



VIBROMATIC

COMPANY, INC.

1301 South Sixth Street - P.O. Box 1358
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<http://www.thomasregister.com/vibromatic>

VIBROMATIC COMPANY, INC. MANUFACTURES ALL PART HANDLING SYSTEMS TO THE SPECIFICATIONS DESCRIBED BELOW. THESE SPECIFICATIONS ARE CONSIDERED PART OF THIS QUOTATION. THIS IS VIBROMATIC'S GUARANTEE TO YOU, THAT ALL PART HANDLING SYSTEMS WILL CONFORM TO SPECIFICATIONS THAT REPRESENT THE HIGHEST QUALITY AND INTEGRITY AVAILABLE ANYWHERE IN THE WORLD.

A. Vibratory Feeder Bowls

1. Feeder bowl construction is 304 series stainless steel unless otherwise specified within this quotation. Tool steel construction may be used in high wear applications.
2. All feeder bowls will be designed with backpressure relief (bubble) at the entrance to confinement, when possible. When a "built in" back pressure relief is not practical, a 110 VAC 60 Hz sensor will be used to detect a "full track condition" allowing the feeder bowl to operate on demand as parts are removed from the track.
3. All feeder bowls with outside pan construction will have a maximum size return hole based on the proper pitch design. The basic bowl will be designed with an eight-degree maximum bottom angle to relieve pressure at the return hole, while ensuring a good supply of parts to the basic track.
4. Each bowl will be designed with a "max allowable scrap relief" to remove dirt, foreign matter, tumbling stones, deburring material, etc. that are smaller than the part being fed. This relief keeps scrap from accumulating within the system. In addition to scrap relief, all orienting mechanisms and selectors (bowl tooling) will be designed to minimize the possibility of foreign material jamming in critical areas.
5. When a bowl is required to handle more than two parts, and adjustment is required, the location of all movable members will be fixed in distinct positions, by keyed blocks, pins, or close fitting screws. In some circumstances, when we only have 2 parts, elongated holes without locators may be used for adjustment by sliding the tooling up for one part and sliding it down for the other part. (Note: This rule also applies to inline confinements)
6. All feeder bowl controls will be Nema 12 rated, and are preset on our floor to operate with approximately 20% reserve on the dial.
7. A corresponding drive unit proportionally sized in mass and diameter will power each bowl size protecting the drive unit from over loading.
8. All feeder bowls will be statically balanced which helps to avoid dead spots in the flow of parts.
9. Two or four coils will power our drive units, but in either case, they will always be mounted symmetrically opposite each other for equal distribution of weight and power.
10. If part transfer from the bowl discharge to the track entrance is critical Vibromatic will scarf both ends to match, providing a smooth transition for the part between each unit.
11. Minimizing sound level will be considered during design and build of all vibratory bowl feeders.
12. The necessary equipment to meet desired sound level requirements will always be specified in our proposal.
13. A Vibromatic drive unit will power all bowl feeders. The Vibromatic circular design configuration allows for plate mounting anywhere within three hundred and sixty degrees. All drive units will be equipped with built-in leveling and height adjustment, and will have a means of bolting the drive unit securely to the base plate for a positive alignment. (Vibromatic square design drive units do not incorporate all of the above features.)





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14. Special circumstances sometimes require air assist for orientation as a last resort. If air assist is necessary, a regulator and flow control will be supplied as standard equipment. If the amount of air required is unusually high an automatic shut off valve will be supplied to minimize overall air consumption. This valve will be Vibromatic's standard valve.
15. If a feeder bowl is designed to handle more than one style part, a quick dump, purge gate will be provided to reduce changeover time.
16. All feeder bowl drive units are designed for "easy access" to spring and coil assemblies, which allows for ease of adjustments, and preventative maintenance. This means there will be no covers to remove to allow access to adjustment screws and fasteners.

Hoppers

1. All standard hopper bins and trays will be constructed of 304 stainless steel.
2. Vibromatic's standard hoppers will have a vertical front (over the discharge) to reduce bridging conditions.
3. The discharge tray, on all vibratory auxiliary supply hoppers, will be powered by a suitable driver, which will be independently mounted (not welded to the auxiliary hopper frame), for ease of maintenance.
4. All TF-2000 series tray drivers will be mounted on rubber feet to prevent unwanted transfer of vibration to surrounding equipment.
5. All auxiliary supply hopper controls will be Nema 12 rated, and are preset on our floor to operate with approximately 20% reserve on the dial setting.
6. All auxiliary supply hoppers will be equipped with an ultra sensitive, proximity type level control sensor.
7. The supporting member, (Framework) on all vibratory auxiliary supply hoppers, will be constructed of rigid plate stock, (not sheet metal) with a heavy duty riser column.

B. Part Qualifiers (Presorters)

1. The function of all "off-line" presorters will be to qualify parts for "trackability" before handling them in "on-line" feed systems. If a presorter is to function in some other way, such as gauging a particular part detail, this will be clearly described in Vibromatic Co. Inc's. quotation.
2. All part presorters will be designed to qualify parts at a rate faster than the "on-line" usage.

C. Explosion Proof Drive Units

1. All vibratory units for bowls, straight lines, and auxiliary supply hoppers will be pneumatic powered.
2. Full track sensors will be fiber optic, with long fibers in the exposed area.
3. Explosion proof units will be equipped with all necessary valving, gauging, plumbing, etc., to control each individual unit.
4. Special circumstances can cause a variation of the above items, and may need to be quoted separately.





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D. Sound Enclosures:

1. All sound enclosures, over 18" wide will be equipped with a hinged lid.
2. All sound enclosures will be equipped with quick release fasteners, for easy access to the enclosed feeding system.
3. Standard sound enclosure construction will consist of 1/8" aluminum material, lined with polyester foam.
4. Each sound enclosure will be equipped with quick release pins for securing to the tabletop.
5. Aluminum extruded type enclosures are quoted separately per application.

E. Straight Lines:

1. All tooling will be centered along the length of the inline whenever possible.
2. Inline construction will be CRS, carburized, or tool steel, hardened to approximately 50-60 Rc. (Tool steel may be either air or oil hardened.)
3. Standard stock sizes will be used for tooling whenever possible.
4. All top confinements will be designed with a 6" removable section, with no more than 2 screws to be removed at the discharge end of the track.
 - a. Top confinements for tracks over 36" long will have a removable section between the bowl discharge and the straight-line tooling.
 - b. The complete top confinement for tracks 12" long and under will be considered the removable section.
 - c. Quick removable sections may be quoted upon request.
5. The concept drawing will show the track top confinement overhanging the discharge end of the straight line tooling by one inch. This allows for a staggered transition between the end of the straight-line tooling and the customer's nest.
6. Maximum allowable clearance, between the part and confinements, will be built into all track profiles.
7. As a rule, confinements will not be higher than one half of the part height. This will prevent parts from shingling in the track.
8. All tracks will be designed to confine parts in a positive manner that will prevent them from coming out of the track when under backpressure.
9. All vibratory straight-line controls will be Nema 12 rated, and are preset on our floor to operate with approximately 20% reserve on the dial setting.
10. All horizontal vibratory straight line drive units will be equipped with a "built in" means of leveling and adjustment, and will have a means of fastening securely to the mounting surface for positive alignment.
11. All straight-line springs and coil assemblies are designed to operate without covers or shrouds to remove, this makes adjustment and performing preventative maintenance easier.
12. If more than one type of part is to be tracked in a straight-line, all adjustments will be pinned or keyed to the required position. (see section "A" "Bowl" item number 5 on adjustments)
13. If feasible, track sensors will be mounted at an angle to the part flow to ensure proper sensing as parts back up to the fiber optic sensor.





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F. Gravity Tracks (Connecting)

1. All gravity tracks will be mounted at a minimum of 35 degrees from horizontal to ensure positive part flow.
2. Gravity track clearances will conform to the same specifications as described in section (F) (Straight lines), item number (6). Extra caution will be taken when tracking parts around a radius. Tracking parts around a radius sometimes requires extra clearance for longer parts.
3. All gravity tracks will be secured to the base plate with a heavy duty mounting bracket.
4. Stationary tube type gravity tracks, will be constructed of stainless steel whenever possible. Slots will be provided for visual inspection and access.
5. Flex tube gravity tracks will be supplied with a Vibromatic custom tube adapter/isolation stand, and approximately 10 foot of either high or low-density polyethylene tubing.

G. Vibratory Drive Unit Controls

1. Vibromatic "H" series controls, mounted in a Nema 12 rated enclosure is our standard control. (Vibromatic also offers an optional self-compensating unit that will "re-tune" itself as required depending on the drive units load at any given time. This unit is called the Phase III.)
2. Wiring diagrams will be clearly marked inside the door of each control box.
3. Each controller will be labeled to specify what it controls i.e. Hopper, Inline, Bowl.

H. Engineering & Manufacturing Specifications:

1. All tables for vibratory units shall be 1 1/4", or thicker (HRS). All legs will be 3" min. square tube with plus or minus 3/4" vertical adjustment. Hollow leveling screws will be provided on each table legs for lagging to the floor at installation. (Additional legs will be located directly under large drive units to prevent unwanted vibration transferring to other equipment).
2. Each system is set up and ran on our floor simulating production conditions as closely as possible to ensure reliability and quality.
3. Vibromatic will indicate separately as options, any suggestions, or improvements that may affect the system cost.
4. All machines will be painted to Vibromatic standard color unless otherwise indicated in writing, on the customer's purchase order. (Vibromatic standard products, all mounting stands and vibratory drive units will be painted black with all other painted surfaces being painted either Machine Gray, Vista Green or customer's supplied paint.) If Vibromatic is required to paint any standard products a custom color, it will be quoted separately.
5. Vibromatic will provide (2) sets of "to scale" concept drawings: One set is for the customer's records, and one set is to be signed and returned to Vibromatic as an approval. (A cad disk will be sent on request.)
 - a. To ensure delivery, construction of the bowl will begin as soon as Vibromatic receives the purchase order. (Provided the correct rotation has been specified with the customer's P.O.)





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- b. A concept will be sent for approval after all other information has been obtained. (Long lead components, i.e. pick & place units, etc may be ordered at this time in order to ensure delivery.)
- c. The remainder of the system, such as the base plate, inline, etc. will be released for production only after customer approval of concept drawings.
6. A "Sequence of operation" will be provided with the purchase of any mechanism upon request. Electrical and pneumatic drawings will be provided with purchase of the "Sequencing control package" upon request.
7. A package of operating instructions, a list of perishable parts (standard and purchased), and set up information will be provided with each part handling system.
8. Drawings:
 - a. As a standard, all engineering drawings will be generated on AutoCAD and printed on Vibromatic Vellum. Vibromatic Company, Inc will maintain a cad file as a permanent record.
 - b. If drawings are to be on customer paper, a cad disk will be sent after the drawing changes are complete. Vibromatic will also maintain a cad file as a permanent record.
9. All systems will be manufactured to Vibromatic standards (including drawings and components specifications) unless otherwise specified in the Vibromatic quotation.
10. Every system will be permanently identified with a "V" serial number that will become part of Vibromatic's permanent records. One of the "V" numbers will indicate the bowl construction, and other "V" number, in sequence will be assigned to all other parts of the system. (If the job is a bowl only, there will only be one "V" number assigned.)
11. Guards will be constructed around pinch points of all mechanisms on turnkey systems. Systems integrators are responsible for the guarding of mechanisms as they integrate our system with their machines. Guarding can be quoted separately upon request.
12. All critical tooling will be doweled or keyed in a fixed location to maintain alignment.
13. A modular approach will be applied, in the design of all mechanisms, using as many "off the shelf" readily available, components as possible.
14. "Easy access" to electrical and pneumatic components will be designed into each system.
15. Total confinement will be provided throughout all tracking and mechanisms to maintain 100%, positive part orientation.
16. Self-lubricating materials, or lubrication grooves and fittings will be provided.
17. Vibromatic standard components will run on clean dry air. No lubrication required.
18. All screws will be #10 diameter, or greater. (Where applicable.)
19. Part presence sensors may be required on Vibromatic mechanisms to verify that each part advances properly. (This is optional and will be quoted upon request by our sales department.)
20. Flow controls for pneumatic cylinders will be furnished.
21. 150 psi rated, flex tubing will be used to plumb all cylinders.
22. STO, rubber cord will be used to wire all switches and solenoids.
23. Seal tight will be used when flex conduit is required.
24. Silent chain conveyors will be equipped with a torque limiter to prevent damage to related devices.
25. Vibromatic will supply a sensor (normally a prox switch) to indicate the position on our equipment showing extended or retracted position of tooling.
26. Floor hoppers are sold with a standard 220/440 Volt 3 phase 60 Hz motor. Control of this motor is quoted as an option.





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The following is a list of components used by Vibromatic Co. Inc. as standard components. Vibromatic may change these components at their discretion. Each item is listed by preference from top to bottom.

VIBROMATIC MECHANICAL COMPONENT LIST

- A. Air cylinders**
 - Up to 3/4" bore = Bimba round body double acting cylinder
 - 3/4" to 1 3/8" bore = Phd Inc. "AV" series double acting cylinder
 - 1 1/2" and up bore = Hydro-line "E" series double acting cylinder
- B. Power Slides**
 - Robohand slides
 - Fabco slides
 - Phd slides
- C. Rotary Actuator**
 - Festo rotary actuator
 - Phd rotary actuator
 - Robohand rotary actuator
 - Miniature Indexer
 - Rotomation
- D. Part Placement Device (Gripper Fingers) (Angled Motion and Parallel)**
 - Robhand grippers
 - Phd grippers
- E. Part Toggle Escapement**
 - R&I toggle escapement
 - Robohand toggle escapement
 - Phd toggle escapement
- F. Linear Part Isolator**
 - Vibromatic VPI-4 part isolator
- G. Filter, Regulator, and Lubricators**
 - Watts
 - Wilkerson
- H. Rodless Cylinders**
 - Festo
- I. Programmable position slide**
 - Lin-tec
- J. Standard Screw escapement**
 - SE-01 Vibromatic screw escapement
 - Veb-1 Vibromatic screw escapement
 - Veb-2 Vibromatic screw escapement
- K. Valves**
 - Numatic valve with Canfield Neon light plugs and cord

Proximity Switches

- A. 18mm Proximity switch**
 - XS1-M18MA230K Telemecanique with quick disconnect and cord
- B. 12mm Proximity switch**
 - XS1-M12MA230K Telemecanique with quick disconnect and cord





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Programmable Controls

- A. Small Applications (10 inputs and 10 outputs) including spare
Siemens Logo
Allen Bradley – Micro control
- B. Medium Applications (more than 10 inputs or 10 outputs and less than 24 inputs and 16 outputs)
Allen Bradley – SLC-500 fixed hardware.
- C. Large applications (More than 24 inputs or 16 outputs and less than 256 I/O combined)
Allen Bradley SLC-500 Modular hardware
- D. Larger applications
Will be determined by Vibromatic on a case by case basis.
- E. DC Power Supplies
Power-one

Full Track Switch (Vibromatic part number “Ban-ra5” (Time delay type)

RSBF Maxi-Beam Scanner Block	Banner
RPBR2 Maxi-Beam Power Block	Banner
RWB4QDA Wiring Base	Banner
RLM5 Maxi-Beam Module	Banner
RKM46 – 4m Cable	Turk
IA23S Fiber	Banner
A-300 Hardware Kit	Banner

Low Level Track Switch (Vibromatic part number “Ban-Ra3”) (No timer - instant on instant off)

The components for this sensor are the same as above except the RLM5 Maxi-Beam Logic Module is not required.

Wiring Standards

A. Methods

1. All wires will be numbered at both ends to match electrical prints.
2. Wire numbers will represent a voltage potential with certain circumstance not a number for a particular wire.
3. Terminals will contain no more than two wires.
4. Wire ducts will be designed with 25% reserve.
5. No wires shall be spliced.
6. Wiring, external to the control panel, shall have terminations at the terminal blocks on the control panel. Both wires from each contact, coil, or solid state device, external to the main control panel shall be returned to the main panel terminal strip for circuit hook-up.

B. Size

18ga. wire will be used on all programmable logic control inputs and outputs
16ga. wire will be used in all other cases, except low voltage or amperage, which will be sized to fit the application.





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- C. Color**
- White = Current carrying ground
 - Green (With or without Yellow stripe) = Ground
 - Black = AC or DC above 150 Volts
 - Blue = DC 150 Volts or under
 - Red = AC 150 Volts or under
 - Yellow = Interlock control circuit from external power source.
- Note: On small coils the wire diagram is as follows:
Black = Ground Blue = Common Brown = Hot

VIBROMATIC ELECTRICAL COMPONENT LIST

- A. Electrical boxes, push button boxes, and panels**
 - Hoffman – Nema 12 with 25% spare panel space provided.\$
(Vibromatic standard H-series controls is built without 25% spare space.)
 - Hammonds – Nema 12 with 25% spare panel space provided.
(Vibromatic standard H-series controls is built without 25% spare space.)
- B. Disconnect switches**
 - ABB Non-fusible
 - Allen-Bradley 1494 series
 - Square D Class 9422
 - Sized for voltage and amperage of Vibromatic supplied equipment plus 25%.
- C. Transformers External Mount**
 - Square D – Class 7400
 - Sized to supply 25% over the requirements of Vibromatic Equipment.
- D. Push buttons, Pilot lights & Selector switches**
 - Allen Bradley 800 EP series. (Excluding H series controls)
- E. Wire duct**
 - Panduit – Restricted slot
- F. Terminal blocks**
 - Allen Bradley – 1492-W4 series
- G. Fuse blocks**
 - Phoenix UK10.3 HESI
 - Allen Bradley 1492-WFB10
 - Bussmann – If available. If not, Marathon will be substituted.
- H. Fuses**
 - Bussmann – If available. If not, Gould will be substituted.
- I. Contractors**
 - Allen Bradley – Bulletin 100
 - Furnas
- J. Motor Starters**
 - Allen Bradley – Including bulletin 100 Contractor & Bulletin 193 overload.
 - Furnas
- K. Beacon Light**
 - Federal signal – Litestak
 - Telemecanique

