Motorized Manual Highway Tape Applicator (MMHTA-18)

Information Folder 5.15

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Description

The 3M™ Motorized Manual Highway Tape Applicator (MMHTA-18) is a motorized, two-wheeled device for applying 3M™ Stamark™ and Scotch-Lane™ pavement marking tapes (See Figure 1). The device is specifically designed to apply pavement markings precoated with pressure sensitive adhesive during and immediately following asphalt resurfacing operations. It can also be used to apply pressure sensitive adhesive coated markings on existing surfaces or temporary markings used in construction work zones.

Figure 1

Product Width and Spacing

Several combinations of tape widths and spacing can be applied using the MMHTA-18. Combinations of solid and skip lines may be applied simutaneously. The 3M™ Manual Highway Tape Applicator can be used to apply all Stamark and Scotch-Lane pavement marking tapes at maximum standard roll lengths. **NOTE:** If special ordering tape, the maximum roll diameter cannot exceed 20 inches (50.8cm) if the material is to be applied with a MMHTA-18. Consult your 3M representitive to determine the availbility of the MMHTA-18 in your area.

Operation

The tape applicator can be operated by one person. The following application rates are based on asphalt paver speeds of 25 - 50 ft./min. and a walking speed of 100 ft./min.

10:30 Skip	750 ft./hr.
15:25 Skip	1125 ft./hr.
Solid Line	1500 ft./hr.
Solid / Skip (NPZ)	2500 ft./hr.
Double Solid	3000 ft./hr.
Overall Average	1000 ft./hr.

NOTE: The application rates shown are intended as guidelines and may vary with project conditions.

Procedure for Application of Pavement Markings

Load the tape and thread it over the 2-inch (5.08 cm) diameter aluminum roll, adhesive side up (See Figure 2). Feed the tape through the CLAMP to the CUTTER PLATE. Adjust the GUIDE BARS at the sides of the tape rolls to hold them securely in position. The guide bars should be adjusted to allow the roll to rotate freely, but not move side to side. Stamark pavement marking tapes can be ordered with the adhesive side of the tape wound inward or wound outward. Both types of rolls will work with the MMHTA-18; however, the tape wound **adhesive side out is recommended**. The tape wound adhesive side out will develop a natural curl that positions it to curve toward the silicone applicator roll as it passes through the cutting plate.

CAUTION: Do not activate the cutting knife with the foot pedal while threading tape.

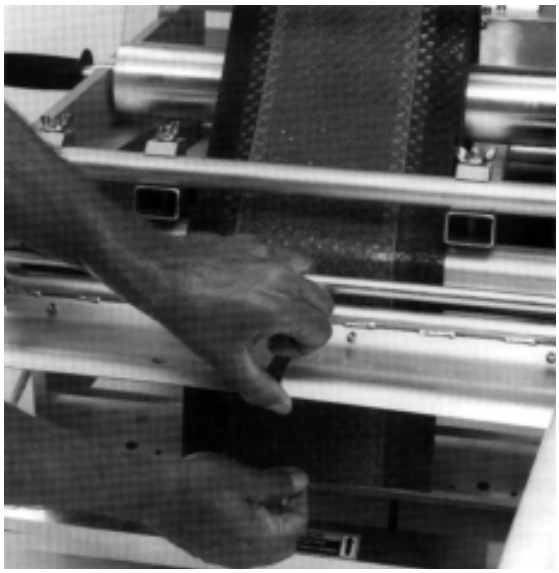


Figure 2

Application Techniques (Refer to Diagram A)

Pre-marking:

Using 200-250 ft. (60-70 m) of light rope, chain or thin wire cable for a guideline, mark the skip sequence on the chain to be followed. Example: A sash chain marked to the proper sequence with 1-inch (2.54 cm) spiral key rings.

Example: For a 10 ft. (3 m) skip line and a 30 ft. (9 m) space (10-30 sequence):

1) Mark point (A), the beginning of the first skip line, about 8 feet (2.44 m) from the beginning of the chain to line up applicator.
2) Measure 10 ft. (3 m) and mark point (B), the end of the skip line.
3) Measure 30 ft. (9 m) and mark point (A), the beginning of the next skip line.
4) Repeat steps 2 and 3 throughout the remaining length of the guideline so that the last mark is at point (A).

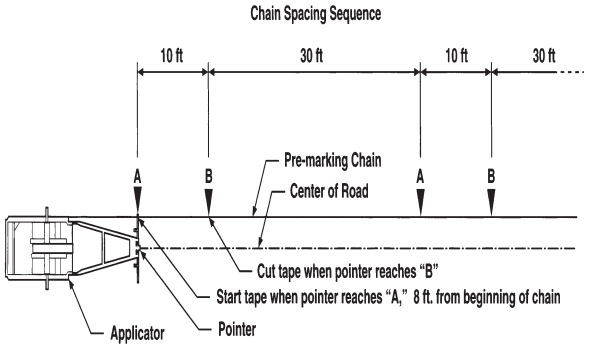


Diagram A

Pre-Application Preparation

1. Inspect cutting blades, clean and adjust if necessary. See Maintenance.
2. Check all fastening hardware and tighten if necessary. Do not overtighten. Use self-locking hardware if replacing missing nuts or bolts.
3. Engine pre-operation check. See Maintenance for maintenance intervals.

A. Oil: Use Honda 4-stroke oil, or equivalent detergent, premium quality motor oil. SAE 10W/30 is recommended for general all-temperature use.

- Remove the oil filler cap/dipstick and wipe clean.
- Insert the dipstick into the oil filler neck, but do not screw it in.
- If oil level is low, fill to the top of the oil filler neck with recommended oil.

B. Air Cleaner: Check the air cleaner elements to be sure they are clean and in good condition. Clean or replace the elements if necessary.

C. Fuel: Remove the filler cap and check the fuel level. Refill the tank if the fuel level is low. Do not fill above the shoulder of the fuel strainer.

Tape Application

1. Determine where the first skip or long line starts by measuring from the last existing skip or reference mark and the side of the road. Offset the premarked chain at least 12 inches (30 cm) from the center of where the new markings will be applied.
2. Lay the guideline out and adjust the pointer to the side of the applicator. Position the applicator even with the pre-marking chain, and position the pointer to the side as shown.
3. To start application, position the right hand in the center of the clamp handle when moving the handle forward to aid in keeping the applicator moving in a straight line when starting tape application (See Figure 3). Slowly move the clamp handle forward while squeezing the clutch lever to move the applicator forward at about the same speed. After tape application has begun, immediately release the clamp handle to allow the tape to move freely. As the tape applicator is moved forward, start the pavement marking each time the pointer passes over “A,” and cut the pavement marking each time the pointer passes over “B.”
4. When the last mark on the guideline is reached, start the next pavement marking, stop the machine and again lay the guideline out in front of the pointer.

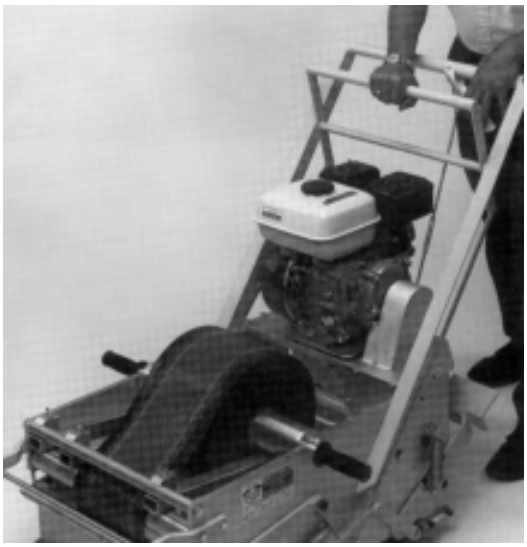


Figure 3

Tape Cutting

Release the clutch bar and bring the applicator to a complete stop over the proper marking. Back-up 1/2 inch (1.27 cm) before cutting the tape and release the foot pedal slowly. **Do not attempt to cut the tape while moving.** Cutting the tape in motion will stretch and tear the tape, causing the next line to start off center.

When cutting a single line or both lines of a double line, depress either the right or left foot pedal to the lowest position (See Figure 4).

When cutting a single line while applying a double line, depress the corresponding foot pedal. Depressing the foot pedal too far will cut both markings.

Figure 4

Tamping

When inlaying pavement markings in new asphalt concrete surfaces, tamp the markings during the final compaction (finishing roller) of the mat. After application of markings on existing surfaces, tamp the tape thoroughly with the 3M™ Roller Tamper Cart (RTC-2) with a minimum 200 lb. (90 kg) load, or slowly (2-3 mph) drive over the tape three times with a vehicle tire. The vehicle **must be** equipped with a pointing device to aid in keeping the vehicle on the tape, making **three passes** forward over the tape. Use a vehicle tire on long line markings only. Do not attempt to tamp intersection markings with a vehicle tire.

Tamping is most important!

When using the RTC-2 Roller Tamper Cart with 200 lbs. (90 kg.) of weight:

- Do not twist or turn the tamping device on the tape.
- Make three passes back and forth over each part of the tape.
- When tamping symbols, start in the center and work to the outside edges.
- Make sure all edges are firmly adhered.
- Open road to traffic as soon as **tamping is complete.**

Maintenance

Keep All Fasteners Tight

Lubrication: All the pivot points and sliding areas should be kept lubricated with light oil penetrant such as 3M™ Five-Way Penetrant or similar penetrants such as WD-40.

Cleaning: The rubber application roller wheels and cutting mechanism must be kept clean. 3M™ Citrus Base Industrial Cleaner or any natural citrus based cleaner may be used on the wheels and knives. Solvents may be used occasionally for difficult cleaning problems. A spray bottle of cleaner is useful to prevent asphalt buildup on the wheels and adhesive buildup on the knives during operation.

Caution: Do not use solvents or petroleum products on the silicone application roller when working on new, hot asphalt surfaces. A paint scraper or putty knife should be used to clean the asphalt buildup from the scraper and cutter mounting bar. To prevent asphalt buildup around the roller, additional clearance can be provided by loosening the scraper mounting screws and sliding the scraper back. Tighten the screws. Second, remove the cutter mounting bar and grind 1/8 inch (3.175 mm) off the bottom. Replace the bar.

		Each Use	Every 50 Hour	Every 100 Hours
Engine Oil	Check Level Change*	X		X
Air Cleaner	Check Clean*	X	X	
Spark Plug	Clean and Readjust			X

*Service more frequently when used in dusty areas.

Adjustments

The SCRAPER BAR, which is readjusted by the manufacturer to prevent excess materials from accumulating on the application roller, should be periodically checked for wear and rotated if necessary. The bar should contact the rubber roller across the full length of the roller.

The KNIVES are readjusted by the manufacturer to slide across each other with a minimum of friction in a scissors action. Adjustment is needed when foil construction tapes are not cleanly cut. Either the STATIONARY KNIFE or the SLIDING KNIFE may be adjusted (See Figure 5). To adjust the stationary knife, loosen the mounting screws slightly. Turn the set screws to bring the cutting edge down, and retighten the mounting screws. The same procedure is followed to adjust the sliding knife. Each knife has two cutting edges. The knives may be removed and new cutting edges exposed. The knives may be sharpened after the cutting edges are dull.

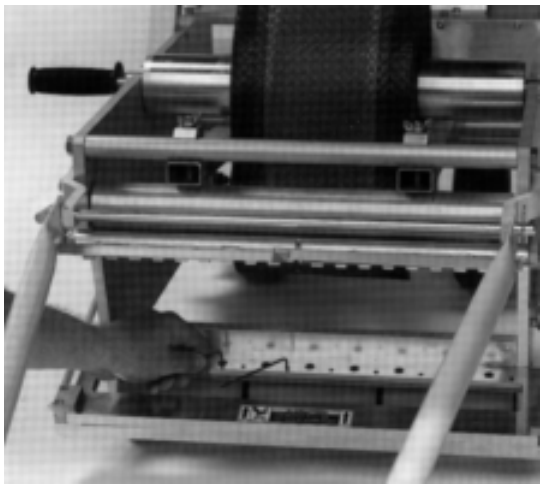


Figure 5

Troubleshooting

Tape Does Not Advance:

1. If the clamp springs have been overly stretched, there will not be enough tension to advance the tape. The springs should be replaced.
2. If the GUIDE BARS are too tight to the roll, the tape will not advance properly. The bars should be positioned so that the tape can advance freely but hold the tape from moving side to side.
3. If the teeth on the clamp are severely worn, there will not be enough force to advance the tape. See Replacement Parts or call your 3M representative.
4. Check to see if the tape releases from itself properly. There should be no adhesive picking from the back side of the tape to the topside of the next layer.

Tape Does Not Cut:

The tape will not cut cleanly if cutting is done while the applicator is in motion. If the knife edges are dull or out of alignment, the knives should be sharpened and adjusted. (See Adjustments.) Clean adhesive buildup from knives. (See Maintenance.)

Shipping

The MMHTA-18 must have the fuel drained prior to shipment in an enclosed area. It is recommended to transport the MMHTA-18 using a utility trailer.

Replacement Parts

The following is a complete listing of available replacement parts for the 18-inch (45.72 cm) wide Motorized Manual Highway Tape Applicator (MMHTA-18). When ordering, please note the "MH-x" number in the right column. A complete description of all parts included for each order entry number is provided. Some parts are not available separately, so take time to find the proper order number that contains all the parts needed.

Alphabetical Listing of Title Items: See the chart on the following page for a complete listing.

Aluminum Roll Assembly	MH-41
Bar Guide Assembly	MH-4
Cartridge Bearing	MH-56
Clamp Assembly	MH-46
Clamp Pivot Shaft	MH-47
Clamp Spring (small)	MH-61
Clamp Spring (large)	MH-10
Clutch Rod Assembly	MH-55
Cutter Bar	MH-45
Cutter Blade - Top	MH-43
Cutter Blade - Bottom	MH-44
Cutter Spring Assembly	MH-14
Drive Axle Assembly	MH-51
Drive V-Belt	MH-57
Engine - 5.5 HP Honda	MH-59
Guide Clamp (front)	MH-12
Guide Clamp (rear)	MH-13
Idler Pulley Assembly	MH-54
Pointer	MH-25
Pointer Assembly	MH-39
Pointer Clamp Assembly	MH-18
Power Transfer Shaft Assembly	MH-53
Roller Chain Assembly	MH-58
Side Frame Connecting Rod	MH-49
Silicone Rubber Roll	MH-50
Stock Roll Shaft	MH-40
Stop Clamp	MH-20
Swivel Caster Assembly	MH-16
Tape Guide	MH-11
Vibration Mount	MH-60
Wheel Assembly	MH-52

NOTE: After locating the proper replacement part, check the following table to see a complete listing of hardware included with each assembly.

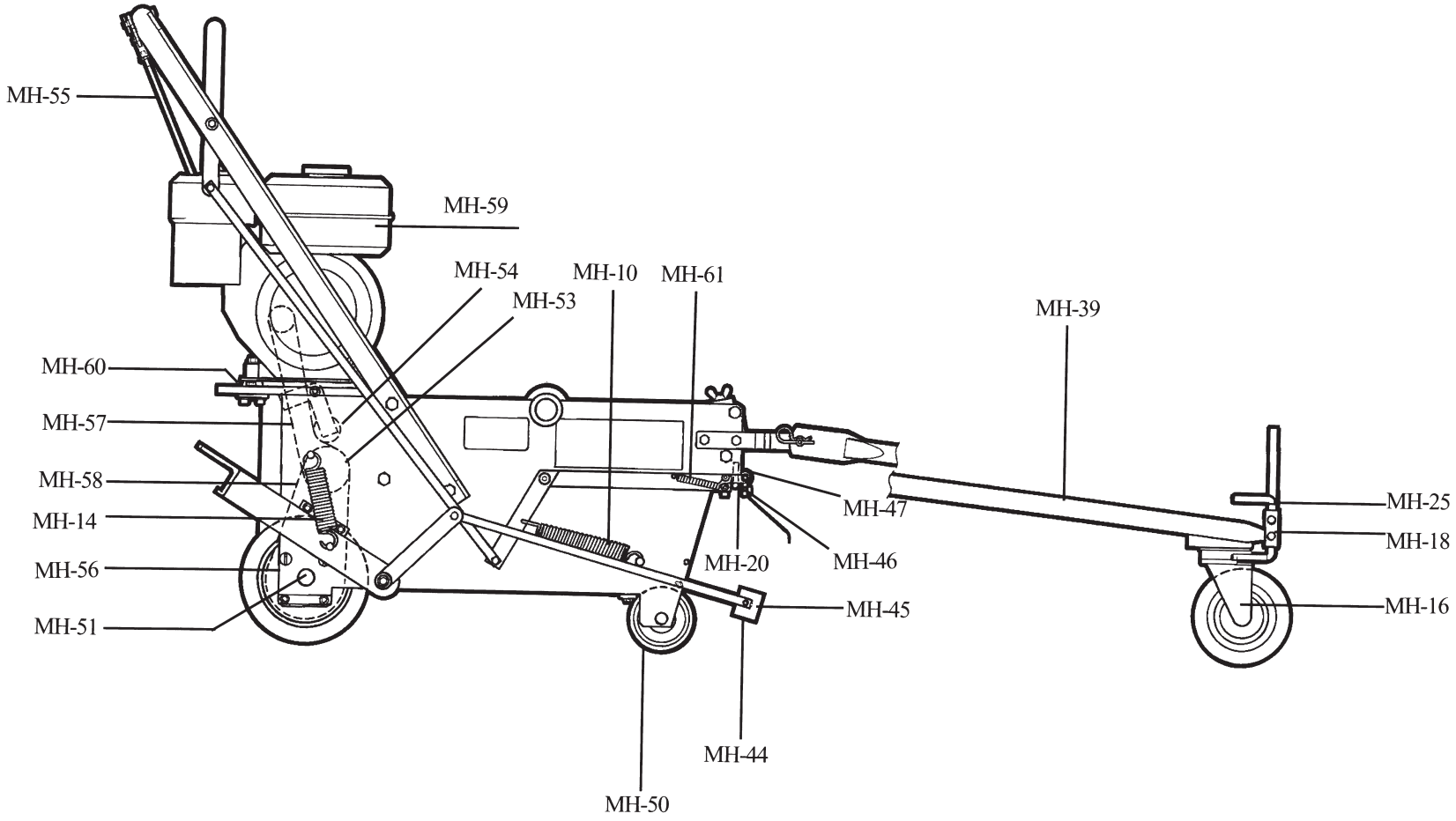
Code	Description
MH-4	**Bar Guide Assembly** (2) Screw, Soc. Hd. Cap, Stl, Zinc Plt., 1/4-20 x 1-1/4 (1) Screw, Soc. Hd. Cap, Stl., Zinc Plt., Loc-Wel, 1/4-20 x 5/8
MH-10	**Clamp Spring (large) Assembly** (1) Screw, Hex Hd. Cap, Stl., Zinc Plate 1/4-20 x 7/8 Lg. (1) Nut, Hex, Stl., Zinc Plt., 14-20
MH-11	**Tape Guide** (1) Tape Guide
MH-12	**Guide Clamp (front) Assembly** (1) Wing Nut, Stl., Zinc Plt., 3/8-16
MH-13	**Guide Clamp (rear) Assembly** (1) Wing Nut, Stl., Zinc Plt. 3/8-16
MH-14	**Cutter Spring Assembly** (2) Screw, Hex Hd. Cap, Stl., Zinc Plt., 1/4-20 x 3/4 Lg. (2) Nut, Hex, Stl., Zinc Plt., 1/4-20
MH-16	**Swivel Caster Assembly** (4) Screw, Hex Hd. Cap, Stl., Zinc Plt., 1/4-20 x 3/4 Lg. (4) Nut, Hex, Stl., Zinc Plt. 1/4-20 (4) Lockwasher, Stl., Zinc Plt., 1/4
MH-18	**Pointer Clamp Assembly** (1) Pointer Clamp (2) L-Screw
MH-20	**Stop Clamp** (2) Stop Clamp
MH-25	**Pointer** (1) Pointer (2) Pointer Clamp (4) L-Screw
MH-39	**Pointer Assembly** (1) Pointer Frame (1) Pointer (2) Pointer Clamp (1) Pointer Pin (4) L- Screw (1) Swivel Caster (4) Cap Screw, Hex. Hd., Stl., Zinc Plt., 1/4-20 x 3/4 Lg. (4) Nut, Hex., Stl. Zinc Plt., 1/4-20 (4) Washer, Lock-Stl., Zinc Plt. 1/4 (1) Hitch Pin Clip, Stl., Zinc Plt., .093 Wire x 1-3/4 Lg.
MH-40	**Stock Shaft Roll** (1) Stock Roll shaft
MH-41	**Aluminum Roll Assembly** (1) 2 inch (5.08cm) Diameter Roll (2) Flanged Bearing-Oilite No. FF-1014 (2) Set Screw-Hex. Soc., Cup Point 1/4-20 x 3/8

Code	Description
MH-43	**Cutting Blade - Top** (9) Cap Screw-Hex. Soc., Stl., Zinc Plt. #10-24 x 5/16 Lg Loc-Wel (10) Set Screw-Hex. Soc., CupPoint Zinc Plt., #10-24 x 3/8 Lg. Loc-Wel
MH-44	**Cutting Blade - Bottom** (9) Cap Screw-Hex. Soc., Stl., Zinc Plt. #10-24 x 1/2 Lg. Loc-Wel (8) Set Screw-Hex. Soc., CupPoint Zinc Plt., #10-24 x 3/8 Lg. Loc-Wel
MH-45	**Cutting Bar** (1) Cutting Bar
MH-46	**Clamp Assembly** (1) Windscreen (2) Cap Screw-Hex. Soc., Stl., Zinc Plt., #10-24 x 5/16 Lg. Loc-Wel
MH-47	**Clamp Pivot Shaft Assembly** (2) Screw, Soc. Hd. Cap, Loc-Wel, Stl., Zinc Plt., 1/4-20 x 3/4 Lg.
MH-49	**Side Frame Connecting Rod** (2) Cap Screw-Hex. Hd., Stl., Zinc Plt. 1/2-13 x 1 Lg.
MH-50	**Silicone Rubber Covered Roll Assembly** (3) Roll, Silicone Rubber Covered - 4 in. dia. (6) Bearing, Flange Series - General #32662-88 (2) Set Screw, Hex. Soc., Cup Point Zinc Plt. 1/4-20 x 3/8
MH-51	**Drive Axle Assembly** (1) Axle (4) Washers (1) Key - 3/16" Sq.l X 1.2 Long (1) Sprocket, 30 Tooth 3/4" Bore Boston #SSC75 (1) Collar, Set Screw - 3/4" Dia. Boston #SSC75 (4) Inner Race, Torrington #IR-1224
MH-52	**Wheel Assembly** (1) Wheel - Modified (1) Spacer - Wheel Bearing (2) Bearing, Torrington #JHTT-1614 (2) Bearing - Clutch Torrington #RC-162110
MH-53	**Power Transfer Shaft Assembly** (1) Shaft - Power Transfer (2) Bearing - Roller Torrington #JTT-1410
MH-54	**Idler Pulley Assembly** (1) Pulley - Idler (2) Pulley - Bearing Fafnir #FS-3-KDD (1) E-Ring - 3/8 Dia. Shaft, Truarc #5133-37

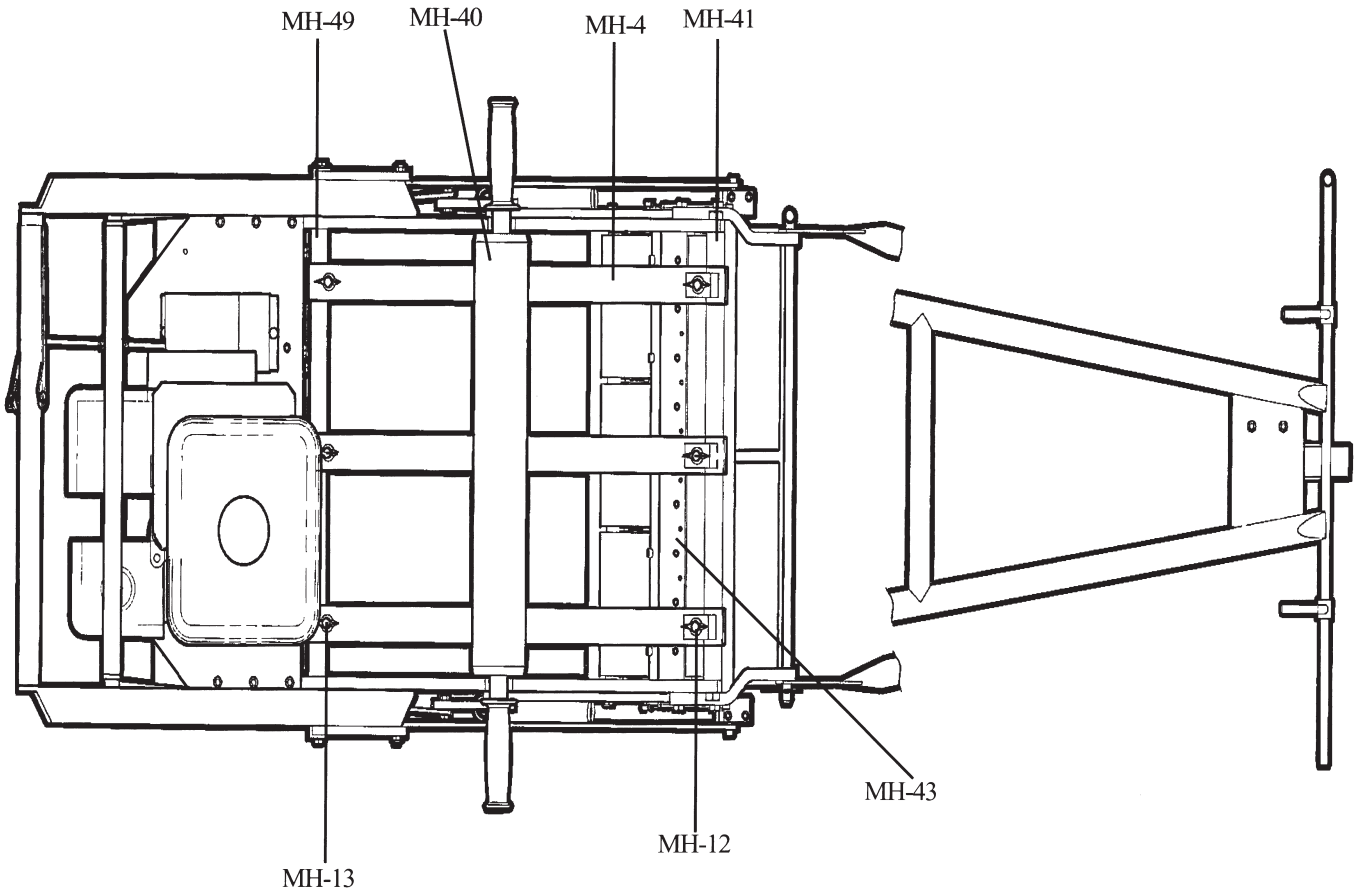
Code	Description
MH-55	**Clutch Rod Assembly** (1) Rod - Clutch (Upper) (1) Rod - Clutch (Lower) (1) Turn Buckle - McMaster #30125T4 (2) Clevis - Rod - Bimba #D-10139-A (3) Nut, Lock, Grade 2 Toplock 1/4-20 Unc, Stl, Zinc Plt.
MH-56	**Cartridge Bearing** (1) Cartridge Bearing, Fafnir RCJC-3/4
MH-57	**Drive V-Belt** (1) V-Belt, Gpl Premium, Dayco #L430
MH-58	**Roller Chain Assembly** (1) Chain, Roller, ANSI #40 1/2 in. Pitch, 2 ft. Long (1) Chain Link #40, +in. Pitch
MH-59	**Engine - 5.5 HP Honda** Engine 5.5 HP, 6:1 Reduction, Exhaust Deflector, Honda #GX160-K1HX2
MH-60	**Vibration Mount** Vibration Mount, 70 Durometer, McMaster #64875K64
MH-61	**Clamp Spring (small) Assembly** (2) Lee Spring #LE-037D-9-MW (4) Screw, Bottom Hd. Cap, Stl., Zinc Plt. 1/4-20 x 3/4 Lg. (2) Screw, Soc. Hd. Cap, Stl., Zinc Plt., #10-24 x 1/2 Lg. (1) Blue Line Print of Drawing

For further information, contact: 3M Traffic Control Materials Division, 1-800-553-1380. Follow instructions to reach Technical Service for Pavement Markings. In Canada call 1-519-452-6201.

MMHTA-18 Side View



MMHTA-18 Top View



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