MOLD-A-RAMA OPERATING MANUAL
FOR SERIAL NOS. 1101 TO 1499

MOLD-A-RAMA, INC.
1250 S. GLENDON
LOS ANGELES 24, CALIFORNIA

MOLD-A-RAMA OPERATING MANUAL

IMPORTANT NOTICE

Installation and maintenance instructions appear in later pages. However, before installing MOLD-A-RAMA, operator should read the brief description of the systems built into MOLD-A-RAMA.

HYDRAULIC SYSTEM

MOLD-A-RAMA contains a complete hydraulic system, powered by a precision pump which includes the reservoir and check-valve. Operation is controlled by an electrically operated cycle-timer and fixed-position cams. (See schematic diagram of hydraulic system, which follows this page.)

Hydraulic system contains 5 cylinders which operate the several phases of the molding and vending cycle and are manufactured to high quality specifications, insuring long life and trouble-free performance.

MOLD CYLINDERS

The 2 mold cylinders are located on top panel and serve to open and close the molds. Adjustable mountings on mold cylinders permit an unlimited variety of mold designs and thus a wide range of products that may be sold by MOLD-A-RAMA.

Left mold cylinder is regulated by a flow-control valve, located on under side of panel, directly below the coupling for the hydraulic hose. Purpose of control is to insure that right mold cylinder arrives at end of stroke before left mold cylinder, thus properly positioning the molds in the closed position over the sprew or filling port. Flow-control is pre-set at factory and requires no adjustment. Right mold cylinder operates directly on the line pressure without flow-control.

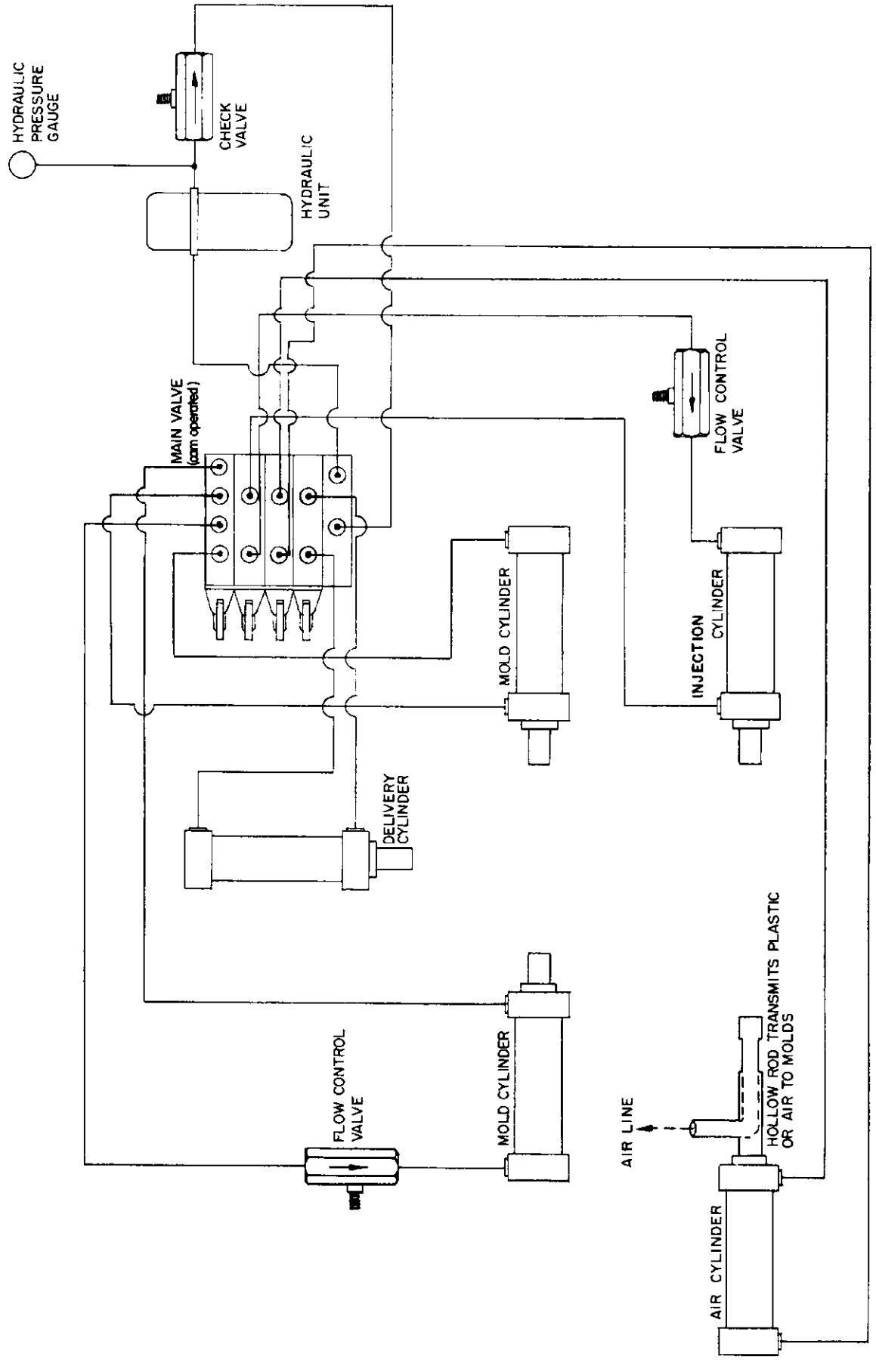
INJECTION CYLINDER

Injection cylinder is under top panel on left side of pot or container for molten plastic. Injection cylinder injects molten plastic into molds. At back end of injection cylinder is a flow-control valve, which controls the feed of molten plastic into molds to insure proper flow and filling. Flow-control is pre-set at factory and requires no adjustments.

AIR CYLINDER

Air cylinder, mounted directly under top panel on left side, operates air-transfer valve which stops the flow of molten plastic to the molds and opens the air-valve to blow molten plastic out of the inside of the molded product in order to produce a hollow molded product.

HYDRAULIC SYSTEM SCHEMATIC



DELIVERY CYLINDER

Delivery cylinder, located at back of top panel, operates scraper-arm which moves molded product from the molds to delivery chute. Delivery cylinder operates directly on line pressure.

HYDRAULIC VALVES

Valves which operate cylinders, located under top panel in upper left corner, are cam-operated by the electrically powered cycle-unit. Timing is pre-set and not adjustable. Valves are designed and tested to insure long life and trouble-free performance.

PNEUMATIC SYSTEM

Pneumatic system of MOLD-A-RAMA operates under controls which are independent of the molding and vending cycle, as far as maintenance of required air-pressure is concerned. Pneumatic system is located in center of base, and includes an electric motor, which operates the air-compressor through a pulley-drive, and an air-tank. Pressure-control switch, mounted on side of air-tank, is pre-set at factory to maintain pressure between 70 and 90 pounds per square inch. Air-Compressor automatically starts when pressure in tank drops below 80 pounds and automatically stops when pressure rises to 90 pounds.

Outer side of air-tank is equipped with pressure-regulator which is pre-set at factory to maintain a line pressure of 80 pounds per square inch. Line from pressure-regulator runs to the air cylinder (previously described) and feeds through air-transfer valve to the molds for the purpose explained in description of air cylinder.

On top of air-tank is a safety-valve to prevent overcharging of tank, and on lower side of tank is a check-valve to hold back pressure in air-tank.

(Schematic diagram of pneumatic system follows this page.)

REFRIGERATION SYSTEM

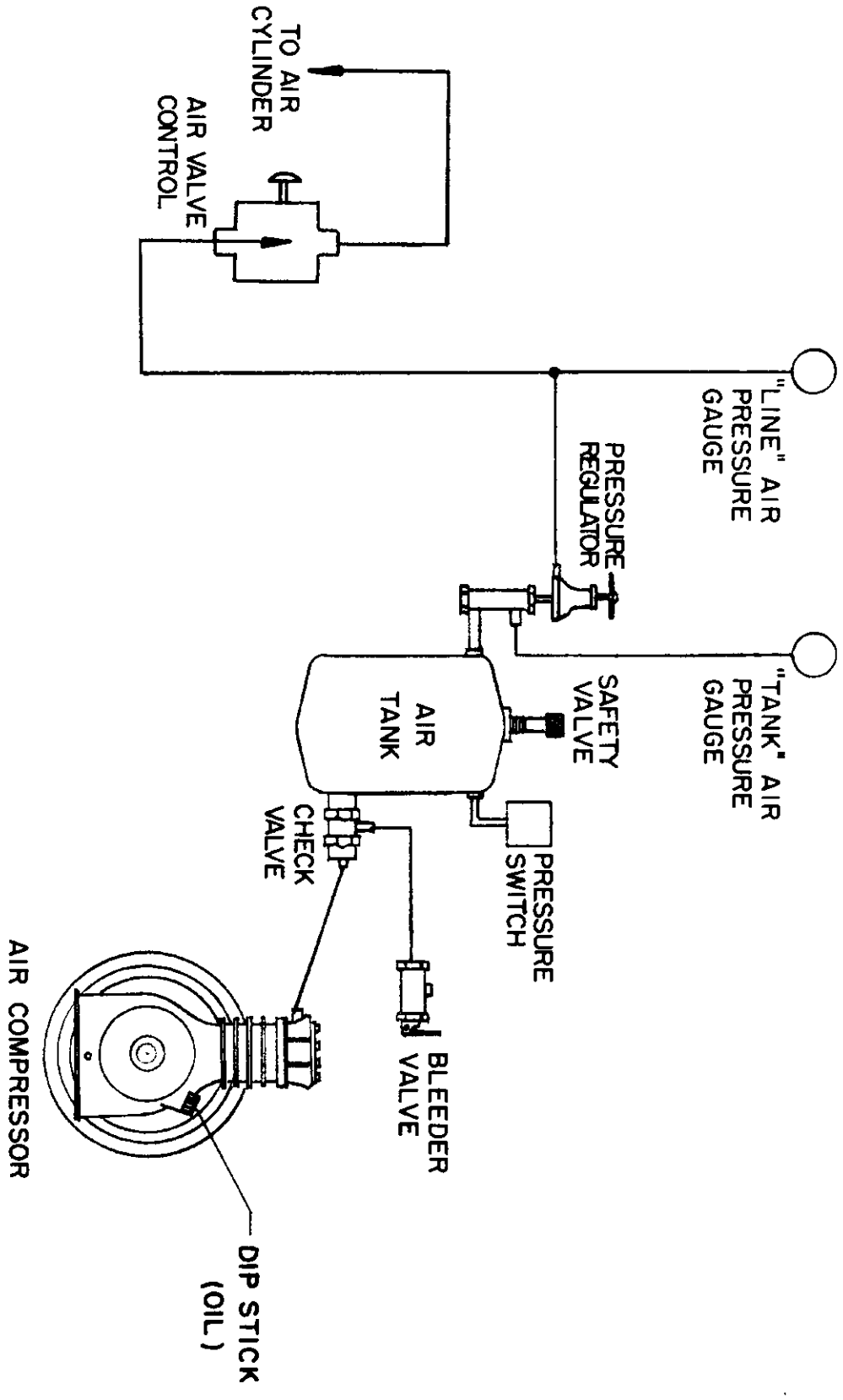
Refrigeration system, like pneumatic system, operates under controls which are independent of the molding and vending cycle.

Refrigeration system, located on right side of base, consists of compressor, condenser, heat exchanger, circulating pump and controls.

Thermostat which controls refrigeration system is located on right side of top panel. Thermostat should be set at "4" to keep coolant at approximately 25 degrees Fahrenheit.

Thermo-switch attached to circulating pump is a safety switch which prevents MOLD-A-RAMA from operating if temperature of coolant is not low enough.

PNEUMATIC SYSTEM SCHEMATIC



Below the heat exchanger is a pan with a coil to evaporate surplus condensation.

(Schematic diagram of refrigeration system follows this page.)

CYCLE UNIT

Cycle unit, which is the timing control of MOLD-A-RAMA, is on the top panel. Cycle unit consists of motor; set of 4 mechanical cams (visible at left of top panel), which operate the hydraulic valves (previously described); set of cam-operated electrical switches to time the cycle.

Mechanical cams are pinned to shaft, and their timing is not adjustable.

Bakelite cams which actuate switches are keyed together, and cannot change their relation to each other. For manufacturing reasons, bakelite cams are keyed to shaft with 2 socket set-screws, but the adjustment is pre-set at factory and should not be varied.

Cam switch and relay switch charts are attached to final page of manual, and general electrical schematic diagram is on separate sheet.

HOPPER AND FEED SYSTEM

Plastic material is contained in hopper located in back cabinet and extending into the main cabinet. Hopper must be filled through locked door on right side of back cabinet. Bottom of hopper is a chain-driven auger, controlled by a float-switch in the pot of molten plastic, and feeding material directly into the pot.

Pot is heated by 2 tubular elements in the pot cylinder casting and readily accessible for service from outside of the pot on left side of main cabinet. Hopper feed motor drives an agitator within the pot to insure constant mixing of the material.

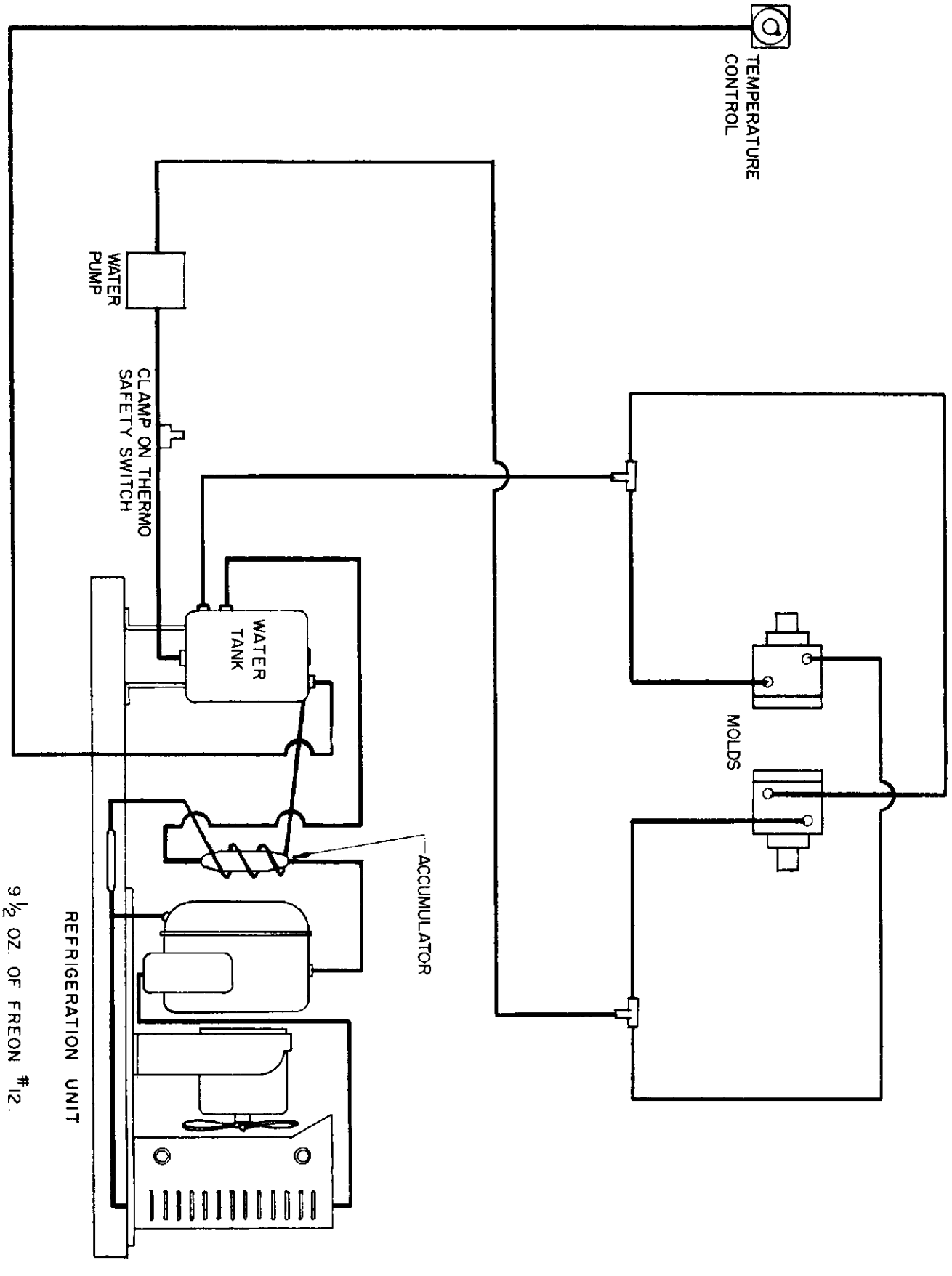
Pipe plug on bottom of pot in front left corner can be removed to drain the molten plastic.

CAUTION

Before removing pipe plug, read instructions TO CHANGE COLOR OF PLASTIC in Maintenance section of manual.

Specifications for proper plastic material are stated in Maintenance section of manual.

REFRIGERATION SYSTEM SCHEMATIC



9 1/2 OZ. OF FREON #12.

HEAD PRESSURE 160 LBS.

SUCTION PRESSURE 21 to 22 LBS.

CAPPILLARY TUBE .049 I.D. 6 FEET LONG, WRAPPED AROUND THE ACCUMULATOR.

COIN MECHANISM

Coin mechanism is located directly behind left side of the front panel of main cabinet. Coin mechanism is adjustable to various prices, as indicated by instructions on front of mechanism.

Coin mechanism is mounted on adjustable bracket and must be level for proper operation.

Schematic diagram of coin mechanism follows this page.

Because of the importance of proper operation of coin mechanism, strict maintenance of coin mechanism is emphatically recommended. See maintenance section of manual for proper procedure.

BACKGLASS SEQUENCE AND GENERAL ILLUMINATION

Lighting on backglass is operated on a low voltage circuit at 6 volts. Decorative effects are incorporated in an animated sequence which serves, not only as illumination, but to designate the several phases of the molding and vending cycle.

Sequence of lighting is controlled by stepping switch mounted in upper back cabinet. Stepping switch is automatically stepped and re-set by cam-operated electrical switches (previously described) and is not directly connected with the actual operation of MOLD-A-RAMA, the sequence lighting on backglass being designed to add eye-appeal and to attract the public.

Instructions for replacement of lamps are stated in maintenance section of manual.

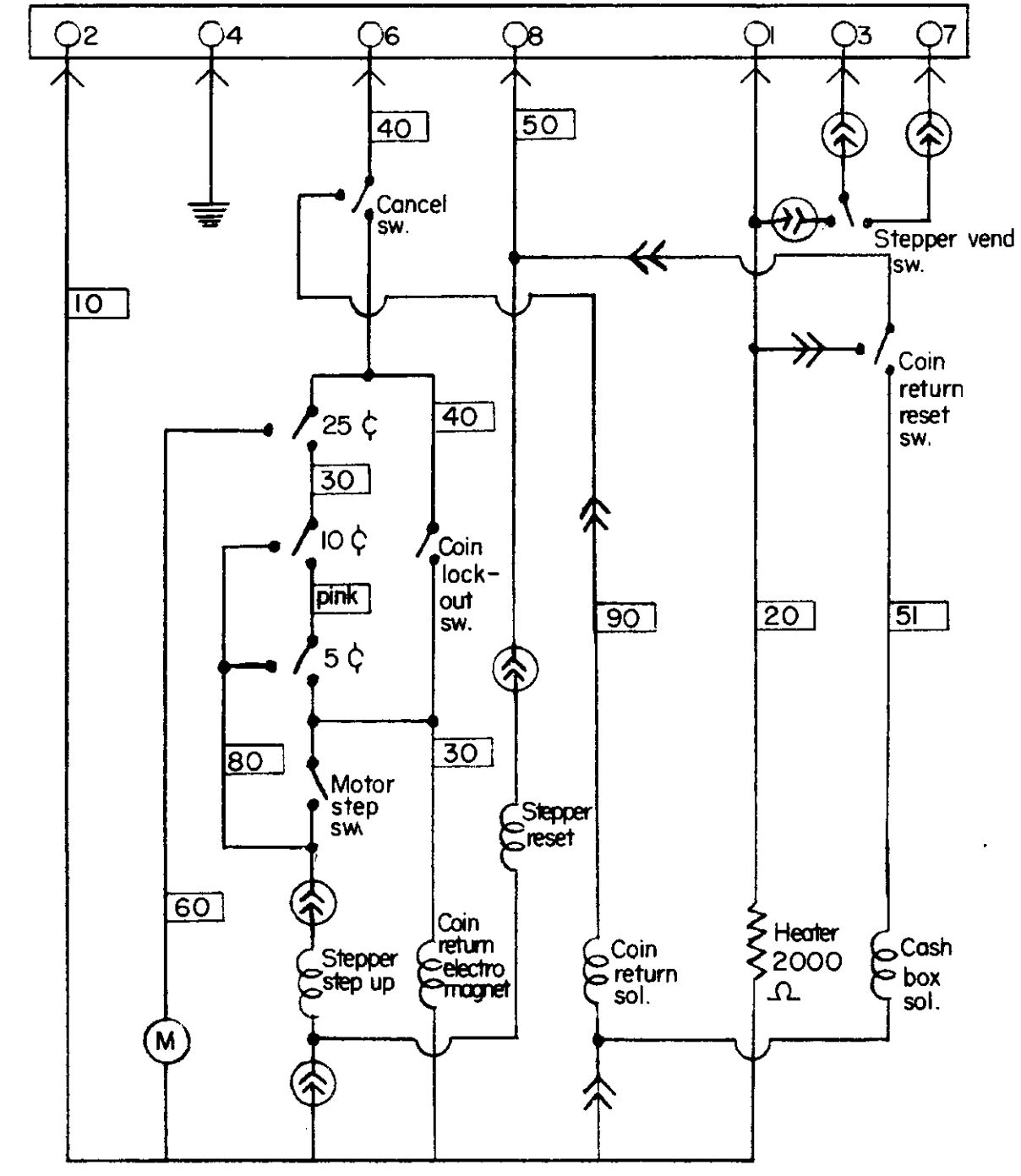
CONTROL PANEL

Control panel is located behind door on right side of machine. Mounted on control panel are the switches, fuses and relays which control the operation of the cycle. Each is labelled to indicate function and all are located for easy access and service.

For convenience of service the main toggle-switch may be turned to "off" position, breaking circuit to all sections of machine, excepting heating elements, which will remain "on". Heating elements are controlled through the thermostat or by heater toggle-switch.

For details of functions of units on control panel, refer to general electrical schematic diagram.

COIN ACCUMULATOR SCHEMATIC



Unit Jones plug

Escrow Jones plug & socket

Stepper Jones plug & socket

INSTALLATION

Read instructions carefully before connecting MOLD-A-RAMA to current supply.

First remove front, back, sides and top of crate. Then unlock and remove 2 side doors of main cabinet. Keys are packed in delivery chute on front panel. Looking into cabinet, note 2 hooks on each side, securing machine to skid. Remove hooks by, removing 4 nut under skid and pulling hooks up from inside of cabinet. MOLD-A-RAMA may then be rolled off of skid and into operating position.

CHECK FUSES, TOGGLE SWITCHES

Before connecting to current supply, check fuses and toggle switches on control panel located directly inside right door to be sure fuses are properly in place and toggle-switches are in "ON" position. Carefully read ELECTRICAL REQUIREMENTS before plugging into wall outlet.

ELECTRICAL REQUIREMENTS

MOLD-A-RAMA operates on 115 volts, 60 cycles, A.C., drawing approximately 20 amps. A separate circuit, which serves no other appliances or lights, must be provided for MOLD-A-RAMA, and the service must be a 3-wire grounded service, fused with either 20 amps. slo-blo or 30 amps. regular fuse.

SPECIAL SAFETY PLUG

MOLD-A-RAMA is equipped with a 3-wire supply cord, the third wire terminating at the plug in a special blade, as specified by Underwriters Laboratories, to ground the equipment electrically. Be sure that current supply outlet corresponds with plug, as specified in description of ELECTRICAL REQUIREMENTS.

NOTICE

The manufacturer of MOLD-A-RAMA disclaims all responsibility for operation of machines not properly installed electrically.

INSTALL MOLDS

Molds are removed from MOLD-A-RAMA for shipping and replaced with a wooden block to prevent damage to mold cylinders.

Reach through side doors and remove bolts which secure bubble-top to cabinet. Bubble top may then be raised on hinged mounting and propped open.

Remove wood blocks from mold cylinders and mount molds, locking molds in position with bolts and nuts furnished and attaching 4 coolant hoses to molds.

ADJUSTMENTS

Adjust mold positioning as described in instructions TO CHANGE MOLDS in Maintenance section of manual.

START HEATING

To facilitate set-up and operation of MOLD-A-RAMA, machine may be plugged in, and the main switch turned to "off" position, breaking circuit to all units other than the heaters. If heater switch is "on", current will still be supplied to heating elements, allowing pot to heat, while all other circuits are "off" for other service, set-up and checking.

Melting time required to bring the plastic to the proper temperature will be approximately 3 hours. During the heating period, machine cannot be cycled by depositing coins AND MUST NOT BE CYCLED BY HAND OPERATION OF RELAYS.

CHECK GAUGES

Gauges on left side of top panel should be checked for proper readings.

RIGHT GAUGE. When equipment is plugged into current supply outlet (if toggle switches are in "ON" position and fuses are in place, as previously explained), compressor motor starts immediately and continues to operate until air tank is filled to proper pressure of 90 pounds per square inch.

Tank pressure is read on gauge at right of group of 3 gauges. Within 20 or 30 seconds after compressor motor starts gauge should read 90 pounds per square inch. (Later, when machine is cycled, right gauge will drop, during the cycle. Then air-compressor will automatically start and continue to operate until 90 pounds is recovered.)

LEFT GAUGE. Gauge at left reads regulated line pressure at which air is fed to molds, as explained in description of AIR CYLINDER on page 1. Reading should be 80 pounds per square inch.

CENTER GAUGE. Center gauge reads hydraulic pressure and reads only during the molding and vending cycle. Reading should be approximately 250 pounds per square inch but will normally fluctuate during the cycle, as the several cylinders of the hydraulic system function in timed order. (Center gauge cannot be checked until pot temperature rises to proper point, but should then be checked.)

If gauges do not read as indicated, refer to Maintenance section of manual.

CHECK CONTROLS

Thermostat controls on right side of top panel should be checked for proper setting.

RIGHT CONTROL. Control at right regulates refrigeration system (previously described) and should be set at "4" to maintain coolant at 25 degrees F. Control is locked at setting by plate under dial.

LEFT CONTROL. Control at left regulates heat in melting pot to maintain molten plastic at proper temperature, and should be set at "250". Control is locked at setting by plate under dial.

Pilot light on each of the 2 controls lights to indicate that controlled system (refrigerating or heating) is operating. When proper temperature of either coolant or pot is reached corresponding pilot light goes out.

Thermostat controls function independently of the molding and vending cycle. Therefore, pilot lights merely indicate the on or off status of systems regulated by the controls and are not directly controlled by the cycle of the machine.

SOLD OUT LIGHT

Directly above the 3 gauges on top panel is a small panel which, when MOLD-A-RAMA is first plugged in, lights to indicate SOLD OUT.

SOLD OUT light is doubly controlled by (1) temperature of coolant, (2) level of material in melting pot. As the refrigeration system lowers coolant temperature, SOLD OUT light should go out, indicating that refrigeration system is operating.

Normally, level of material in pot, when MOLD-A-RAMA is delivered is not low enough to light SOLD OUT panel. Factory testing of MOLD-A-RAMA includes a minimum of 200 cycles of actual molding. Material remains in pot, after completion of tests, providing sufficient material to satisfy float switch (previously mentioned in description of HOPPER AND FEED SYSTEM).

CHECK FLOAT SWITCH

Float arm which operates low level and high level switches on melting pot projects from slot in left side of pot. Float arm should be toward the top position, indicating sufficient level of plastic material in pot. If arm is low enough to actuate low level switch, see instructions for LOADING.

LOADING

Unlock fill door at top of right side of back cabinet, pour in plastic crystals until hopper is filled.

NOTE

If level of material in pot is low to the point of actuating low-level switch, plastic crystals may be added directly to pot by first removing top plate directly below molds.

Simply block up molds and mold cylinders, remove scraper from delivery cylinder, remove 4 screws from top plate, lift top plate from top panel.

OPERATION TEST

When molten plastic in pot rises to proper temperature and coolant is properly refrigerated, lockout controls are automatically released, and MOLD-A-RAMA may be cycled either by hand operation of coin mechanism or by depositing coins.

The fact that pot and coolant are at proper operating temperatures is signalled by pilot lights going out on both thermostat controls on top panel.

During operation of MOLD-A-RAMA, pilot lights go on and off as related systems operate. Ambient or room temperature will cause variations in the frequency of the operation of systems regulated by the thermostat controls.

SEQUENCE OF OPERATION

When correct amount of coins is deposited,

(1) Cycle unit motor starts and rotates hydraulic cams and electrical cams to sequence the cycle;

(2) Hydraulic pump starts and center gauge indicates approximately 250 pounds pressure;

(3) First hydraulic cam (at extreme left of bank of 4 cams visible on top panel) actuates mold cylinders to closed position;

(4) Second hydraulic cam actuates injection cylinder injecting molten plastic into molds;

(5) Third hydraulic cam actuates air cylinder operating air-transfer valve to stop flow of molten plastic and to blow molten plastic out of inside of molded product;

(6) No. 3 electrical cam actuates No. 3A cam switch to shut off hydraulic pump during brief cooling period, then starts pump again for balance of cycle;

(7) First hydraulic cam actuates mold cylinders to open molds;

(8) Forth hydraulic cam actuates delivery cylinder, moving scraper blade forward to deliver molded product.

During operation, stepping-switch in top back cabinet operates lights in backglass, designating each of the several phases of the operating cycle.

COINS ARE RETURNED

(1) If SOLD OUT is lit and No. 2 Relay is energised,

(A) Check low level switch (bottom swith on left side of pot). If float arm is actuating swith plastic must be added to pot. (See LOADING instructions in Installation section of manual.)

(B) Check to see that refrigeration unit is operating.

(C) Check coolant safety switch located on pipe between coolant pump and coolant tank. Disconnect Thermostat plug, and, if SOLD OUT light goes out, Coolant temperature is not low enough. Also check level of coolant in tank by removing square plug at top of tank. Coolant tank must be filled to top.

(2) Check to be sure that "Heat" toggle-switch is in "ON" position. Switch is located on control panel on right side of main mechanism frame.

(3) Check coin-mechanism.

(A) Rejector must be clean,

(B) Coin-slide must operate freely,

(C) Check wiring of plug against schematic diagram.

(4) If, after all above checks are completed, coins continue to be returned, low pot temperature is indicated. If machine has been operating for at least 2 hours, pot should be up to 250 degrees F. and pilot light on "250" thermostat control on top panel should go out. If light remains lit, indicating pot is still calling for heat, check both heating elements on left side of pot above injection cylinder. Continuity check will indicate if heating elements are operating properly.

COINS ACCEPTED BUT MACHINE DOES NOT CYCLE

Check tank pressure guage (right guage on top panel). Reading should be 90 pounds and compressor should not be operating.

(A) If compressor continues to operate, check air lines for leaks. (See pneumatic diagram on page 4.)

(B) Check pressure switch mounted on side of air tank. (Refer to PENN 116 SERIES PRESSURE CONTROLS instruction sheet.

(C) Check switch on No. 1 Relay (Closed when relay is not energized, open when relay is energized.)

(D) Check settings on coin mechanism in accordance with instructions on front of mechanism.

(E) No. 3 Relay should pull in when proper amount of coins are deposited. (Check general electrical schematic diagram.)

LIGHTS IN BACK CABINET DO NOT LIGHT PROPERLY

(1) If lights flicker, check for loose wiper on stepping switch located above control panel on right side of frame.

(2) If one light does not light, check contact on stepping switch; check for burned out or loose lamp, broken wire or connection.

(3) If no lights light, check wiring from transformer mounted on insert in back cabinet.

(4) If sequence of lighting does not function properly, check operation of stepping switch (see general electrical schematic diagram.) Cycle unit motor cam No. 5 steps up stepping switch; cam No 4 re-sets stepping switch.

POT RUNS OUT OF PLASTIC

Feed motor located in back of cabinet should operate with every cycle. If motor fails to operate properly, see check procedure on next page under heading FEEDER MOTOR WILL NOT RUN.

COUNTER FAILS TO OPERATE

1. Check counter by running 115 volts A.C. directly into counter, which should step up every time contact is made.

2. Check switches for proper setting - Cycle Unit Motor Cam Switches No. 1 and No. 4. See Switch Charts and general electrical schematic diagram.

3. Check wires and plugs.

MOTOR TROUBLE SHOOTING

All MOLD-A-RAMA motors operate on 115 volts A.C. Therefore, in each case itemized below, the words "Check motor" indicate that motor should be unplugged from circuit and 115 volts run directly into motor.

WATER PUMP WILL NOT RUN

1. Check motor.
2. Check plugs and wiring

REFRIGERATOR MOTOR WILL NOT RUN

1. Check motor.
2. Check fuse.
3. Check coolant thermostat control on top panel.
4. Check plug and wiring.

COMPRESSOR MOTOR WILL NOT RUN

1. Check motor
2. Check fuse
3. Check pressure switch in back cabinet mounted to left of pressure tank. (See PENN 116 SERIES PRESSURE CONTROLS instructions sheet.
4. Check plug and wiring.

HYDRAULIC MOTOR WILL NOT RUN

1. Check motor
2. Check fuse
3. Check Cycle Unit Motor Cam Switch No. 3 (black-white and gray-yellow wires), which should be closed.
4. Check Cam Switch No. 1 (brown-white and black-white wires), which is open but will close a few seconds after Cycle Unit Motor starts.
5. Check plug and wiring.

FEED MOTOR WILL NOT OPERATE

1. Check motor
2. Check high level switch (top switch on left side of tank. High level switch is normally closed and should open only by float-arm when pot is full of plastic. Float arm may be hung and holding switch open or actuating arm on switch may be hung up. Check to be sure that no build-up of plastic on float-arm or mounting is limiting function of float and switch.

3. Check Cycle Unit Motor Cam Switch No. 1 (black and blue-white wires), which closes to operate Feeder Motor.

4. Check plug and wiring.

MAINTENANCE

TO REPLACE LAMPS IN BACK CABINET

Unlock lock on top of back cabinet. Pull glass frame forward from top, then lift frame up out of 2 retaining slots at bottom of back cabinet. Back cabinet insert is then completely accessible for replacement of lamps.

TO CHANGE DISPLAY SAMPLE

Remove glass frame from back cabinet, as explained in instructions TO REPLACE LAMPS.

TO CHANGE MOLDS

FIRST, turn off power at toggle switch or pull A.C. plug from wall outlet.

Raise bubble top, as explained in Installation section of manual.

Disconnect 4 coolant hoses, remove nuts and bolts holding molds to cylinders. Remove molds and replace with new molds.

ADJUSTMENTS

Because molds vary in size, each new set of molds requires adjustment.

SIDE TO SIDE ADJUSTMENT

Pull right mold by hand as far forward as possible. Face of mold should line up with centers of 2 holes in pot top-plate.

If right mold cannot be properly centered by hand, loosen hex nut and bullet cap nut at end of mold cylinder and adjust mold to proper centered position. Then tighten nuts.

Repeat adjustment procedure with left mold, but left mold should be forced approximately $\frac{1}{4}$ in. past center of holes. (As left mold is forced past center, right mold will retract.)

FRONT TO BACK ADJUSTMENT

Center of molds (from front to back) should be centered between the 2 holes in top-plate. Adjustment can be obtained by loosening allen head bolt on vertical rod at end of mold cylinder, then moving mold forward or backward to proper centered position. Re-tighten bolt to maintain correct adjustment.

ADJUSTMENT TEST

After adjusting molds turn on power at toggle switch or plug in A.C. plug to wall outlet, if previously removed. Deposit coins to mold and vend product. Holes in base of molded product should be as close to center of base as possible.

TO CHANGE COLOR OF PLASTIC

MOLD-A-RAMA, when delivered, contains only clear plastic in pot, which produces a translucent white product. Pigment in crystal form may be added to plastic to mold products in various colors.

Pigment should be added directly to pot, not into hopper.

FIRST CLEAN POT

In order to insure true color change, pot must be thoroughly cleaned. Because pot must be drained completely, MOLD-A-RAMA should be operated to as low a pot level as possible prior to changing colors. While pot is hot and plastic is in molten state,

(1) Place container large enough to hold plastic in pot directly below drain plug located front left corner of bottom of pot.

(2) Remove drain plug with wrench, being careful to avoid contact of molten plastic with hands or clothing, molten plastic being at a temperature of 250 degrees F.

CAUTION!

Place plug with threaded end down to allow molten plastic to flow out of threads.

(3) After molten plastic has drained out of pot, excess plastic must be scraped from inside of pot to reduce contamination of previous color to a minimum.

(4) Remove molds as explained in instructions TO CHANGE MOLDS. (Be sure to shut off power or pull A.C. plug.)

(5) Remove pot top-plate, as explained in LOADING instructions in Installation section of manual.

(6) Scrape excess plastic from inside of pot.

(7) When pot is thoroughly cleaned, replace plug in drain and fill pot with clear plastic crystals and pigment crystals in prescribed ratio, filling pot to 3/4 level. While filling pot, lift float arm to insure proper level indication.

(8) Replace top plate and molds, turn on power to permit new mixture of plastic and pigment to melt.

(9) Test operation, as explained in Installation section of manual and in instructions TO CHANGE MOLDS.

NOTE

If pot has not been cleaned thoroughly color of previous mixture will appear in molded products, but as products in the new color are produced, contamination will diminish.

CORRECT PLASTIC-PIGMENT RATIO

For proper blending, pigment crystals should be added to pot at a ratio of 1 part of pigment to 100 parts of plastic.

PIGMENT SPECIFICATIONS

Pigment crystals may be purchased for MOLD-A-RAMA in many colors. Contact MOLD-A-RAMA office for complete information on available colors.

PLASTIC SPECIFICATIONS

Clear plastic crystals may be purchased from the factory.

IF GUAGE READINGS ARE NOT CORRECT

RIGHT GUAGE (air tank pressure). Adjust pressure switch on side of air tank (see schematic diagram of pneumatic system on page 4). Adjustment is detailed in PENN 116 SERIES PRESSURE CONTROLS instructions sheet supplied with each MOLD-A-RAMA. Right guage should read 90 pounds per square inch prior to start of molding and vending cycle and after dropping during the cycle, should return to 90 pounds normal air-tank pressure.

LEFT GUAGE (line pressure). Turn pressure regulator valve (see schematic diagram of pneumatic system) to right or left until 80 pounds per square inch line pressure is indicated.

CENTER GUAGE (hydraulic pressure). This guage indicates operation of hydraulic pump. Pressure is not adjustable and therefore only indicates function.

HYDRAULIC SYSTEM. Oil level in pump (identified as HYDRAULIC UNIT in schematic diagram of hydraulic system on page 2) should be periodically checked. Remove plug on side of hydraulic unit. Oil should be to level of plug.

Fill hydraulic unit through hole in side of housing, when breather cap is removed.

Capacity of reservoir is one gallon. Hydraulic oil may be obtained from factory. Specify No. M-1240 ND. See Parts Catalog.

AIR COMPRESSOR. Lubricant in compressor may be periodically checked by removing knurled cap with dip stick which permits lubricant level to be read directly (see schematic diagram of pneumatic system on page 4.) Remove cap by pulling straight up.

Lubricant capacity of compressor is ¼ pint. Use SAE No. 20 oil, obtainable from factory. Specify No. M-1241 ND.

REFRIGERATION SYSTEM. Level of coolant in water tank (see schematic diagram of refrigeration system on page 6) may be periodically checked by removing square plug at top of tank.

Capacity of tank is 3 quarts, and coolant is mixture of 7 parts water and 3 parts Prestone or other permanent type anti-freeze.

COIN MECHANISM. Coin mechanism should be cleaned at each service call. Remove slug rejector by lifting spring mounted locks at top of each side of unit, tilting rejector forward and lifting out. Sections of the rejector are pivoted from the side of the unit and can be swung open for accessibility. Clean each section and replace by inserting bottom pins in grooves in unit channel and snapping into upright position.

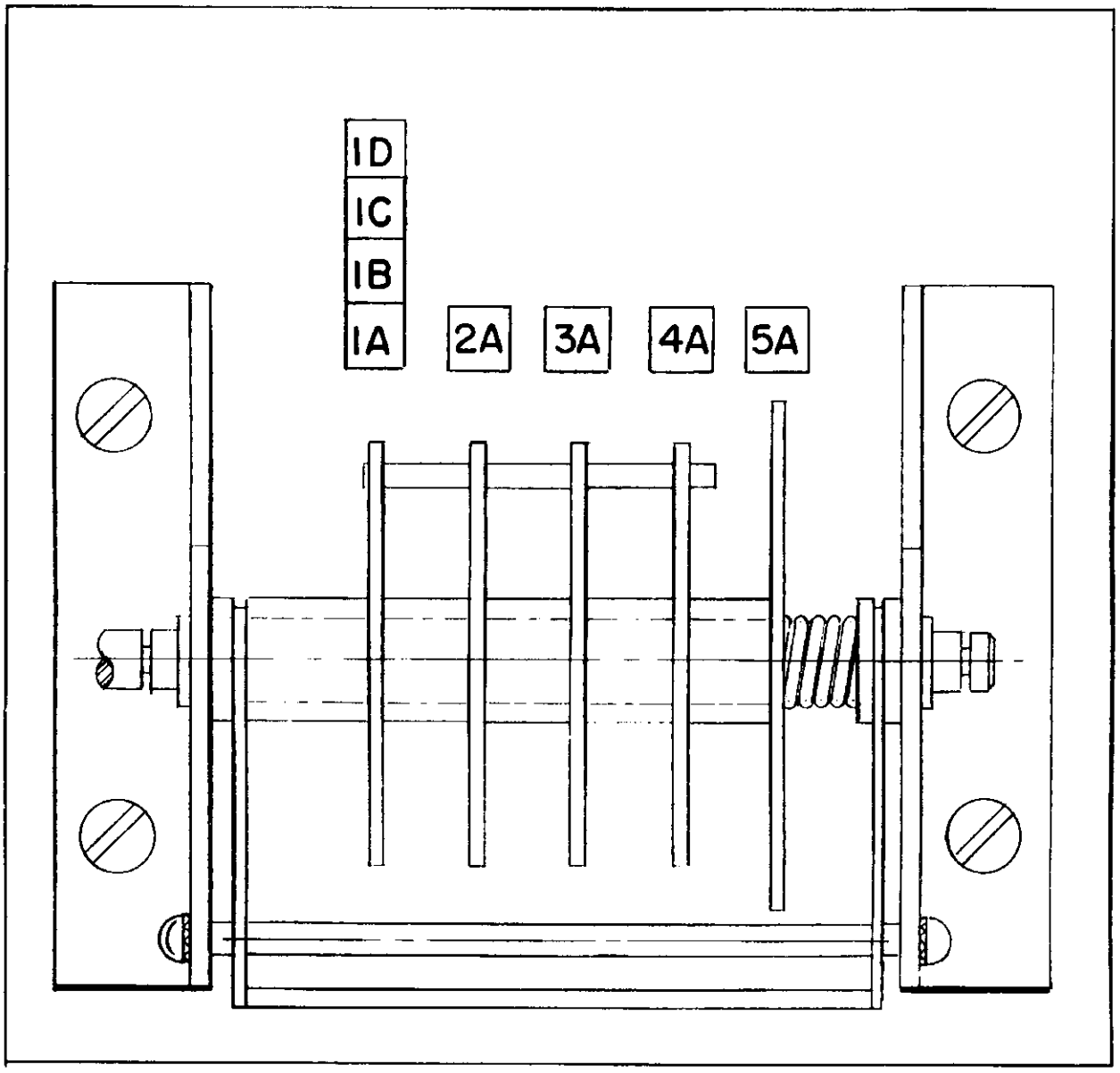
IMPORTANT PERIODIC SERVICE. Keep in mind that the successful operation of MOLD-A-RAMA, like any other machine, requires proper maintenance.

When MOLD-A-RAMA is serviced, machine should be carefully cleaned, not only to insure an attractive appearance to the public, but also to minimize problems which may be caused by accumulation of plastic and other materials. Pot should be ckecked periodically, inside and out. Remove cover, as described on page 12 (under heading NOTE), and scrape excess plastic from sides of pot, top of pot casting and area around auger feed. Also remove excess plastic from air transfer rod. Check left side of pot for proper actuation of float in pot and also outside of pot for proper switch actuation.

OTHER SERVICE. Only other maintenance service required is lubrication of motors and bearings.

CYCLE UNIT MOTOR PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART ON NEXT PAGE



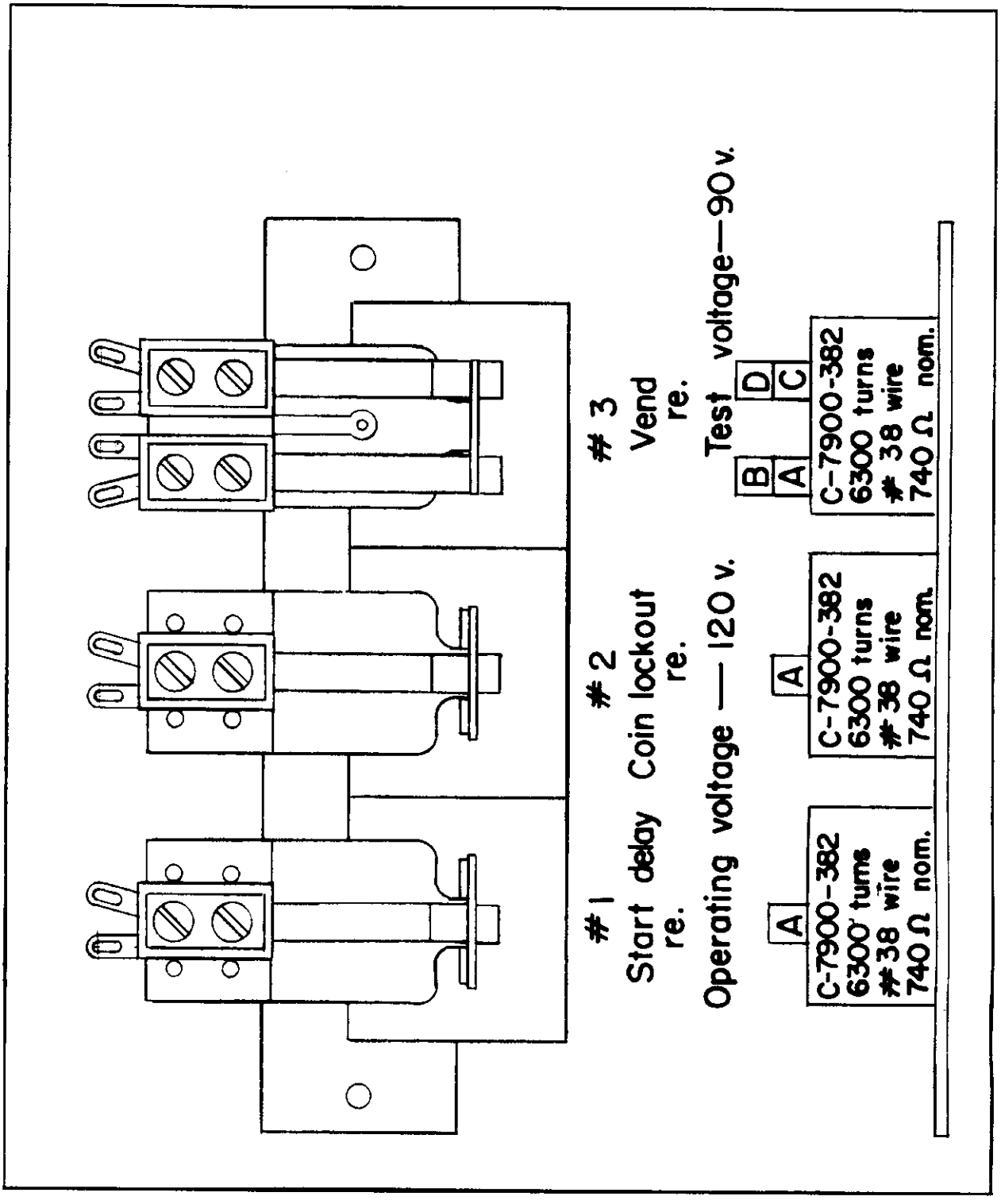
3 RELAYS BANK SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PRECEDING PAGE

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
#1 Relay Start Delay	C-16	50 78	White Orange-Black	
A N.C.	H-16	21-2 80	Blue-Red Black	Breaks Circuit to Cycle Motor through Relay #3
#2 Relay Coin Lockout	C-13	50 57-1	White White-Orange	
A N.C.	L-12	83-1 65-2	Black-Yellow Brown-White	Breaks Circuit to Coin Mech. through Relay #3 & Pot Thermostat
#3 Relay Vend	C-13	50 75	White Orange-White	
A N.O.	M-12	80 45	Black Green-White	Completes Circuit to Coin Mech.
B N.O.	K-13	75 74	Orange-White Orange-Green	Hold In
C N.O.	G-16	21-2 20	Blue-Red Blue	Starts Cycle Motor
D N.C.	K-12	83-1 81-1	Black-Yellow Black-Red	Breaks Circuit to Coin Mech. through Pot Thermostat

3 RELAYS BANK PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART ON NEXT PAGE



CYCLE UNIT MOTOR CAM SWITCH CHART

FOR POSITION OF SWITCHES SEE PICTORIAL VIEW ON PRECEDING PAGE

RELAY SWITCH		LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.O.	J-16	20 80	Blue Black	Carry over for Cycle Motor
1B	N.O.	M-14	93-1 80	Gray-Yellow Black	Breaks Circuit to Counter & Lite Unit Reset Coil
1C	N.O.	K-16	65-2 85	Brown-White Black-White	Cycles Hydraulic Pump through Cam Switch #3
1D	N.O.	G-1	15 18	Red-White Red-Black	Switches Sound during Cycle
2A	N.C.	M-13	74 80	Orange-Green Black	Breaks Circuit to Vend Relay #3
3A	N.C.	H-13	85 93	Black-White Gray-Yellow	Breaks Circuit to Hydraulic Pump
4A	N.O.	K-17	93-1 91	Gray-Blue Gray-Red	Pulses Reset Coil on Lite Unit and Counter
5A	N.O.	H-17	80 90	Black Gray	Pulses Step Up Coil on Lite Unit

PARTS CATALOG

Prices are for each part or assembly listed unless otherwise noted. All prices are F.O.B. Chicago.

PART NO.	DESCRIPTION	PRICE
	(LIGHT UNIT ASSEMBLY—AS-1148-27 ND)	
CO-32R-110	Coil, Reset	.62
A-613-32a	Core Plug Assembly	.31
N-254a	Hairpin	.15 (per 100)
A-1766a	Pawl, Reset, Assembly	.18
S-496-101a	Plunger, Reset	.10
S-496-100a	Plunger, Step-Up	.08
P-3389a	Ring, Retaining, Ratchet	1.20 (per 100)
E-184-149a	Solenoid, Step-Up	.71
SP-100-113b	Spring, Extension, Step-Up Arm	.07
SP-370a	Spring, Torsion (2 turns)	.06
A-1765-4a	Step-Up Arm Assembly	.35
AS-1046-363a	Wiper Assembly	.96
	AIR COMPRESSOR ASSEMBLY—AS-2165 ND)	
M-1129 ND	Compressor, X-2 (with 8 in. Stamped pulley)	22.50
M-1194-1 ND	Hose, ¼ in. by 26 in. (¼ in. MP to ¼ in. FPS)	1.19
M-1194-2 ND	Hose, ¼ in. by 24 in. (¼ in. MP to ¼ in. FPS)	1.16
E-119-302a	Motor, ½ H.P., Single Phase, 115-230 V, 1725 RPM Sleeve Bearing 40° Rigid Mount	36.39
M-1133 ND	Regulator, Pressure ¼ in. N. 26 M.C. Range	3.83
M-1132-1 ND	Switch, Pressure, High Range	11.25
M-1154b	Tank (and Mounting Bracket, 10in. by 16 in.)	14.18
M-1191 ND	Tube, Copper, 3/8 in., 9 in. long (FSF one end)	.54
M-1191-1 ND	Tube, Copper, ¼ in. 32 in. long (FSF one end)	.82
R-379 ND	V-Belt, Size 4L390	.78
M-1134 ND	Valve, Air Relief	1.11
M-1136 ND	Valve, Check (including Bleeder)	2.51
	(REFRIGERATION UNIT ASSEMBLY—AS-2166 ND)	
M-1141a	Pump, Water (Little Giant)*	16.43
AS-2166 ND	REFRIGERATION UNIT, COMPLETE	182.18
M-1138 ND	Refrigerator, ¼ H.P.*	54.23

* Included in complete refrigeration unit but may be purchased separately

PART NO.	DESCRIPTION	PRICE
	(CONTROL PANEL-ASSEMBLY--AS-2168 ND)	
E-560-2 ND	Fuse, Fustat (Buss) (20 amps.)	.14
E-560-3 ND	Fuse, Fustat (Buss) (10 amps.)	.17
E-560 ND	Receptacle, Fustat (Buss) (Type SRD for 20 amps.)	.41
E-560-1 ND	Receptacle, Fustat (Type SRD for 10 amps.)	.41
E-300-208a	Relay Bank, 3, "D"	8.18
E-108-78a	Switch, Toggle, D.P.S.T.	1.58
E-108-76a	Switch, Toggle, M & M	.96
	(HOPPER ASSEMBLY--AS-2169ND)	
M-1145 ND	Chain, 14 links, No. 35 (including connector)	1.00
E-119-312 ND	Motor	14.14
A-2671a	Sleeve and Bearing Assembly	10.59
	(PANEL ASSEMBLY, TOP--AS-2170 ND)	
P-5717b	Cover, Pot	1.70
M-1127-1 ND	Cylinder, Delivery	14.34
M-1127 ND	Cylinder, Mold	17.55
CA-1116b	Gasket, Pot	1.03
E-125-3a	Lamp	.21
P-5751a	Scraper-Blade	.20
G-329a	Sold Out Glass	.21
E-548 ND	Thermostat, Cold	6.90
E-548-1 ND	Thermostat, Heat	15.45
	(CABINET ASSEMBLY--AS-2171 ND)	
M-1209c	Dome, Plastic ("Bubble-Top")	15.90
P-2530-4a	Plate, Coin-Drop (25¢)	.20
P-2210-110a	Plate, Price	.73
A-2678b	Vend-Receptacle Assembly	4.54
	(FRAME ASSEMBLY--AS-2172 ND)	
E-130-13 ND	Counter	4.49
M-1202 ND	Swivel-Caster	2.49
	(CYCLE UNIT ASSEMBLY--AS-2173ND)	
E-119-317 ND	Motor, 1.2 R.P.M.	17.62
M-1126	Valve, Main	80.03

PART NO.	DESCRIPTION	PRICE	
	(HYDRAULIC UNIT ASSEMBLY--AS-2174 ND)		
M-1195 ND	Hose, Hydraulic, ¼ in. by 26 in. (¼ MP to ¼ FPS)	1.58	
M-1142a	Power-Unit, Hydraulic, ½ H.P.	69.00	
M-1143 ND	Valve, Check, CV-200A	2.96	
	(AGITATOR ASSEMBLY--AS-2177b)		
P-5746a	Blade, Agitator	.23	
LS-540-8-510	R. H. M. S.	.75	(per 100)
M-1164a	Sprocket, 9-tooth	2.07	
	(POT ASSEMBLY--AS-2178 ND)		
M-666-8a	Actuating-Arm, High Level	.04	
M-666-9a	Actuating-Arm, Low Level	.05	
M-1148 ND	Cal-Rod	2.46	
M-1145-1 ND	Chain, 30 links, No. 35 (including connector)	2.12	
M-1149 ND	Cylinder, Air	10.29	
M-1149-1 ND	Cylinder, Heat	34.38	
M-1201a	Float	1.41	
M-1194 ND	Hose, Air, ¼ in. by 12 in. (¼ F.F.S. to 1/8 F.R.S.)	1.05	
E-108-71a	Switch, Cherry	1.44	
M-1162 ND	Valve, Air	4.17	
	(GLASS FRAME ASSEMBLY-- AS-2182 ND)		
G-328a	Backglass	9.78	
	(ACCUMULATOR ASSEMBLY--AS-2189 ND)		
M-1203 ND	Accumulator Assembly (10-02-004)	84.45	

PART NO.	DESCRIPTION	PRICE
	CABLES AND RELATED PARTS	
E-550-20 ND	Cable, Cabinet	35.98
E-550-7 ND	Cable, Compressor	1.82
E-550-18 ND	Cable, Control Panel	6.55
E-550-17 ND	Cable, Cycle Unit	4.81
E-550-12 ND	Cable, Feed Motor	1.53
E-550-15 ND	Cable, Heater	1.47
E-550-13 ND	Cable, Hydraulic	1.47
E-550-19 ND	Cable, Insert (Backglass)	5.06
E-550-16 ND	Cable, Micro Switch	2.53
E-550-11 ND	Cable, Pressure Unit	1.32
E-550-8 ND	Cable, Refrigerator	1.47
E-550-14 ND	Cable, Tape Deck	1.86
E-550-9 ND	Cable, Thermostat (Heat and Cold)	3.69
E-550-10 ND	Cable, Thermostat, Water	1.50
E-162-95 ND	Plug, Cabinet Cable (to Control Unit)	.67
E-162-79 ND	Plug, Compressor Cable	.44
E-162-103 ND	Plug, Cycle Unit Cable	.40
E-162-79 ND	Plug, Feed Motor Cable	.44
E-162-79 ND	Plug, Heater Cable	.44
E-162-79 ND	Plug, Hydraulic Cable	.44
E-162-101 ND	Plug, Insert Cable	.30
E-162-101 ND	Plug, Micro Switch Cable	.30
E-162-79 ND	Plug, Pressure Unit Cable	.44
E-162-79 ND	Plug, Refrigerator Cable	.44
E-162-101 ND	Plug, Tape Deck Cable	.30
E-162-100 ND	Plug, Thermostat Cable (Heat and Cold)	.62
E-162-79 ND	Plug, Water Thermostat Cable	.44
E-162-17 ND	Socket, Cabinet Cable (to Cycle Unit)	.30
E-162-102 ND	Socket, Cabinet Cable (to Coin Unit)	1.22
E-162-98 ND	Socket, Cabinet Cable (to Insert)	.30
E-162-80 ND	Socket, Cabinet Cable (to Motors)	.44
E-162-99 ND	Socket, Cabinet Cable (to Heat and Cold Thermostat Unit)	.68
P-405-14a	Terminal, Soldering	.45 (per 100)

PART NO.	DESCRIPTION	PRICE
	MISCELLANEOUS MATERIALS	
P-1900-63b	Cash Box	1.58
P-5846a	Clamp, Cord	.07
E-126-35 ND	Cord Set	2.63
P-5794b	Cover, Cash Box	.37
M-1246 ND	Link, Connecting (for No. 35 Chain)	.14
M-1242 ND	Oil, Air Compressor (1/4 pint per unit)	.64 (qt.)
M-1240 ND	Oil, Hydraulic Unit (1 gal. per unit)	.90 (gal.)

NOTE: If Hydraulic Oil purchased locally use:

AMERICAN
  Stanoil No. 15 or American Industrial No. 15
CITIES SERVICE
  Pacemaker No. 150T
GULF HARMONY
  No. 44
METAL LUBRICANTS CO.
  Malcolene 305
SHELL TELLES
  No. 27
SOCONY
  DTE light
STANDARD
  Stanoil No. 15 or American Industrial No. 15
TEXAS REGAL
  R & O No. A

PART NO.	DESCRIPTION	PRICE
	TUBES AND RELATED PARTS	
M-1193 ND	Hose, Hydraulic, ¼ in. I.D., 16" (¼ in. MPX, ¼ in. FFS)	1.71
M-1180 ND	Insert, Brass (2030 by 6 by ¼ in. dia.)	.02
	NOTE	
	Each of following Tubes are 3/8 in. copper with insulation. Notation under each Tube identifies Tube by location.	
M-1191-2 ND	Tube (From Water Pump to "T"	1.44
M-1191-3 ND	Tube (Viewed from rear of machine, right hand water connection to right hand "T")	1.05
M-1191-4 ND	Tube (Viewed from rear of machine, left hand water connection to left hand "T")	1.05
M-1191-5 ND	Tube (Viewed from rear of machine, right hand "T" to right side water connection, right side of panel)	2.10
M-1191-6	Tube (Viewed from rear of machine, left hand "T" to left side water connection, left side of panel)	2.10
	NOTE	
	Each of following Tubes is 3/8 in. steel. Number appearing after each Tube refers to port to which Tube connects, as illustrated in attached view of Hydraulic Main Valve, in which ports are numbered 1 to 12.	
M-1190-10 ND	Tube (1) (W/Nut FP-13313)	.65
M-1190-11 ND	Tube (2) (W/Nuts FP-13314)	.67
M-1190-8 ND	Tube (3) (W/Nuts FP-13311)	.62
M-1190-9 ND	Tube (4) (W/Nuts FP-13312)	.51
M-1190-6 ND	Tube (5) (W/Nuts FP-13309)	.73
M-1190-7 ND	Tube (6) (W/Nuts FP-13310)	.71
M-1190-4 ND	Tube (7) (W/Nuts FP-13307)	.72

CONTINUED ON NEXT PAGE:

PART NO.	DESCRIPTION	PRICE
M-1190-5 ND	Tube (8) (W/Nuts FP-13306)	.74
M-1190 ND	Tube (9) (W/Nuts FP-13303)	.92
M-1190-10 ND	Tube (10) (W/Nuts FP-13304)	.92
M-1190-2 ND	Tube (11) (W/Nuts FP-13305)	.71
M-1190-3 ND	Tube (12) (W/Nuts FP-13306)	.68
M-1192 ND	Tube, Vinyl (FT. 200 by 3/8 by 1/4, 15 in.)	.14
M-1185 ND	Valve, Flow Control (Pneu-Trol)	3.71

HYDRAULIC MAIN VALVE