

This manual contains additional publications. These publications are located at the front of the manual.

Addendum **L3298**: June 2019

Instruction Manual

MODEL RA MODEL RA-A



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 to the manual's contents. Addendum page numbers have an "A" prefix.

Models RA, RA-A Dicers

Addendum to manual L1635

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9

Safety, Rules for Safe Operation: Add the following.

Lockout Procedure

WARNING

Always follow the lockout procedure before opening any guard! Failure to lock out the power disconnect switch could result in accidental start-up and serious injury.

1. If the machine is running, push the **stop button (1)**.
2. Turn the **disconnect switch handle (2)** on the electrical enclosure off and **lock out**. Use the **padlock (3)** attached to the enclosure to lock the switch, or lock the switch according to your plant policy on energy lockout procedures.
3. **Verify that the machine will not start.** If the **emergency stop button(s) (4)** was pushed, rotate and pull out to reset. After rotating parts have stopped, press the **start button (5)** and hold for 2 seconds. The machine should not start.





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12 Safety, Protective Devices: Add the following.

The **emergency stop buttons (1)**, located on the electrical enclosure and on the control station, provides rapid access to stop the machine in an emergency. The starting circuit will remain interrupted (open) until the button is reset; rotate and pull out to reset. The button is monitored by a safety relay which shuts down the machine if the button fails.



14 General Information, Specifications: The second sentence of the second paragraph no longer applies.

Add the following:

Electrical Enclosure: constructed of stainless steel, NEMA 4X and IP 66 rated.

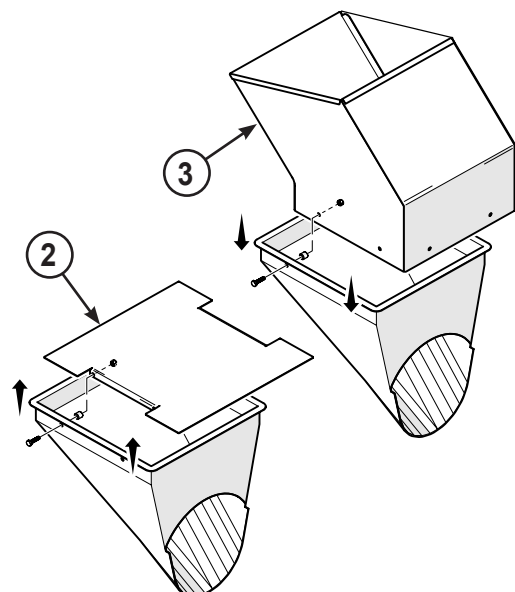
16 General Information, Sizes of Cuts: Under "Crosscut knives", the first line should read .05"-3" (1.3-76.2 mm).

18 Installation, Machine Shipment: Add the following.

The machine may be shipped with a **feed cover plate (2)** fastened over the feed opening. Remove the plate and install the **hopper extension (3)**.

WARNING

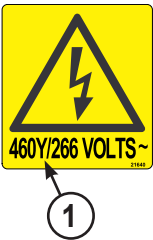
Do not operate the machine without the hopper extension! Failure to install the hopper extension decreases the distance to the cutting parts and could result in serious injury such as amputation.



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19
Installation, Electrical Power: Add the following to step 1.

A “Y” (1) in the voltage designation indicates that the machine requires a Wye power supply and is equipped with mini circuit breakers (MCBs).



To check for a Wye power supply:

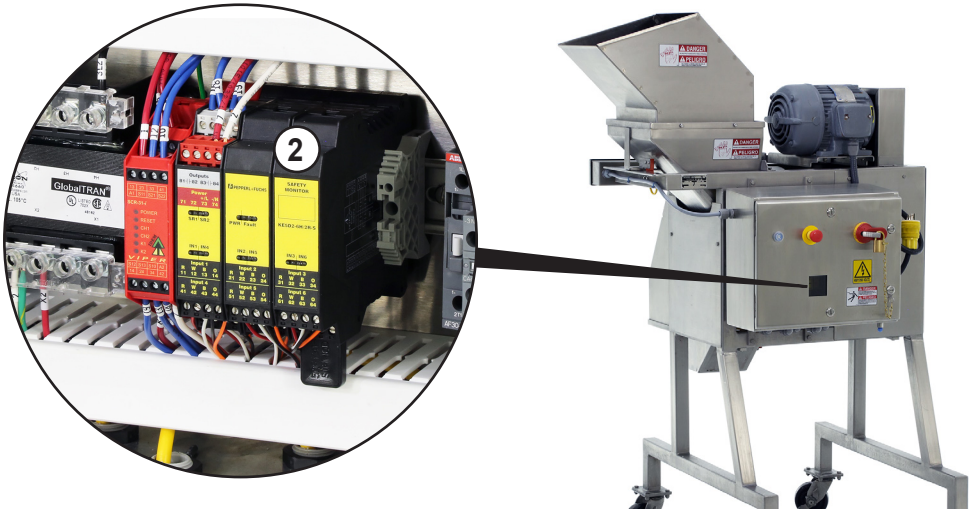
Calculate the voltage to ground. Multiply the power supply voltage by .577 (supply voltage x .577 = voltage to ground). Measure the voltage to ground at each phase and compare to the calculated value.

For example, at 400 volts, a Wye power supply will measure approximately 231 volts from one phase to ground (400 x .577 = 231). One phase may measure 0 volts, which is acceptable. A delta supply at 400 volts will measure 400 volts from one phase to ground, and should not be used if a Wye power supply is designated.

NOTICE

If the machine requires a Wye power supply (“Y” in the label, see above) and the voltage from one phase to ground exceeds 277 volts, contact your Urschel service representative.

22-25
Safety, Safety Switch System, Safety Switch, Amplifier, Safety Switch Test: A **safety monitor (2)** is supplied with the current electrical system. See the entries for pages 48-50 for more information on changes to the electrical system. The safety switch testing procedure has not changed.



Safety Monitor Inputs					
Switch Number	1	2	3	4	5
Guard	Feed Hopper	Belt Guard	Front Panel	Juice Chute	Discharge Chute
Switch Input	IN1	IN2	IN3	IN4	IN5



Operation, Start-up Procedure, Stopping Procedure: The following replaces the information in the machine manual.

Start-up Procedure

1. **All foreign objects and product must be removed from the *feed area* (1).** All guards must be securely in place.
2. **Unlock and remove the *padlock* (2) from the *disconnect switch handle* (3) located on the electrical enclosure.** If the ***emergency stop button* (4)** was previously pushed, it must be reset; rotate and pull out to reset.
3. **Turn the disconnect switch handle on (I).**
4. **Press the *start button* (5).** The start button will illuminate when the machine starts.
5. **Let the machine reach full operating speed** before feeding product (about five seconds).
6. **If the machine does not start, see [Maintenance: Troubleshooting](#) in the machine manual.**



Stopping Procedure

WARNING

Never attempt to open or remove the guards while the machine is running! Contact with exposed rotating parts may cause severe injury such as amputation.

1. **Stop feeding product.** This allows remaining product to be cut and discharged.
2. **When appropriate for the product, flush the feed area thoroughly** with a generous amount of water before stopping the machine.
3. **Push the *stop button* (6).**
4. **Turn the disconnect switch handle off (O).** Lock out the handle with the padlock or in accordance with your plant policy on energy lock out procedures.
5. **If guards are to be removed, verify that the machine will not start.** Press and hold the ***start button* (5)** for two seconds. The machine should not start.

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- 27 Operation, Machine Overload or Jam: The **reset button (1)** currently supplied with the machine is shown below. This button is located on the electrical enclosure.



- 32 Maintenance, Cleaning: Add the following.

Cleaning a New Machine and Parts Before Use

Parts and equipment supplied by Urschel have not been sanitized. Urschel recommends that the supplied parts and equipment be properly cleaned and sanitized prior to use and in accordance with the requirements of the application.



48-50

Maintenance, Electrical Assembly (*continued*): The following applies to pages 48-50 in their entirety. For information on the function of specific electrical components, see the following pages.

The electrical assembly was supplied with an **amplifier (1)** beginning in 1997 until 2013. The function of the amplifier is described in Maintenance: Electrical Assembly in the Model RA and RA-A manual L1635.

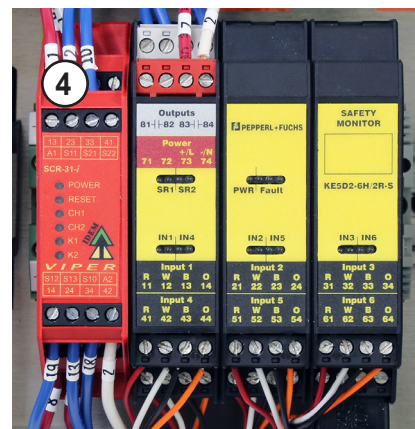
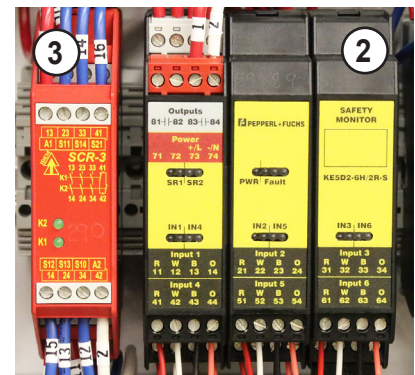
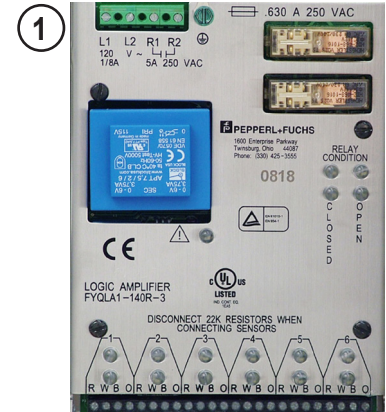
The electrical assembly was redesigned and new machines were supplied with a **safety monitor (2)** beginning in 2013. The monitor serves a function similar to that of the amplifier, but is not a direct replacement and is not interchangeable. See the following pages for more information on the safety monitor. The safety monitor is currently supplied with new machines.

The **SCR-3 safety relay (3)** was added to the electrical assembly in conjunction with the safety monitor. The safety relay monitors the motor contactor and the emergency stop button. The SCR-3 is no longer supplied with new machines. See the following pages for more information.

The **SCR-31-i Viper relay (4)** is currently supplied with new machines, beginning in 2018. The SCR-31-i Viper relay functions similarly to the SCR-3 relay, but is not a direct replacement and is not interchangeable. See the following pages for more information.

NOTICE

See the entries for pages 80-89 in this addendum and the parts section of the Model RA and RA-A manual L1635 for the part numbers and parts description of the electrical components shown on this page. Previously supplied electrical components are available as repair parts unless otherwise noted in this addendum.

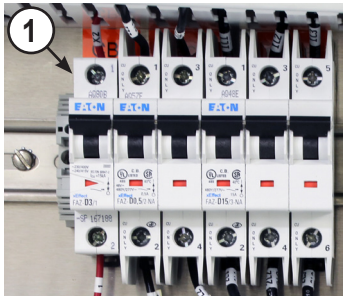


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48-50
Maintenance, Electrical Assembly (*continued*): Add the following.

Mini Circuit Breakers (MCBs) and Fuses

The electrical enclosure is supplied with either *mini circuit breakers (1)* or fuses. The chart to the right shows which devices are supplied for a given voltage and power supply type. If circuit breakers trip or fuses fail frequently, investigate the cause.



Reading the Safety Monitor

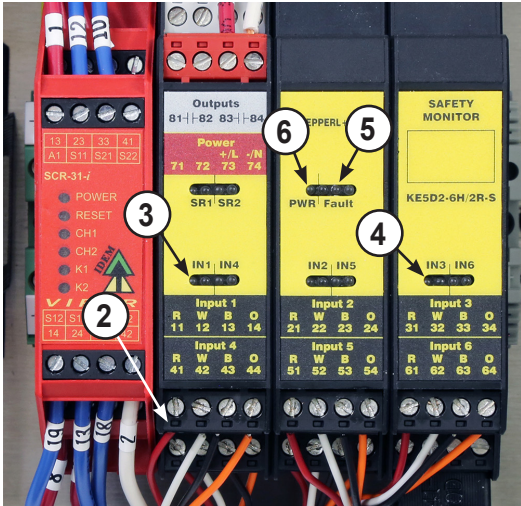
The safety switches are connected to the *inputs (2)* along the bottom of the safety monitor. Each input has two *input status lights (3)*. A green status light means the input circuit is closed. All status lights must be green (closed) for the machine to run.

When a guard is removed the corresponding status light turns red. For example, turn the disconnect switch handle on (I) and remove the front cover (see Maintenance, Covers and Guards in the machine manual). The *IN3 (4)* input light turns red. The light turns green when the cover or guard is replaced. See the chart to the right for the location of each switch or sensor.

The *fault lights (5)* flash red when the monitor detects an open safety circuit. If the fault lights are flashing and none of the input status lights are red, turn the disconnect switch handle back off. Wait 5 seconds and then turn the handle back on.

The *PWR (6)* light is green when the disconnect switch handle is on. Electrical power is supplied to the machine.

Voltage	Power Supply Type	Short Circuit Protective Device (SCPD)	
		Circuit Breaker	Fuse
240 and lower	Wye	✓	
	Delta	✓	✓
380 - 480	Wye	✓	✓
	Delta		✓
575	Wye		✓
	Delta		✓



Safety Monitor Inputs	
Input	Location
IN1	Feed Hopper
IN2	Belt Guard
IN3	Front Panel
IN4	Juice Chute
IN5	Discharge Chute

(continued on the next page)

48-50

Maintenance, Electrical Assembly (*continued*): The SCR-31-i Viper safety relay is supplied with current electrical assemblies. Add the following information.

Safety Relay LEDs (SCR-31-i Viper, currently used)

NOTICE

The SCR-31-i Viper safety relay is not interchangeable with the SCR-3 safety relay shown on the next page. See the previous pages for more information on changes to the electrical system.

The safety relay currently in use is the SCR-31-i Viper. See the following page for information on the previous safety relay.

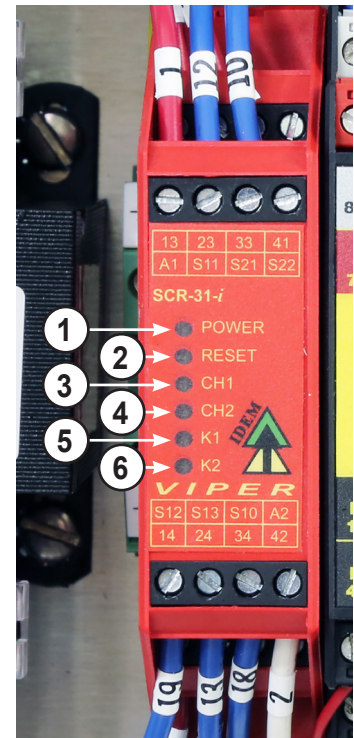
The safety relay includes the following LEDs. Various combinations of lit and unlit LEDs help to indicate the status of the safety system.

- (1) **Power**
- (2) **Reset**
- (3) **CH1**
- (4) **CH2**
- (5) **K1**
- (6) **K2**

The Power, CH1, CH2, K1, and K2 LEDs are lit: All guards are in place and the emergency stop button is reset. The machine is ready to start.

The Power and Reset LEDs are lit: A guard(s) has been removed or the emergency stop button has been pushed.

Only one of the K1 or K2 LEDs are lit: If both CH1 and CH2 are lit, but either the K1 or K2 LED is not lit, the safety relay has experienced a fault. Contact your Urschel service representative for further assistance.



48-50

Maintenance, Electrical Assembly (*continued*): The amplifier was replaced by a safety monitor and safety relay on previous electrical assemblies. Add the following information.

Safety Relay LEDs (SCR-3, previously used)

NOTICE

The SCR-3 safety relay is not interchangeable with the SCR-31-i Viper relay that is shown on the previous page. See the previous pages for more information on changes to the electrical system.

The safety relay previously used is the SCR-3. The safety relay includes the following LEDs. Various combinations of lit and unlit LEDs help indicate the status of the safety system.

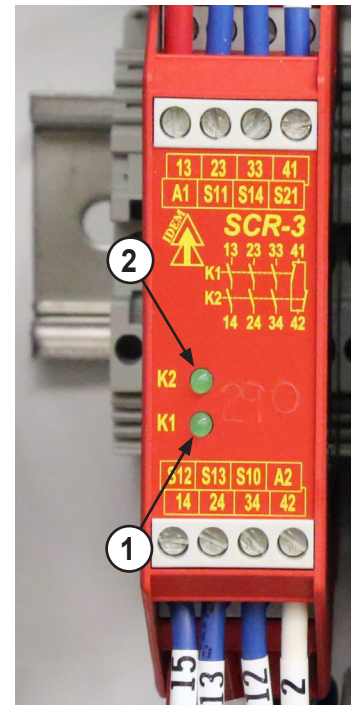
(1) K1

(2) K2

K1 and K2 LEDs are both lit: All input circuits for the safety relay are closed. The machine is ready to start.

Only K1 or K2 is lit: The circuit for that channel (K1 or K2) is interrupted. A fault exists and the machine will not start.

Both K1 and K2 are not lit: The circuit for both channels (K1 or K2) is interrupted. A fault exists and the machine will not start.





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Maintenance, Electrical Assembly: The information below applies to the previous version of the electrical system.

Amplifier: The last paragraph on the left that includes the phrase “check the connection for tightness (40 inch ounces or .28 newton meters)” should read 5.0 inch pounds (80 inch ounces) or .56 newton-meters. A replacement amplifier includes dielectric grease, an applicator brush and instruction sheet (part number for the kit is 12920). Apply the grease to the amplifier terminals and sensor leads after installation.

The note at the end of the page pertaining to the amplifier exchange program no longer applies. Urschel Laboratories no longer offers an exchange program for the 63737 amplifier. 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.

60-61

Parts, Tools: The following tools are supplied with the machine.

- 11011** - Socket, 9/16", 12 point, 3/8" drive
- 11021** - Socket, 1/2", 12 point, 3/8" drive
- 11010** - Wrench, combination, 9/16", chrome plate
- 11032** - Socket, 7/16", 6 point, 3/8" drive
- 11042** - Feeler Gauge
- 11045** - Grease, Haynes Lubri-Film, cartridge
- 11058** - Allen Wrench, 1/8"
- 11070** - Grease Gun
- 11670** - Feeler Gauge, .010 thick
- 11929** - Grease, Haynes Lubri-Film, spray, carton
- 17389** - Wrench, T-handle
- 17453** - Protective Glove, medium (2 gloves are supplied with the machine)
- 19350** - Clearance Gauge, .010 clearance
- 22149** - Block for Clamping Knives
- 48293** - Spindle Wrench, circle knife
- 98130** - Wrench, combination, 1/2", chrome plated
- 98136** - Wrench, 8 piece set, T-handle
- 98137** - Wrench, 13 piece set, chrome plated, ball end
- 98163** - Screwdriver, flat head, 1/4" flat x 6"

Optional Tools

- 17567** - Protective Glove, extra small, 1 glove only
- 17497** - Protective Glove, small, 1 glove only
- 17498** - Protective Glove, large, 1 glove only
- 17566** - Protective Glove, extra large, 1 glove only

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62-63 Parts, Frame, Covers and Guards:

The 62052 - Hand Knob, 5/16-18 is replaced by:
63825 - Hand Knob, 5/16-18 thread, s.s.

The 16538 - Hand Knob, 3/18-16 thread is replaced by:
51060 - Hand Knob, 3/18-16 thread.

Add the **19800** - Cover, back, lower. This cover prevents entry to the drive train and belts when the machine is running.

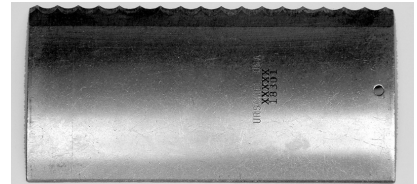
Add the **19386** - Hopper Extension. The hopper extension is currently supplied with new machines. The following changes apply when the hopper extension is installed.

The 10041 - Hex Head Cap Screw, 1/4-20 x 1-3/4", s.s. (item 2) is replaced by:
10039 - Hex Head Cap Screw, 1/4-20 x 1", s.s.

The 19390 - Spacer (item 4) is replaced by:
19603 - Spacer, 7/16".

64-65 Parts, Slicing Unit:

Add the **18301** - Knife, slicing, scalloped.
This knife is used with products that have a tough outer layer or skin such as bread.



68-69 Parts, Dicing Unit:

Add the **19817** - Bearing with Bronze Thrust Washer as a replacement part for item 12, 48041 - Bearing with Thrust Washer, 3/4 x 1-1/8 x 2-9/16". The 19817 bearing can be used in applications where the 48041 bearing causes excessive wear to the ends of the spindles.



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70-71

Parts, Circular Knife Spindle Assembly:

The bronze 48075 - Spindle, circular knife is replaced by:

48280 - Spindle, circular knife, stainless steel.

All of the bronze circular knife spindles listed in the chart on page 71 are replaced by the stainless steel assemblies also listed in the chart.

72-73

Parts, Feed Spindle Assembly:

The 48075 - Spindle, circular knife is replaced by:

48280 - Spindle, circular knife, stainless steel.

All of the bronze feed spindle assemblies listed in the chart on page 73 are replaced by the stainless steel assemblies also listed in the chart.

In the Standard Parts chart on page 73, item 6 (Spacer No. and Quantity) for the 3/4" (19.1 mm) cut size should be:

18035 - Spacer, 1/8", 2", O.D., .025 thick knife.

In the Heavy Duty Parts chart on page 73, the millimeter value for 3/8" size of cut should read 9.5 mm.

76-77

Parts, Crosscut Knife Spindle Assembly: assemblies with plated bronze parts have been replaced by stainless steel assemblies. Add to the chart:

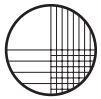
7/32" (5.6 mm), 19666 (assembly), 19667 (spindle, s.s.), 14 (knife quantity),

3/32" (2.4 mm), 19819 (assembly), 19820 (spindle, s.s.), 32 (knife quantity).

79

Parts, Crosscut Knife Spindle Assembly (Heavy Duty):

The 48157 - Spindle Assembly, crosscut, 3/8", 7 knife, heavy duty, s.s. and the 48160 - Spindle Assembly, crosscut, 1/2", 5 knife are no longer available.



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80-89

Parts, Electrical Assembly:

Pages A.14-A.25 in this addendum contain the current electrical assemblies, control station, wiring diagram, and switch assembly supplied on the machine.

Pages A.26-A.35 in this addendum contain repair parts for electrical systems supplied from June 2013 to July 2018*.

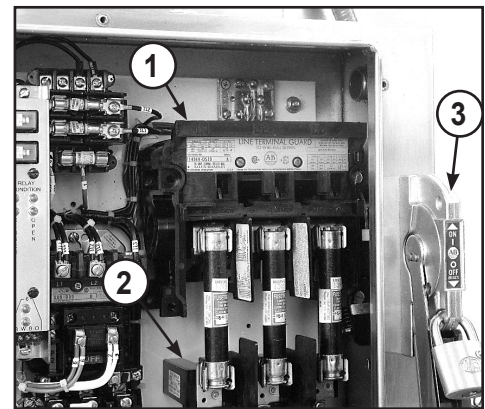
Pages A.36-A.39 in this addendum contain repair parts for electrical systems supplied from September 2009 to April 2013*.

Pages A.40-A.47 in this addendum contain repair parts for electrical systems manufactured from September 2006 to June 2009*.

Pages 80-89 in the machine manual contain repair parts for electrical systems manufactured from May 1997 until September 2006*. Repair parts are available unless noted below.

Pages 80-81 in the manual: The Allen-Bradley 1494 **Series A disconnect (1)** and **fuse block (2)** are no longer available. The **63383 Operating Mechanism (3)** can be purchased from Urschel as a repair part.

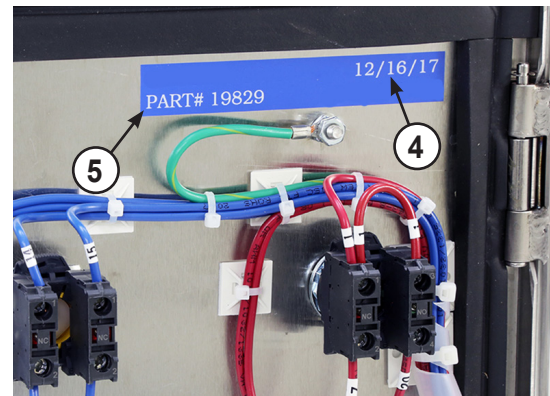
There is a retrofit procedure for replacing the Allen-Bradley disconnect, fuse blocks, and operating mechanism with an IEC style rotary handle, disconnect switch, fuse holder, or circuit breakers. Contact your Urschel representative or request the technical bulletin **L2424** for more information.



Pages 84-85 in the manual: The disconnect switch and disconnect switch handle have been replaced by:

21630 - Disconnect Switch Retrofit Assembly. Contact your Urschel representative for more information.

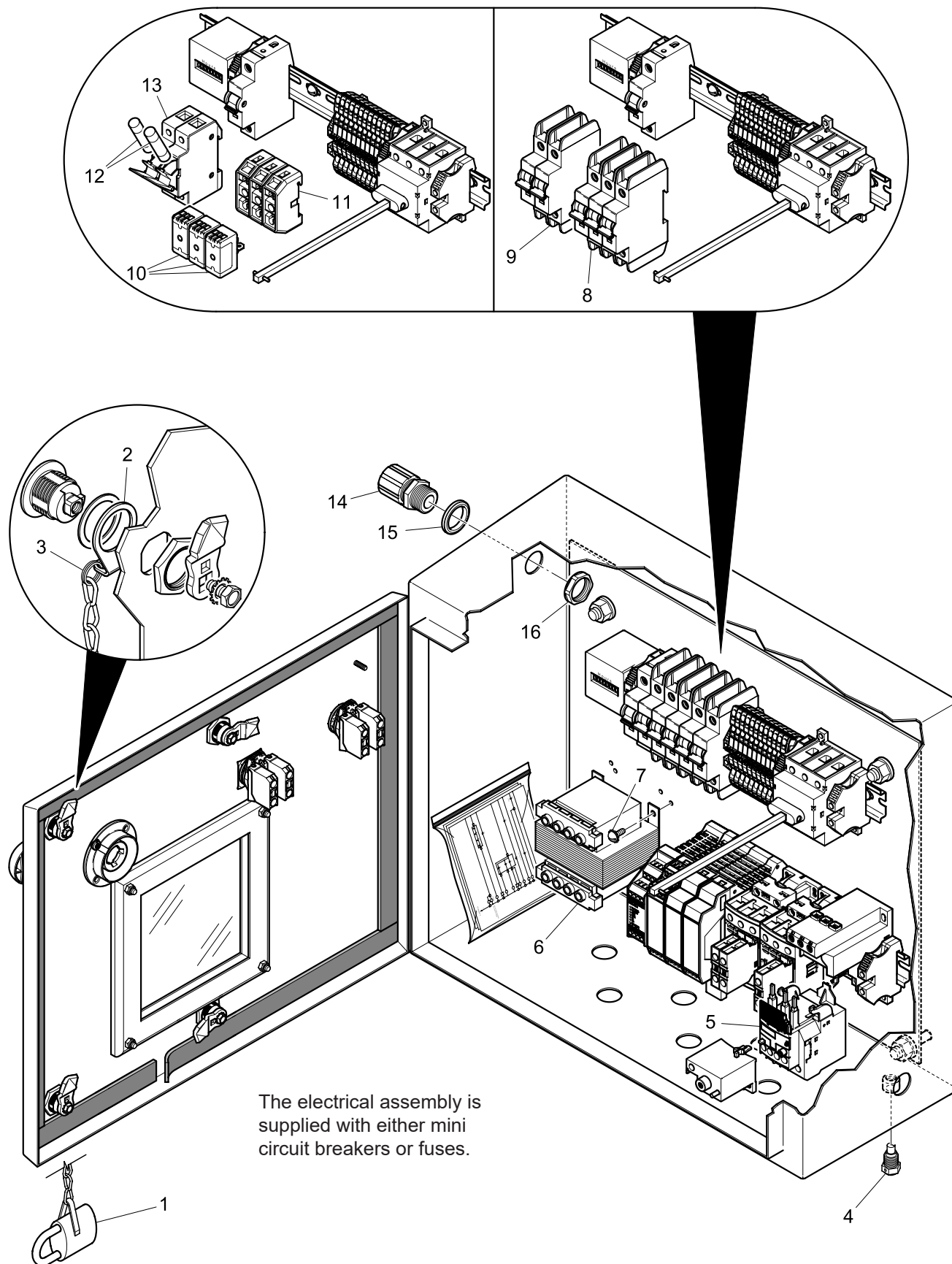
*All dates are approximate. To determine the approximate manufacturing date of your machine's electrical system, check the inside of the electrical enclosure for the **date (4)** on the builder's plate. The **part number (5)** for your machine's electrical assembly is also included on the builder's plate. This number can be used to locate your assembly in this addendum. Contact your Urschel representative for assistance if necessary.



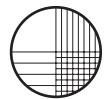


80-89

Parts, Electrical Assembly (*continued*): The electrical assembly currently in use is shown below and on the following page.



The electrical assembly is supplied with either mini circuit breakers or fuses.



Item	Quantity	Part Number and Description
—	1	19833 - Electrical Assembly, RA-A (includes items 1–16, and 19835 Electrical Enclosure Assembly, Control Station, RA-A , located on the following pages.)
—	1	19834 - Electrical Assembly, machine, RA-A
1	1	13408 - Padlock With Chain
2	1	21778 - Padlock Retainer
3	1	21499 - Split Ring, s.s.
4	1	11593 - Breather/Drain, 1/4"
5	1	* - Overload Relay (OL1)
6	1	* - Control Circuit Transformer, 50 VA
7	4	10625 - Round Head Machine Screw, with washer, 10-32 x 1/2"

Overcurrent Protection Device (OCPD), choose circuit breakers (item 8–9) or fuses (items 10–13)

8	1	*	- Circuit Breaker, mini, 3 pole (MCB1)
9	1	*	- Circuit Breaker, mini, 2 pole (MCB2)
10	3	*	- Fuse, cube (FU1)
11	3	21349	- Fuse Base, 30 amp, cube (for FU1)
12	2	*	- Fuse (FU2)
13	1	12930	- Modular Fuse Holder, 2 pole (for FU2)
14	1	11803	- Cord Connector, straight, .375"/.500"
15	1	11900	- Seal Washer, 3/16" x 7/8" x 1-9/32"
16	1	11611	- Lock Nut, 1/2"

* See Overcurrent Protection Device (OCPD) Charts below.

Electrical assemblies also include the Safety Sensors and Enclosure Fittings. See the following pages.

3-Phase Incoming Supply Mini Circuit Breaker (MCB1) And Cube Fuse (FU1) Selection Chart				
Motor Full Load Amperage Range (Amps)	OCPD Size (Amps)	Item 8 Mini Circuit Breaker (MCB1) Part Number	Item 10 Cube Fuse (FU1) Part Number	Item 11 Cube Fuse Base Part Number
3.44 - 5.71	10	21606	21339	21349
5.72 - 8.57	15	21607	21325	
8.58 - 11.43	20	21608	21327	
11.44 - 14.29	25	21609	21328	
14.30 - 17.14	30	21610	21329	

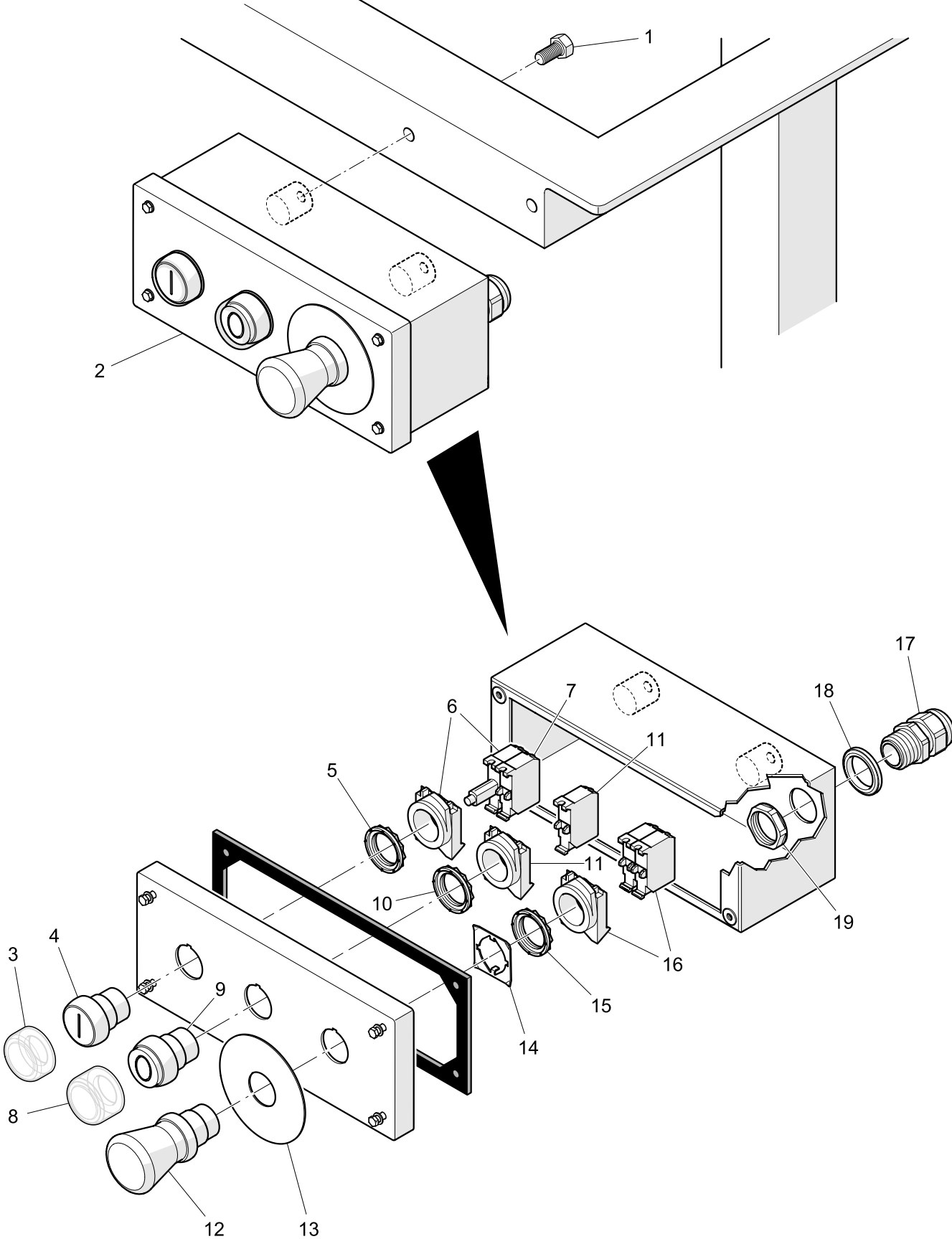
50 VA Control Circuit Transformer Chart Using Mini Circuit Breakers (MCB2) Or Fuses (FU2)							
Primary Voltage	Item 6 Control Circuit Transformer Part Number	Primary Overcurrent Protection Device OCPD (MCB2 or FU2)					
		Primary OCPD Size (Amps)	Item 9 Primary MCB2 Part Number	Item 12 Primary Fuse (FU2) Part Number	Item 13 Primary Fuse Holder Part Number		
		200-240	12927	1.0	21613	12693	12930
		380-415	12928	0.5	21612	21919	
		460	12927				
575	21310	0.4	—	21509			

Item 5 Overload Relay	
Motor Full Load Amperage	Overload Relay (OL1) Part Number
4.20 - 5.70	21848
5.70 - 7.60	21849
7.60 - 10.00	21850
10.00 - 13.00	21851
13.00 - 16.00	21852
16.00 - 20.00	21853
20.00 - 24.00	21854
24.00 - 29.00	21855
29.00 - 35.00	21856



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80-89 Parts, Electrical Assembly (*continued*): The control station assembly currently in use is shown below and on the following page.



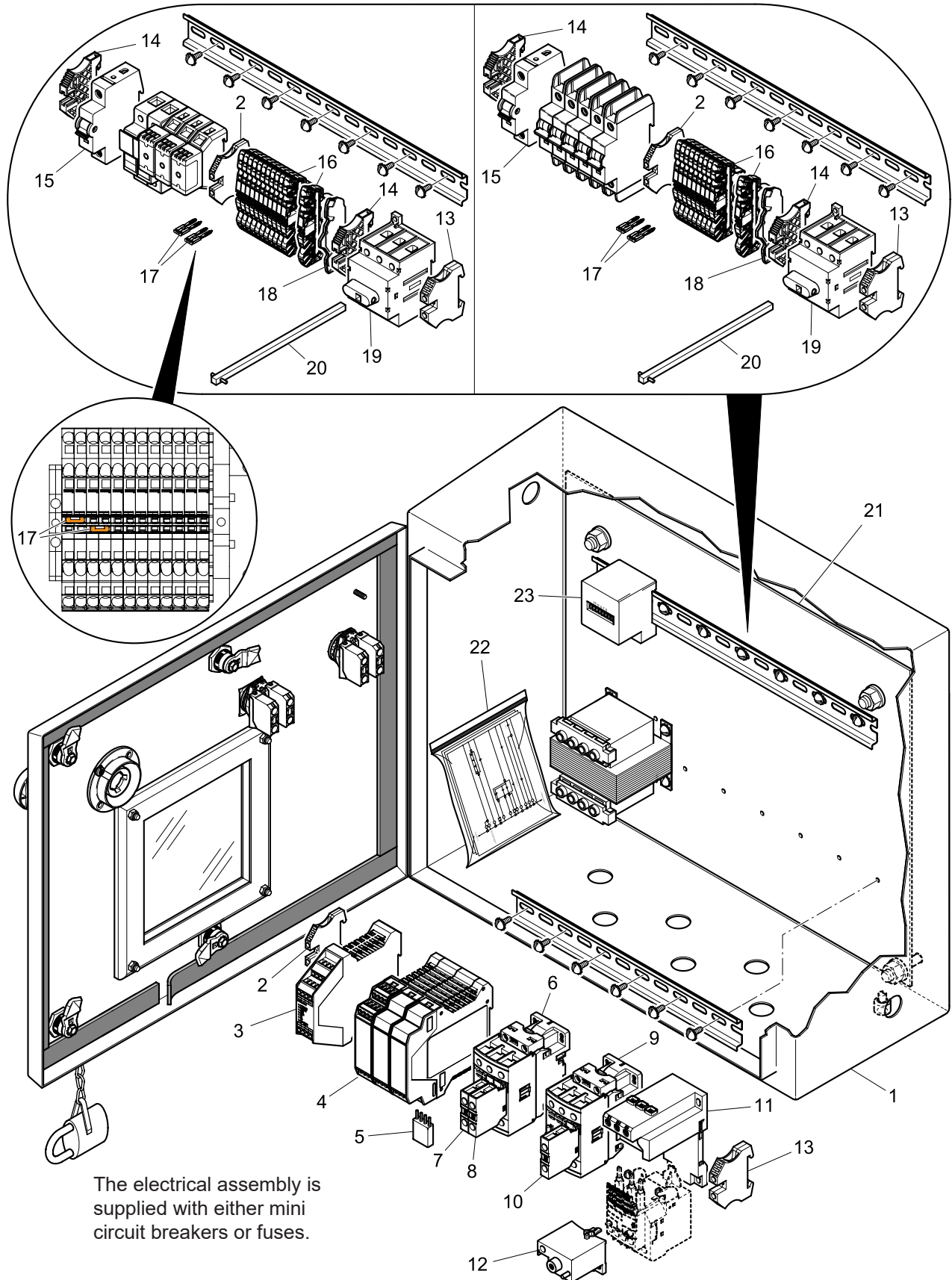


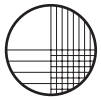
Item	Quantity	Part Number and Description
1	2	10044 - Hex Head Cap Screw, 5/16-18 x 5/8", s.s.
2	1	19835 - Electrical Enclosure Assembly, control station, RA-A (includes items 3–19)
–	1	21761 - Push Button Assembly, start, illuminated (includes items 3–7)
3	1	21431 - Boot, push button
4	1	21760 - Push Button, start, illuminated
5	1	21572 - Push Button Nut, metal
6	1	21491 - Pilot Light, lamp, green, 24 VAC/VDC
7	1	21430 - Contact Block, normally open with latch
–	1	12976 - Stop Button Assembly, IEC (includes items 8–11)
8	1	21721 - Boot, extended, push button A-B
9	1	21487 - Push Button, stop
10	1	21572 - Push Button Nut, metal
11	1	21429 - Contact Block, normally closed with latch
–	1	21763 - Push Button Assembly, E-stop, 2 normally closed (includes items 12–16)
12	1	21427 - Push Button, E-Stop, red, 40 mm
13	1	21428 - Legend Plate, yellow, round
14	1	21578 - Washer, push button, anti-rotation
15	1	21572 - Push Button Nut, metal
16	1	21429 - Contact Block, normally closed with latch
17	1	11803 - Cord Connector, straight, .375"/.500"
18	1	11900 - Seal Washer, 3/16" x 7/8" x 1-9/32"
19	1	11611 - Lock Nut, 1/2"



80-89

Parts, Electrical Assembly (*continued*): The electrical enclosure assembly currently in use is shown below and on the following page.





Item	Quantity	Part Number and Description
—	1	19829 - Electrical Enclosure Assembly, RA-A (includes items 1–22)
1	1	19830 - Electrical Enclosure, RA-A
2	2	21442 - Grounding Block, size 4
3	1	21883 - Safety Relay, SCR-31-i, Viper (SR1)
4	1	21724 - Safety Monitor, 24 VAC (SM1)
5	1	21819 - Resistor, safety monitor (for SM1)
6	1	21837 - Contactor, 50 amp, 24 volt 50/60 Hz coil (M1)
7	1	21839 - Auxiliary Contact Block, front mount, normally open (for M1)
8	1	21840 - Auxiliary Contact Block, front mount, normally closed (for M1)
9	1	21839 - Contactor, 50 amp, 24 volt 50/60 Hz coil (M2)
10	1	21840 - Auxiliary Contact Block, front mount, normally closed (for M2)
11	1	21841 - Overload Base Adapter, ABB T42 overload (for OL1)
12	1	21857 - Overload Relay Reset Module, 24 VAC (for OL1)
13	2	21443 - Grounding Block, size 10
14	2	21439 - End Anchor
15	1	21618 - Circuit Breaker, mini, 1 pole, 3 amp (MCB3)
16	12	21672 - Terminal Block, 4 spring clamp, 1 circuit
17	2	21873 - Jumper Bar, 2 pole, for 21762
18	1	21860 - Terminal End Section, 4 connection point
19	1	21557 - Disconnect Switch, 3 pole, 40 amp (DISC1)
20	1	21559 - Disconnect Shaft, extended 10.4" (for DISC1)
21	1	19831 - Electrical Enclosure Panel, RA-A
22	1	19832 - Electrical Schematic, RA-A

The Electrical Schematic is illustrated on the following pages.

Optional Part

(An optional accessory which customers can use to track the operational hours of the machine.)

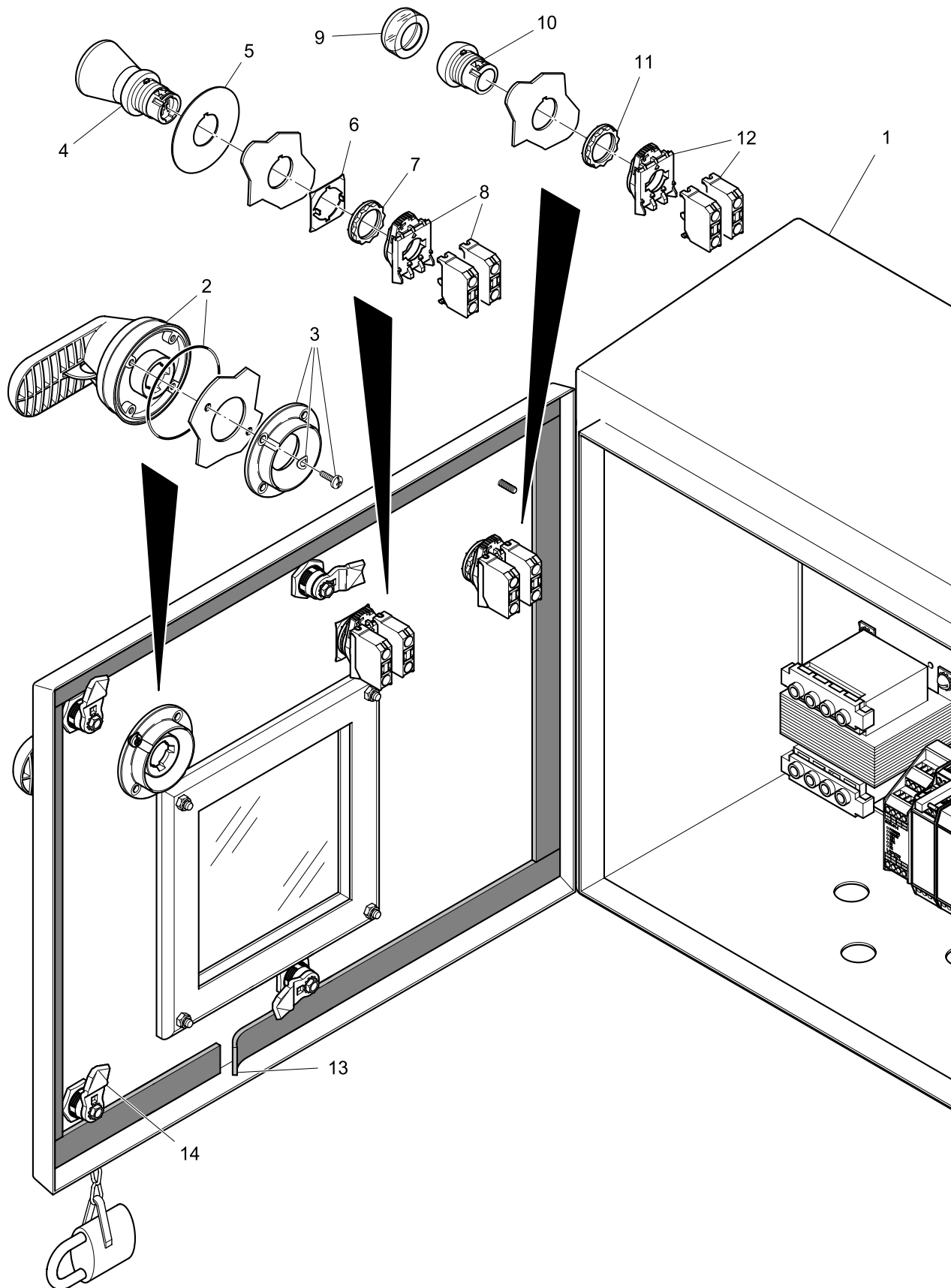
23	1	21894 - Hour Meter, 24 VAC
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80-89

Parts, Electrical Assembly (*continued*): The electrical enclosure assembly door parts currently in use are shown below and on the following page.



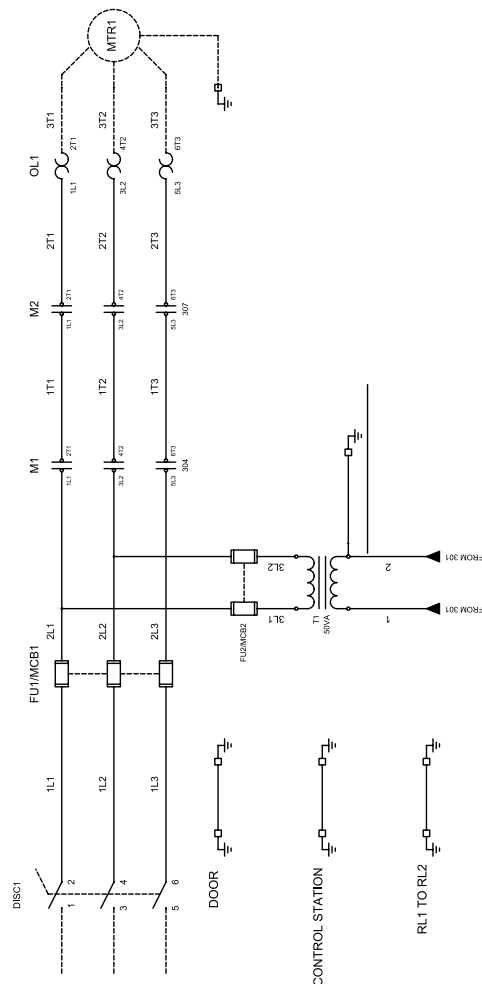
Item	Quantity	Part Number and Description
1	1	19829 - Electrical Enclosure Assembly, RA-A (includes items 2–14)
2	1	21560 - Disconnect Switch Handle (includes O-ring)
3	1	21460 - Disconnect Rod Guide (includes hardware)
–	1	21763 - Push Button Assembly, E-Stop, 2 normally closed (includes items 4–8)
4	1	21427 - Push Button, E-Stop, red, 40 mm
5	1	21428 - Legend Plate, yellow, round
6	1	21578 - Washer, push button, anti-rotation
7	1	21572 - Push Button Nut, metal
8	2	21429 - Contact Block, normally closed with latch
–	1	21622 - Push Button Assembly, reset (includes items 9–12)
9	1	21431 - Boot, push button
10	1	21623 - Push Button, reset
11	1	21572 - Push Button Nut, metal
12	2	21430 - Contact Block, normally open with latch
13	1	* - Door Gasket (fitting and adhesive required)
14	4	21270 - Quarter Turn Latch Assembly (Industrial Enclosures)
	4	21271 - Quarter Turn Latch Assembly (Hoffman Enclosures)

* Contact an Urschel representative.

Parts, Electrical Assembly (*continued*): Electrical Schematic 19832. Use with the electrical assembly and electrical enclosure assembly on the previous pages.

ELECTRICAL SCHEMATIC
(Sheet 2 of 3)
Note: Sheet 1 is not shown.

POWER CIRCUIT



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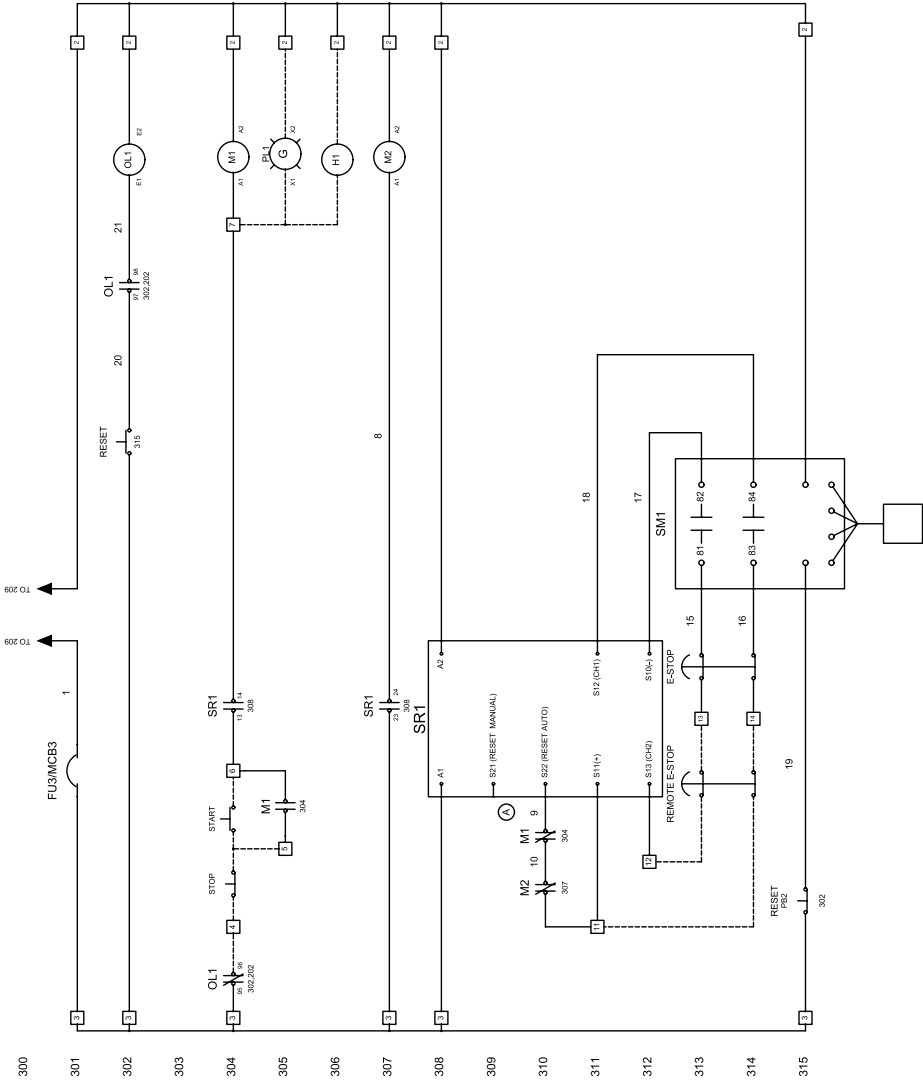
80-89

Parts, Electrical Assembly (*continued*): Electrical Schematic 19832. Use with the electrical assembly and electrical enclosure assembly on the previous pages.

PART # 19832

ELECTRICAL SCHEMATIC
(Sheet 3 of 3)

CONTROL CIRCUIT / CONNECTION CHARTS

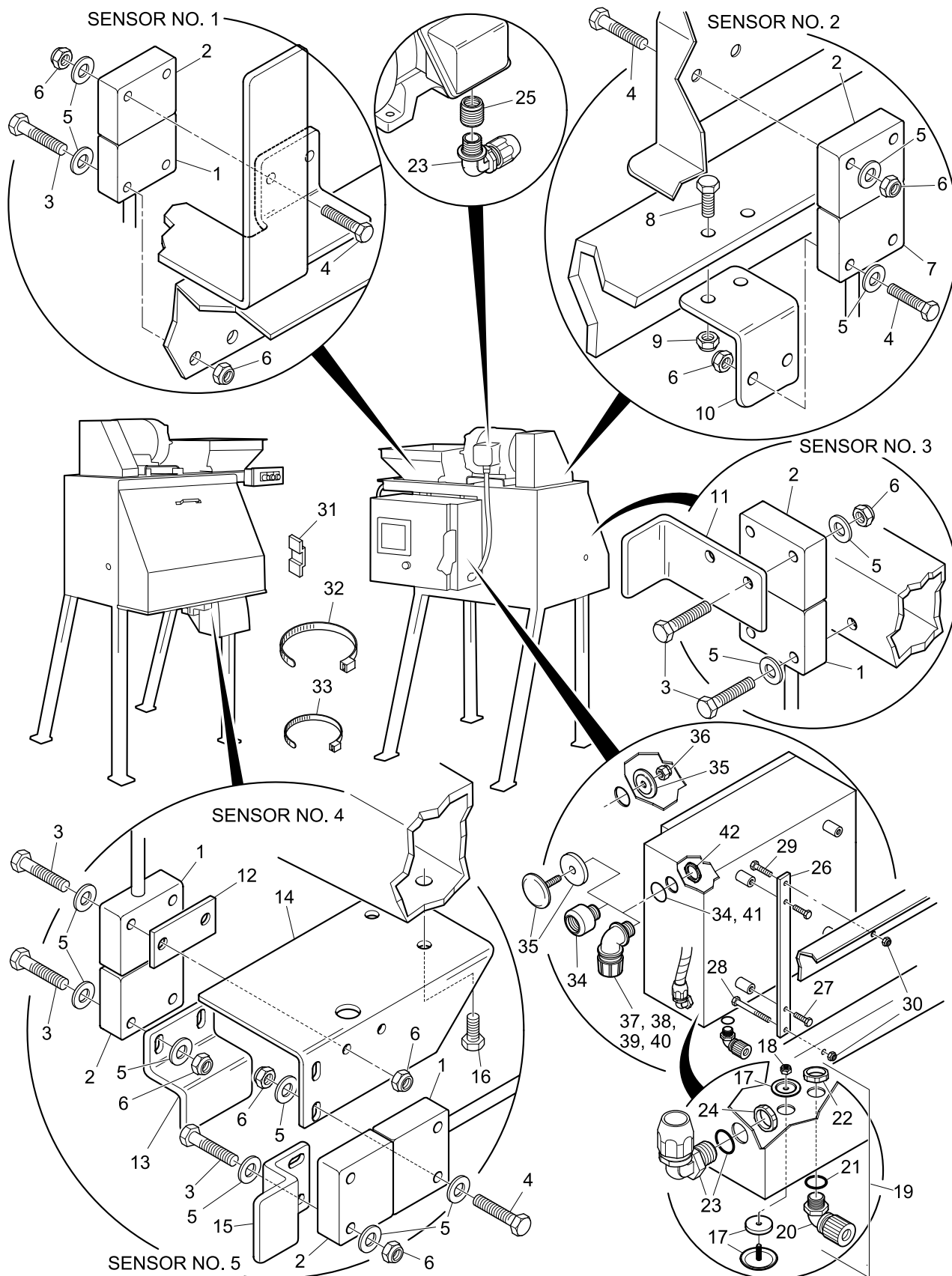


CONNECTION CHART: SM1	
INPUT STATION NUMBER	SENSOR LOCATION
IN1	FEED HOPPER
IN2	BELT GUARD
IN3	FRONT PANEL
IN4	JUICE CHUTE
IN5	DISCHARGE CHUTE
IN6	N/A

CONNECTION CHART: CS1		
ENCLOSURE TERMINAL CONNECTION	CABLE CORE NUMBER	WIRE NUMBER LABEL
CS1 . 1	1	4
CS1 . 2	2	2
CS1 . 3	3	5
CS1 . 4	4	6
CS1 . 5	5	7
CS1 . 6	6	11
CS1 . 7	7	12
CS1 . 8	8	13
CS1 . 9	9	14
CS1 . GRD	GND	N/A

80-89

Parts, Electrical Assembly (*continued*): The safety sensors and enclosure fittings currently in use are shown below and on the following page.



Item	Quantity	Part Number and Description
<i>Electrical Assemblies include the following parts:</i>		
1	4	63738 - Sensor, 6' lead
2	5	63741 - Actuator
3	12	10233 - Hex Head Cap Screw, 10-24 x 1", s.s.
4	8	10351 - Hex Head Cap Screw, 10-24 x 7/8", s.s.
5	26	10006 - Washer, flat, #10, s.s., thin
6	18	10231 - Hex Nut, 10-24, s.s., locking
7	1	63739 - Sensor, 12' lead
8	2	10038 - Hex Head Cap Screw, 1/4-20 x 3/4", s.s.
9	2	10230 - Hex Nut, 1/4-20, s.s., locking, thick
10	1	19364 - Sensor Bracket
11	1	19362 - Actuator Bracket (included with front panel)
12	1	12801 - Spacer, 1/8"
13	1	24247 - Actuator Bracket
14	1	19363 - Sensor Bracket
15	1	24247 - Actuator Bracket (included with discharge chute)
16	1	10037 - Hex Head Cap Screw, 1/4-20 x 1/2", s.s.
17	1	11553 - Hole Seal, 7/8"
18	1	10231 - Hex Nut, 10-24, s.s., locking
19	5	11548 - Cord Connector, 90 degree, .250"/.375" (includes items 20–22)
20	1	11609 - Cord Connector, 90 degree, .250"/.375"
21	1	11900 - Seal Washer, 3/16" x 7/8" x 1-9/32"
22	1	11611 - Lock Nut, 1/2"
23	1	11614 - Conduit Connector, 90 degree, 1/2"
24	1	11611 - Lock Nut, 1/2"
25	1	11502 - Reducing Bushing, 1/2" x 3/4"
26	2	19403 - Bracket
27	4	10046 - Hex Head Cap Screw, 5/16-18 x 7/8", s.s.
28	2	10054 - Hex Head Cap Screw, 5/16-18 x 2-3/4", s.s.
29	2	10047 - Hex Head Cap Screw, 5/16-18 x 1", s.s.
30	4	10306 - Hex Nut, 5/16-18, s.s., locking
31	18	13465 - Cable Tie Clip
32	18	11513 - Cable Tie
33	9	11534 - Cable Tie, small, 99 mm long

Items below are not included with the electrical assembly; use at the power source entry point.

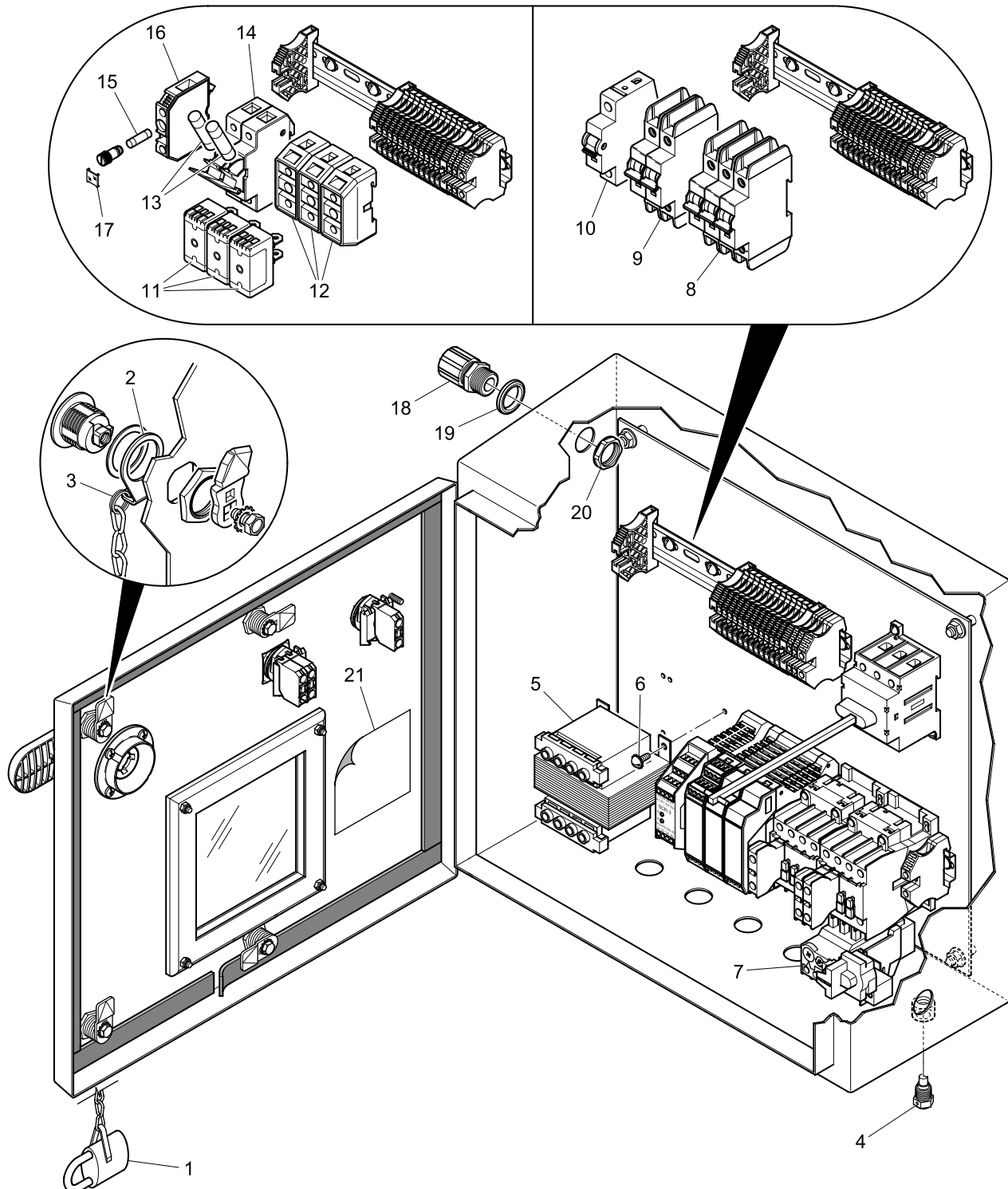
34	1	11582 - Conduit Hub, 1"
35	1	11591 - Hole Seal, 1-3/8"
36	1	10231 - Hex Nut, 10-24, s.s., locking
—	1	11626 - Cord Connector Assembly, 90 degree, .437"/.562" (includes items 37, 41, 42)
37	1	11625 - Cord Connector, 90 degree, .437"/.562"
—	1	21370 - Cord Connector Assembly, 90 degree, .63"/.75" (includes items 38, 41, 42)
38	1	21368 - Cord Connector, 90 degree, .63"/.75"
—	1	21371 - Cord Connector Assembly, 90 degree, .75"/.88" (includes items 39, 41, 42)
39	1	21369 - Cord Connector, 90 degree, .75"/.88"
—	1	21372 - Cord Connector Assembly, 90 degree, .88"/1.00" (includes items 40, 41, 42)
40	1	11972 - Cord Connector, 90 degree, .88"/1.00"
41	1	11966 - Seal Washer, 3/16" x 1-5/16" x 1-3/4"
42	1	11624 - Lock Nut



80–89

Parts, Electrical Assembly (*continued*): This electrical assembly was supplied with new machines from June 2013 to July 2018.

Current assemblies are supplied with **fuses or mini circuit breakers (MCB)**. See the entry for pages 48-50 for information on which device is appropriate for your machine.



Item	Quantity	Part Number and Description
–	1	19809* - Electrical Assembly, RA-A (includes items 1–20, and the Control Station Enclosure Assembly 19818 , located on the following pages)
1	1	13408 - Padlock With Chain
2	1	21778 - Padlock Retainer
3	1	21499 - Split Ring, s.s.
4	1	11593 - Breather/Drain 1/4"
5	1	<i>See Chart</i> - Control Circuit Transformer, 50 VA
6	4	10625 - Round Head Machine Screw, with washer, 10-32 x 1/2"
7	1	<i>See Chart</i> - Overload Relay (OL1)
Short Circuit Protective Device (SCPD), choose circuit breakers (items 8–10) or fuses (items 11–17).		
8	1	<i>See Chart</i> - Circuit Breaker, mini, 3 pole (MCB1, main)
9	1	<i>See Chart</i> - Circuit Breaker, mini, 2 pole (MCB2, primary)
10	1	<i>See Chart</i> - Circuit Breaker, mini, 1 pole, 2 amp (MCB3, secondary)
11	3	<i>See Chart</i> - Fuse (FU1, main)
12	3	21349 - Fuse Base, 30 amp, cube (for FU1)
13	2	<i>See Chart</i> - Fuse (FU2, primary)
14	1	12930 - Modular Fuse Holder, 2 pole (for FU2)
15	1	<i>See Chart</i> - Fuse, 2.50 amp (FU3, secondary)
16	1	12763 - Fuse Terminal, 5 x 20mm, IEC (for FU3, includes item 17)
17	1	12781 - Transparent Cover
18	1	11803 - Cord Connector, straight, .375/.500
19	1	11900 - Seal Washer, 3/16" x 7/8" x 1-9/32"
20	1	11611 - Lock Nut, 1/2"
21	1	19810 - Wiring Diagram, RA-A

*Not for sale. Part number supplied for reference only.

See charts on [page A.33](#).

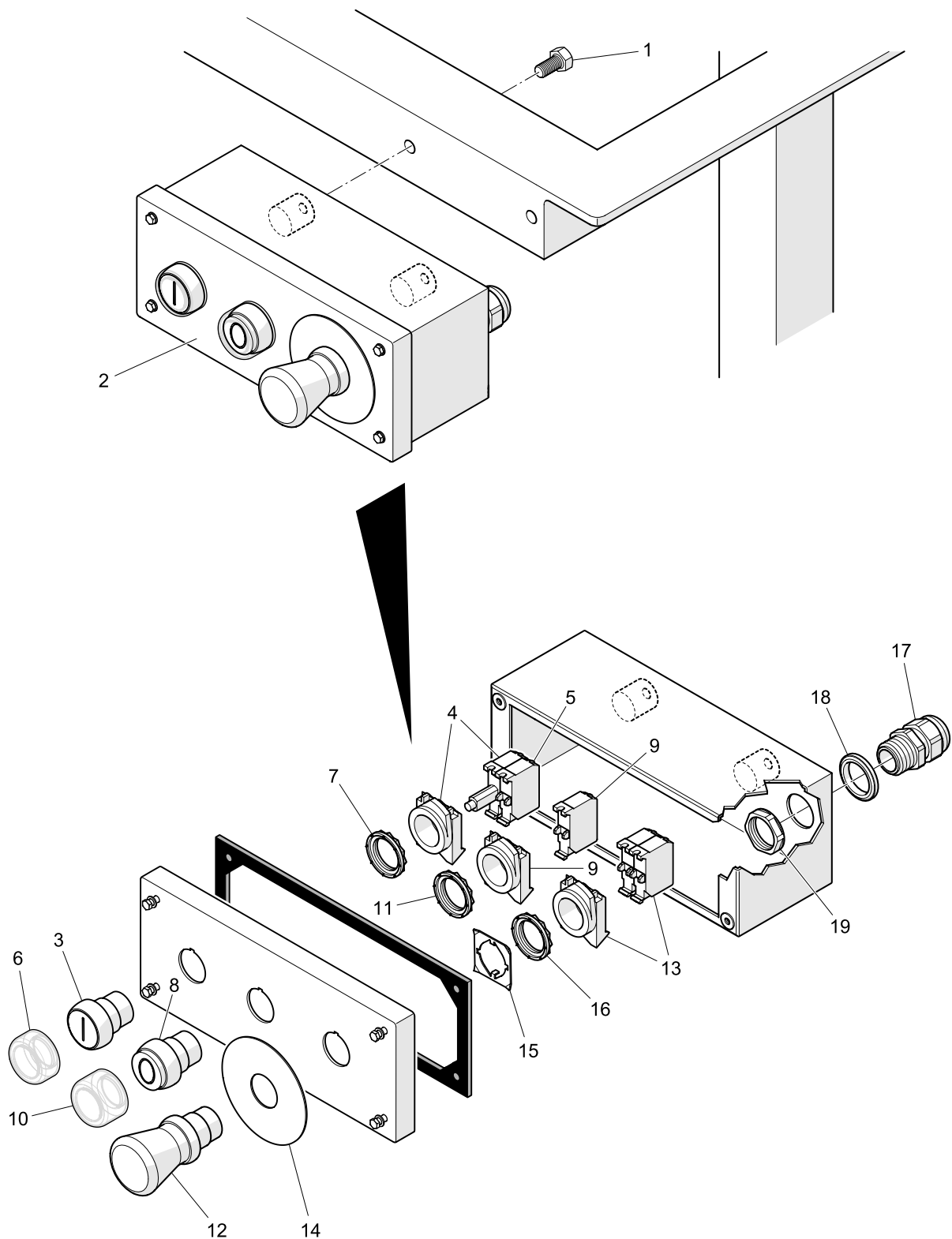
Electrical assemblies also include safety switches and related parts. See [pages A.34-A.35](#).



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80–89

Parts, Electrical Assembly (continued): This control station assembly was supplied with new machines from June 2013 to July 2018.



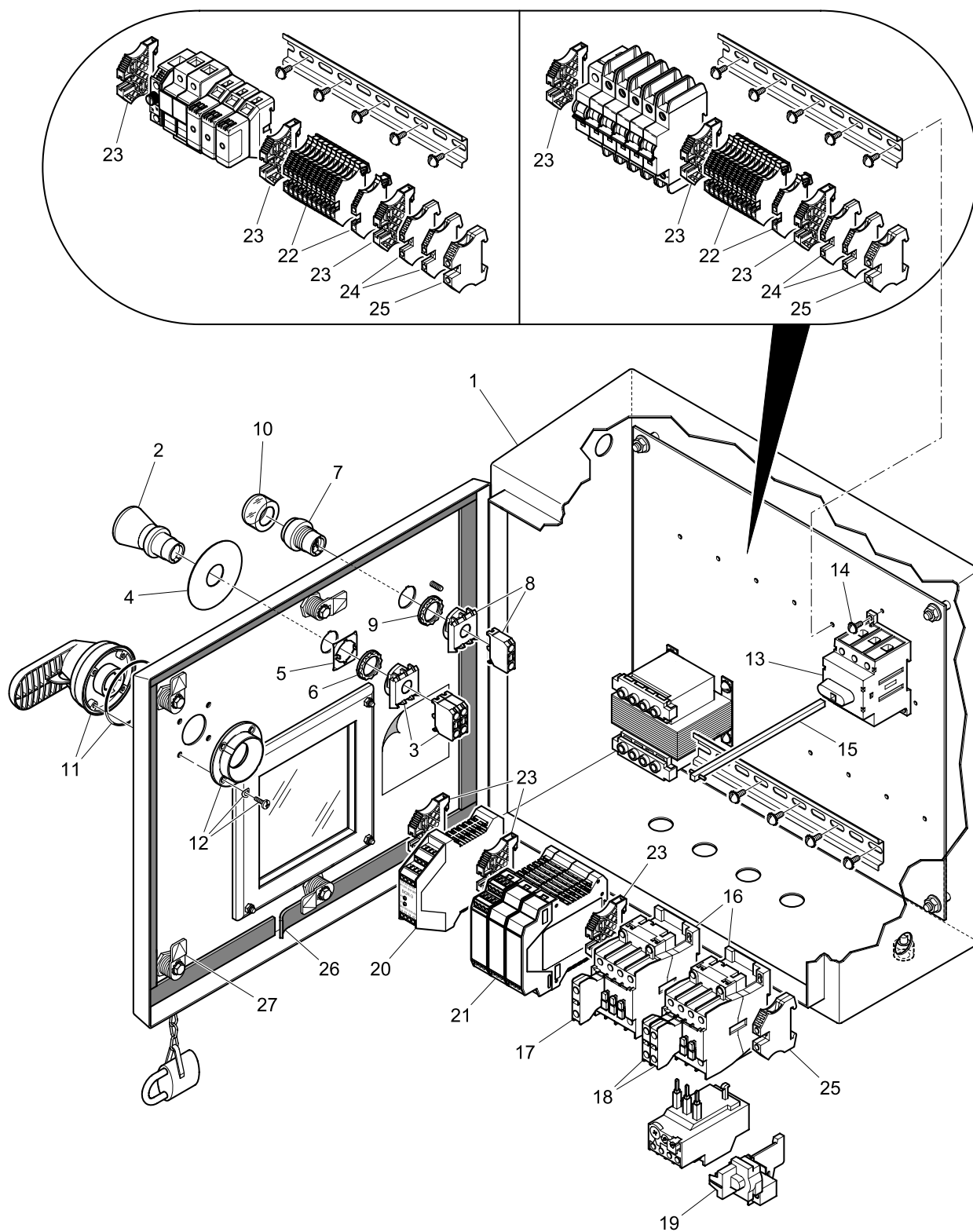
Item	Quantity	Part Number and Description
<i>The electrical assembly includes the following parts.</i>		
1	2	10044 - Hex Head Cap Screw, 5/16-18 x 5/8", s.s.
2	1	19818 - Control Station Enclosure Assembly (includes items 3–19)
–	1	21761 - Push Button Assembly, start, illuminated (includes items 3–7)
3	1	21760 - Push Button, start, illuminated
4	1	21491 - Pilot Light Lamp Module, 24 volt, with latch
5	1	21430 - Contact Block, normally open
6	1	21431 - Boot, push button
7	1	21572 - Push Button Nut, metal
–	1	12976 - Stop Button Assembly, IEC (includes items 8–11)
8	1	21487 - Push Button, stop
9	1	21429 - Contact Block, normally closed, with latch
10	1	21431 - Boot, push button
11	1	21572 - Push Button Nut, metal
–	1	21763 - Push Button Assembly, E-Stop, 2 normally closed (includes items 12–16)
12	1	21427 - Push Button, stop
13	2	21429 - Contact Block, normally closed, with latch
14	1	21428 - Legend Plate, yellow, round
15	1	21578 - Washer, push button, anti-rotation
16	1	21572 - Push Button Nut, metal
17	1	11877 - Cord Connector, straight, .236/.472
18	1	11900 - Seal Washer, 3/16" x 7/8" x 1-9/32"
19	1	11611 - Lock Nut, 1/2"

See charts on page A.33.

Electrical assemblies also include safety switches and related parts. See pages A.34-A.35.



Parts, Electrical Assembly (*continued*): This electrical enclosure was supplied with new machines from June 2013 to July 2018.





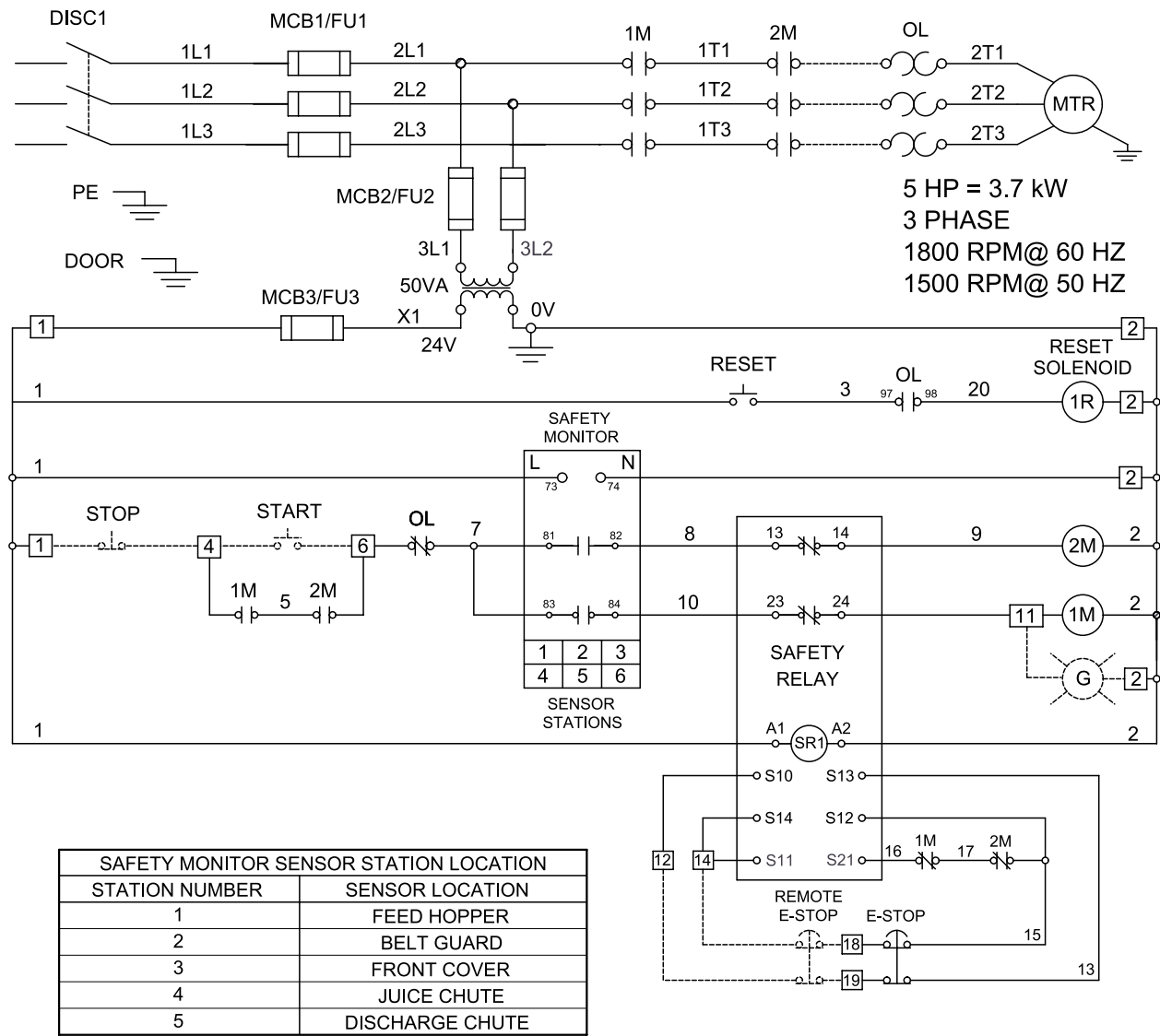
Item	Quantity	Part Number and Description
1	1	19808* - Electrical Enclosure, RA-A (includes items 1–27)
–	1	21763 - Push Button Assembly, E-Stop, 2 normally closed (includes items 2–6)
2	1	21427 - Push Button, stop
3	2	21429 - Contact Block, normally closed, with latch
4	1	21428 - Legend Plate, yellow, round
5	1	21578 - Washer, push button, anti-rotation
6	1	21572 - Push Button Nut, metal
–	1	21622 - Push Button Assembly, reset (includes items 7–10)
7	1	21623 - Push Button, reset
8	1	21430 - Contact Block, normally open, with latch
9	1	21572 - Push Button Nut, metal
10	1	21431 - Boot, push button
11	1	21560 - Disconnect Switch Handle (includes O-ring)
12	1	21460 - Disconnect Rod Guide
13	1	21557 - Disconnect Switch, 3 pole, non-fusible, 40 amp (DISC 1)
14	2	10415 - Round Head Machine Screw, with washer, 8-32 x 1/2"
15	1	21559 - Disconnect Shaft, extended, 10.4" long
16	2	21488 - Contactor, 26 amp, 24 volt coil (1M and 2M)
17	1	21468 - Auxiliary Contact, ABB, normally open (for 1M)
18	2	21469 - Auxiliary Contact, ABB, normally closed (for 2M)
19	1	21752 - Remote Overload Reset Coil, 24 volt (for 2M)
20	1	21634 - Safety Relay
21	1	21724 - Safety Amplifier, 24 VAC
22	12	21438 - Terminal Block
23	6	21439 - End Anchor
24	2	21442 - Grounding Block, size 4
25	2	21443 - Grounding Block, size 10
26	1	* - Door Gasket (fitting and adhesive required)
27	4	21270 - Quarter Turn Latch (Industrial Enclosures)
	4	21271 - Quarter Turn Latch (Hoffman Enclosures)

* Not for sale. Part number supplied for reference only.

Manual Page Number	Revision
80–89	Parts, Wiring Diagram 19810: This wiring diagram was supplied with new machines from June 2013 to July 2018.

WIRING DIAGRAM

PART # 19810



MCB1/FU1____A, MCB2/FU2____A, MCB3/FU3____A
F.L.A._____



Charts for machines with mini circuit breakers.

3 POLE MINI CIRCUIT BREAKER CHART (MCB1)		
Motor Full Load Amperage	"MCB" Part Number	Fuse Size (Amps)
0 - 1.71	21602	3
1.72 - 2.85	21603	5
2.86 - 3.42	21604	6
3.43 - 4.57	21605	8
4.58 - 5.71	21606	10
5.72 - 7.43	21632	13
7.44 - 8.57	21607	15
8.58 - 11.42	21608	20
11.43 - 14.28	21609	25
14.29 - 17.14	21610	30
17.15 - 20.00	21611	40

Motor Full Load Amperage	Overload Relay (OL1) Part Number
.4 - .63	21543
.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

CONTROL CIRCUIT TRANSFORMER CHART USING MINI CIRCUIT BREAKERS							
Transformer Part Number	Primary Voltage	Primary MCB MCB2 (2 Pole)		Secondary MCB 110 volt MCB3 (1 Pole)		Secondary MCB 24 volt MCB3 (1 Pole)	
		Size	Part Number	Size	Part Number	Size	Part Number
12927	200-240	1.00	21613	.50	21615	2.00	21617
12928	380-415	.50	21612	.50	21615	2.00	21617
12927	440-480	.50	21612	.50	21615	2.00	21617

Charts for machines with fuses.

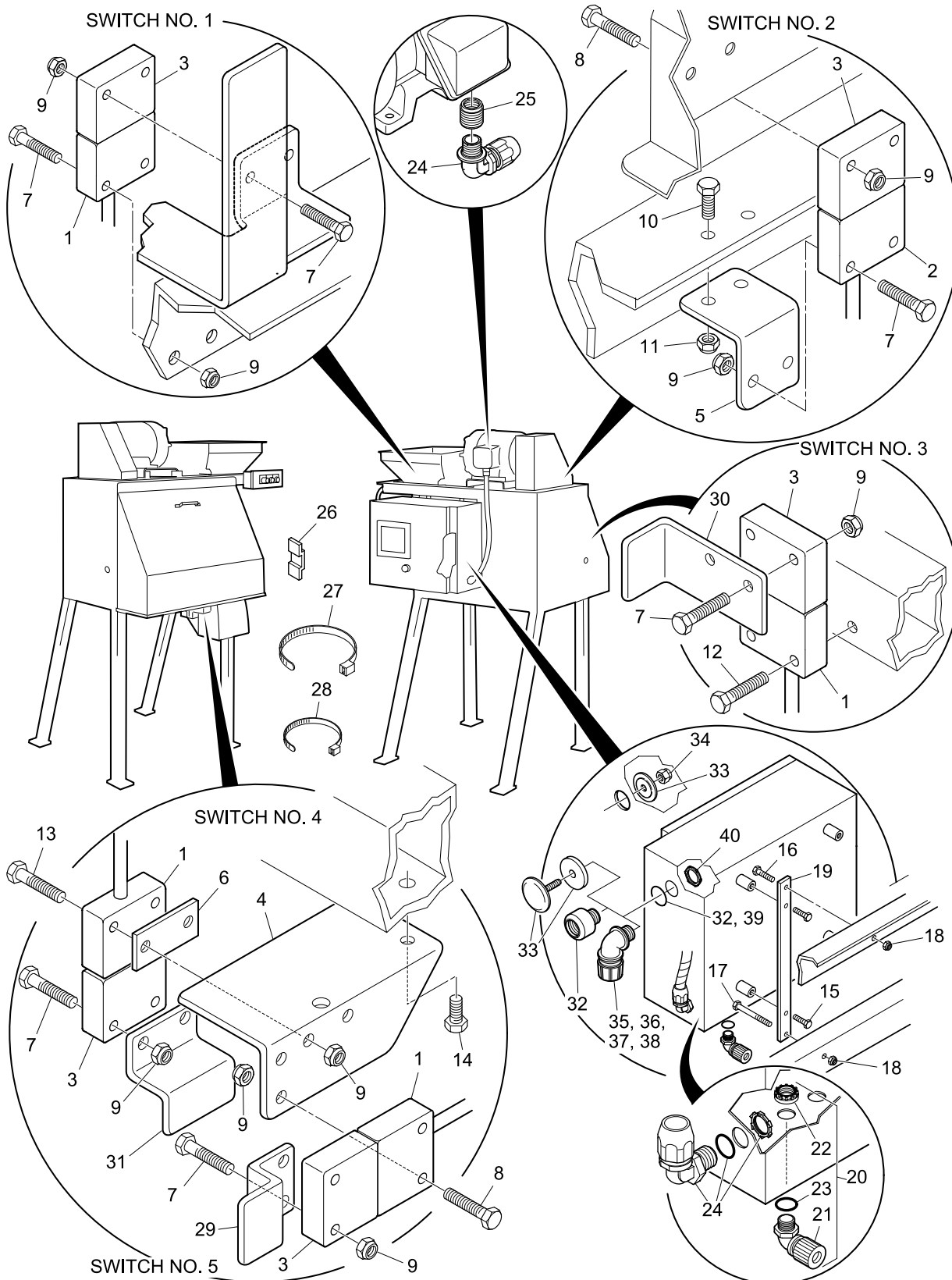
Motor Full Load Amperage	"Cube" Fuse (FU1) Part Number	Fuse Size
0 - 1.71	21384	3
1.72 - 3.42	21341	6
3.43 - 5.71	21339	10
5.72 - 8.57	21325	15
8.58 - 10.00	21326	17.5
10.01 - 11.42	21327	20
11.43 - 14.28	21328	25
14.29 - 17.14	21329	30
17.15 - 20.00	21330	35
20.01 - 22.85	21331	40
22.86 - 25.71	21332	45
25.72 - 28.57	21333	50
28.58 - 32.00	21334	60

Motor Full Load Amperage	Overload Relay (OL1) Part Number
.4 - .63	21543
.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

Where Used	Transformer Part Number	Primary Voltage	Primary Fuse (FU2)		Secondary Fuse (FU3) 24 volt	
			Size	Part Number	Size	Part Number
N. America	12927	200-240	1.00	12925	2.50	12922
Elsewhere	12927	200-240	1.00	12929	2.50	12922
N. America	12927	440-480	.50	12926	2.50	12922
Elsewhere	12928	380-415	.50	12924	2.50	12922
N. America	21310	575	.40	21509	2.50	12922

80–89

Parts, Electrical Assembly, Switches: The illustration below, and the parts list on the following page, include parts used on machines manufactured from September 2006 to July 2018. Uses these parts with the assemblies shown on [pages A.26-A.33](#) and [pages A.36-A.47](#).



Electrical assemblies include the following items 1–28.

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 21–23).	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	11614	Conduit Connector, 90 degree, 1/2"	2
25	11502	Reducing Bushing, 1/2" x 3/4", (for cast iron motor).	1
26	13465	Clip, cable tie	21
27	11513	Cable Tie	21
28	11534	Cable Tie, small, 99 mm long	10
29	24247	Actuator Bracket, (included with discharge chute)	1
30	19362	Actuator Bracket, (included with front panel)	1
31	24247	Actuator Bracket	1

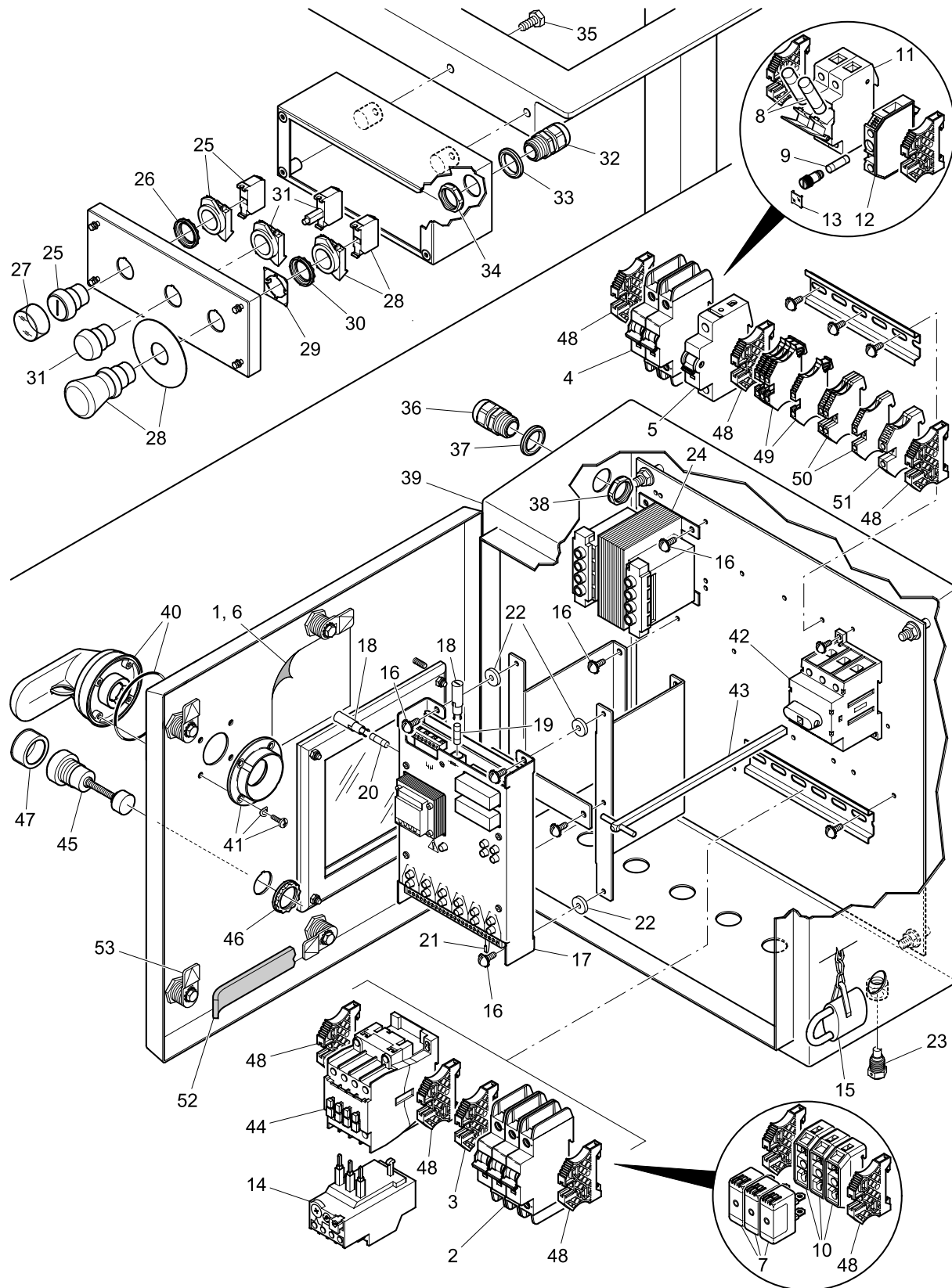
THE FOLLOWING ITEMS ARE NOT INCLUDED WITH THE ELECTRICAL ASSEMBLY. CHOOSE ONE FOR USE AT THE POWER SOURCE ENTRY POINT.

32	11582	Conduit Hub, 1", (includes washer and lock nut).	1
33	11591	Hole Seal, 1-3/8"	1
34	10231	Hex Nut, 10-24, s.s., locking.	1
—	11626	Cord Connector Assembly, 90 degree, .437/.562, (includes items 35, 39 & 40)	1
35	11625	Cord Connector, 90 degree, .437/.562.	1
—	21370	Cord Connector Assembly, 90 degree, .62/.75, (includes items 36, 39 & 40)	1
36	21368	Cord Connector, 90 degree, .62/.75	1
—	21371	Cord Connector Assembly, 90 degree, .75/.88, (includes items 37, 39 & 40)	1
37	21369	Cord Connector, 90 degree, .75/.88	1
—	21372	Cord Connector Assembly, 90 degree, .88/1.0, (includes items 38, 39 & 40)	1
38	11972	Cord Connector, 90 degree, .88/1.0	1
39	11966	Seal Washer, 3/16" x 1-5/16" x 1-3/4".	1
40	11624	Lock Nut	1



80–89

Parts, Electrical Assembly (*continued*): This electrical assembly was supplied with new machines from September 2009 to April 2013.





ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19783*	Electrical Assembly, with mini circuit breakers, RA-A, <i>(includes items 1–5, and items 14–38).</i>	1
1	19784	Wiring Diagram, with mini circuit breakers, RA-A.	1
2	**	Circuit Breaker, mini, 3 pole, (MCB1).	1
3	21439	End Anchor	1
4	**	Circuit Breaker, mini, 2 pole, primary, (MCB2).	1
5	21615	Circuit Breaker, mini, 1 pole, .50 amp, (MCB3)	1
—	19785*	Electrical Assembly, with fuses, RA-A, (includes items 6–38)	1
6	19786	Wiring Diagram, with fuses, RA-A	1
7	**	Fuse, main, (FU1)	3
8	**	Fuse, primary, (FU2)	2
9	12923	Fuse, secondary, .50 amp, (FU3)	1
10	21349	Fuse Base, 30 amp, cube, (for FU1).	3
11	12930	Modular Fuse Holder, 2 pole, (for FU2)	1
12	12763	Fuse Terminal, 5 x 20 mm, IEC, (for FU3, includes item 13)	1
13	12781	Transparent Cover	1
14	**	Overload Relay, (OL1).	1
15	13408	Padlock With Chain	1
16	10625	Round Head Mach Screw with Washer, 10-32 x 1/2"	12
17	63737§	Amplifier, (includes items 18–21).	1
18	13673	Adapter, fuse	2
19	13671	Fuse, .630 amp.	1
20	13672	Fuse, .125 amp.	1
21	63755	Resistor, 22K ohms	2
22	12633	Rubber Washer, 3/16 x 5/8 x 1/8" thick.	4
23	11593	Breather Drain, 1/4"	1
24	**	Control Circuit Transformer	1
—	19712	Control Station Enclosure Assembly, (includes items 25–34)	1
25	21424	Push Button Assembly, start, (includes items 26 & 27)	1
26	21572	Push Button Nut, metal	1
27	21431	Boot, push button.	1
28	21426	Push Button Assembly, stop, (includes items 29 & 30)	1
29	21578	Washer, anti-rotation	1
30	21572	Push Button Nut, metal	1
31	21433	Pilot Light Assembly	1
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	10044	Hex Head Cap Screw, 5/16-18 x 5/8", s.s.	2
36	11877	Cord Connector, straight, .236/.472	1
37	11900	Seal Washer, 3/16" x 7/8" x 1-9/32"	1
38	11611	Lock Nut, 1/2"	1
39	19782*	Electrical Enclosure, (includes items 40–53)	1
40	21560	Disconnect Switch Handle, s.s., (includes "O"-ring).	1
41	21460	Disconnect Rod Guide	1
42	21557	Disconnect Switch, 3 pole, non-fusible, 40 amp, (DISC1).	1
43	21559	Disconnect Shaft, extended, 10.4" long	1
44	21444	Contactor, 40 amp (1M).	1
45	21436	Reset Button Assembly, (includes items 46 & 47).	1
46	21572	Push Button Nut, metal.	1
47	21431	Boot, push button	1
48	21439	End Anchor	6
49	21438	Terminal Block	4
50	21442	Grounding Block, size 4	3
51	21443	Grounding Block, size 10	1
52	***	Door Gasket, (fitting and adhesive required)	1
53	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 A.39.

*** Consult the factory.

§ For information on replacing the amplifier. See page A.13 in this addendum.

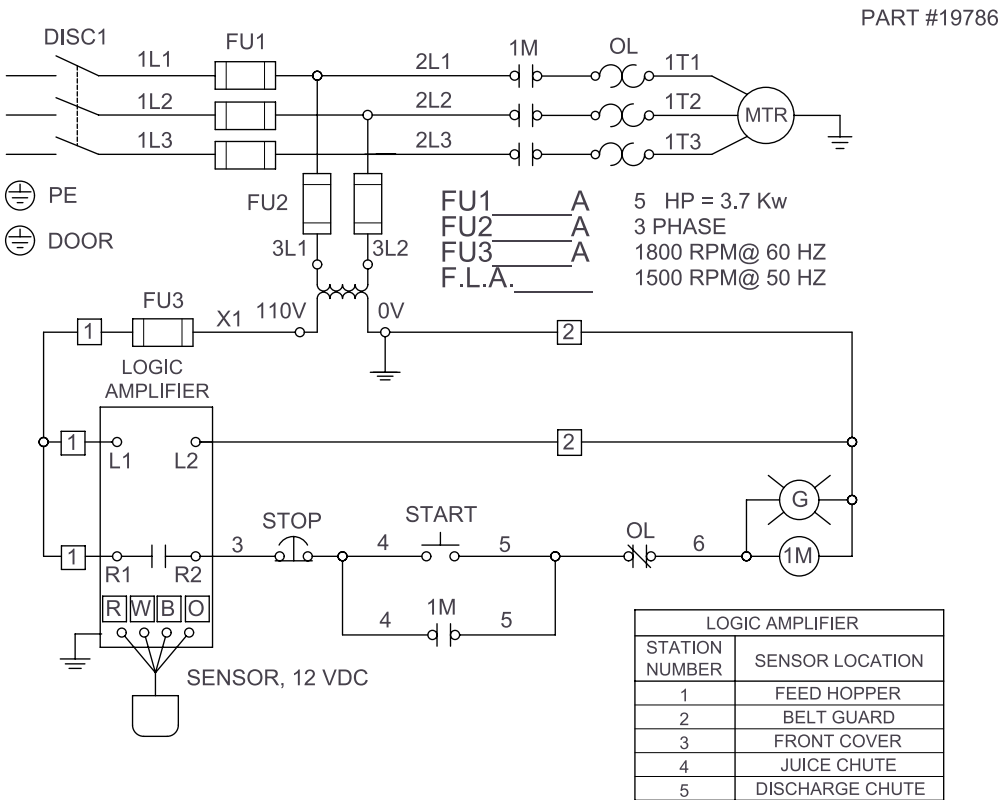
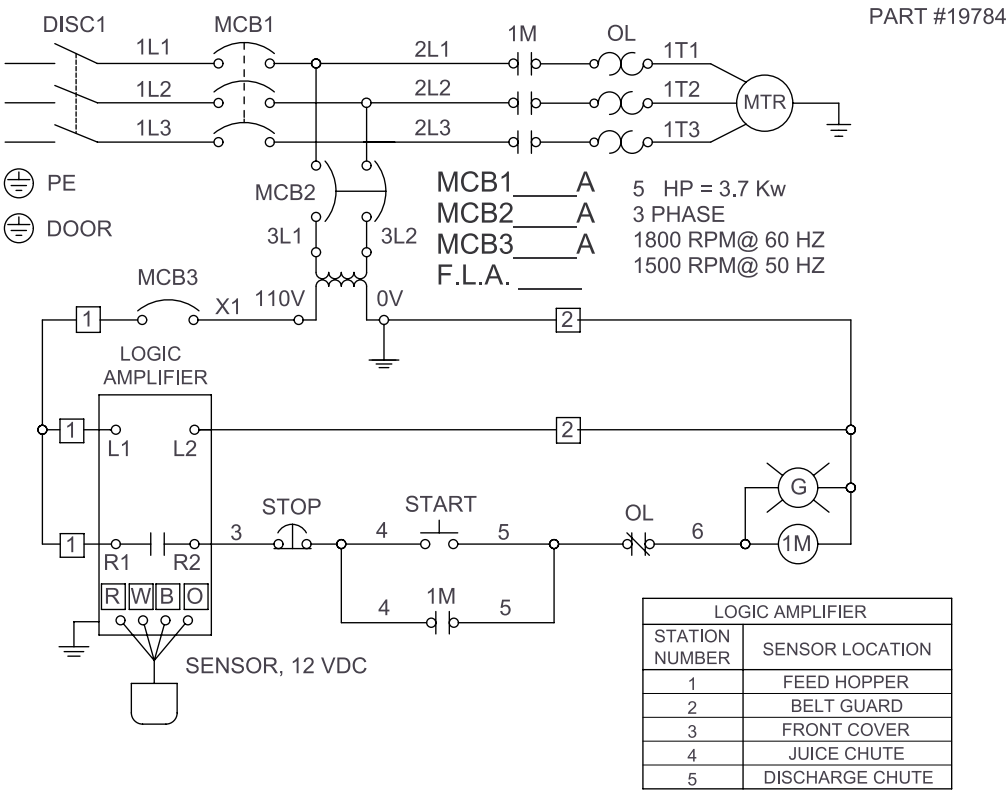
Electrical assemblies also include safety switches and related parts. See pages A.34-A.35.



Manual Page Number	Revision
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80–89 Parts, Wiring Diagrams 19784 and 19786: These wiring diagrams were supplied with new machines from September 2009 to April 2013.

This electrical schematic was used prior to the schematic currently supplied on new machines. See previous pages for the schematics currently supplied on machines.





Charts for machines with mini circuit breakers.

3 POLE MINI CIRCUIT BREAKER CHART (MCB1)		
Motor Full Load Amperage	"MCB" Part Number	Fuse Size (Amps)
0 - 1.71	21602	3
1.72 - 2.85	21603	5
2.86 - 3.42	21604	6
3.43 - 4.57	21605	8
4.58 - 5.71	21606	10
5.72 - 7.43	21632	13
7.44 - 8.57	21607	15
8.58 - 11.42	21608	20
11.43 - 14.28	21609	25
14.29 - 17.14	21610	30
17.15 - 20.00	21611	40

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

CONTROL CIRCUIT TRANSFORMER CHART USING MINI CIRCUIT BREAKERS							
Transformer Part Number	Primary Voltage	Primary MCB MCB2 (2 Pole)		Secondary MCB 110 volt MCB3 (1 Pole)		Secondary MCB 24 volt MCB3 (1 Pole)	
		Size	Part Number	Size	Part Number	Size	Part Number
12927	200-240	1.00	21613	.50	21615	2.00	21617
12928	380-415	.50	21612	.50	21615	2.00	21617
12927	440-480	.50	21612	.50	21615	2.00	21617
21310	575	.50	21612	.50	21615	2.00	21617

Charts for machines with fuses.

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

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

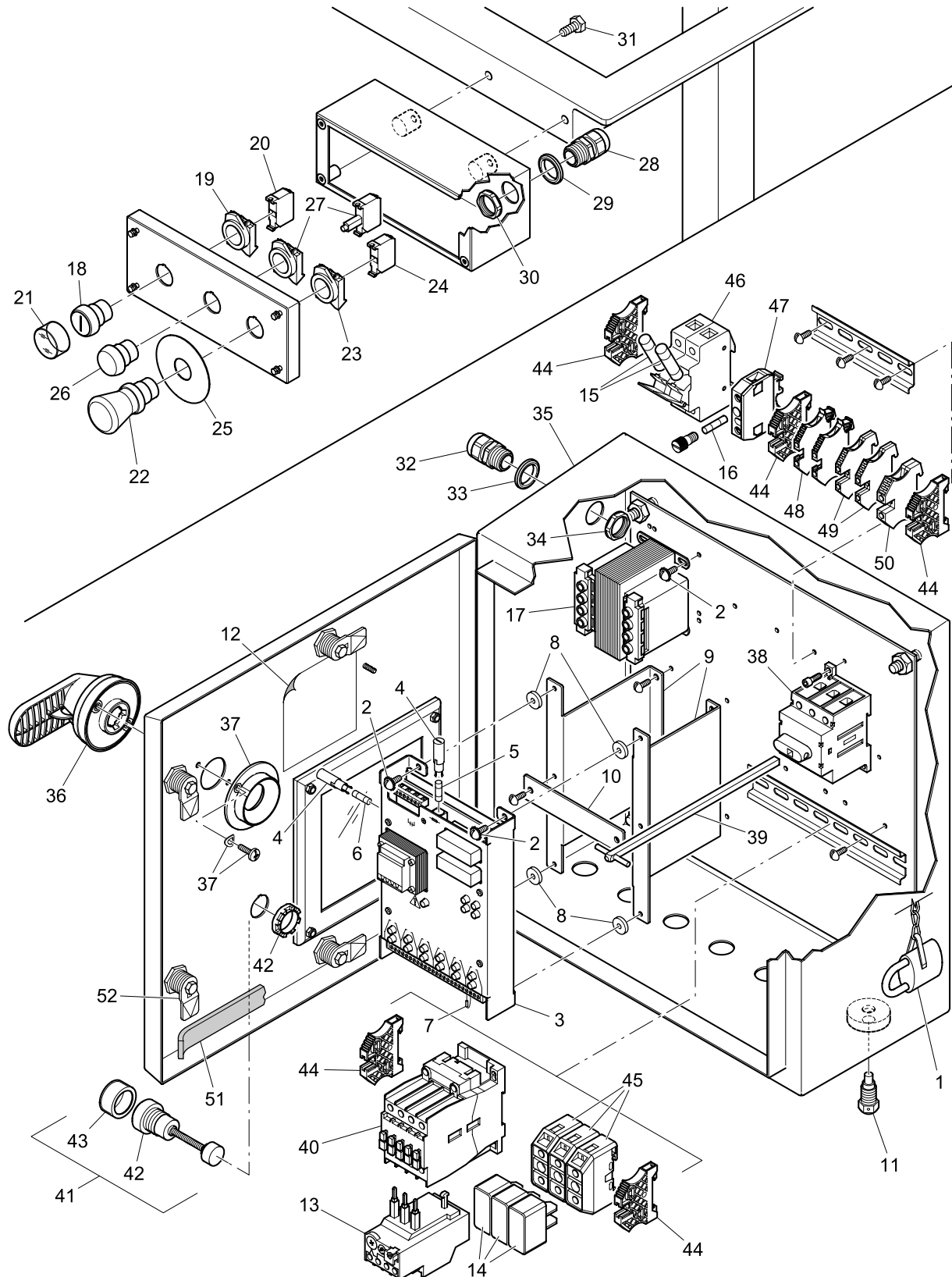
Where Used	Transformer Part Number	Primary Voltage	Primary Fuse		Secondary Fuse 110-120 volt		Secondary Fuse 24 volt	
			Size	Part Number	Size	Part Number	Size	Part Number
N. America	12927	200-240	1.00	12925	.50	12923	2.50	12922
Elsewhere	12927	200-240	1.00	12929	.50	12923	2.50	12922
N. America	12927	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	21509	.50	12923	2.50	12922



80–89

Parts, Electrical Assembly (*continued*): This electrical assembly was supplied with new machines from September 2006 to June 2009.

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.
—	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	21630§§	Disconnect Switch Retrofit Assembly (includes handle, rod and switch)	1
37	21460	Disconnect Rod Guide (use with discontinued switch handle 21241, not required with 21630 Retrofit Assembly)	1
38	—	Disconnect Switch (order 21630 Retrofit Assembly)	1
39	—	Extended Shaft (order 21630 Retrofit Assembly)	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

* Not for sale; part numbers supplied for reference only.

** Consult the factory.

** See charts on the follow [page A.46](#).

§ For information on replacing the amplifier see the entry for [page 50](#) in this addendum.

§§ A retrofit kit is available for these parts. See [page A.13](#) in this addendum.

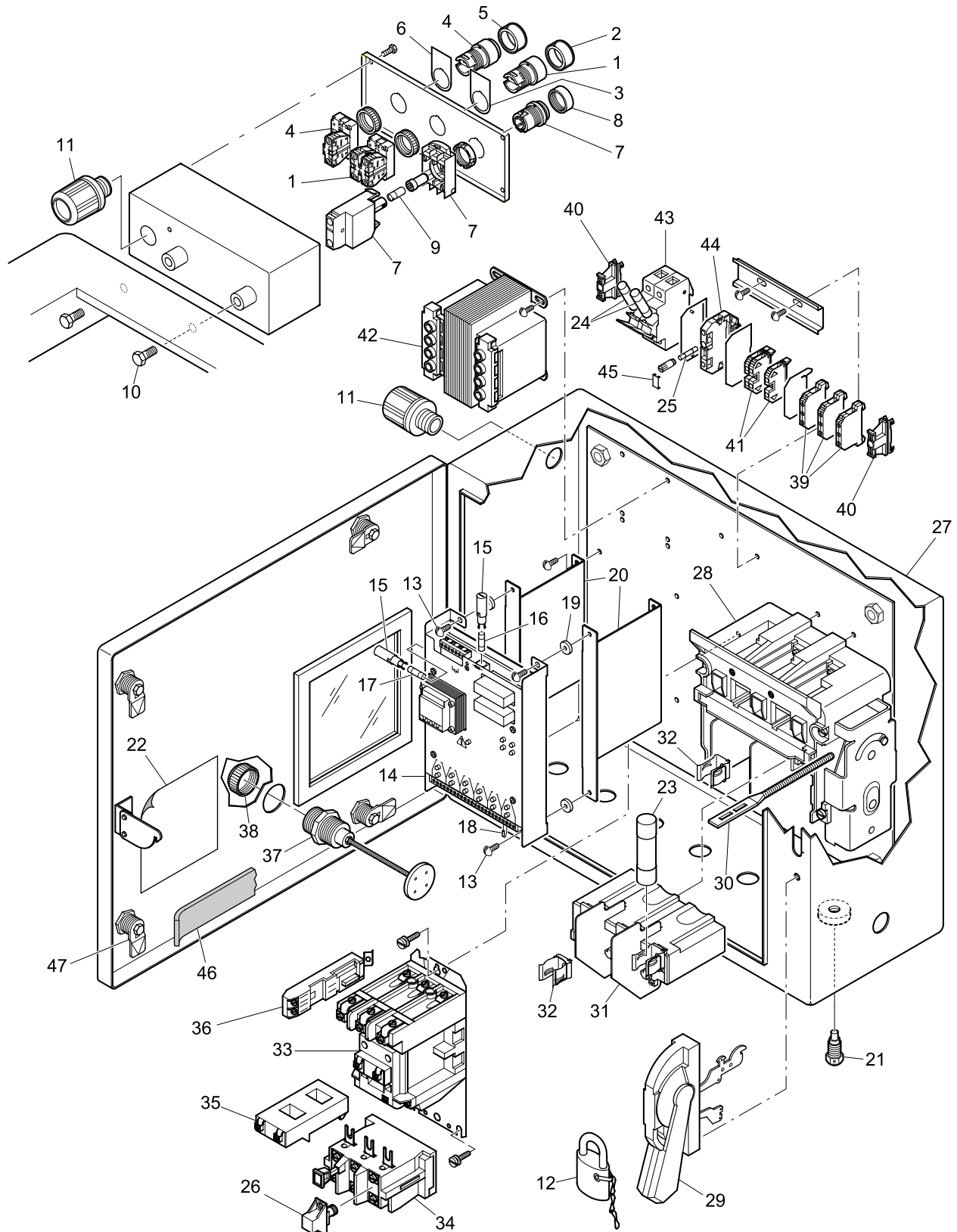
Electrical assemblies also include safety switches and related parts. See [pages A.34-A.35](#).



80–89

Parts, Electrical Assembly (*continued*): This electrical assembly was supplied with new machines from September 2006 to June 2009.

These electrical assemblies were 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, (replaced by 19712 Control Station Enclosure Assembly; see previous pages for parts list; buttons and pilot light listed below are available as repair parts).	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	§§	Disconnect, 30 amp (discontinued)	1
29	63383	Operating Handle	1
30	63384	Connecting Rod	1
31	§§	Fuse Trailer Block, (discontinued)	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 A.46](#).

*** Contact your Urschel representative.

§ For information on replacing the amplifier see the entry for [page 50](#) in this addendum.

§§ A retrofit kit is available for these parts. See [page A.13](#) in this addendum.

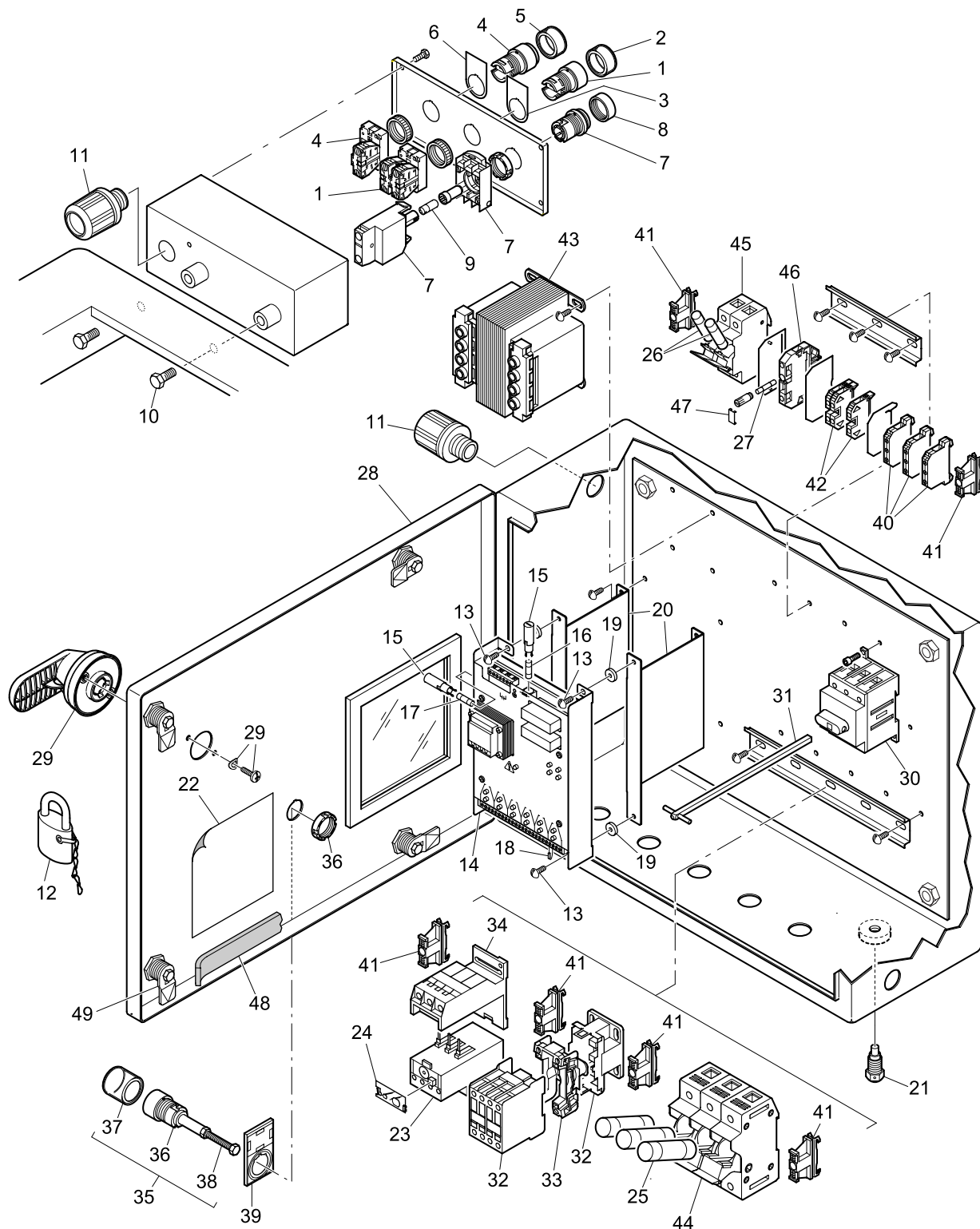
Electrical assemblies also include safety switches and related parts. See [pages A.34-A.35](#).



80–89

Parts, Electrical Assembly (*continued*): This electrical assembly was supplied with new machines from September 2006 to June 2009.

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, (replaced by 19712 Control Station Enclosure Assembly; see previous pages for parts list; buttons and pilot light listed below are available as repair parts)	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	21630	Disconnect Switch Retrofit Assembly (includes switch, rod and handle)	1
30	—	Disconnect Switch (order 21630 Retrofit Assembly)	1
31	—	IEC Extended Shaft (order 21630 Retrofit Assembly)	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 the follow page A.46.

*** Contact your Urschel representative.

§ For information on replacing the amplifier see the entry for page 50 in this addendum.

Electrical assemblies also include safety switches and related parts. See pages A.34-A.35.

Parts, Wiring Diagrams 19719: These wiring diagrams were supplied with new machines from September 2006 to June 2009.

This electrical schematic was used prior to the schematic currently supplied on new machines. See previous pages for the schematics currently supplied on machines.

1L1, 1L2, 1L3, PE, DOOR, FU1, FU2, FU3, FLA, 1M, OL, 1T1, 1T2, 1T3, MTR, 3L1, 3L2, 110V, 0V, X1, LOGIC AMPLIFIER, L1, L2, R1, R2, STOP, START, 1M, OL, G, 1M, SENSOR, 12 VDC

5 HP = 3.7 kW
10 HP = 7.5 kW (OPT)
3 PHASE
1800 RPM @ 60 HZ
1500 RPM @ 50 HZ

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

PART #19719

PART #19719

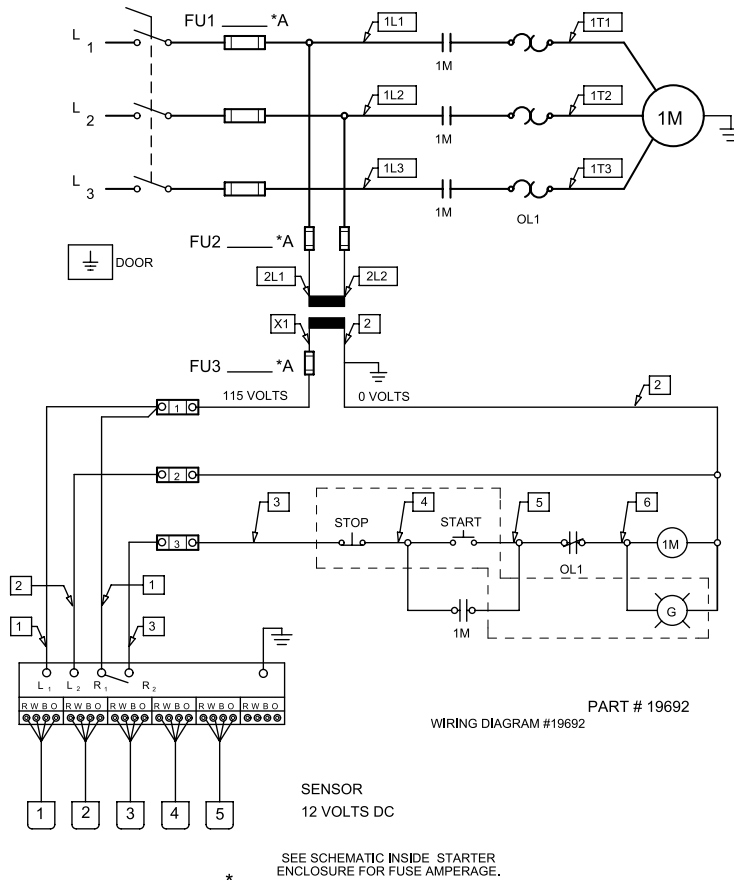
Motor Full Load Amperage	"Cube" Fuse Part Number	Fuse Size
0 - 1.71	21384	3
1.72 - 3.42	21341	6
3.43 - 5.71	21339	10
5.72 - 8.57	21325	15
8.58 - 10.00	21326	17.5
10.01 - 11.42	21327	20
11.43 - 14.28	21328	25
14.29 - 17.14	21329	30
17.15 - 20.00	21330	35
20.01 - 22.85	21331	40
22.86 - 25.71	21332	45
25.72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

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80-89 **Parts, Wiring Diagrams 19692 and 19686:** These wiring diagrams were supplied with new machines from September 2006 to June 2009.

This electrical schematic was used prior to the schematic currently supplied on new machines. See previous pages for the schematics currently supplied on machines.



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

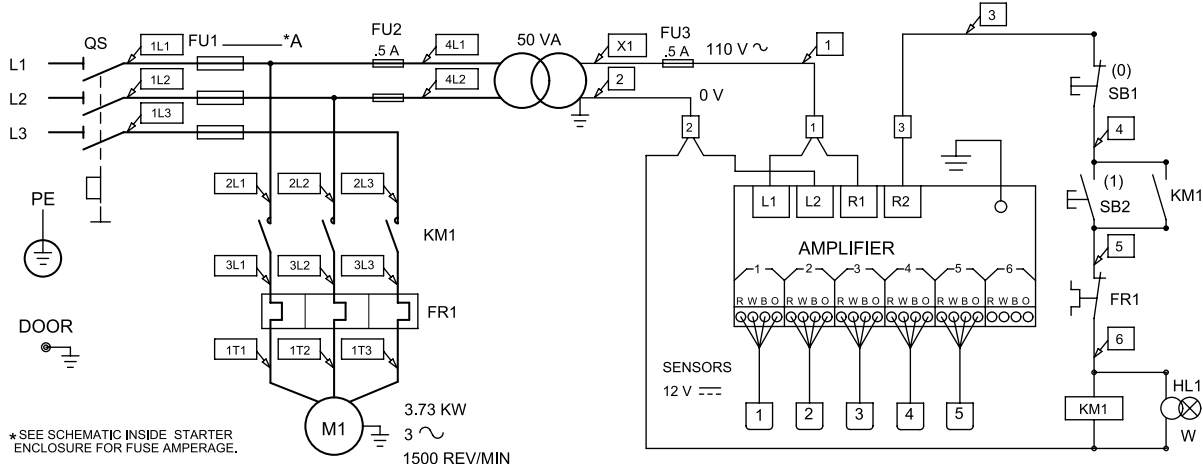
Use with 19692 schematic.

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





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90-91

Parts, Motor with Drive Parts:

Item 1, Motor, is replaced by:

- 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 changed. See the figure below.

The 19228 - Motor base (item 3) is replaced by:

- 19488** - Motor Base, 184T frame.

The 10046 - Hex Head Cap Screw, 5/16-18 x 7/8" s.s. (item 6) is replaced by:

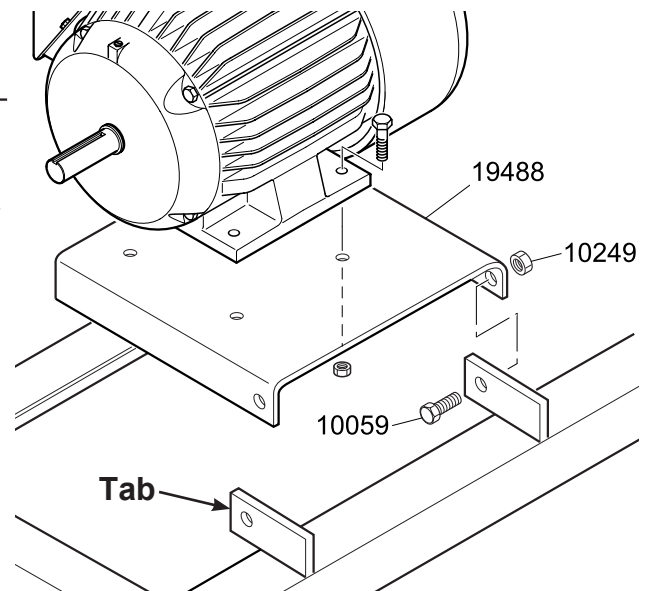
- 10059** - Hex Head Cap Screw, 3/8-16 x 1-1/4", s.s.

The 10306 - Hex Nut, locking, 5/16-18, s.s. (item 7) is replaced by:

- 10249** - Hex Nut, 3/8-16, s.s., locking, thin.

NOTICE

Item 6 and item 7, listed on page 91, are available as repair parts for machines using the previous motor base (part number 19228).



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93

Parts, Machine Labels: The following replaced the information in machine manual. Refer to the illustrations on page 92.

Language*	Language Code*	Part Number				
		Item 1 Feed Opening	Item 2 Discharge Chute	Item 3 Removed Guard	Item 4 Caution Label	Item 5 Danger Label Electrical
English/Spanish	—	11662	11663	11665	11666	11667
Arabic	AR	98113	98115	98117	98125	98121
Chinese	CH	11724	11725	11727	11723	11728
Croatian	CR	98112	98114	98116	98126	98120
Czech	CZ	11868	11869	11871	11872	11873
Danish	DA	11793	11794	11796	11797	11798
Dutch	DU	11716	11717	11719	11720	11721
Estonian	ES	98166	98165	98168	98167	98169
Finnish	FI	11758	11759	11761	11762	11763
French	F	11674	11675	11677	11678	11679
German	GE	11681	11682	11684	11685	11686
Greek	GR	11737	11738	11740	11741	11742
Hungarian	HU	11772	11773	11775	11776	11777
Indonesian	IN	11751	11752	11754	11755	11756
Italian	IT	11702	11703	11705	11706	11707
Japanese	J	11688	11689	11691	11692	11693
Korean	KO	98228	98229	98230	98231	98238
Polish	POL	11730	11731	11733	11734	11735
Portuguese	PO	11695	11696	11698	11699	11700
Russian	RU	11744	11745	11747	11748	11749
Serbian	SB	11109	11110	11112	11108	11854
Slovenian	SL	98348	98347	98350	98349	98351
Swedish	SW	11709	11710	11712	11713	11714
Thai	TH	11946	11947	11949	11950	11951
Turkish	TU	11765	11766	11768	11769	11770
Quantity		4	1	4	1	1

Item	Quantity	Part Number and Description
6	**	12714 - Hazard Alert Label, electrical, 200 volts 12715 - Hazard Alert Label, electrical, 208 volts 12716 - Hazard Alert Label, electrical, 220 volts 12717 - Hazard Alert Label, electrical, 230 volts 12718 - Hazard Alert Label, electrical, 240 volts 12719 - Hazard Alert Label, electrical, 380 volts 12720 - Hazard Alert Label, electrical, 400 volts 12721 - Hazard Alert Label, electrical, 415 volts 12723 - Hazard Alert Label, electrical, 460 volts 12724 - Hazard Alert Label, electrical, 575 volts
-	**	21641 - Hazard Alert Label, electrical, 380Y/220 21642 - Hazard Alert Label, electrical, 400Y/230 21643 - Hazard Alert Label, electrical, 415Y/240 21640 - Hazard Alert Label, electrical, 460Y/266
7	1	11326 - Urschel Label, 1.5" x 8.25"

* The English/Spanish label has English in the top language area. All other labels are bilingual with English in the bottom language area. These labels also have a language code.

** One Hazard Alert Label of corresponding voltage is supplied with the machine.



Manual Page Number	Revision
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94-95

Parts, Optional Parts:

The 19392 - Hopper Extension and Drip Shield Assembly is no longer supplied with the machine. Item 1, **19386** - Hopper Extension, is supplied with current machines. See the entry for pages 62-63 for the fasteners used with the hopper extension.

The 10229 - Hex Head Cap Screw, 1/4-20 x 1-1/2", s.s. (item 6) is replaced by:

10041 - Hex Head Cap Screw, 1/4-20 x 1-3/4", s.s.

The 10113 - Socket Head Cap Screw, 3/8-16 x 1-1/4, s.s. (item 19) is replaced by:

10114 - Socket Head Cap Screw, 1/4-20 x 1-1/2", s.s.

Add:

19400 - Spindle Assembly, slicing only (includes the following items)

18033 - Spacer, 3/4", 2", O.D., .025 thick knife (quantity 8)

48280 - Spindle, circular knife, s.s. (quantity 1)

19233 - Socket Set Screw, 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 to replace 18803)

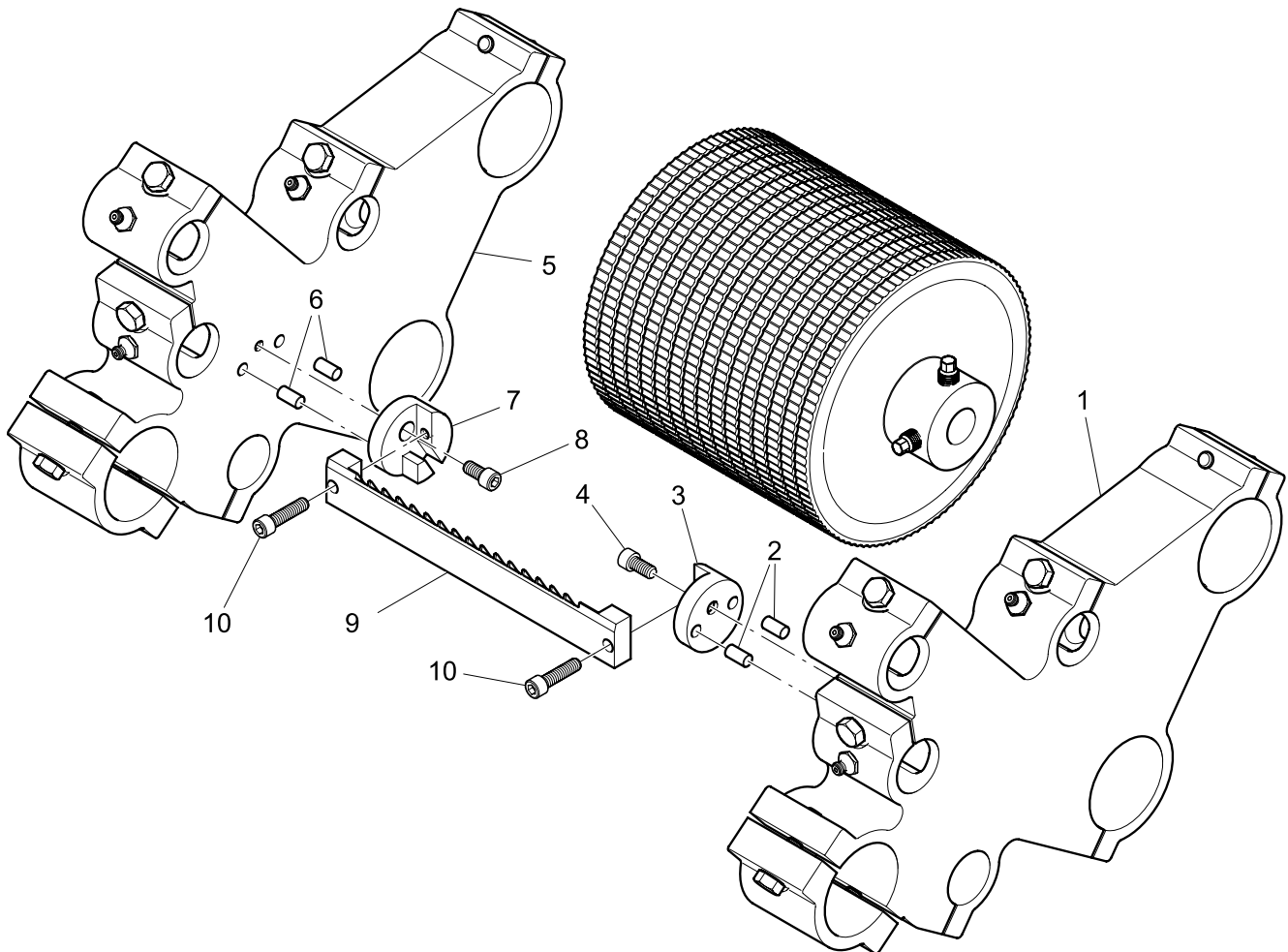
(continued on the next page)

Manual Page Number	Revision
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94-95

Parts, Optional Parts (*continued*): Add the Feed Drum Stripper plates and related parts shown below. The stripper plate helps remove sticky products from the grooves in the feed drum.

ITEM NO. QTY.	PART NO.	DESCRIPTION	
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





Manual Page Number	Revision
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96-97

Parts, Optional Parts:

Add:

18300 - Spacer, filler, .058" thick, 2.00" O.D. This spacer can be used in place of circular knives to change the size of cut. For example, on a 1/4" circular knife spindle assembly, every other knife can be removed and replaced with a filler spacer to produce a 1/2" circular spacer.

MODELS RA & RA-A

Instruction Manual

1635 MAR 97
(supersedes 1319 MAR 88)

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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.

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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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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

Safety Signs



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.

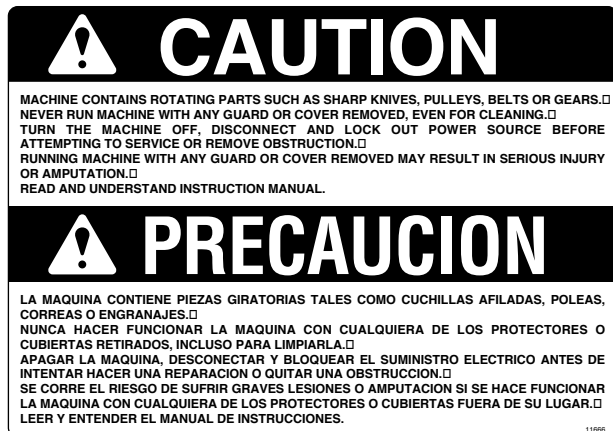


Figure 1 — Caution label


 **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.

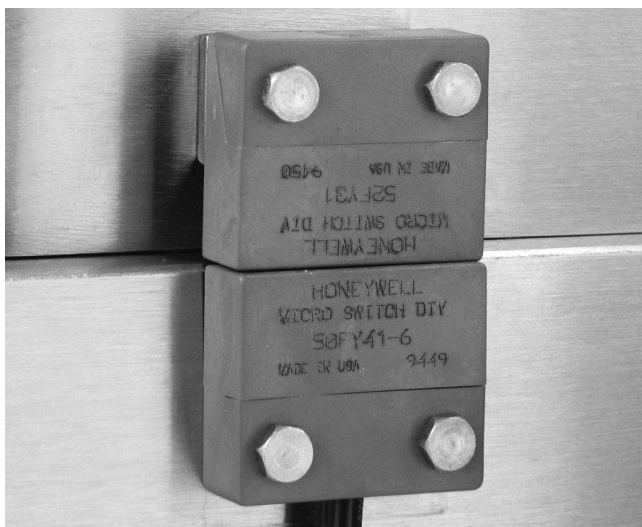


Figure 6 — Safety switch



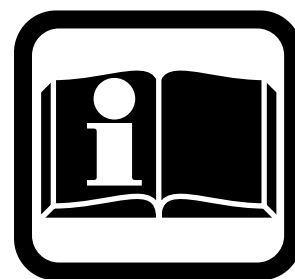
Figure 7 — Power disconnect/lockout switches

⚠ **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

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.

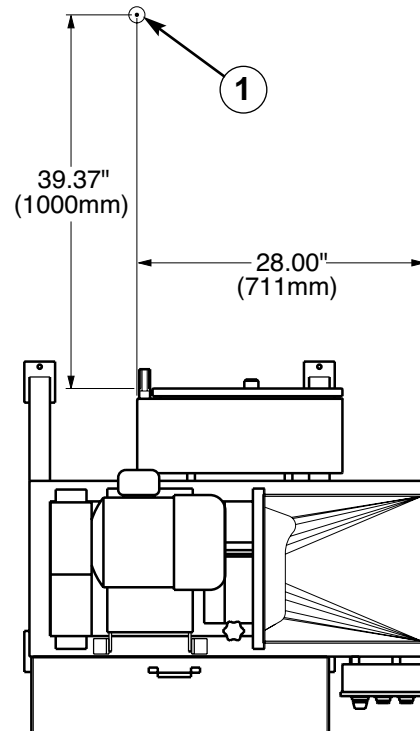


Figure 8 — Top view showing maximum sound position.
(1) Measurement Position, 63" (1600 mm) from floor.

GENERAL INFORMATION

Applications and Operating Principle

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.

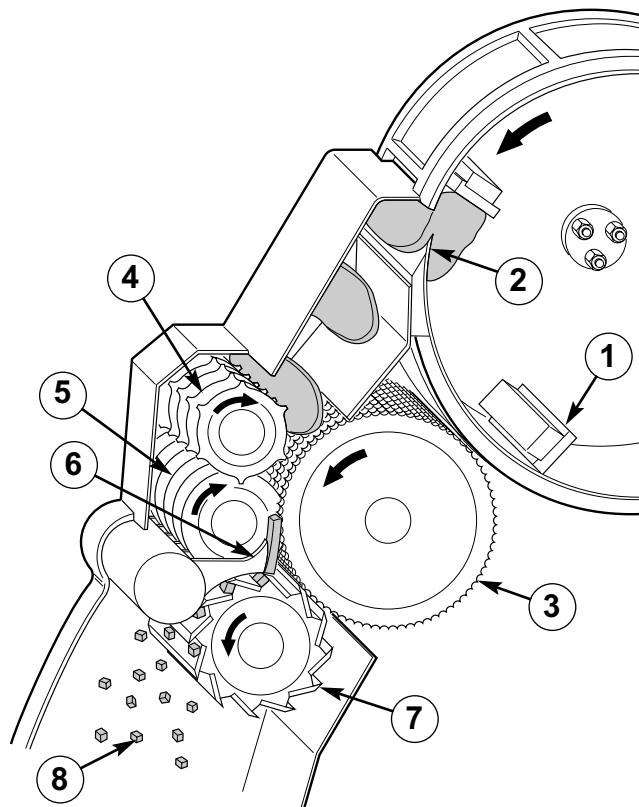


Figure 9 — Cutaway view of cutting unit. (1) Impeller, (2) Slicing Knife, (3) Feed Drum, (4) Feed Spindle, (5) Circular Knives, (6) Shear Plate, (7) Crosscut Knives, (8) Product. See chart on page 16 for cutting part speeds.

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

See the addendum
for updated information

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!*

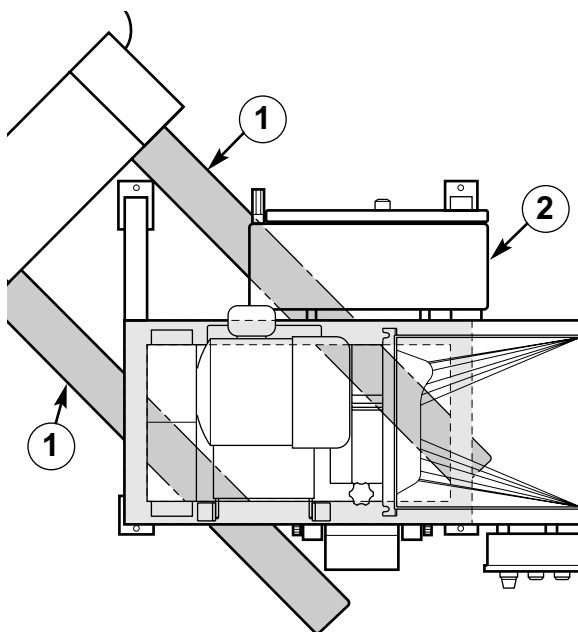


Figure 10 — Top view showing the position of lifting forks. (1) Lifting Forks, (2) Starter Enclosure.

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.

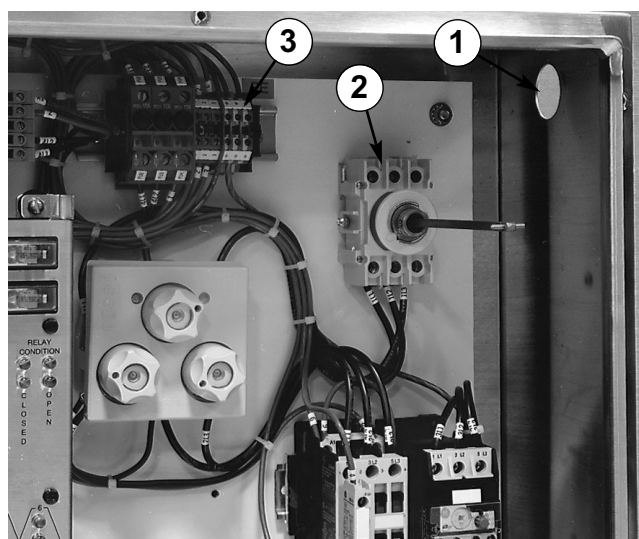
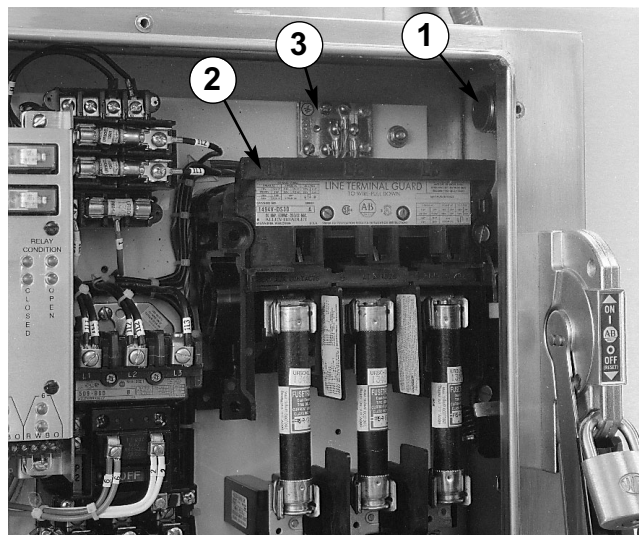
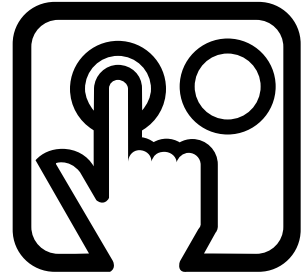


Figure 11 — Connect outside power source to the terminals on the disconnect; connect ground conductor to the earth termination point. (NEMA* enclosure, top, and IEC** enclosure, bottom). (1) Power Source Entry Point, (2) Disconnect, (3) Earth Termination Point.

* 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!*

OPERATION

Start-up, Stopping and Feeding

See the addendum
for updated information

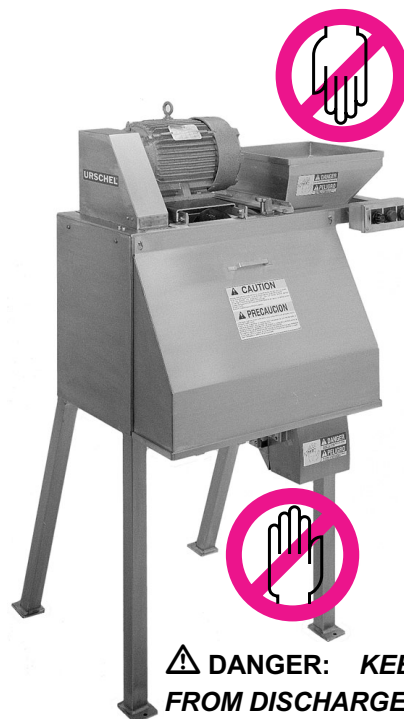
PRE-START CHECKLIST

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.

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).

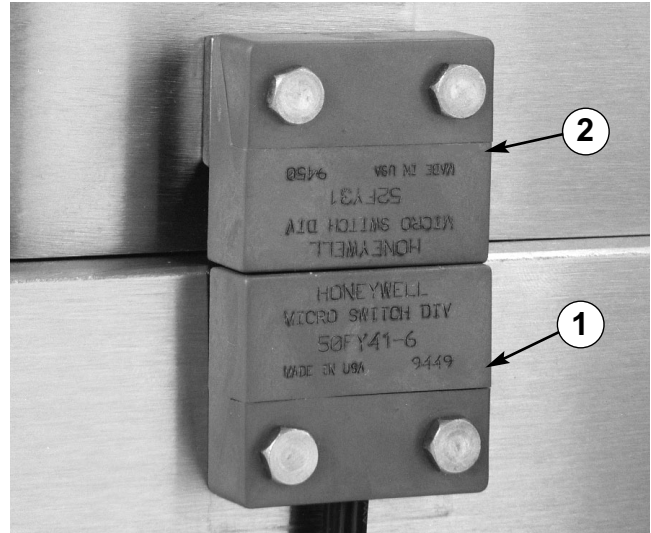


Figure 13 — Safety switch, (1) Sensor, (2) Actuator.

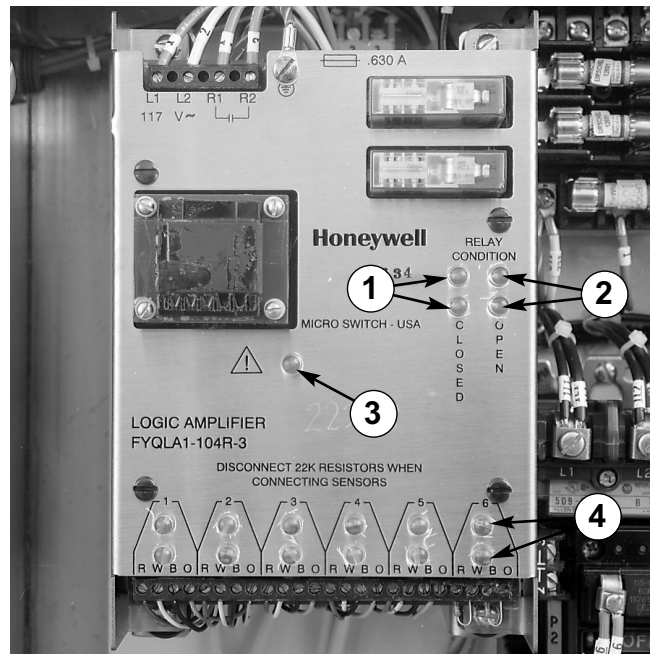


Figure 14— Amplifier. (1) Green "Relay Condition" LEDs, (2) Red "Relay Condition" LEDs, (3) Red "Attention" LED, (4) Red "Switch Output" LEDs.

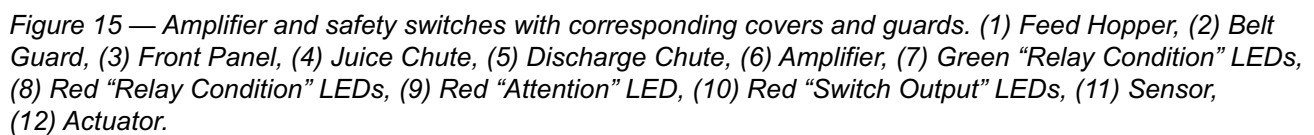
SAFETY SWITCH TEST

⚠ 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.



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 over-feeding 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

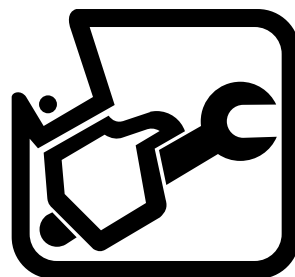
⚠ DANGER: *Never try to remove jammed product while the machine is running! You may come into contact with cutting parts which could cause severe injury!*

DANGER!



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!*

MAINTENANCE

Covers and Guards

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.

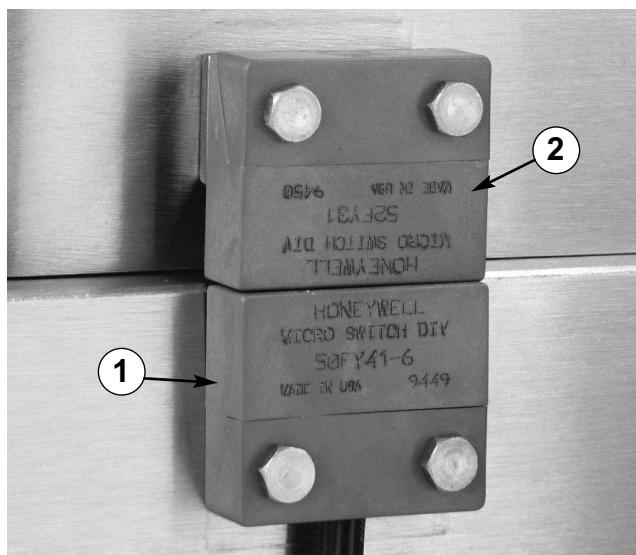


Figure 16— Safety switch sensors and actuators must be aligned and within 1/16" (1.6 mm). (1) Sensor, (2) Actuator.

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).

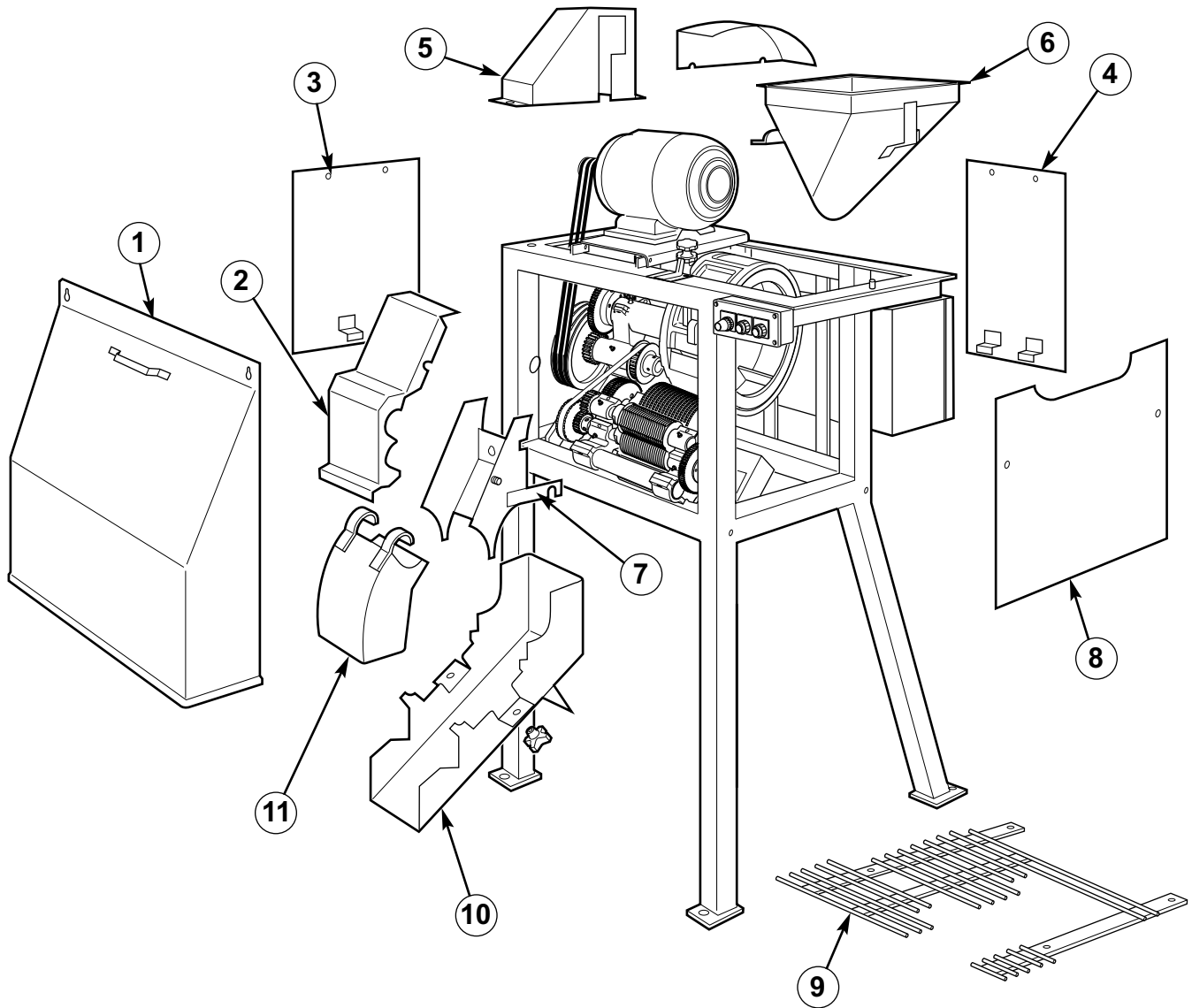


Figure 17 — Covers and guards. (1) Front Panel, (2) Slice Guide Cover, (3) Right End Panel, (4) Back Panel, (5) Belt Guard, (6) Feed Hopper, (7) Slice Guide, (8) End Panel, (9) Bottom Grid, (10) Juice Chute, (11) Discharge Chute.

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.

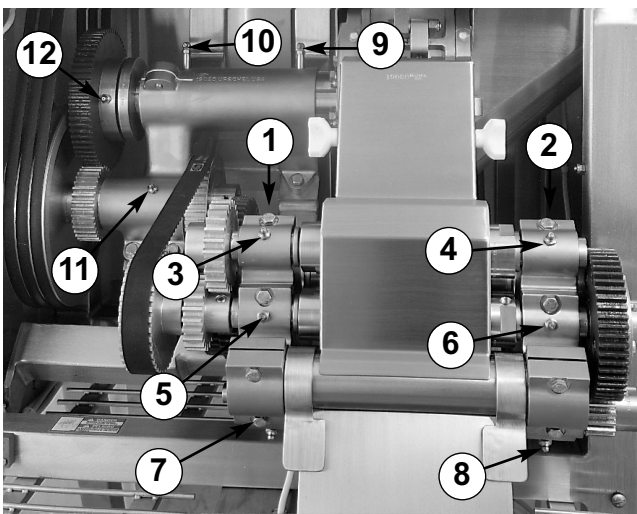


Figure 18 — Lubrication points for dicing unit (1–8) and drive bracket (9–11). Points (1) and (2) are on the backs of side frames. Point (12) is on the shear pin hub.

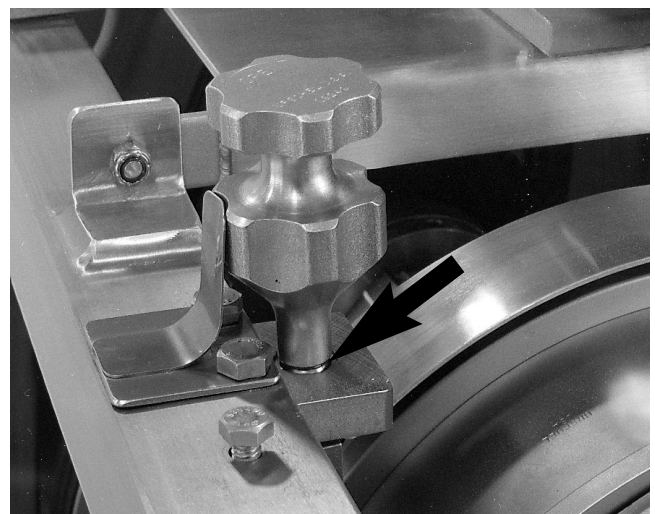


Figure 19 — Slice adjustment bearing

MAINTENANCE

Slicing Unit

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.

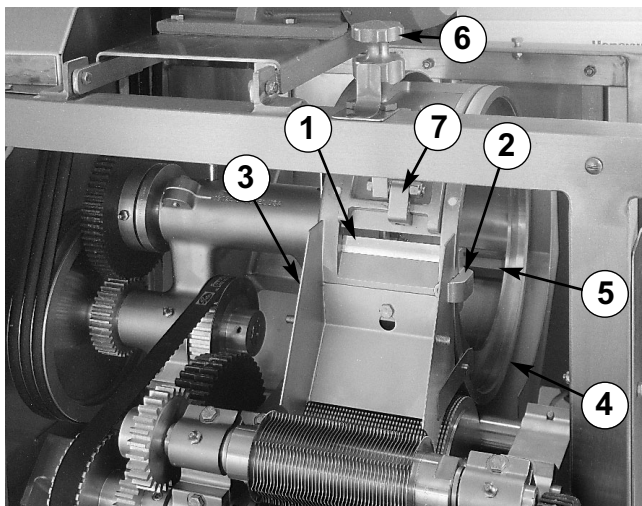


Figure 20 — Slicing Unit. (1) Slicing Knife, (2) Slicing Knife Clamp, (3) Slice Guide, (4) Slicing Case, (5) Impeller, (6) Slice Adjustment Knob, (7) Gate Bracket.

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.

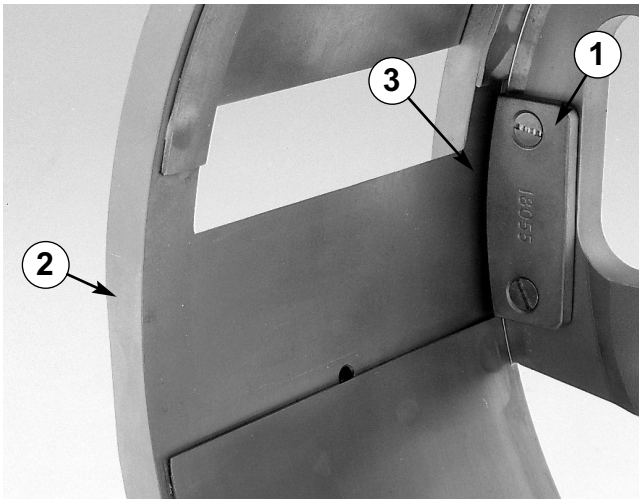


Figure 21 — Slicing knife area. (1) Slicing Knife Holder, (2) Slicing Case, (3) Slot.



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)

MAINTENANCE

Slicing Unit

("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 $\frac{1}{16}$ " to $\frac{1}{8}$ " (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 $\frac{1}{16}$ " (1.59 mm) increments.

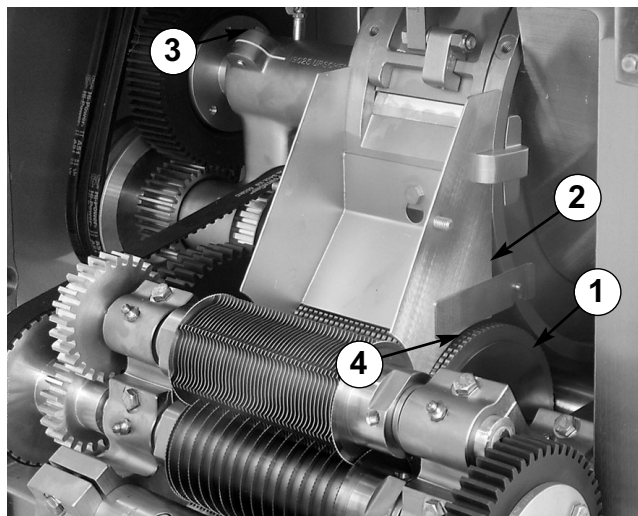


Figure 23 — Maintain $\frac{1}{16}$ to $\frac{1}{8}$ " (1.59 to 3.18 mm) clearance between slice guide and feed drum. (1) Feed Drum, (2) Slice Guide, (3) Pinch Bolt, (4) Clearance.

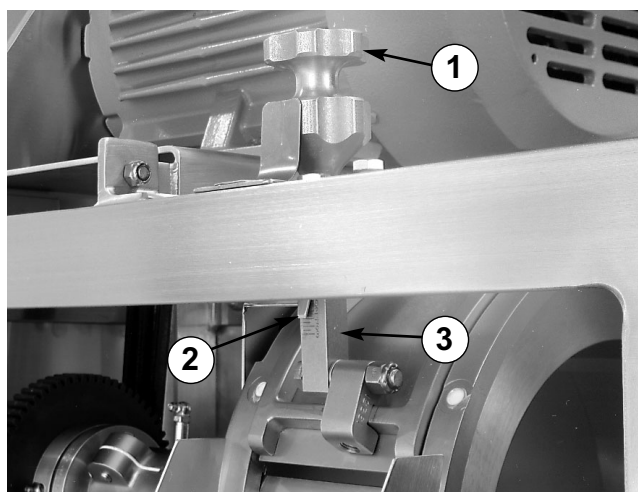


Figure 24 — Slice thickness adjustment. (1) Slice Adjustment Knob, (2) Indicator Arm, (3) Scale.

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.

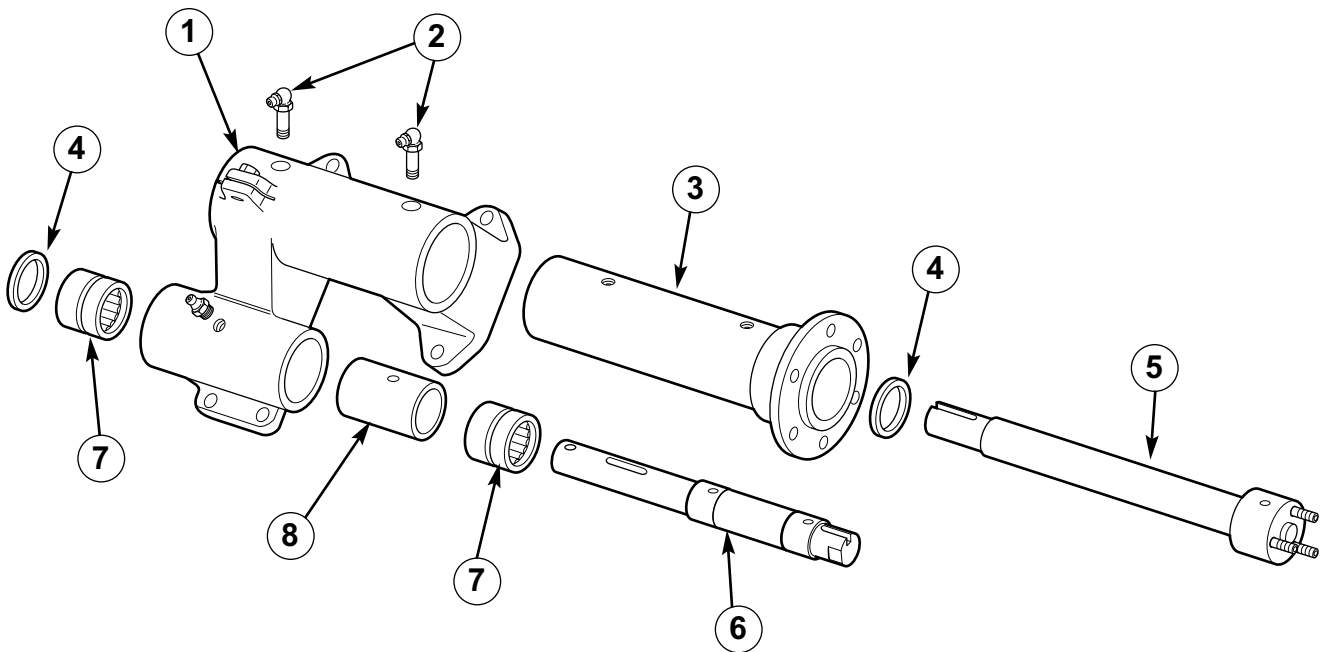


Figure 25 — Drive train assembly. (1) Drive Bracket Support Casting, (2) Lubrication Fittings, (3) Impeller Shaft Housing, (4) Thrust Washer, (5) Impeller Shaft, (6) Dicer Drive Shaft, (7) Roller Bearing, (8) Bearing Spacer.

MAINTENANCE

Drive Train

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.

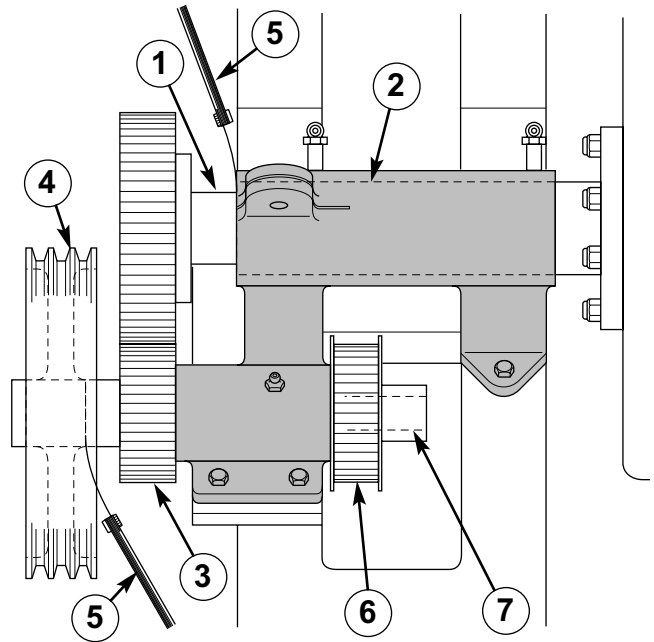


Figure 26 — Set a clearance of .004" (.102 mm) between gear hub and bearing, and between gear and pulley. (1) Gear Hub, (2) Impeller Shaft Housing, (3) Gear, (4) Pulley, (5) Feeler Gauge, (6) Pulley Assembly, (7) Drive Shaft.

MAINTENANCE

Dicing Unit

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.

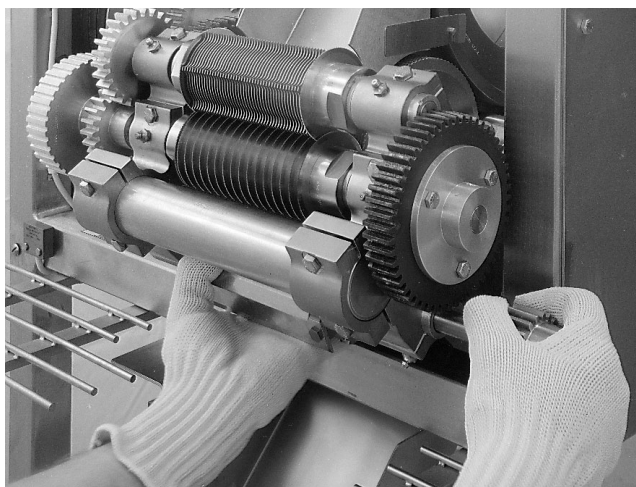


Figure 27 — Removing crosscut knife spindle

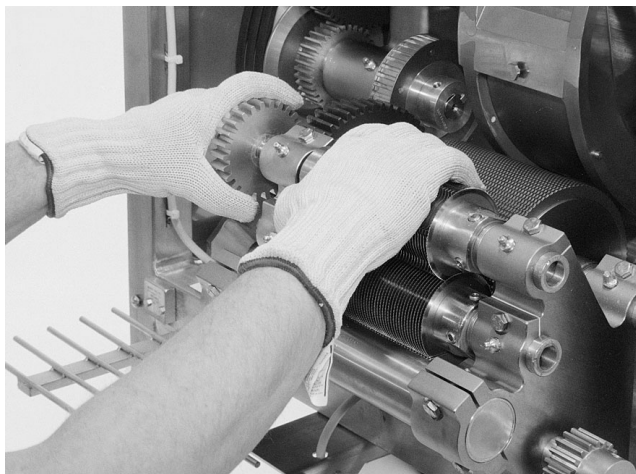


Figure 28 — Removing feed spindle

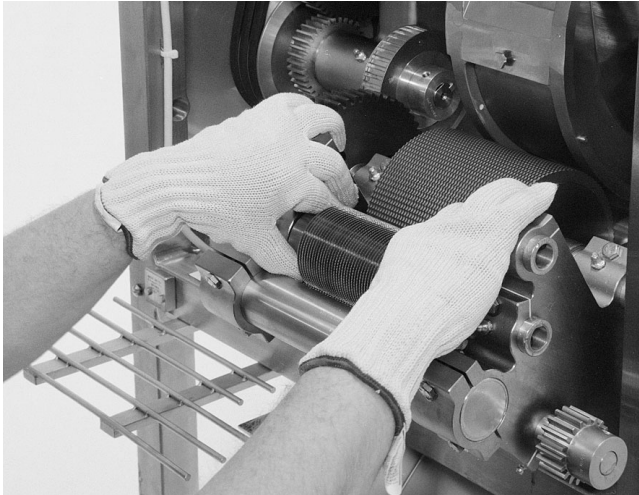


Figure 29 — Removing circular knife spindle

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.

MAINTENANCE

Dicing Unit

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.*

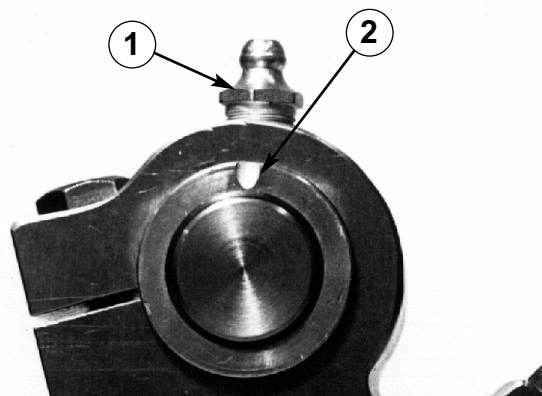


Figure 30 — Aligning notch on bearing with grease fitting. (1) Grease Fitting, (2) Notch.

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.

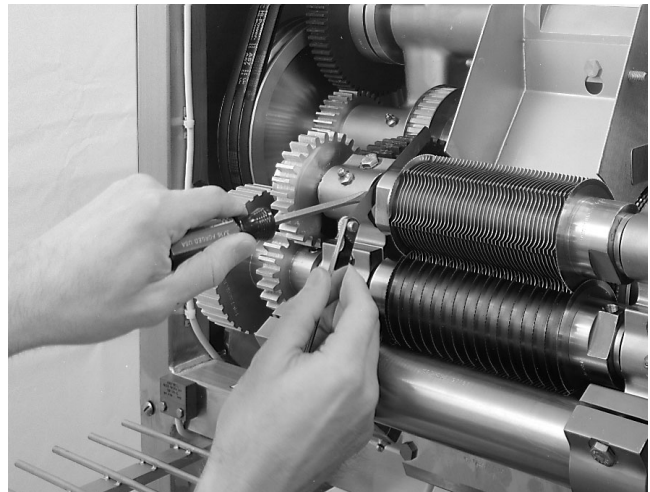


Figure 31 — Setting clearance between spindle and bearing

(“Adjustments”, continued on page 44)

MAINTENANCE

Dicing Unit

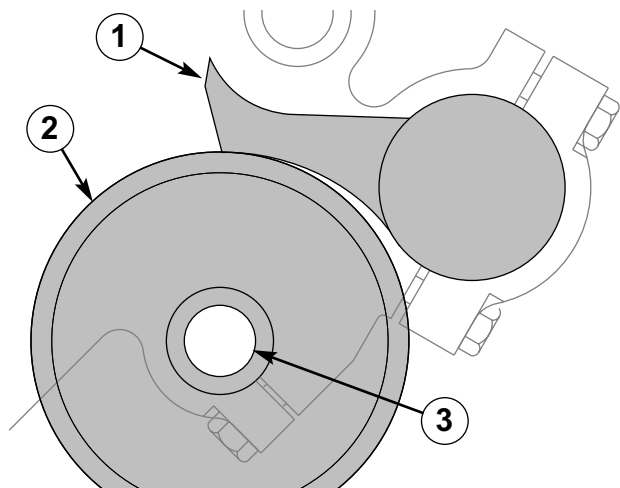


Figure 32 — Setting clearance between crosscut knife spindle and shear plate using clearance gauge.

(1) Shear Plate, (2) Clearance Gauge, (3) Crosscut Knife Spindle Shaft.

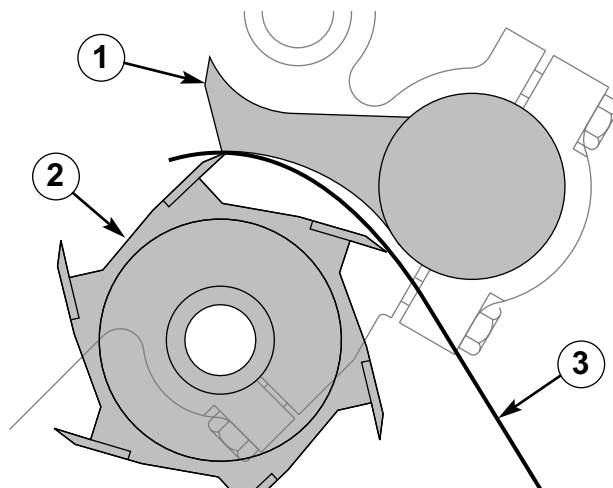


Figure 33 — Setting clearance between crosscut knife spindle and shear plate using feeler gauge. (1) Shear Plate, (2) Crosscut Knife Spindle, (3) Feeler Gauge.

(“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.

MAINTENANCE

Circular Knife and Feed Spindles

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.

MAINTENANCE

Crosscut Knife Spindle Assembly

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.

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).

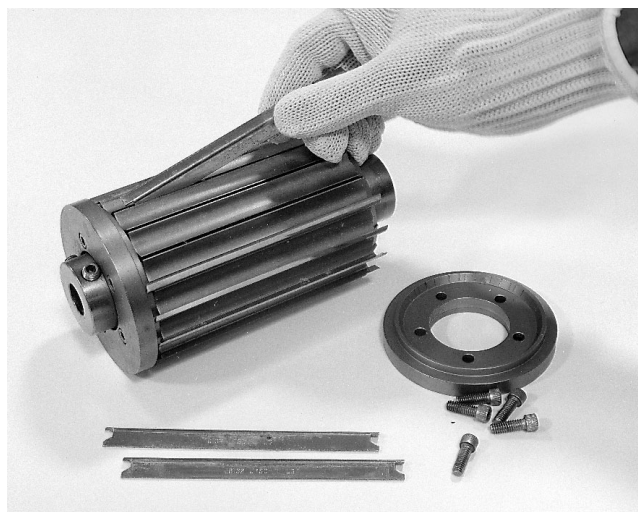


Figure 35 — Standard crosscut knife spindle disassembly



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

MAINTENANCE

Crosscut Knife Spindle Assembly

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).

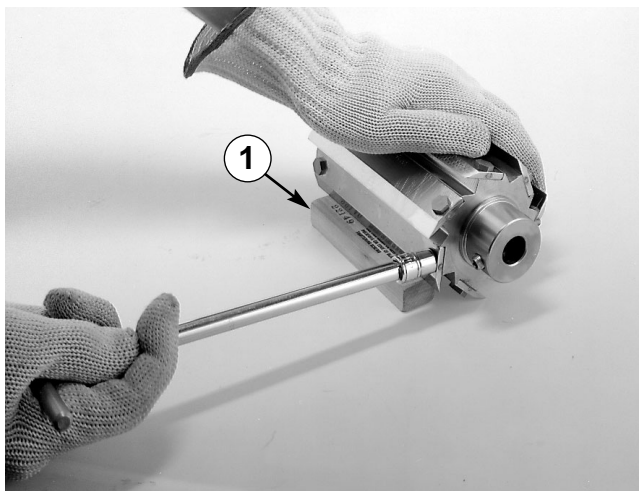


Figure 37 — Using wooden block to hold knife against seat. (1) Wooden Block

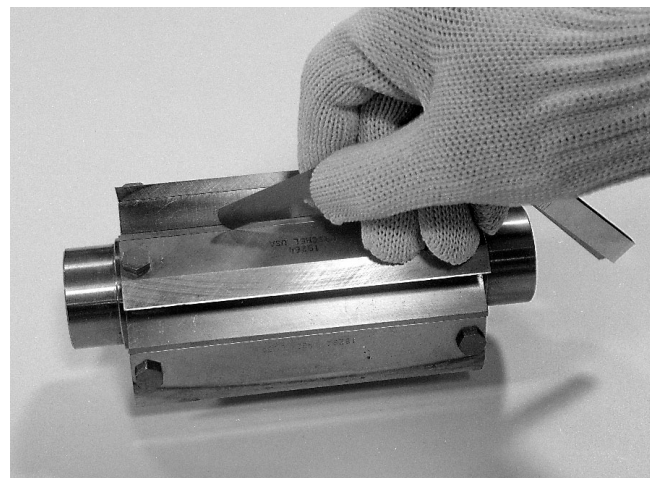


Figure 38 — Check with feeler gauge between knife and knife seat.

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.

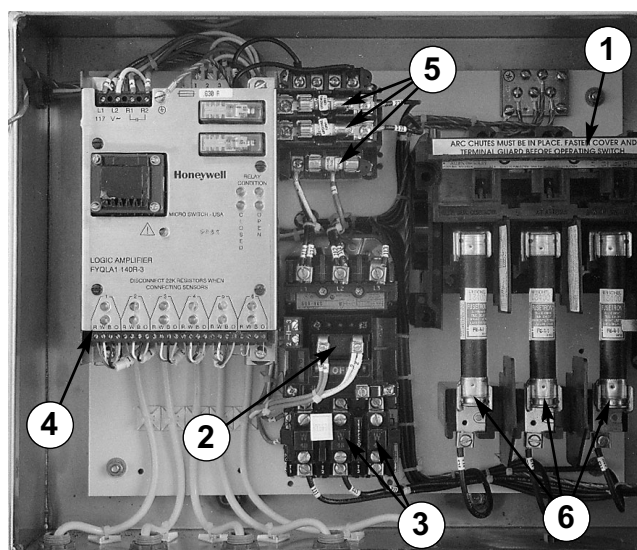


Figure 39 — Typical starter enclosure interior (NEMA). (1) Disconnect, (2) Starter Coil, (3) Heaters, (4) Amplifier, (5) Transformer Fuses, (6) Main Fuses, (7) Overload Relay.

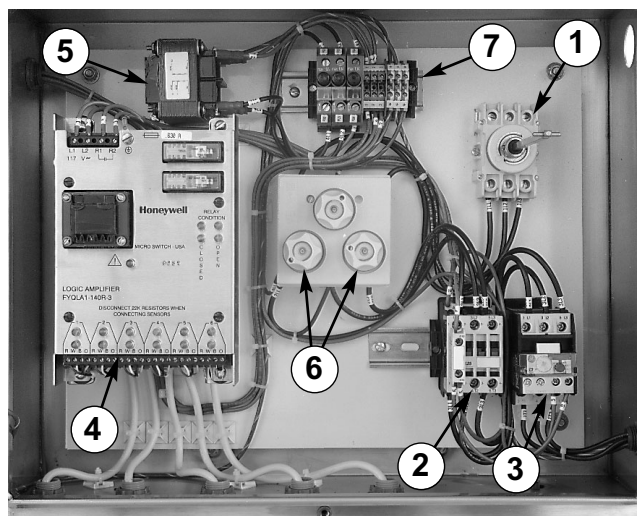


Figure 40 — Typical starter enclosure interior (IEC). (1) Disconnect, (2) Contactor, (3) Overload Relay, (4) Amplifier, (5) Transformer, (6) Main Fuses, (7) DIN Bar.

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).

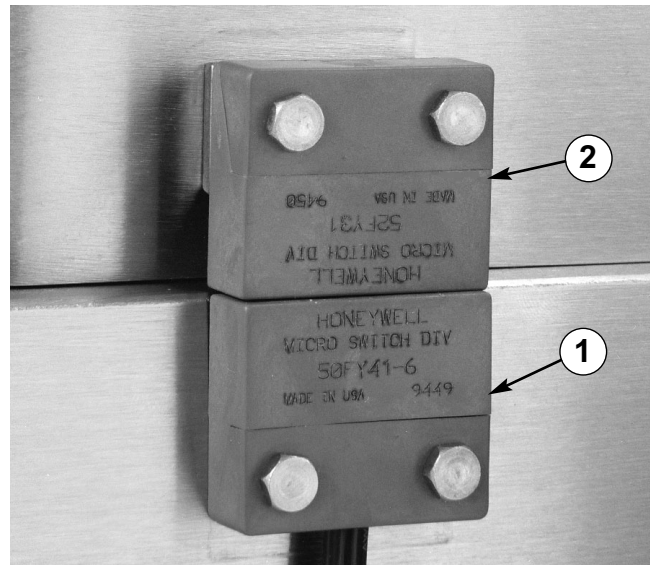


Figure 41 — Safety switch sensors and actuators must be aligned and within 1/16" (1.6 mm). (1) Sensor, (2) Actuator.

("Inspection", continued on page 50)

(“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.

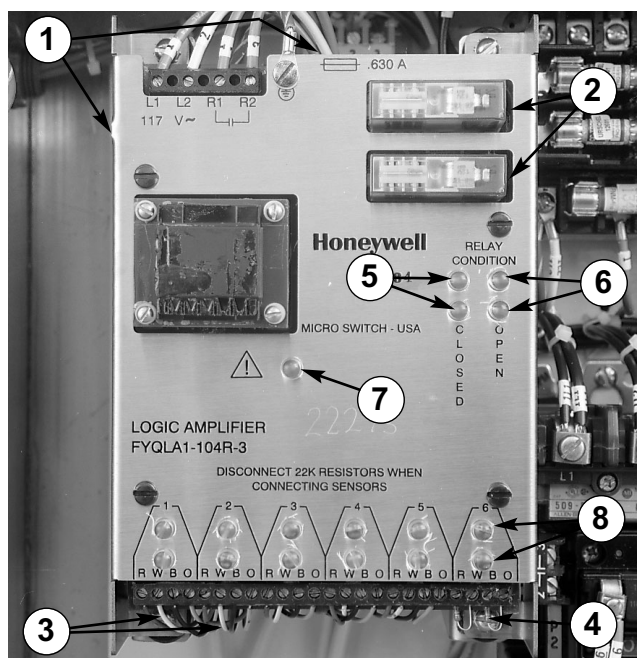


Figure 42 — Amplifier. (1) Fuses, (2) Relays, (3) Sensor Leads, (4) Resistor, (5) Green “Relay Condition” LEDs, (6) Red “Relay Condition” LEDs, (7) Red “Attention” LED, (8) Red “Switch Output” LEDs.

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	2.416" (61.37 mm)
	18068	2.416" (61.37 mm)
	18216	2.450" (62.23 mm)
CROSSCUT	18132	*.125" (2.24 mm)
	19264	1.264" (32.11 mm)
	48105	.938" (23.83 mm)
	48115	1.392" (35.36 mm)
CIRCULAR	18134	bottom of serrations
	18135	2.938" (74.63 mm)
	18803	bottom of serrations

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

(*"Knife Care", continued on page 52*)

MAINTENANCE

Knife Care

(“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 buffering wheel. Hold knife securely; the use of a knife buffering clamp is recommended. Never attempt to catch a dropped knife! Should you drop a knife during the buffering 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 buffering 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 buffering 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 buffering wheel rake, available from an industrial supplier, to soften the wheel.*

For safety reasons, use a knife buffering 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).

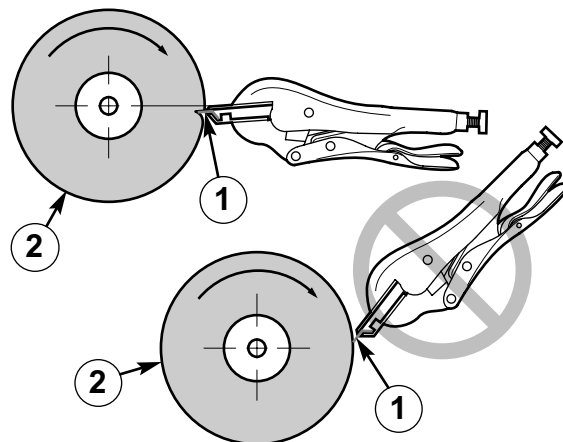


Figure 43 — Correct position (top) and incorrect position (bottom) for knife during buffering. (1) Knife, (2) Buffering Wheel.

Push the knife edge into the buffering wheel, penetrating the wheel 1/16"–1/8" (1.5–3 mm). Move the knife endwise and buff the entire edge across the buffering 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 buffering wheel too long as the edge may heat and burn.

Failure to obtain sharp edges by buffering 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 buffering wheel (Figure 43).
3. Too little or too much buffing compound on the wheel.
4. Undersize buffering wheels. Discard the buffering wheels when they are worn to 8-3/4" (222 mm) diameter.

MAINTENANCE

Troubleshooting

PROBLEM	CAUSE	CORRECTION
Incomplete Cuts	Circular or crosscut knives dull or under-sized from sharpening	Replace knives as required. Avoid using under-sized 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.

MAINTENANCE

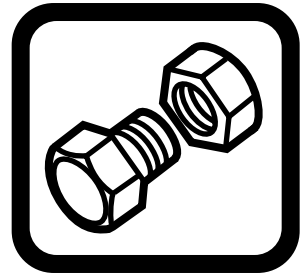
Troubleshooting

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.

MAINTENANCE

Troubleshooting

PROBLEM	CAUSE	CORRECTION
Motor Frequently Becomes Overloaded	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 Chesterton factory is cost effective. The country code for dialing the U.S.A. is 1.

URSHEL

CORPORATE HEADQUARTERS

1200 Cutting Edge Drive

Chesterton, Indiana 46304 U.S.A.

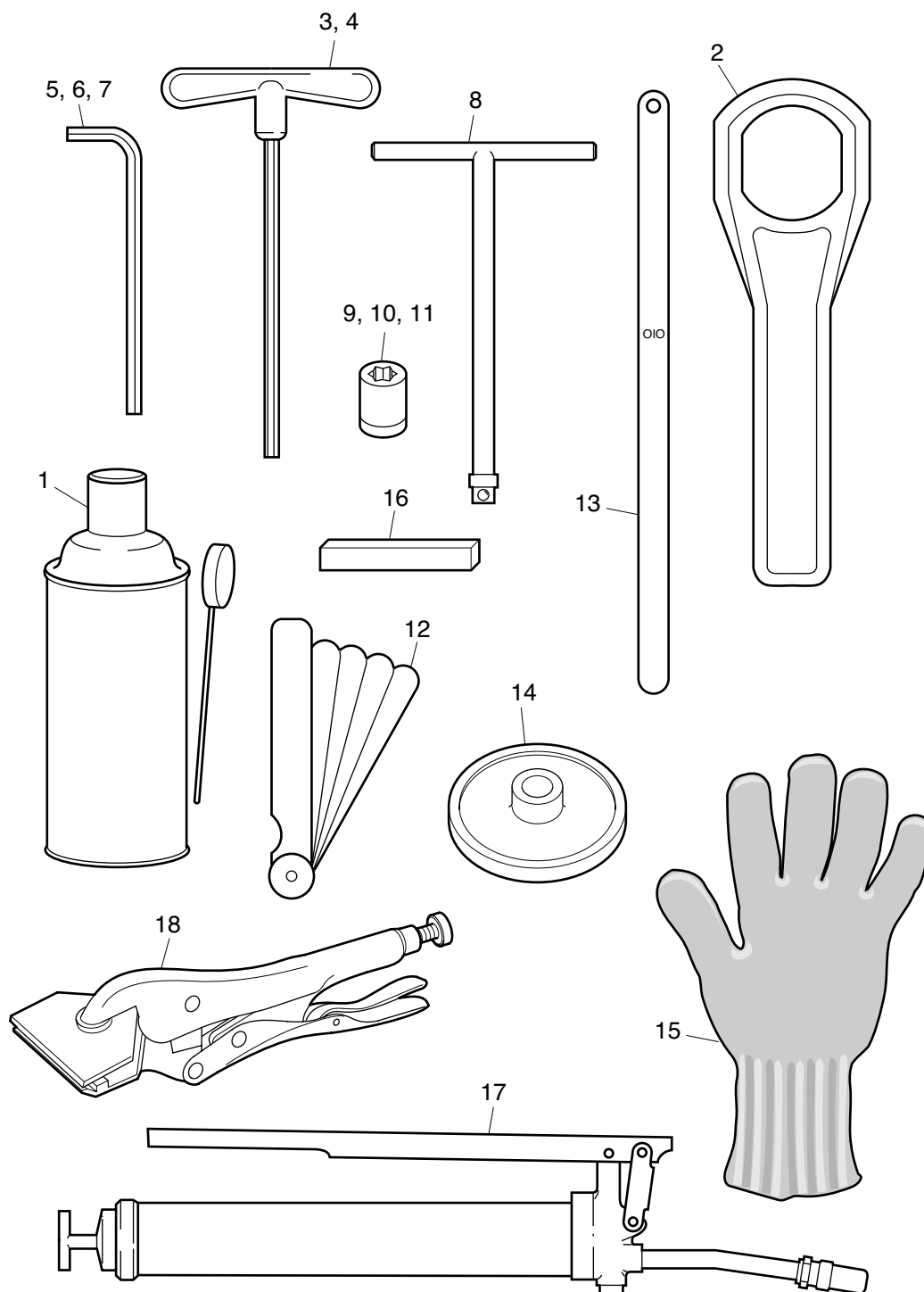
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Toll Free: +1.844.URSHEL (877.2435)

www.urschel.com

Technical Publication inquiries: techpubs@urschel.com

Other inquiries: info@urschel.com



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)

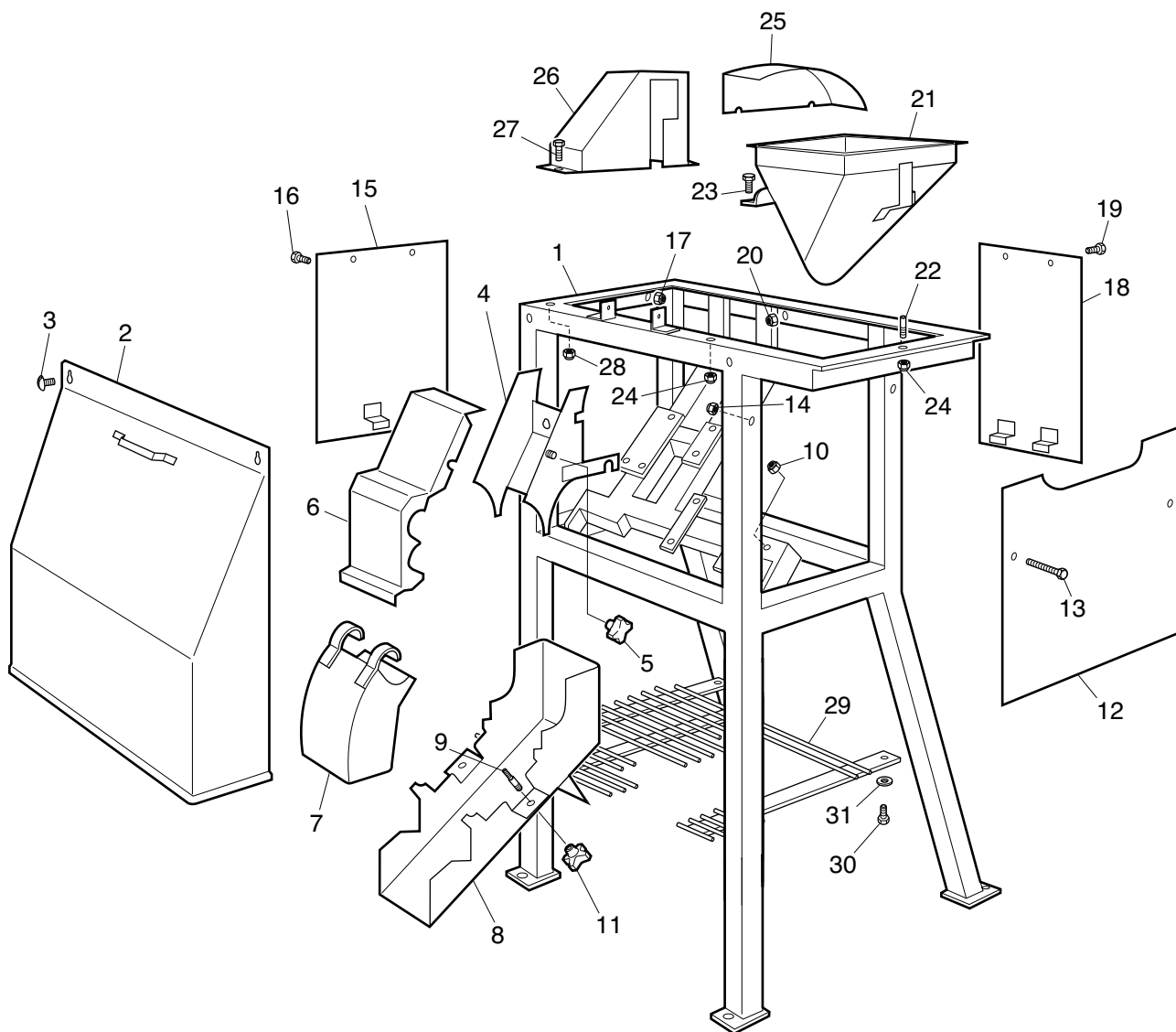
TOOLS FOR KNIFE SHARPENING

—	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

See the addendum
for updated information



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

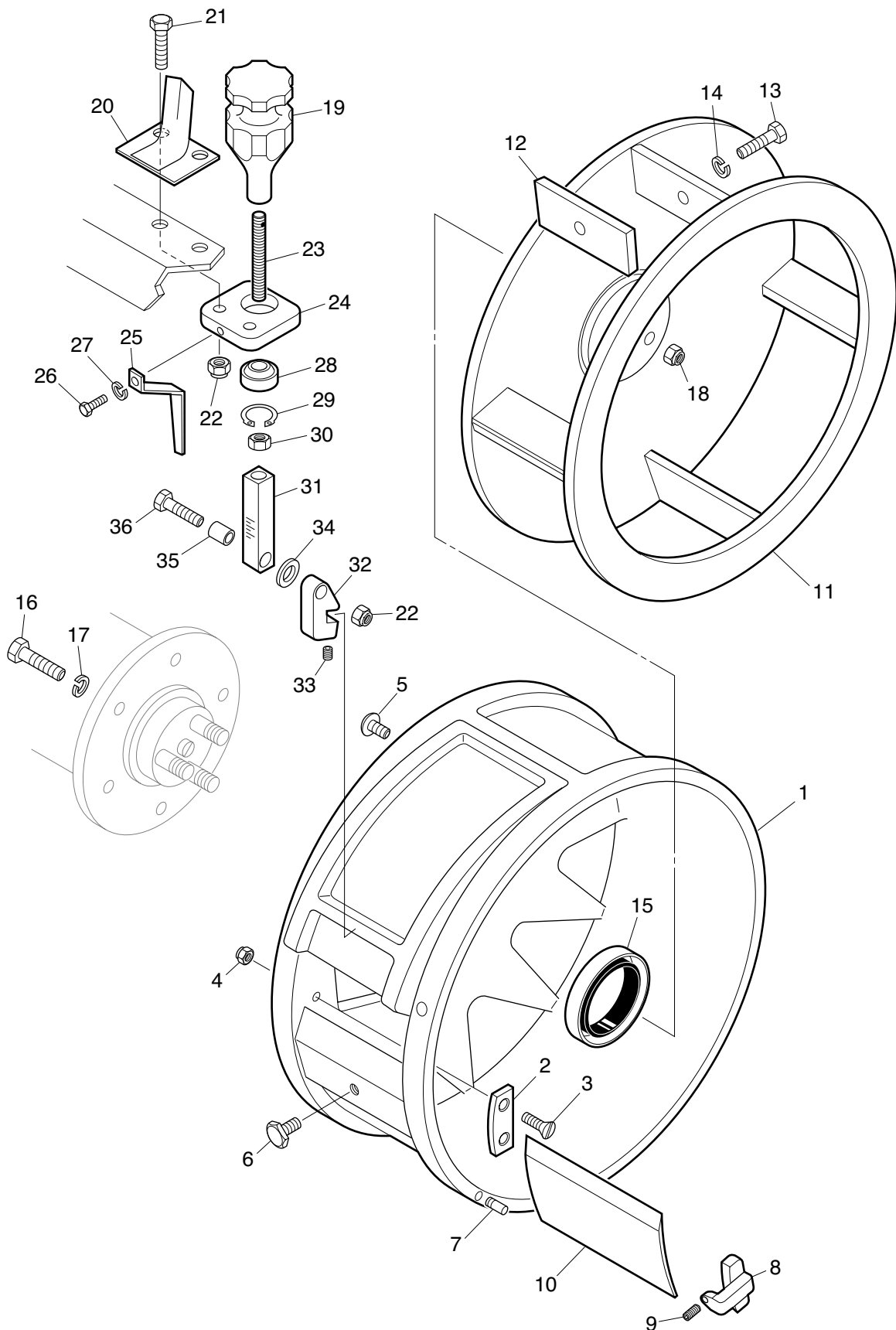
* Not sold separately.

NOTE: s.s. denotes stainless steel

PARTS

Slicing Unit

See the addendum
for updated information

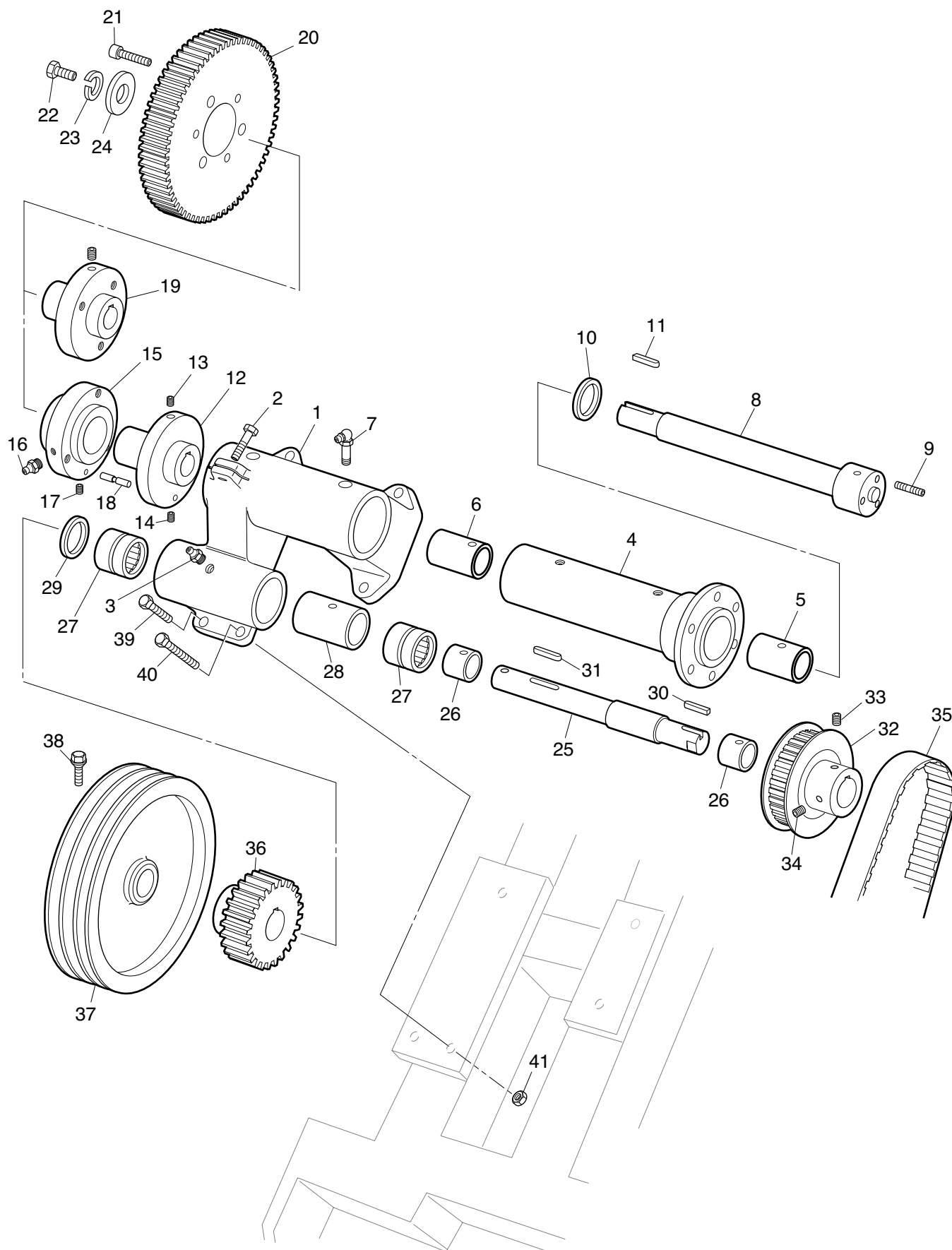


ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	19292	Slicing Case Assembly, (includes items 1–7)	1
1	—	Slicing Case, (not sold separately)	1
2	18055	Slicing Knife Holder	1
3	10158	Flat Head Machine Screw, 10-24 x 1", s.s.	2
4	10231	Hex Nut, locking, 10-24, s.s.	2
5	10214	Truss Head Machine Screw, 1/4-20 x 3/8", 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



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

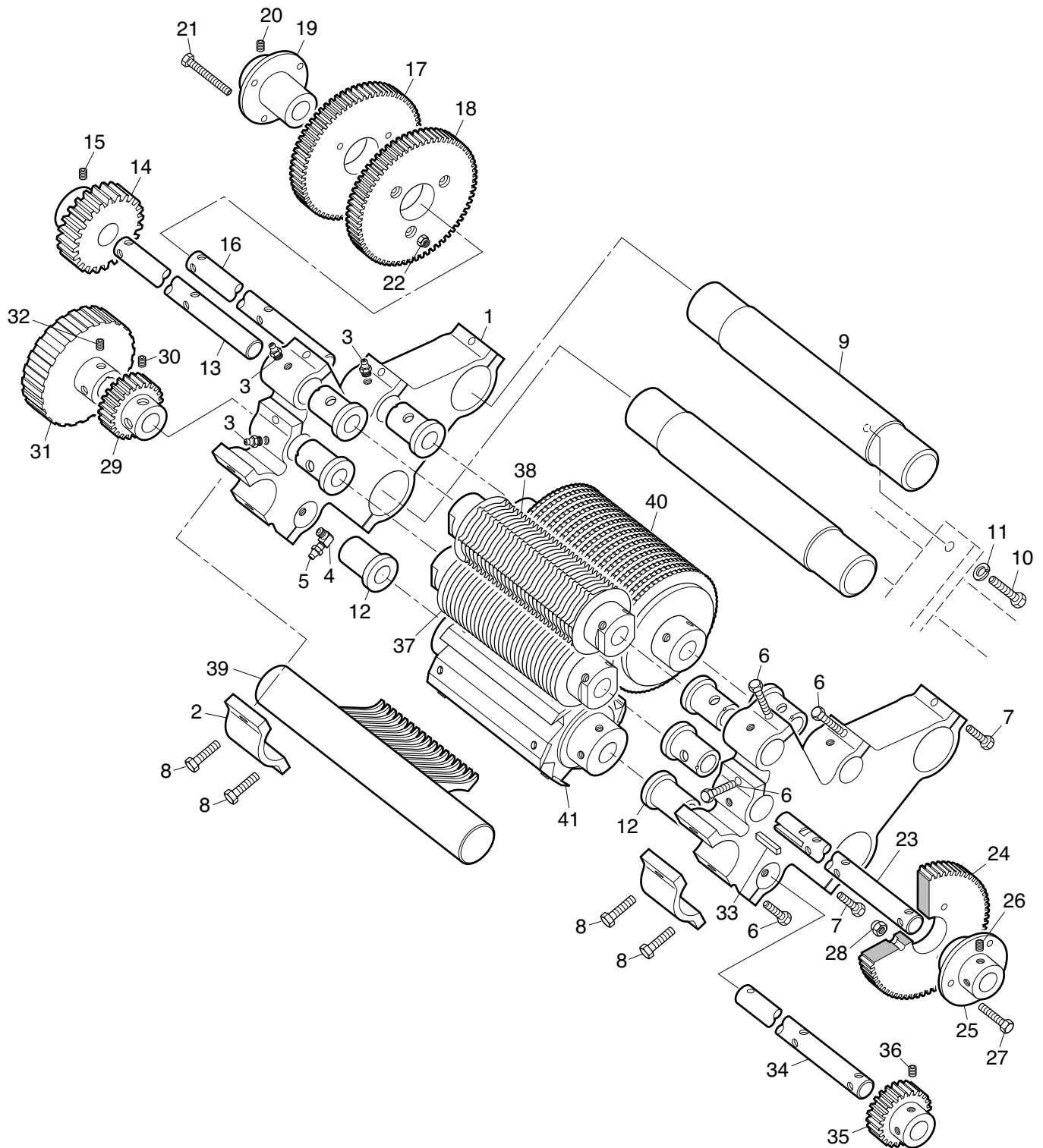
* See Drive Chart, page 91.

NOTE: s.s. denotes stainless steel

PARTS

Dicing Unit

See the addendum
for updated information



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

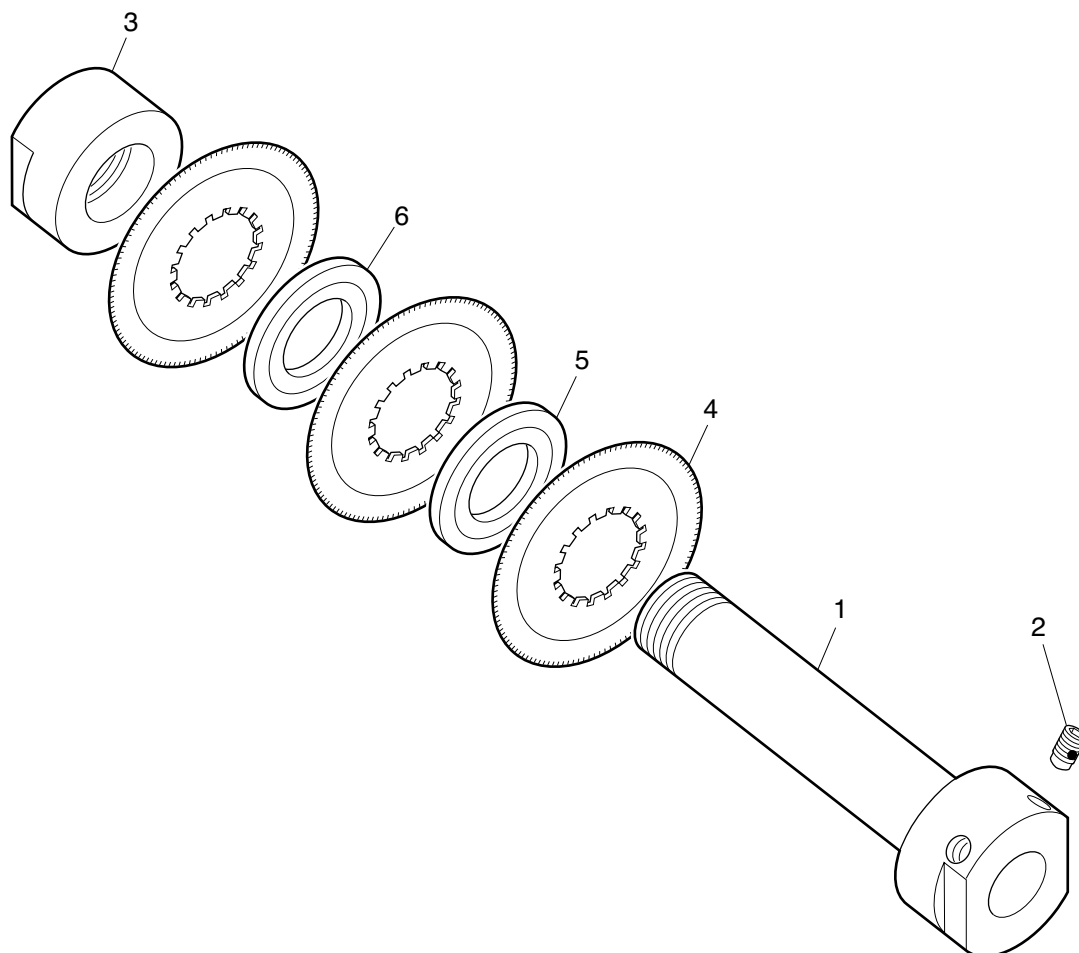
* See pages 70 thru 79.

NOTE: s.s. denotes stainless steel

PARTS

Circular Knife Spindle Assembly

See the addendum
for updated information



PARTS

Circular Knife Spindle Assembly

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

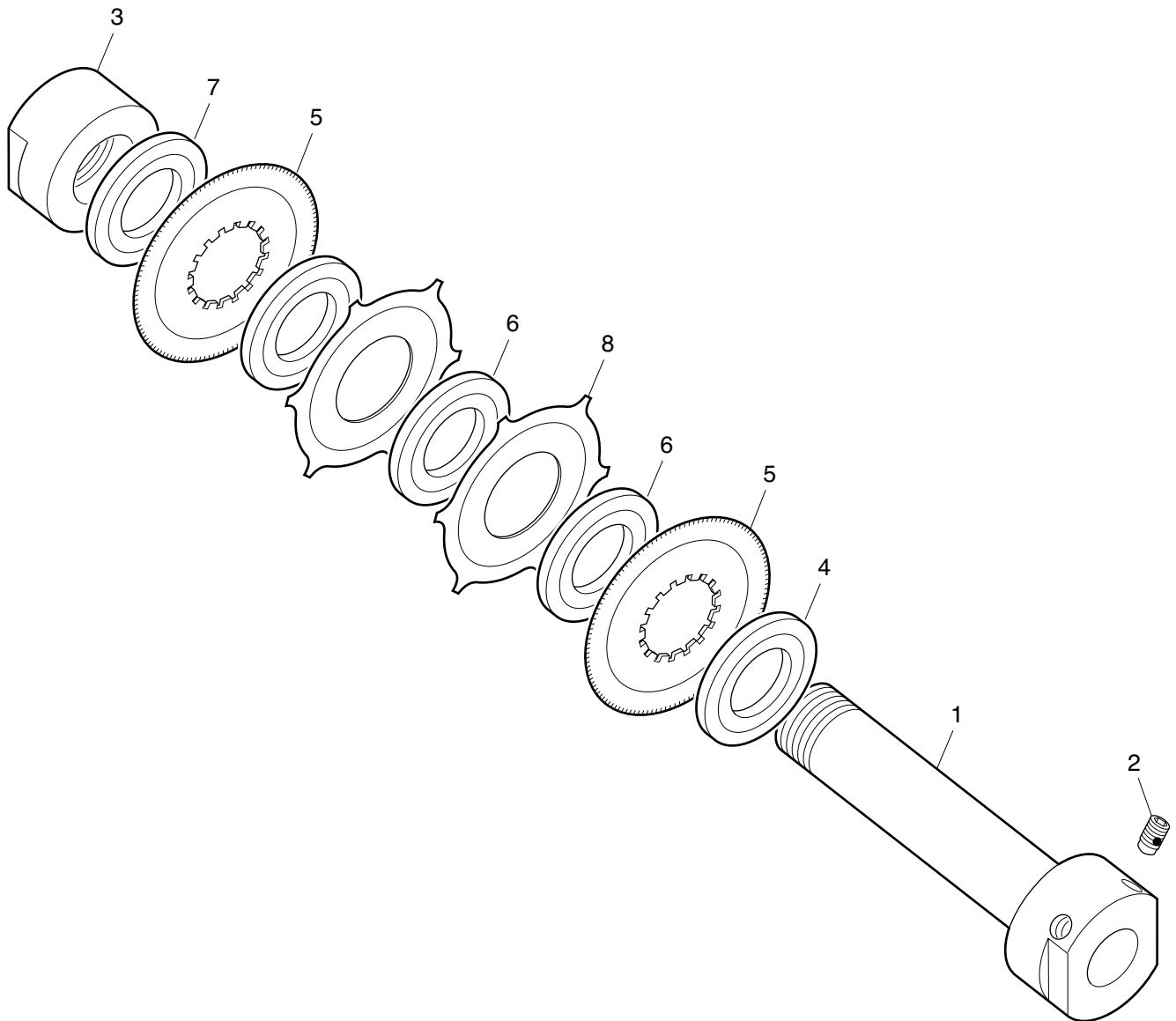
STANDARD PARTS							
Size of Cut	Circular Knife Spindle Assembly No.		Item 4 Knife No. and Qty.		Item 5 Spacer No. and Qty.		† Item 6 Spacer No. and Qty.
	Bronze	Stainless					
1/8" (3.2 mm)	18102	18245	18134	47	18035	46	— —
5/32" (4.0 mm)	18104	18246	18134	38	18036	37	— —
3/16" (4.8 mm)	18105	18247	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

See the addendum
for updated information



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

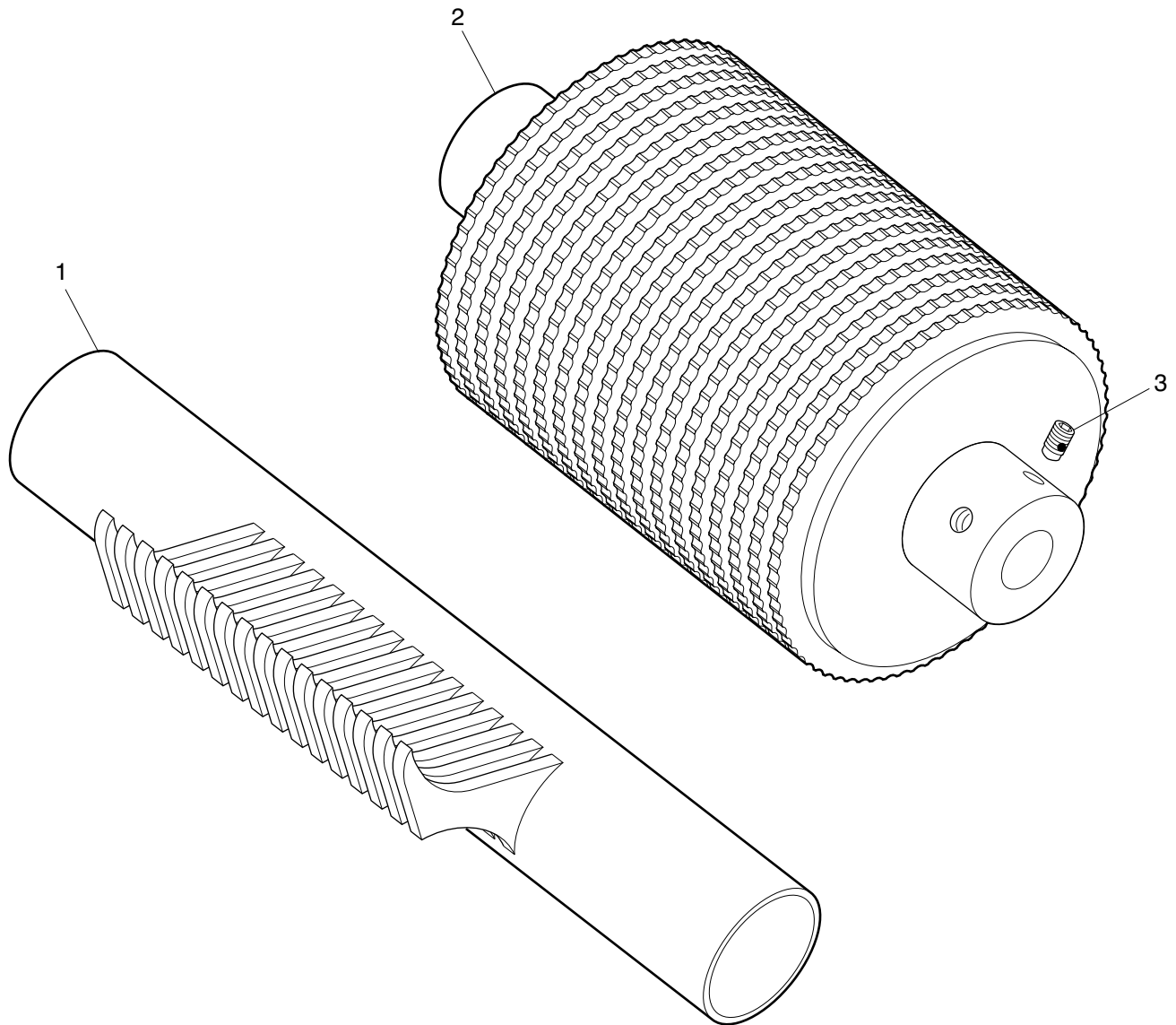
NOTE: s.s. denotes stainless steel

STANDARD PARTS									
Size of Cut	Feed Spindle Assembly No.		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.
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



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.

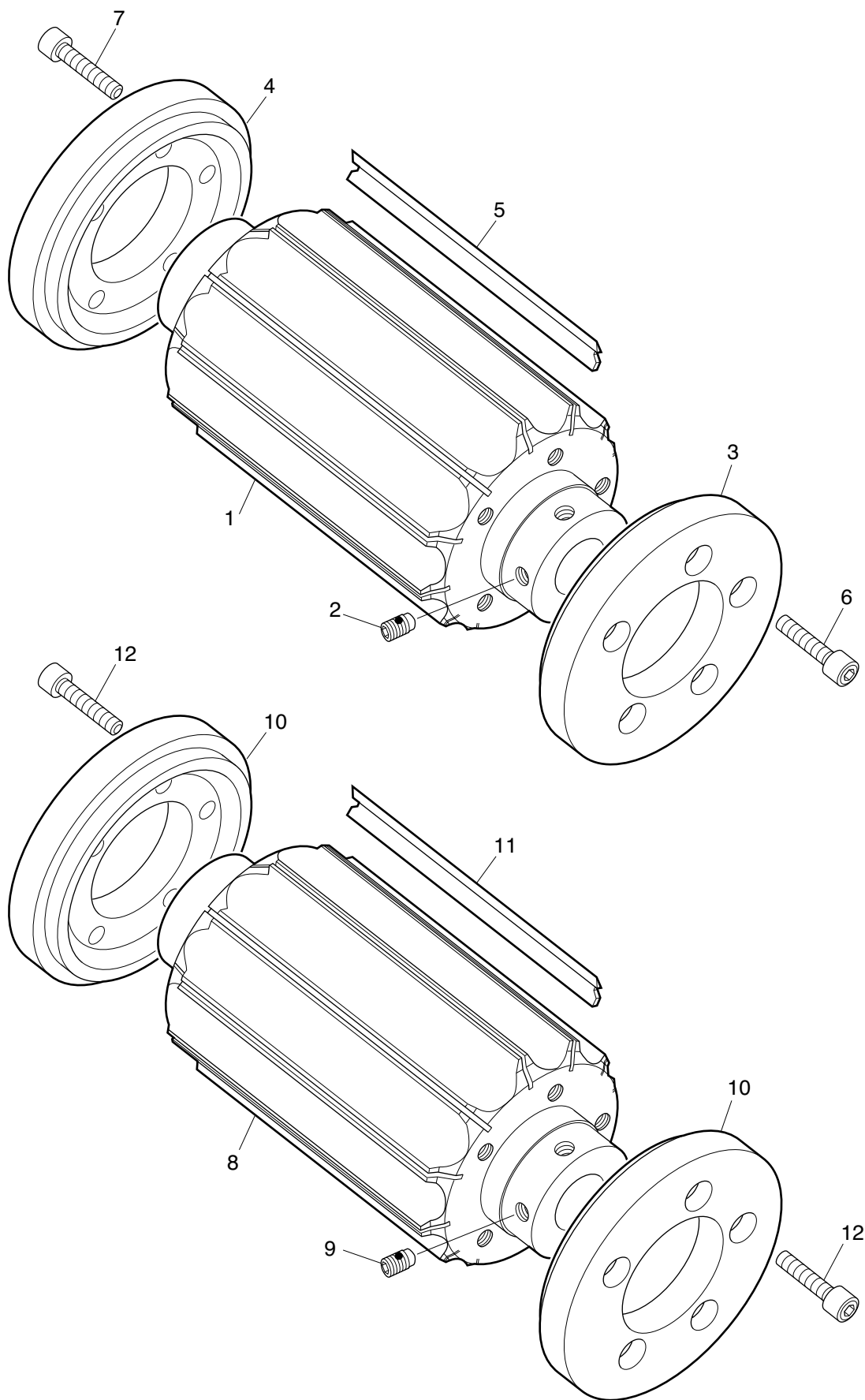
† There is an exchange program on this item (18115 only). For further details, contact Urschel Laboratories, Inc.

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

See the addendum
for updated information



Crosscut Knife Spindle Assembly

ITEM NO.	PART NO.	DESCRIPTION	QTY.
—	*	Crosscut Knife Spindle Assembly, plated bronze, <i>(includes items 1–7),</i>	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

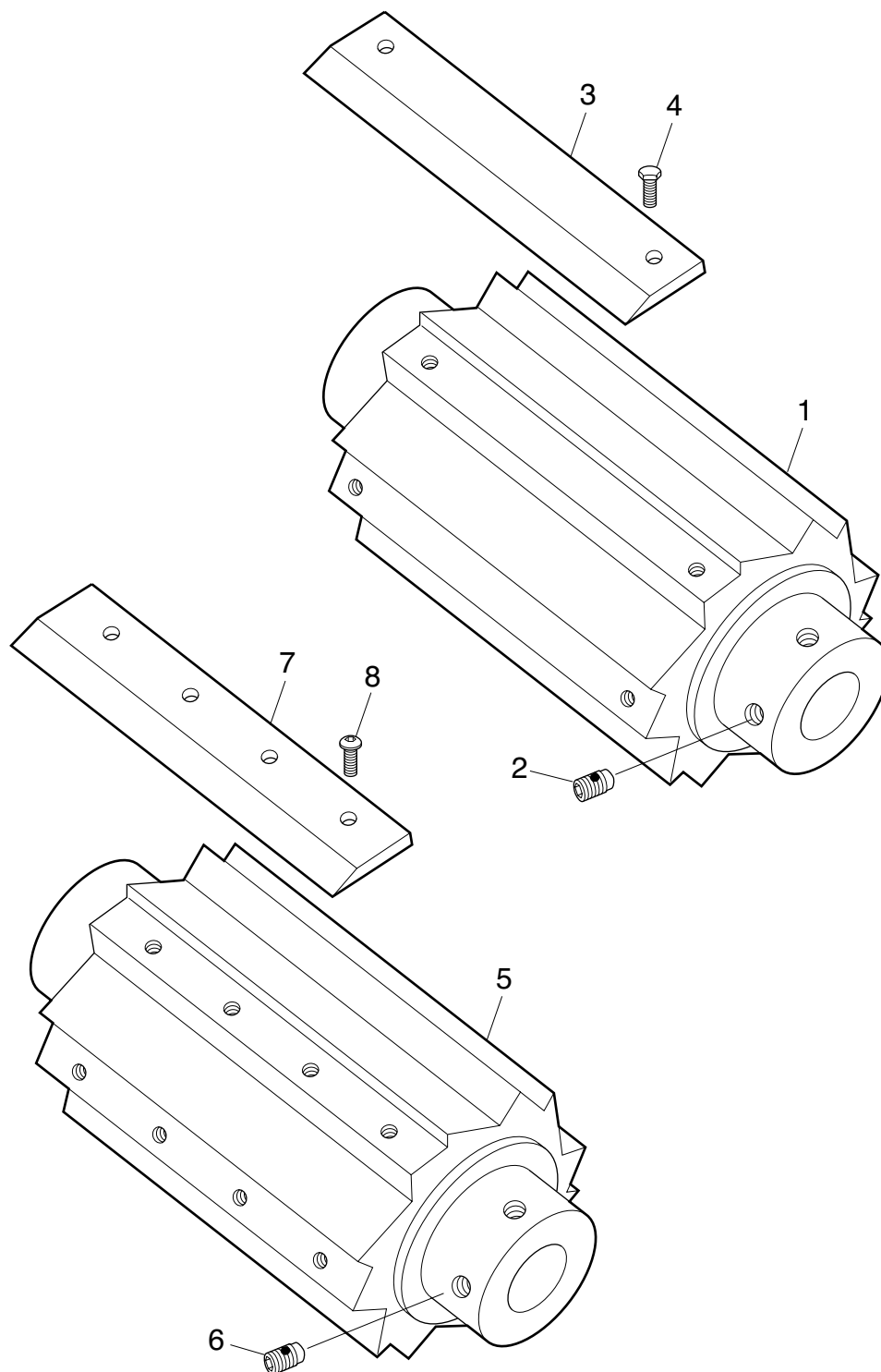
* See chart.

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

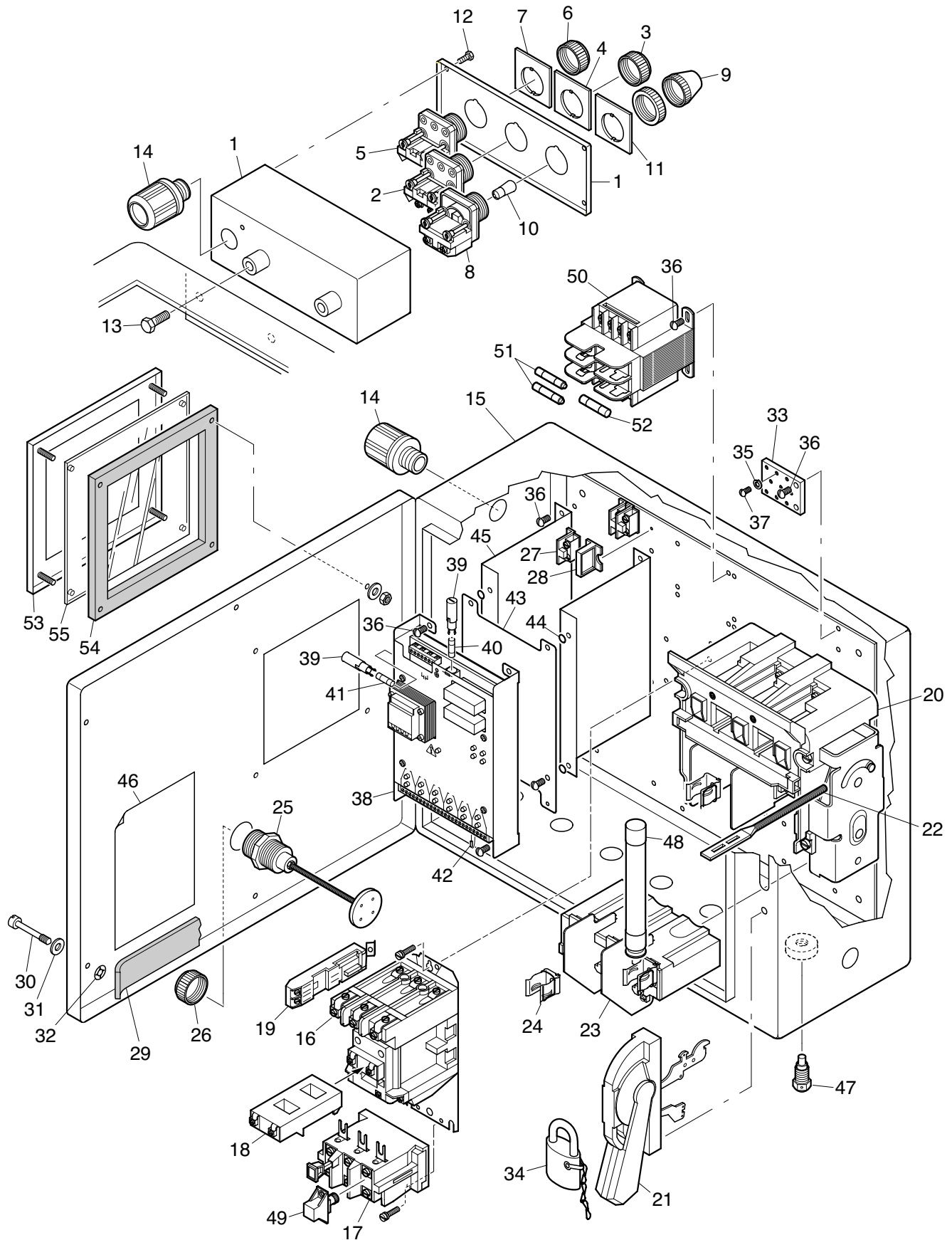
Chart No. 2

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



PARTS

Electrical Assembly (NEMA)

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

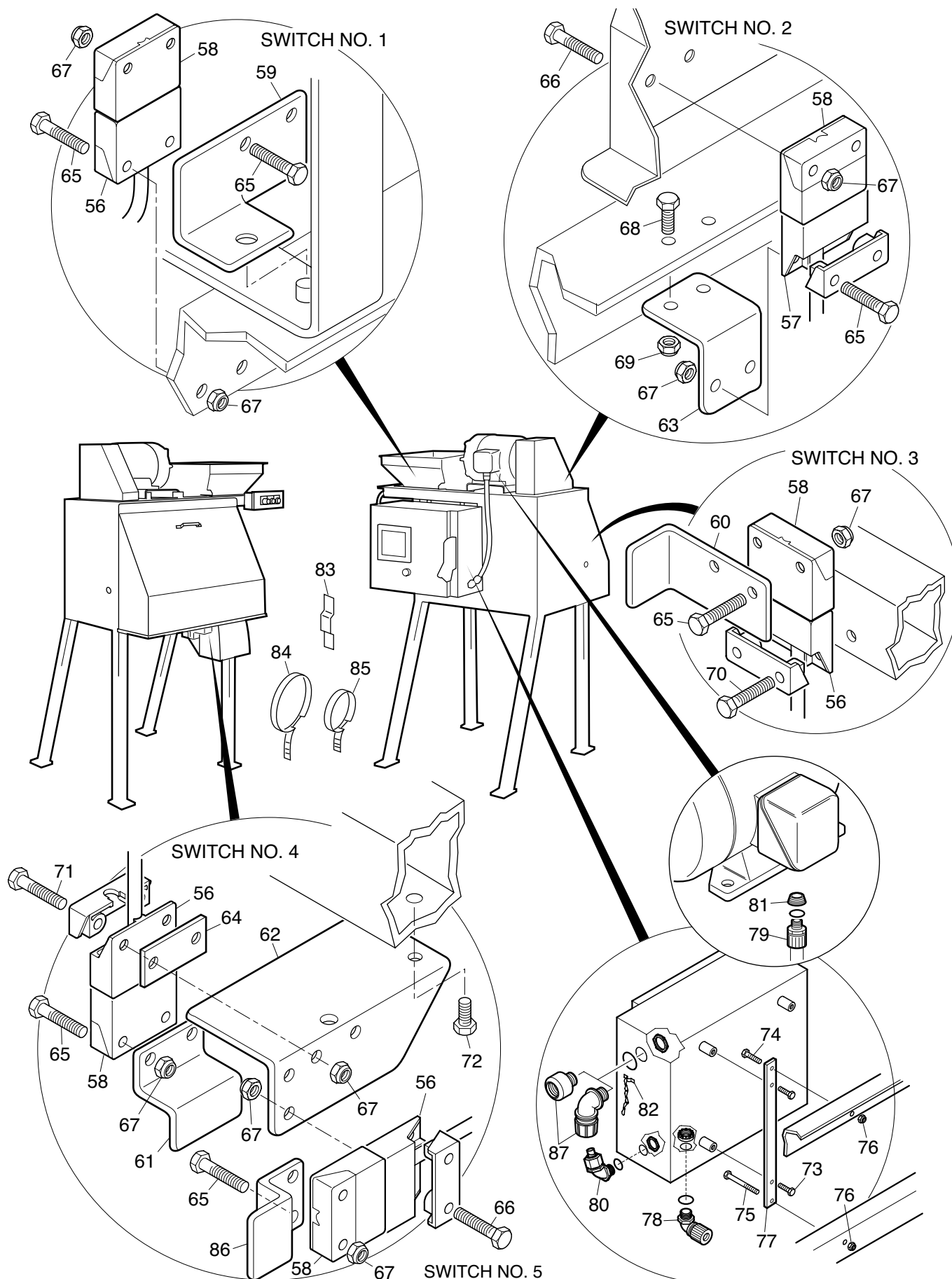
* Consult factory.

** 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)

See the addendum
for updated information

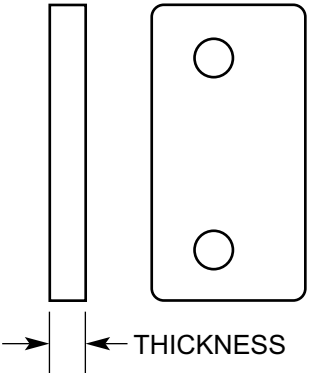


(continued from page 81)

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.

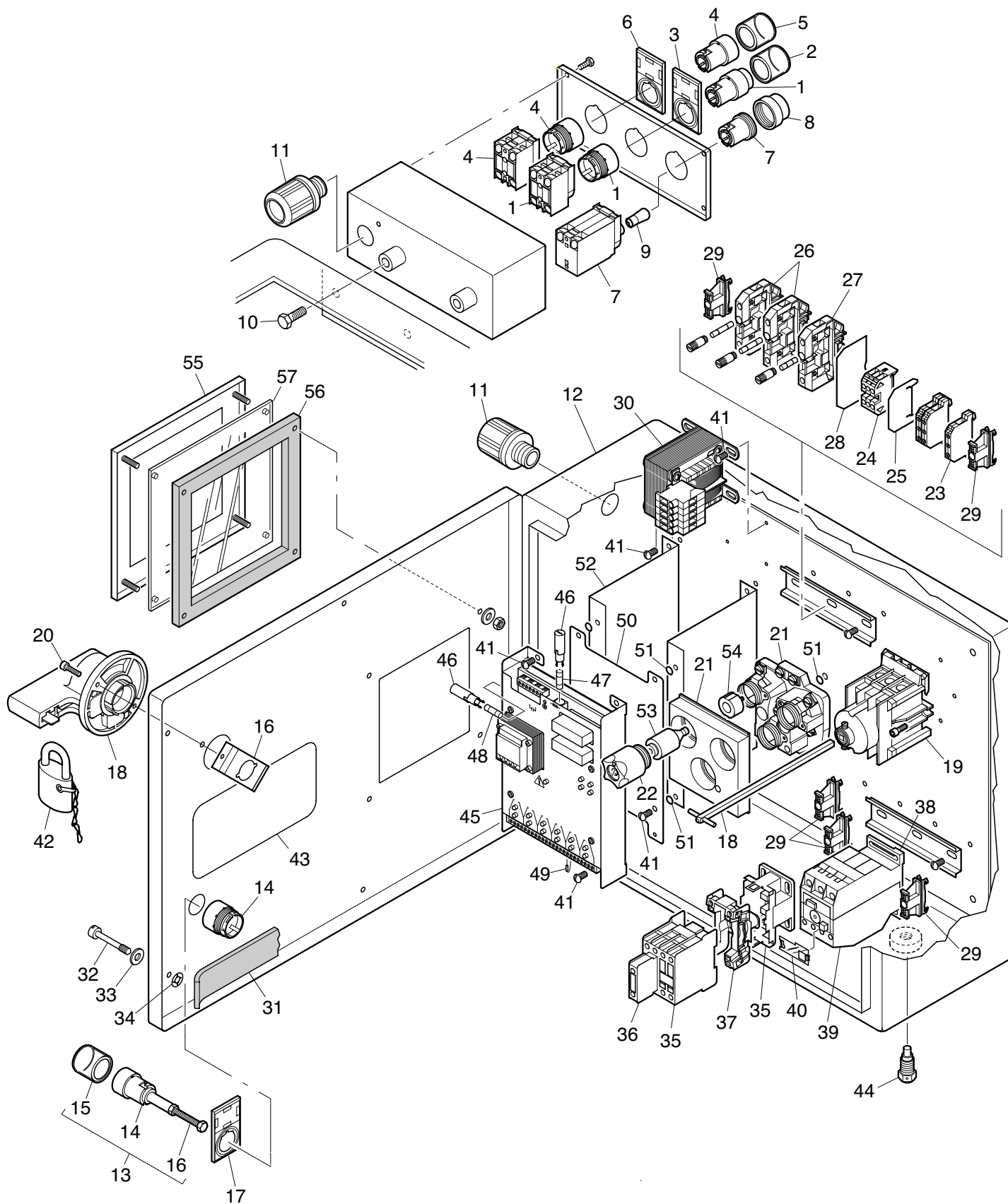
NOTE: s.s. denotes stainless steel

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



PARTS

Electrical Assembly (IEC)

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

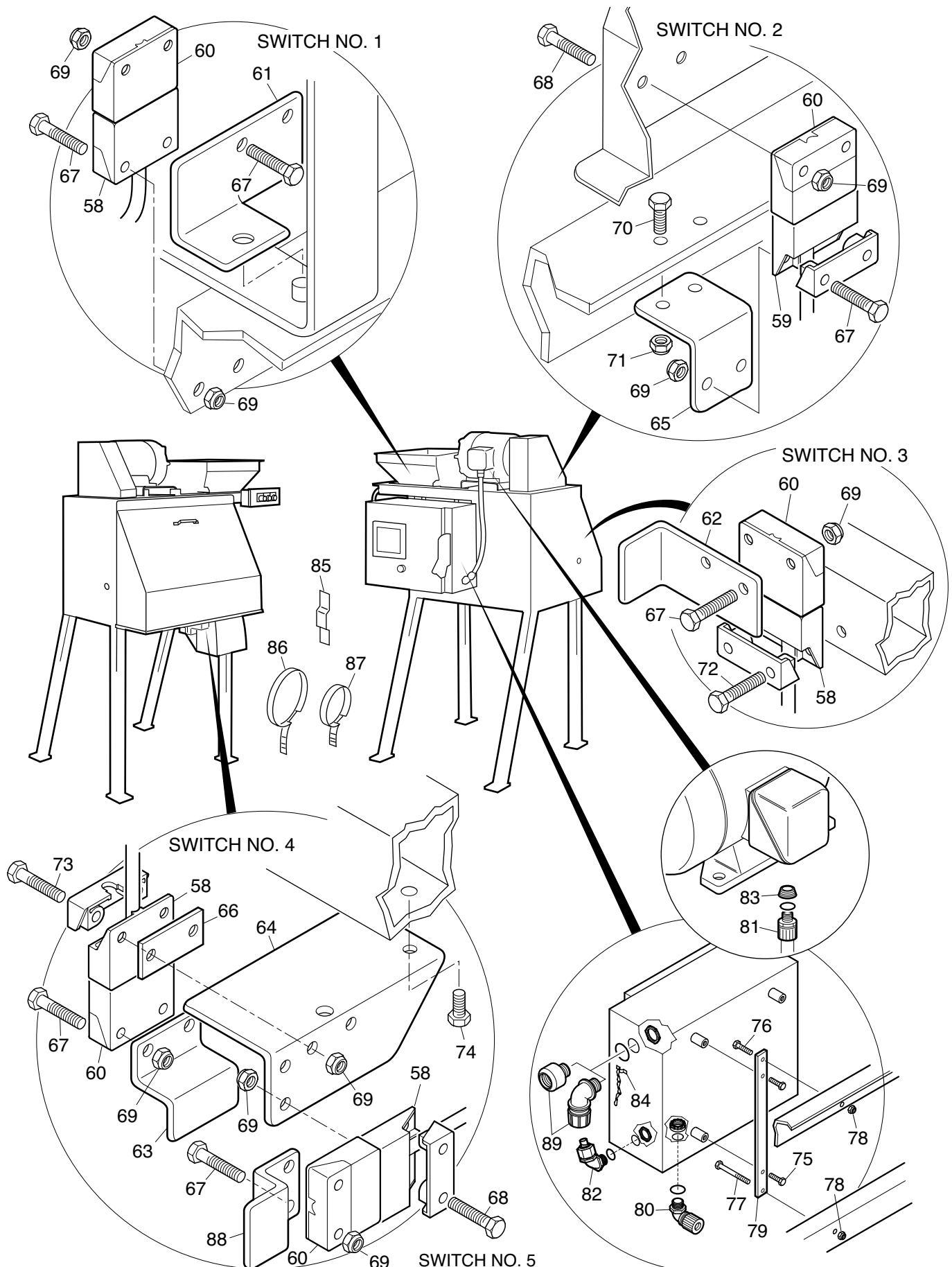
** A retrofit assembly (part no. 63756) is required to adapt 63737 amplifier to machines currently using 63068 amplifier. Consult factory for further information.

(continued on page 87)

PARTS

Electrical Assembly (IEC)

See the addendum
for updated information



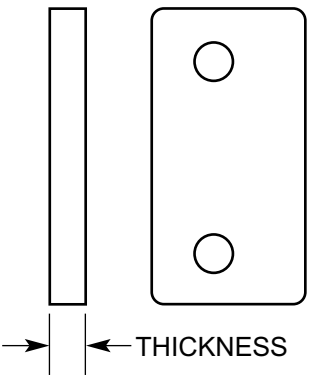
(continued from page 85)

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

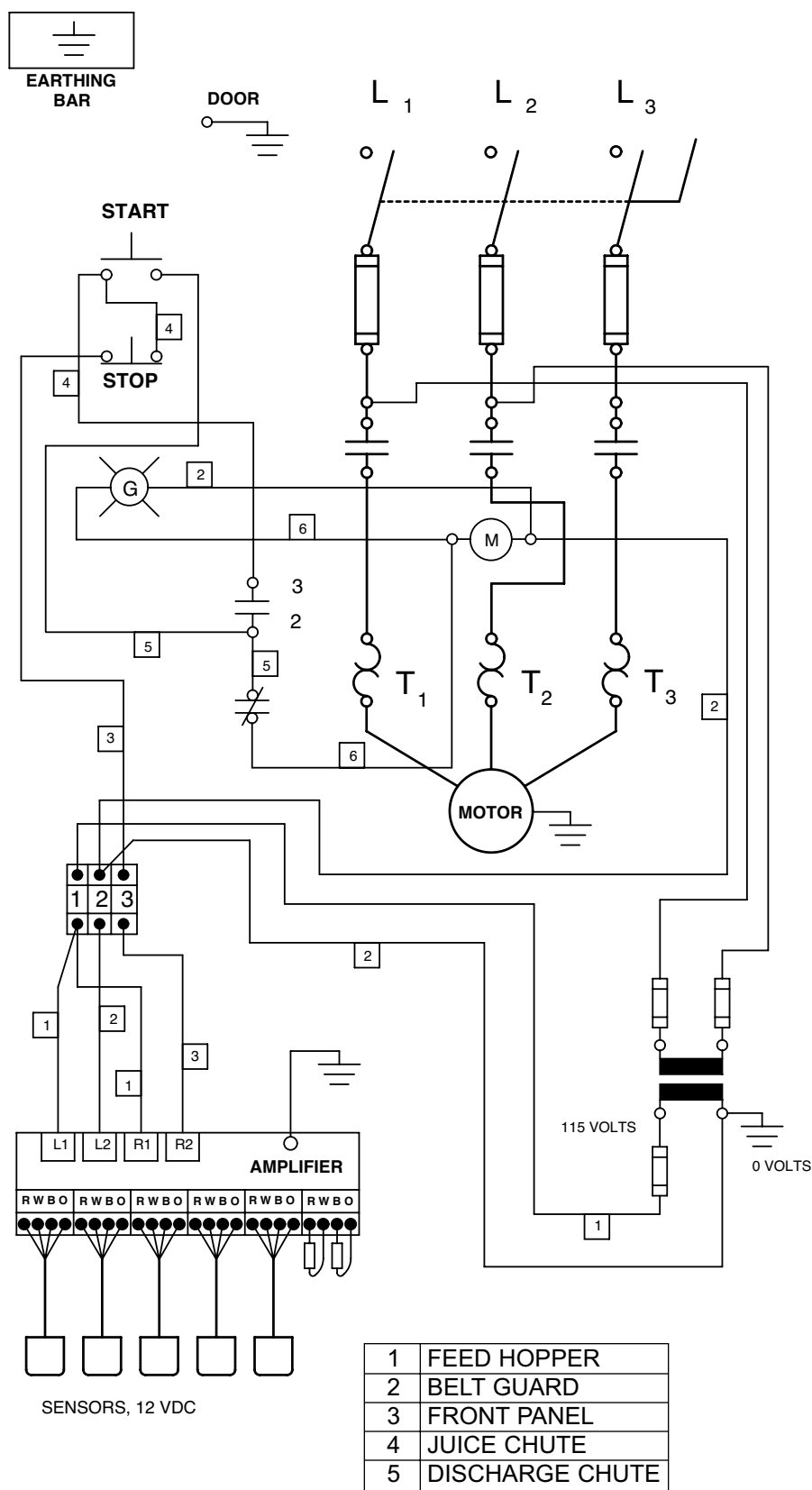
* See chart below to select spacer so that sensor and actuator are aligned.

NOTE: s.s. denotes stainless steel

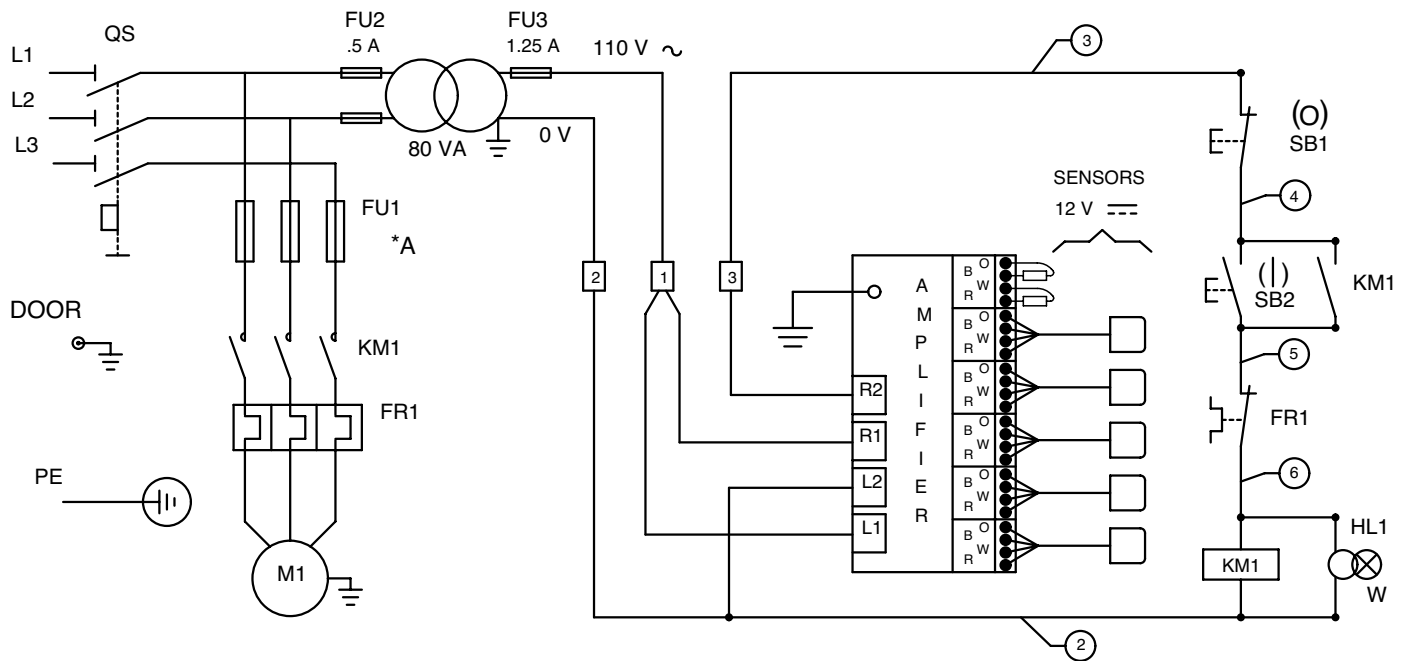
SWITCH SPACER CHART		
Item 66 Part No.	Thickness	
	inches	mm
63084	.037	.094
12799	.062	1.57
12800	.093	2.36
12801	.125	3.18
12802	.187	4.75
12803	.250	6.35
12804	.312	7.92
12805	.375	9.53
12806	.437	11.10
12807	.500	12.70



NEMA National Electrical Manufacturers Association



IEC International Electrotechnical Commission



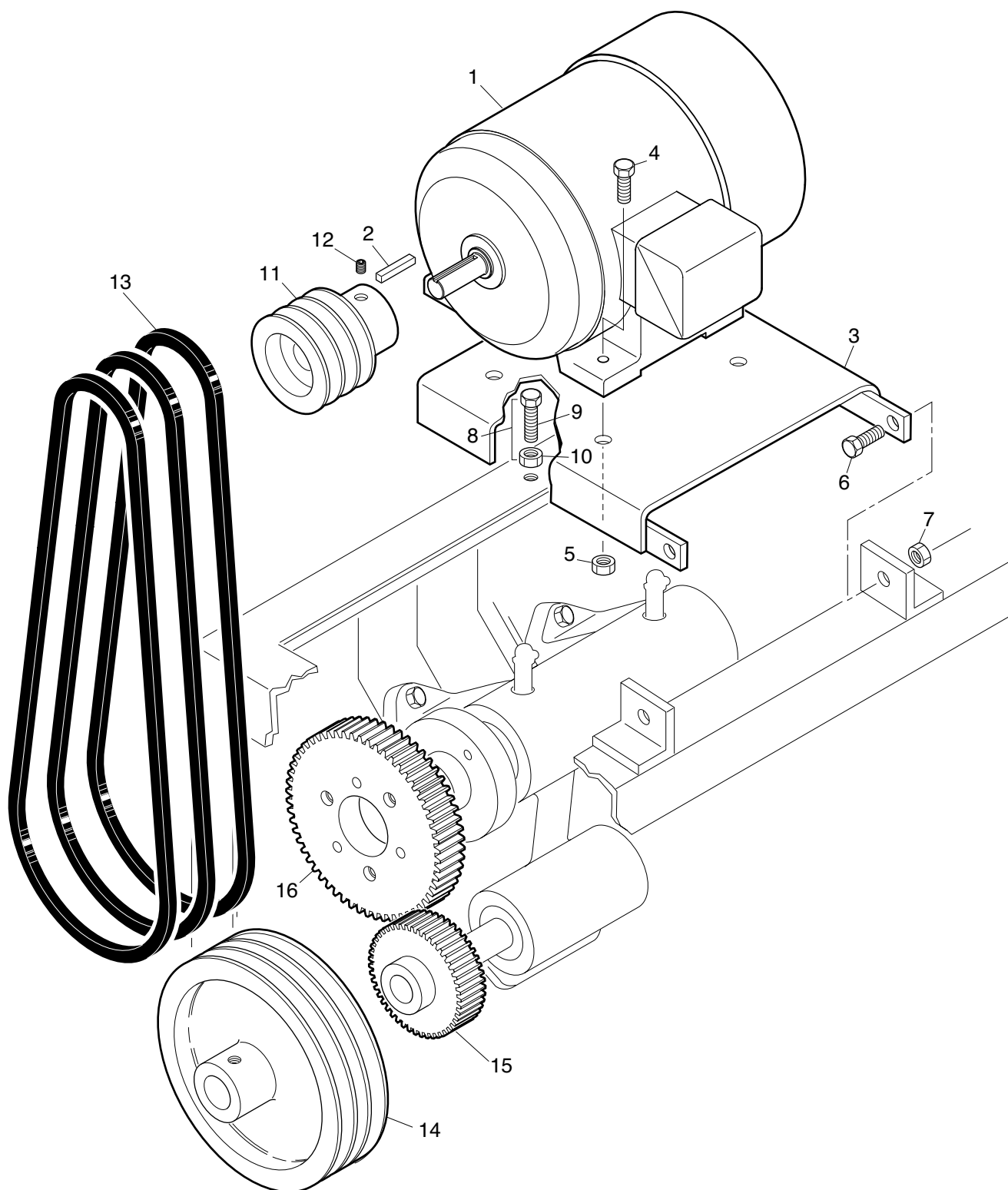
1	FEED HOPPER
2	BELT GUARD
3	FRONT PANEL
4	JUICE CHUTE
5	DISCHARGE CHUTE

* 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.

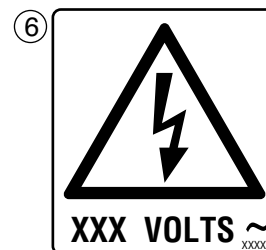
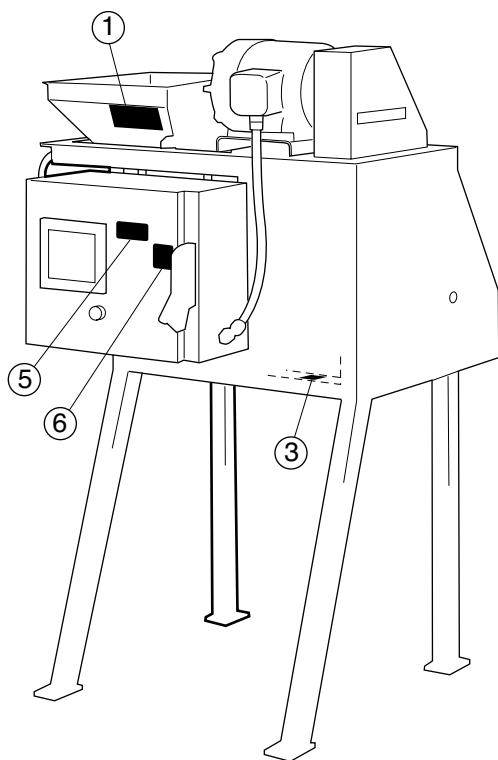
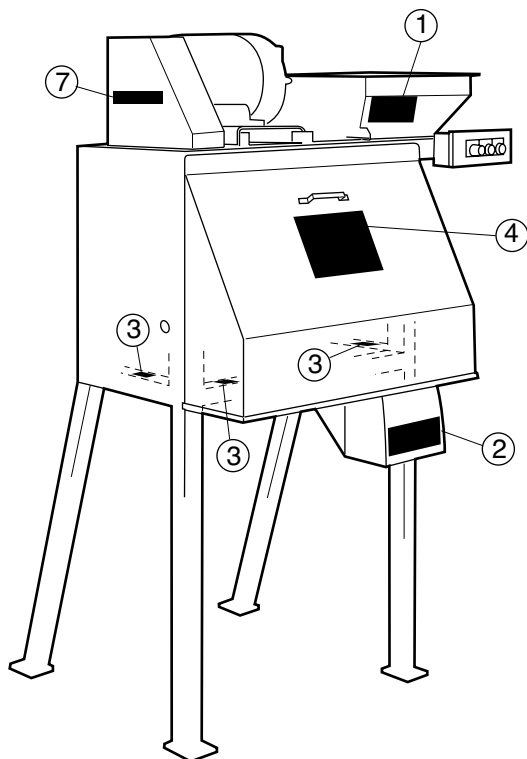
NOTE: s.s. denotes stainless steel

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	19588	19010	19215	19009	19015	19016	450	900	2463
	50	19591	19012	19240	19009	(34 teeth)	(68 teeth)	450	900	2463
High Intermediate 900	60	19637	19010	19215	19009	19635	19636	292	900	2463
	50	19638	19012	19240	19009	(25 teeth)	(77 teeth)	292	900	2463
High Intermediate	60	19622	19010	19216	19008	19015	19016	287	575	1589
	50	19623	19012	19239	19008	(34 teeth)	(68 teeth)	287	575	1589
Medium	60	19589	19010	19215	19009	19013	19014	193	900	2463
	50	19592	19012	19240	19009	(18 teeth)	(84 teeth)	193	900	2463
Slow	60	19590	19010	19216	19008	19013	19014	123	575	1589
	50	19593	19012	19239	19008	(18 teeth)	(84 teeth)	123	575	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



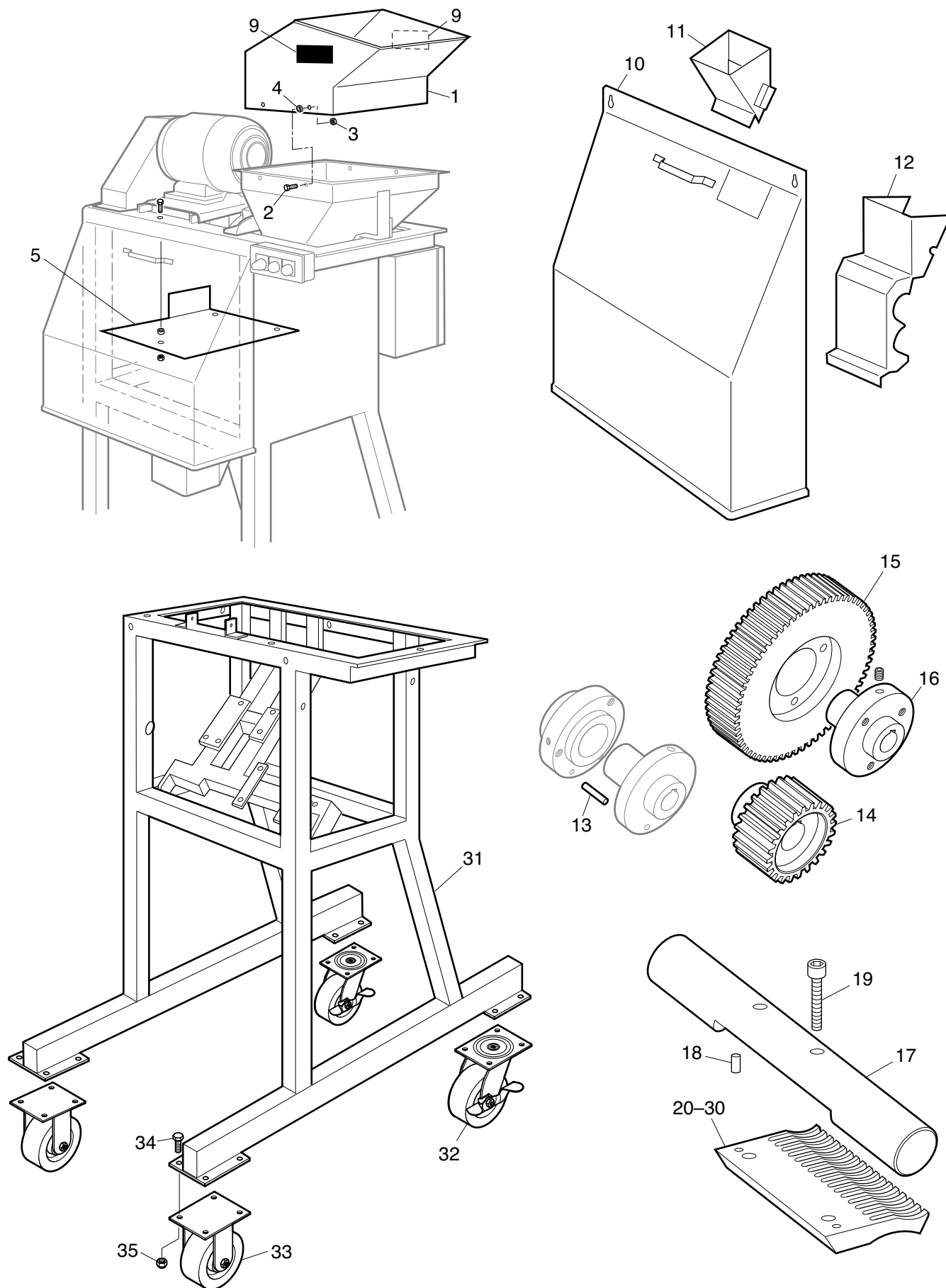
	ASS'Y. NO.	①	②	③	④	⑤	⑥	⑦
ENGLISH	19458	11662	11663	11665	11666	11667	*	11326
SPANISH	19458	11662	11663	11665	11666	11667	*	11326
FRENCH (F)	19540	11674	11675	11677	11678	11679	*	11326
GERMAN (Ge)	19553	11681	11682	11684	11685	11686	*	11326
JAPANESE (J)	19554	11688	11689	11691	11692	11693	*	11326
PORTUGUESE (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

See the addendum
for updated information



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.

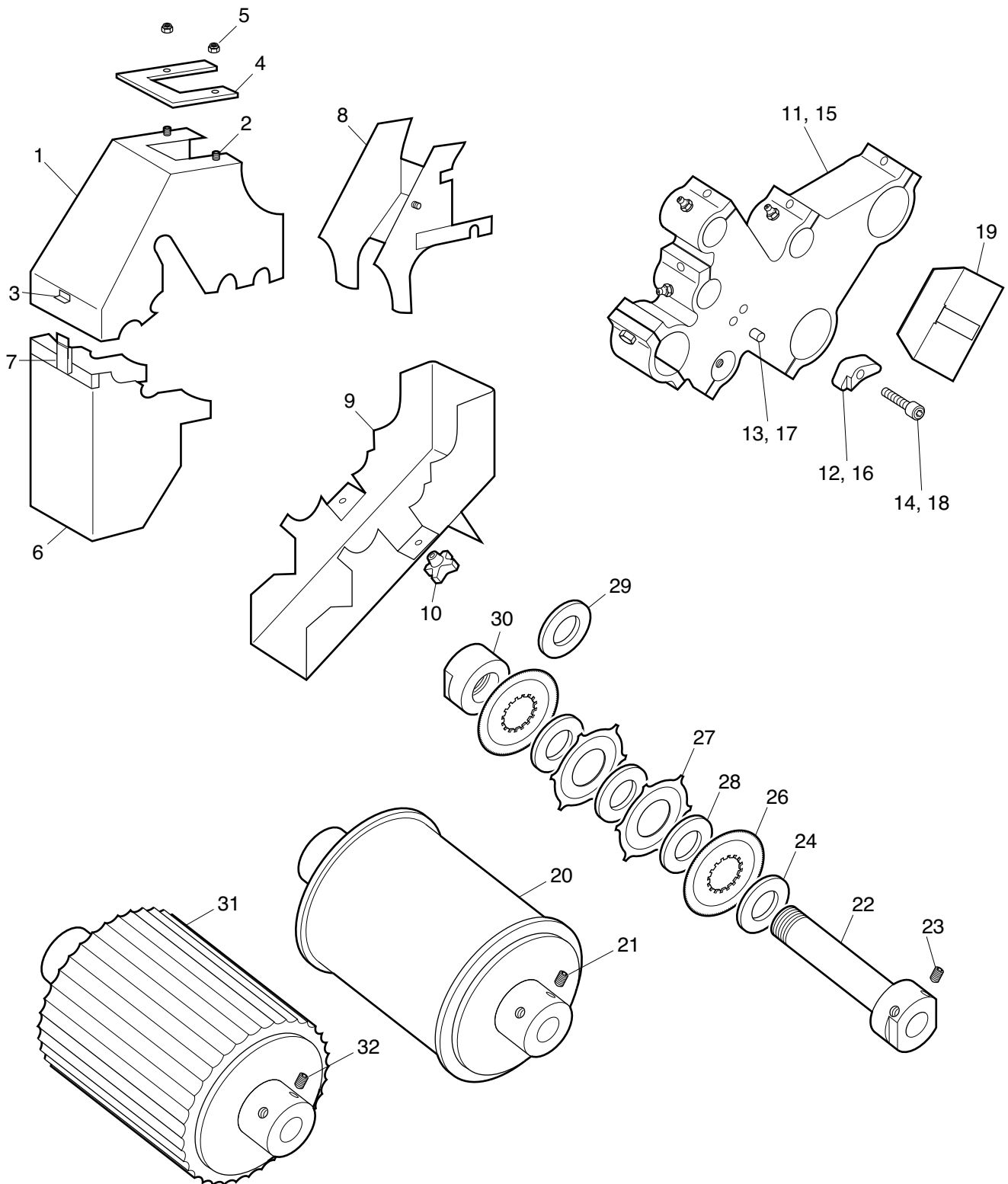
NOTE: s.s. denotes stainless steel

("Optional Parts", continued on page 97)

PARTS

Optional Parts

See the addendum
for updated information



("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.

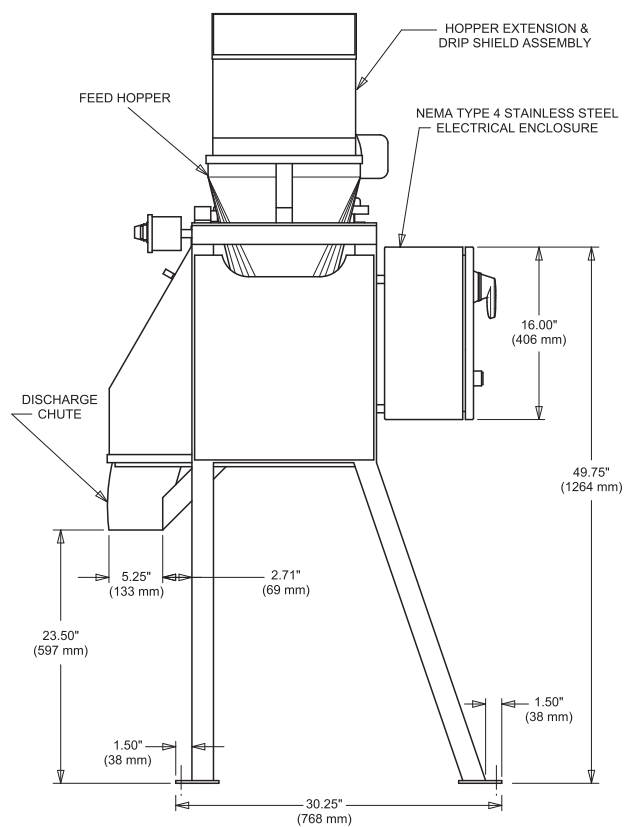
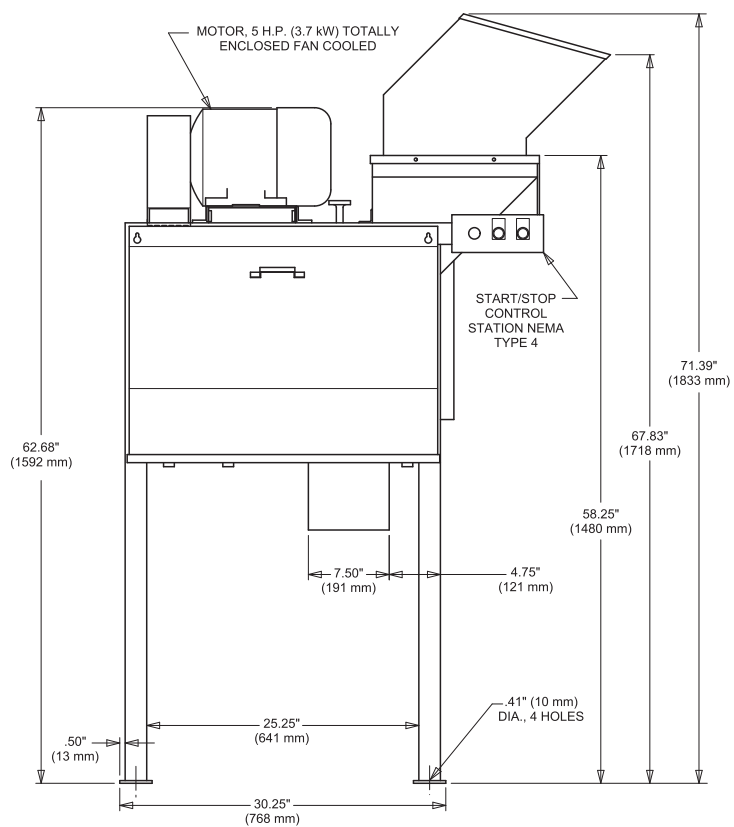
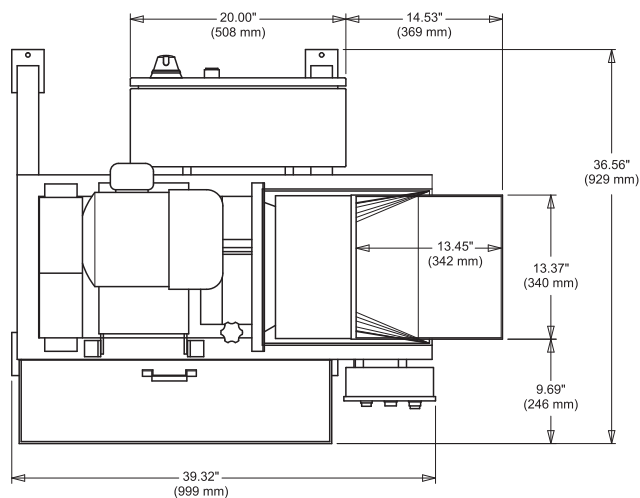
NOTE: s.s. denotes stainless steel

Size of Cut	Feed Spindle Assembly No.		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

LABORATORIES INCORPORATED

**Designers and manufacturers of
precision size reduction equipment.**

URSCHEL

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