex Head Cap Screw,** *10-24 x 7/8", s.s.*	4
69	10231	**Hex Nut,** *locking, 10-24, s.s.*	18
70	10038	**Hex Head Cap Screw,** *1/4-20 x 3/4", s.s.*	2
71	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	2
72	10232	**Hex Head Cap Screw,** *10-24 x 5/8", s.s.*	2
73	10348	**Hex Head Cap Screw,** *10-24 x 1-1/4", s.s.*	2
74	10037	**Hex Head Cap Screw,** *1/4-20 x 1/2", s.s.*	2
75	10045	**Hex Head Cap Screw,** *5/16-18 x 3/4", s.s.*	4
76	10047	**Hex Head Cap Screw,** *5/16-18 x 1", s.s.*	2
77	10054	**Hex Head Cap Screw,** *5/16-18 x 2-3/4", s.s.*	2
78	10306	**Hex Nut,** *locking, 5/16-18, s.s.*	4
79	19403	**Bracket**	2
80	11548	**Cord Connector,** *7/32", 90°*	5
81	11613	**Conduit Connector,** *1/2", straight*	1
82	11614	**Conduit Connector,** *1/2", 90°*	1
83	11502	**Conduit Bushing,** *1/2 x 3/4"*	1
84	13424	**Clip**	1
85	13465	**Clip**	21
86	11513	**Cable Tie**	21
87	11534	**Cable Tie,** *small*	20
88	24247	**Actuator Bracket,** *(included with discharge chute)*	1
89	11582	**Conduit Hub**	1
	11626	**Cord Connector,** *90°*	1

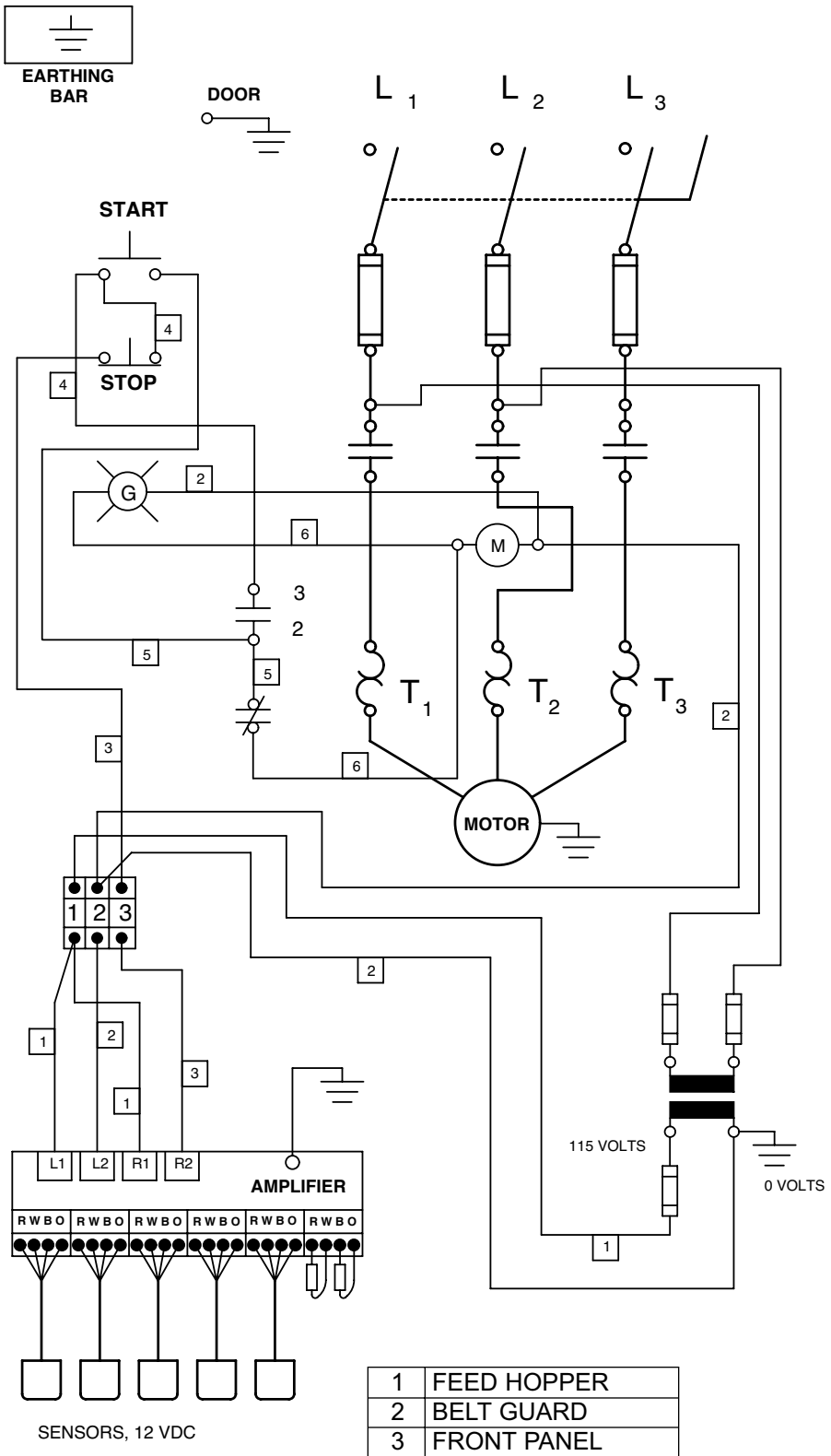
* See chart below to select spacer so that sensor and actuator are aligned.
NOTE: *s.s. denotes stainless steel*

SWITCH SPACER CHART		
Item 66 Part No.	Thickness inches	Thickness mm
63084	.037	.094
12799	.062	1.57
12800	.093	2.36
12801	.125	3.18
12802	.187	4.75
12803	.250	6.35
12804	.312	7.92
12805	.375	9.53
12806	.437	11.10
12807	.500	12.70



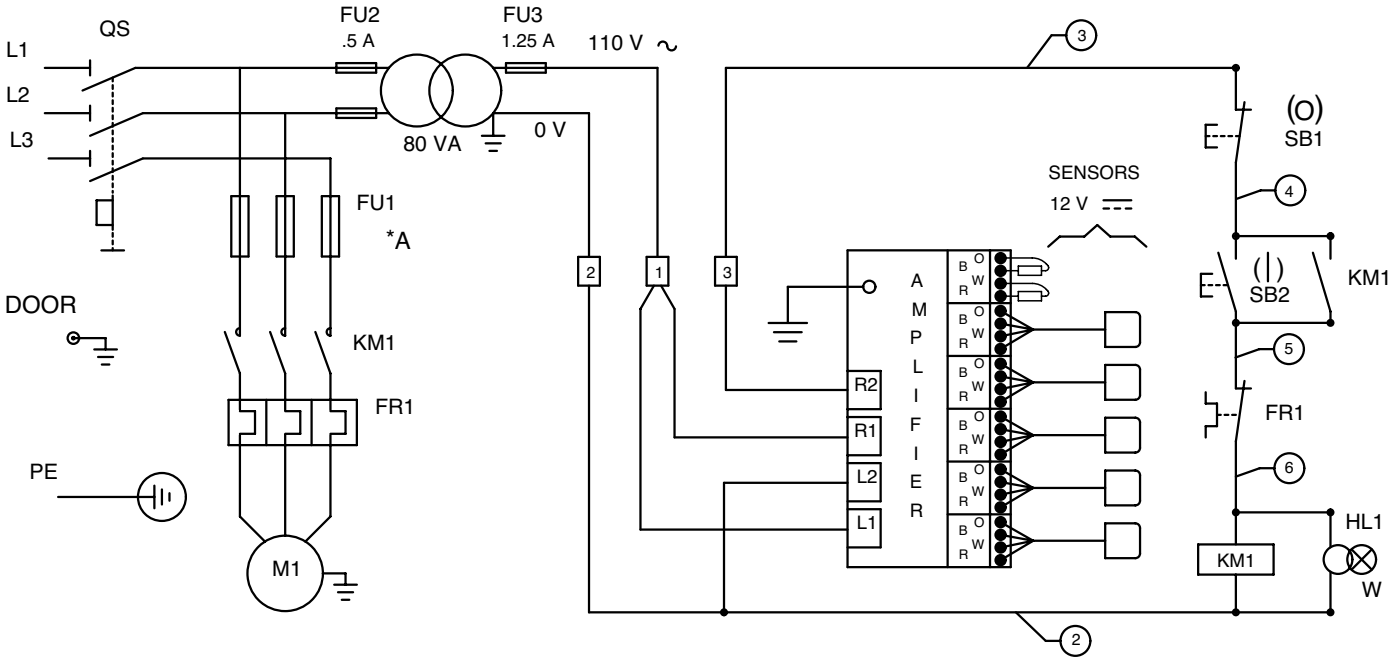
See the addendum for updated information

NEMA
National Electrical Manufacturers Association



1	FEED HOPPER
2	BELT GUARD
3	FRONT PANEL
4	JUICE CHUTE
5	DISCHARGE CHUTE

IEC
International Electrotechnical Commission

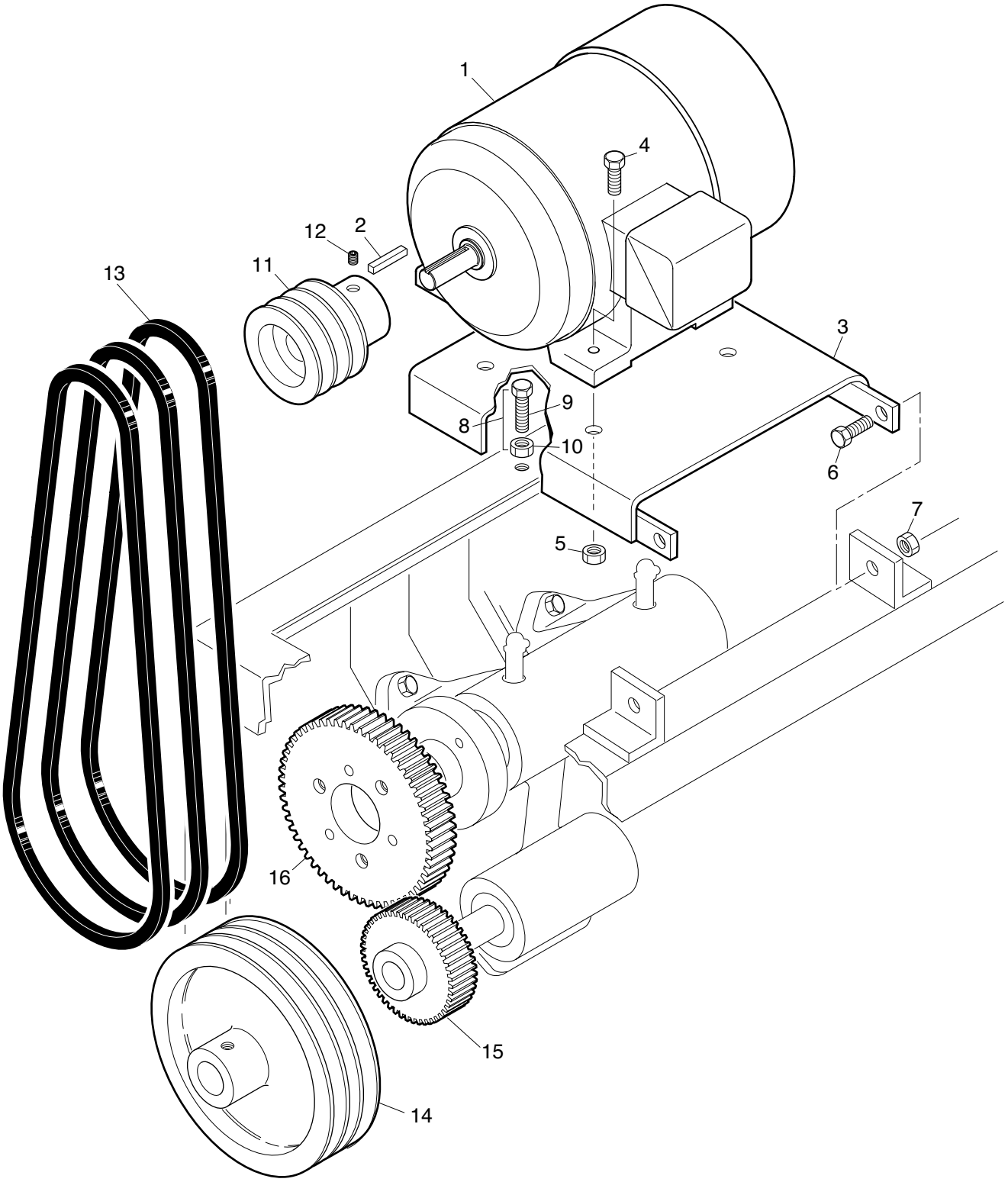


1	FEED HOPPER
2	BELT GUARD
3	FRONT PANEL
4	JUICE CHUTE
5	DISCHARGE CHUTE

* See schematic inside starter enclosure for fuse amperage.

PARTS

Motor With Drive Parts



See the addendum for updated information

PARTS
Motor With Drive Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	†	**Motor,** *5 H.P., 184 frame*	1
2	16243	**Key,** *1/4 x 2-3/8"*	1
3	19228	**Motor Base**	1
4	10060	**Hex Head Cap Screw,** *3/8-16 x 1-1/2", s.s.*	4
5	10249	**Hex Nut,** *locking, 3/8-16, s.s.*	4
6	10046	**Hex Head Cap Screw,** *5/16-18 x 7/8", s.s.*	2
7	10306	**Hex Nut,** *locking, 5/16-18, s.s.*	2
8	27086	**Take Up Screw,** *(includes items 9 & 10)*	1
9	27277	**Hex Head Cap Screw,** *5/16-18 x 2-1/2", s.s.*	1
10	10021	**Hex Nut,** *5/16-18, s.s.*	1
11	*	**Motor Pulley,** *3 groove, (includes item 12)*	1
12	10140	**Socket Set Screw,** *locking, 5/16-18 x 3/8", Nylok*	2
13	*	**"V" Belts,** *set of 3*	1
14	*	**Drive Pulley,** *3 groove*	1
15	*	**Gear**	1
16	*	**Gear**	1

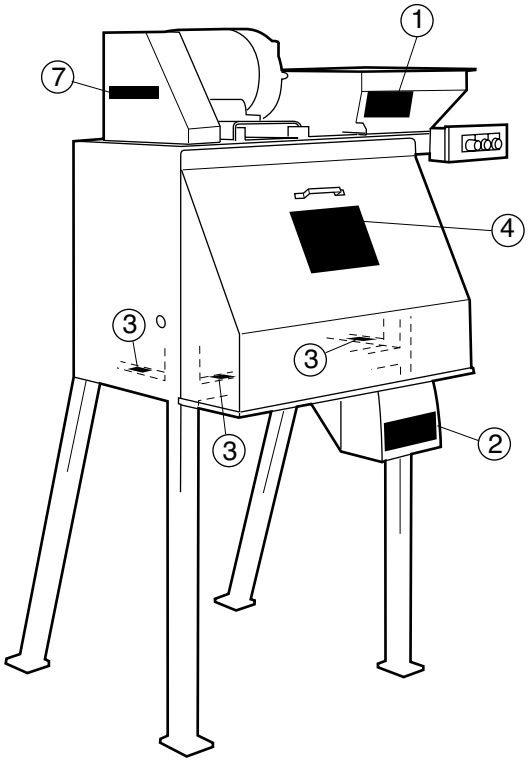
† Consult factory.
* See chart below.
NOTE: *s.s. denotes stainless steel*

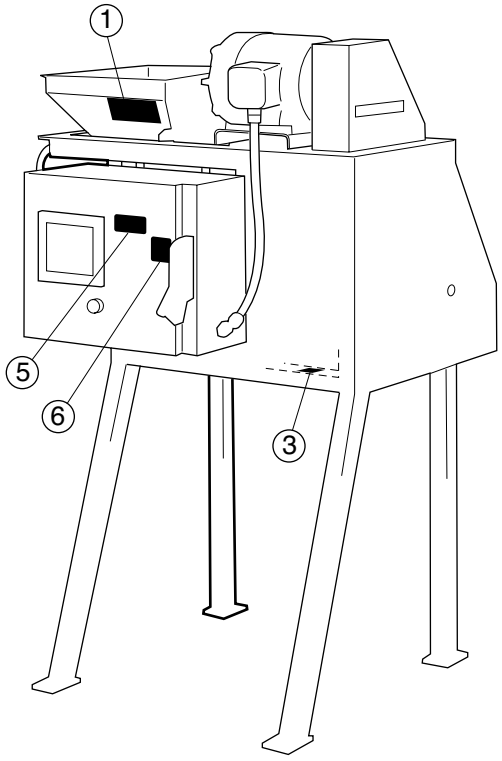
Speed	Hertz	Ass'y. No.	Item 11 Motor Pulley	Item 13 "V" Belts	Item 14 Drive Pulley	Item 15 Gear	Item 16 Gear	Impeller RPM	Circular Knife Spindle RPM	Crosscut Knife Spindle RPM
High	60 50	19588 19591	19010 19012	19215 19240	19009 19009	19015 (34 teeth)	19016 (68 teeth)	450 450	900 900	2463 2463
High Intermediate 900	60 50	19637 19638	19010 19012	19215 19240	19009 19009	19635 (25 teeth)	19636 (77 teeth)	292 292	900 900	2463 2463
High Intermediate	60 50	19622 19623	19010 19012	19216 19239	19008 19008	19015 (34 teeth)	19016 (68 teeth)	287 287	575 575	1589 1589
Medium	60 50	19589 19592	19010 19012	19215 19240	19009 19009	19013 (18 teeth)	19014 (84 teeth)	193 193	900 900	2463 2463
Slow	60 50	19590 19593	19010 19012	19216 19239	19008 19008	19013 (18 teeth)	19014 (84 teeth)	123 123	575 575	1589 1589

⚠ **CAUTION:** *Do not operate Models RA and RA-A at higher than recommended speeds. To do so could create a safety hazard and cause excessive wear on machine parts.*

PARTS

Machine Labels





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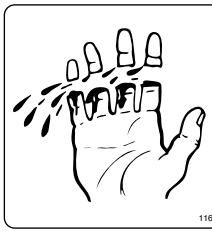


DANGER

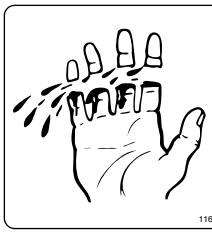
DO NOT PUT HANDS INTO FEED OPENING.

PELIGRO

NO PONER LA MANO DENTRO DE LA□ ABERTURA DE ALIMENTACION.

11662

2



DANGER

DO NOT PUT HANDS INTO OR UNDER□ DISCHARGE CHUTE.

PELIGRO

NO PONER LA MANO DENTRO O BAJO□ EL CONDUCTO DE DESCARGA.

11663

3

DANGER

MACHINE IS UNGUARDED. REPLACE GUARD OR COVER.

PELIGRO

LA MAQUINA ESTA SIN PROTECCION. VOLVER A COLOCAR EL PROTECTOR O CUBIERTA.

11665

4

CAUTION

MACHINE CONTAINS ROTATING PARTS SUCH AS SHARP KNIVES, PULLEYS, BELTS OR GEARS.□
NEVER RUN MACHINE WITH ANY GUARD OR COVER REMOVED, EVEN FOR CLEANING.□
TURN THE MACHINE OFF, DISCONNECT AND LOCK OUT POWER SOURCE BEFORE ATTEMPTING TO SERVICE OR REMOVE OBSTRUCTION.□
RUNNING MACHINE WITH ANY GUARD OR COVER REMOVED MAY RESULT IN SERIOUS INJURY OR AMPUTATION.□
READ AND UNDERSTAND INSTRUCTION MANUAL.

PRECAUCION

LA MAQUINA CONTIENE PIEZAS GIRATORIAS TALES COMO CUCHILLAS AFILADAS, POLEAS, CORREAS O ENGRANAJES.□
NUNCA HACER FUNCIONAR LA MAQUINA CON CUALQUIERA DE LOS PROTECTORES O CUBIERTAS RETIRADOS, INCLUSO PARA LIMPIARLA.□
APAGAR LA MAQUINA, DESCONECTAR Y BLOQUEAR EL SUMINISTRO ELECTRICO ANTES DE INTENTAR HACER UNA REPARACION O QUITAR UNA OBSTRUCCION.□
SE CORRE EL RIESGO DE SUFRIR GRAVES LESIONES O AMPUTACION SI SE HACE FUNCIONAR LA MAQUINA CON CUALQUIERA DE LOS PROTECTORES O CUBIERTAS FUERA DE SU LUGAR.□
LEER Y ENTENDER EL MANUAL DE INSTRUCCIONES.

11666

5

DANGER

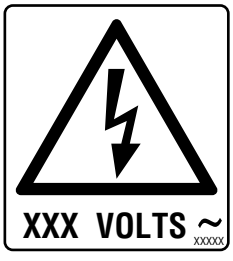
MUST BE OPENED AND SERVICED BY QUALIFIED ELECTRICIAN ONLY. INSTALL TO MEET APPLICABLE CODES.

PELIGRO

DEBE SER ABIERTO Y REPARADO POR UN ELECTRICISTA CALIFICADO SOLAMENTE. INSTALAR DE ACUERDO A LOS CODIGOS CORRESPONDIENTES.

11667

6



7

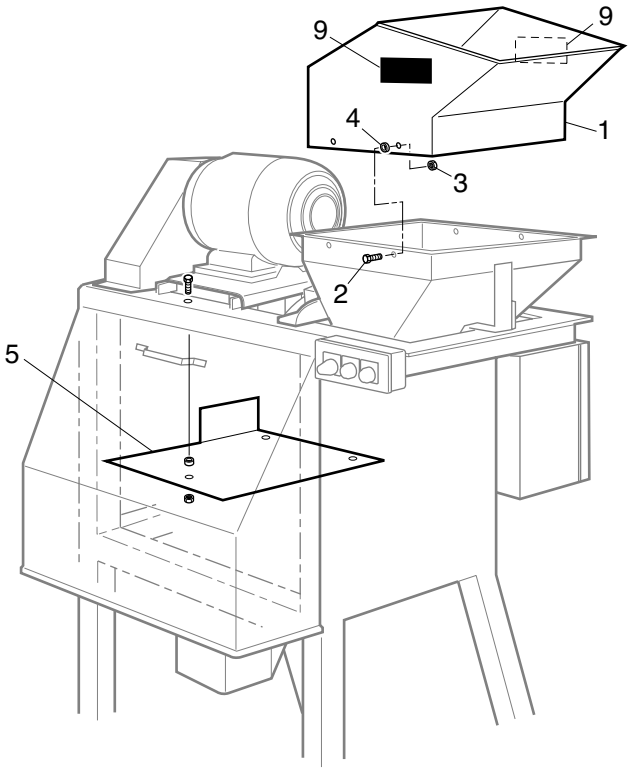
URSCHEL

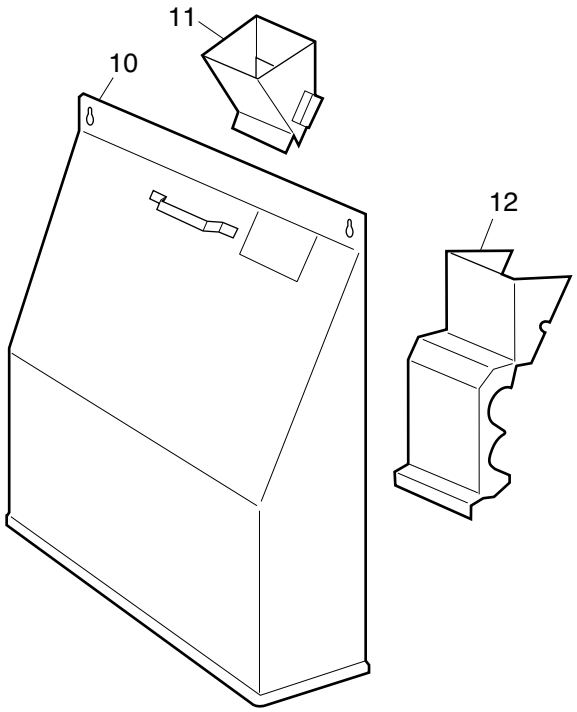
	ASS'Y. NO.	1	2	3	4	5	6	7
ENGLISH	19458	11662	11663	11665	11666	11667	*	11326
SPANISH	19458	11662	11663	11665	11666	11667	*	11326
FRENCH (F)	19540	11674	11675	11677	11678	11679	*	11326
GERMAN (Ge)	19553	11681	11682	11684	11685	11686	*	11326
JAPANESE (J)	19554	11688	11689	11691	11692	11693	*	11326
PORTUGUESE (Po)	19555	11695	11696	11698	11699	11700	*	11326
ITALIAN (It)	19556	11702	11703	11705	11706	11707	*	11326
SWEDISH (Sw)	19557	11709	11710	11712	11713	11714	*	11326
DUTCH (Du)	19558	11716	11717	11719	11720	11721	*	11326
CHINESE (Ch)	19559	11724	11725	11727	11723	11728	*	11326
POLISH (Pol)	19560	11730	11731	11733	11734	11735	*	11326
GREEK (Gr)	19561	11737	11738	11740	11741	11742	*	11326
SERBO-CROATION (Sb)	19562	11109	11110	11112	11108	11667	*	11326
RUSSIAN (Ru)	19563	11744	11745	11747	11748	11749	*	11326
INDONESIAN (In)	19564	11751	11752	11754	11755	11756	*	11326
FINNISH (Fi)	19565	11758	11759	11761	11762	11763	*	11326
TURKISH (Tu)	19566	11765	11766	11768	11769	11770	*	11326
HUNGARIAN (Hu)	19567	11772	11773	11775	11776	11777	*	11326
DANISH (Da)	—	11793	11794	11796	11797	11798	*	11326
QUANTITY	1	2	1	4	1	1	1	1

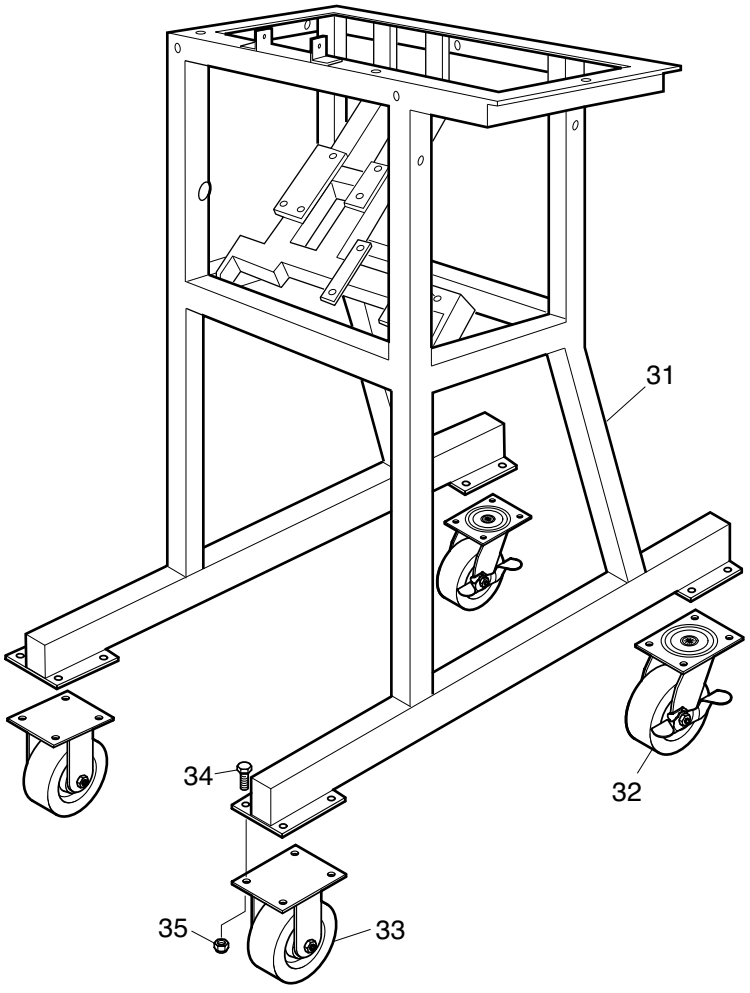
***** 200 VOLTS 12714
208 VOLTS 12715
220 VOLTS 12716
230 VOLTS 12717
240 VOLTS 12718
380 VOLTS 12719
400 VOLTS 12720
415 VOLTS 12721
440 VOLTS 12722
460 VOLTS 12723
575 VOLTS 12724

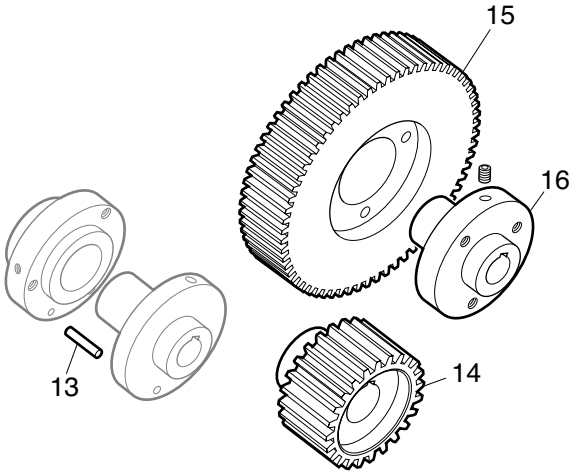
PARTS

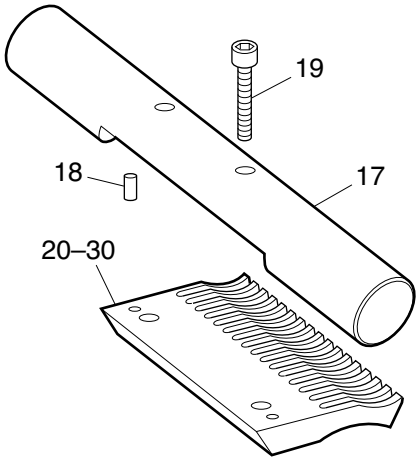
Optional Parts











ITEM NO.	PART NO.	DESCRIPTION	QTY.
HOPPER EXTENSION AND DRIP SHIELD			
—	19392	**Hopper Extension & Drip Shield Assembly,** *(includes items 1–9)*	1
1	19386	**Hopper Extension**	1
2	10041	**Hex Head Cap Screw,** *1/4-20 x 1-3/4", s.s.*	4
3	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	4
4	19390	**Spacer**	4
5	19391	**Drip Shield,** *(under motor)*	1
6	10229	**Hex Head Cap Screw,** *1/4-20 x 1-1/2", s.s.*	3
7	10230	**Hex Nut,** *locking, 1/4-20, s.s.*	3
8	19390	**Spacer**	3
9	*	**Danger Label,** *feed opening*	2
FRONT PANEL FOR BYPASSING OR ADDING PRODUCT AFTER THE SLICING UNIT			
10	19093	**Front Panel with Hopper,** *includes item 11, (replaces item 2, page 63)*	1
11	19090	**Feed Hopper**	1
12	19094	**Slice Guide Cover,** *(replaces item 6, page 63)*	1
HEAVY DUTY DRIVE PARTS			
13	19213	**Shear Pin,** *heavy duty, (replaces item 18, page 67)*	1
14	19619	**Gear,** *34 teeth, 1" I.D., s.s., wide, (replaces item 15, page 91)*	1
15	19618	**Gear,** *68 teeth, 2" I.D., nylon, wide, (replaces item 16, page 91, must be used with 19262 heavy duty hub)*	1
16	19262	**Hub,** *heavy duty, with set screw*	1
ALTERNATE STRIPPER PLATES AND SUPPORT			
17	19617	**Support,** *stripper plate, (includes item 18; use with optional stripper plates)*	1
18	10311	**Dowel Pin,** *1/4 x 3/8", s.s.*	2
19	10113	**Socket Head Cap Screw,** *3/8-16 x 1-1/4, s.s.*	2
20	19471	**Stripper Plate,** *1/8" cut*	1
21	19610	**Stripper Plate,** *5/32" cut*	1
22	19596	**Stripper Plate,** *3/16" cut*	1
23	19642	**Stripper Plate,** *1/4" cut*	1
24	19605	**Stripper Plate,** *5/16" cut*	1
25	19646	**Stripper Plate,** *3/8" cut*	1
26	19624	**Stripper Plate,** *1/8" cut, wide slot, (for low-fat or sticky products), (use with 18134 knives only)*	1
27	19643	**Stripper Plate,** *5/32" cut, wide slot, (for low-fat or sticky products)*	1
28	19621	**Stripper Plate,** *3/16" cut, wide slot, (for low-fat or sticky products)*	1
29	19649	**Stripper Plate,** *1/4" cut, wide slot, (for low-fat or sticky products)*	1
30	19665	**Stripper Plate,** *3/8" cut, wide slot, (for low-fat or sticky products)*	1
MACHINE FRAME WITH CASTERS			
31	19085	**Frame for Plate Casters,** *23-1/2" discharge height*	
–	12384	**Plate Casters,** *set of four, (includes items 32–35)*	1
32	12477	**Swivel Caster,** *plate type*	2
33	12528	**Rigid Caster,** *plate type*	2
34	10058	**Hex Head Cap Screw,** *3/8-16 x 1", s.s.*	16
35	10249	**Hex Nut,** *locking, 3/8-16, s.s.*	16

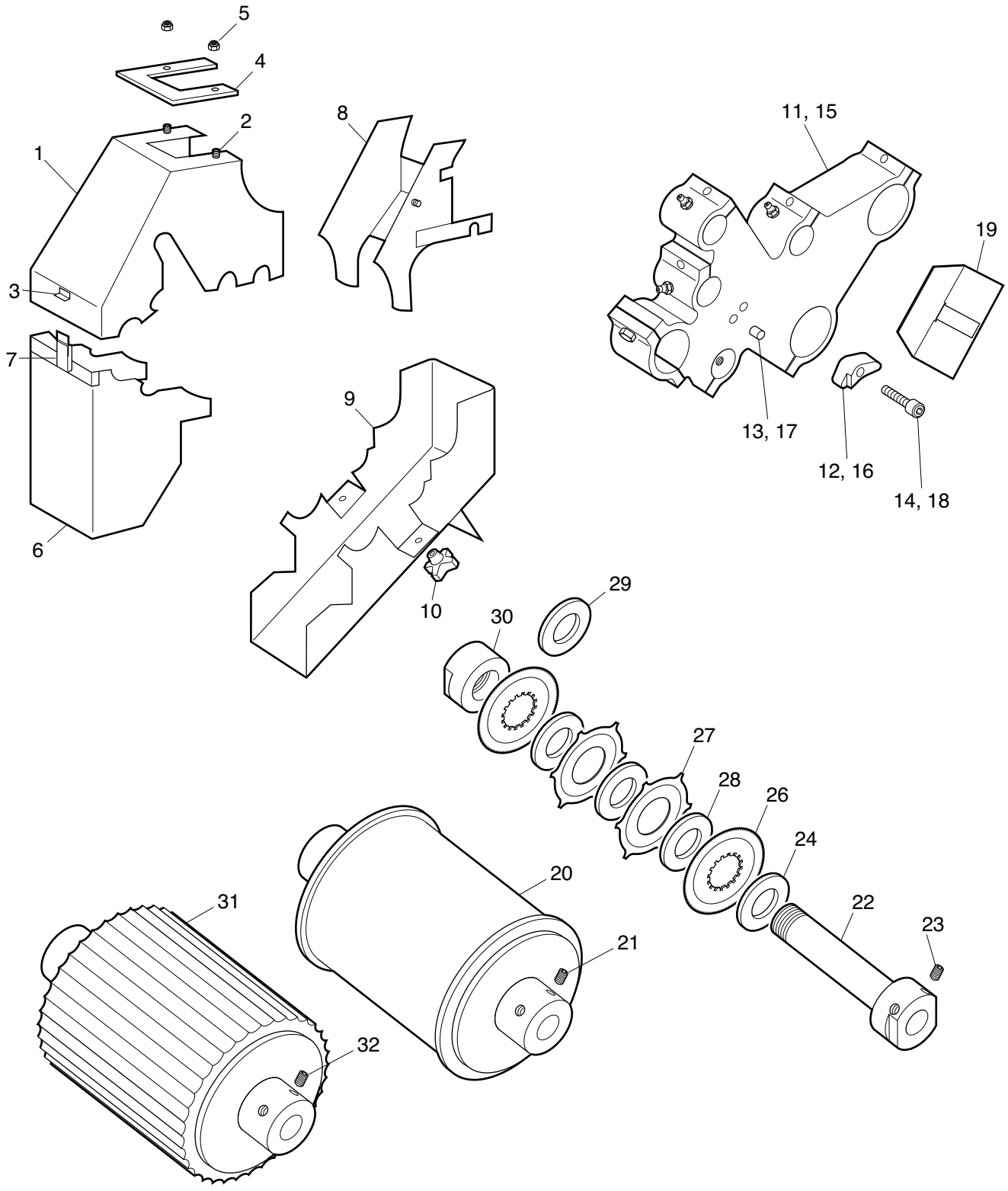
* See item (1) in chart on page 93.

NOTE: *s.s. denotes stainless steel*

("Optional Parts", continued on page 97)

PARTS

Optional Parts



("Optional Parts", continued from page 95)

ITEM NO.	PART NO.	DESCRIPTION	QTY.
PARTS FOR DICING NUTS (MODEL RA ONLY)			
1	19060	**Upper Discharge Chute,** *must be used w/items 6, 7 & 9, (includes items 2 & 3)*	1
2	48176	**Stud,** *1/4-20 x 5/8"*	2
3	19235	**Strike**	1
4	19062	**Cover,** *discharge chute*	1
5	10230	**Hex Nut,** *1/4-20, s.s., locking*	2
6	19059	**Lower Discharge Chute,** *replaces item 7, page 63, must be used w/item 1, (includes item 7)*	1
7	19234	**Catch,** *lower discharge chute*	1
8	19195	**Slice Guide,** *replaces item 4, page 63*	1
9	19341	**Juice Chute,** *wide, replaces item 8, page 63*	1
10	16538	**Hand Knob,** *3/8-16*	2
11	19247	**Side Frame,** *internal nut guard, left, replaces 1 assembly 18001, page 69, (includes items 2–8, page 69, plus following items 12–14)*	1
12	19246	**Internal Nut Guard,** *left*	1
13	10221	**Dowel,** *1/4 x 1/2"*	1
14	10297	**Socket Head Cap Screw,** *1/4-20 x 1-1/2", s.s.*	1
15	19248	**Side Frame,** *internal nut guard, right, replaces 1 assembly 18001, page 69, (includes items 2–8, page 69, plus following items 16–18)*	1
16	19245	**Internal Nut Guard,** *right*	1
17	10221	**Dowel,** *1/4 x 1/2"*	1
18	10297	**Socket Head Cap Screw,** *1/4-20 x 1-1/2", s.s.*	1
19	19047	**Nut Shield,** *bottom*	2
20	18214	**Feed Drum,** *smooth, replaces item 40, page 69, (includes item 21)*	1
21	19233	**Special Set Screw,** *locking*	2
—	*	**Feed Spindle Assembly,** *for nuts, replaces item 38, page 69, (includes items 22–30)*	1
22	48075	**Spindle,** *bronze, (includes item 23)*	1
—	48280	**Spindle,** *s.s., (includes item 23)*	1
23	19233	**Special Set Screw,** *locking*	2
24	*	**Fill In Spacer**	1
25	*	**Spacer,** *3/8"*	2
26	18134	**Knife,** *circular, serrated, 3"*	4
27	18003	**Feed Roll Disc,** *.026" thick*	*
28	*	**Spacer**	*
29	*	**Spacer**	1
30	48281	**Spindle Nut,** *s.s.*	1
31	18258	**Feed Drum,** *with large grooves, (alternate part to replace item 20, includes item 32)*	1
32	19233	**Special Set Screw,** *locking*	2

* See chart.

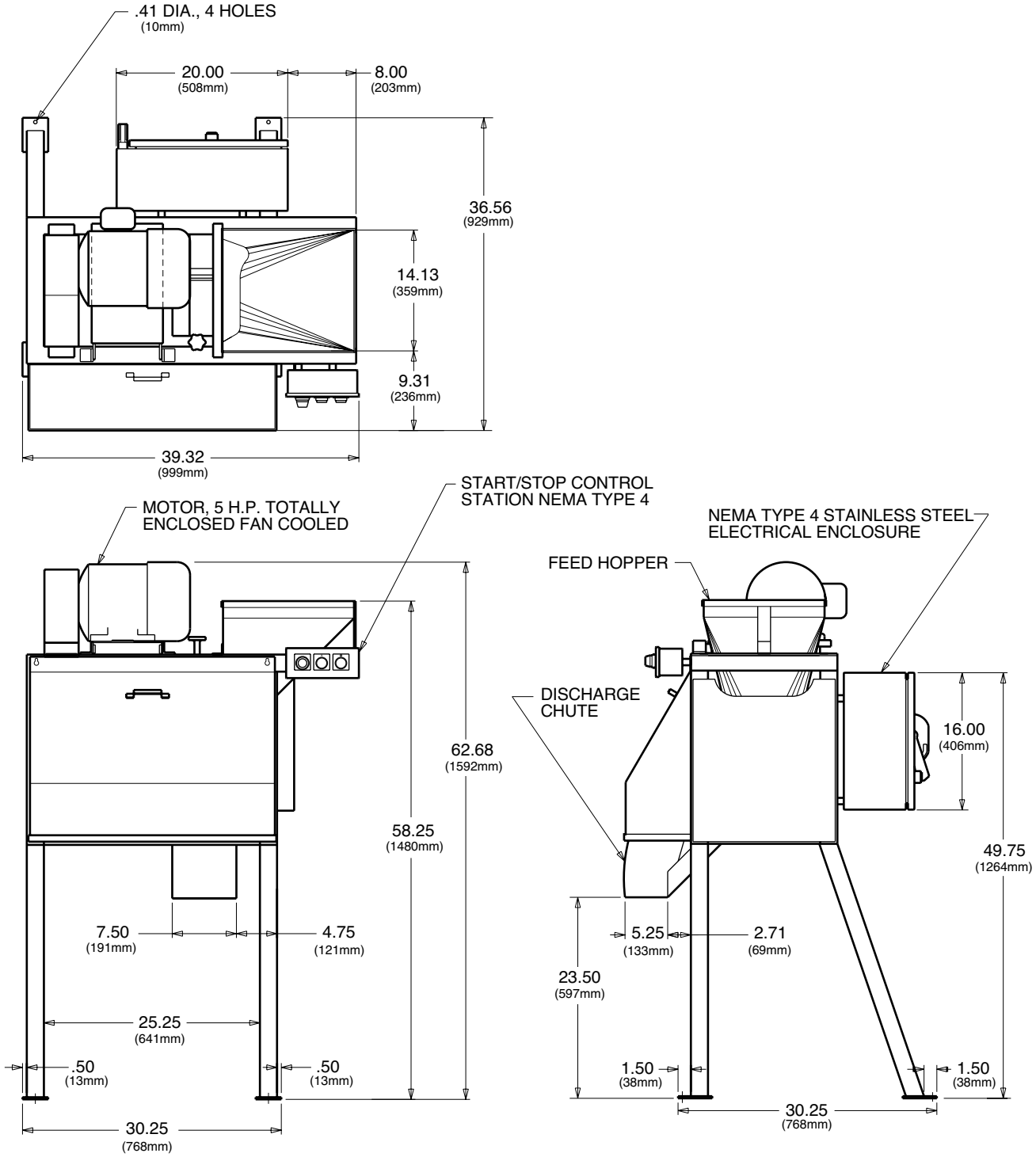
NOTE: *s.s. denotes stainless steel*

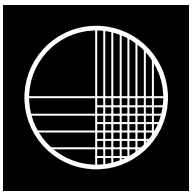
Size of Cut	Feed Spindle Assembly No. Bronze	Feed Spindle Assembly No. Stainless	Item 24 Fill In Spacer	Item 25 Spacer	Feed Disc Qty.	Item 28 Spacer No. and Qty.		† Item 29 Spacer
1/8" (3.2 mm)	18217	18253	18043	18039	38	18035	39	—
3/16" (4.8 mm)	18233	18254	18045	18039	24	18037	25	18038
5/32" (4.0 mm)	18267	18278	18043	18814	30	18036	32	—

† Final spacer to be placed on spindle between last knife and spindle nut when indicated.

PARTS

Dimensional Drawing





URSCHEL

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