

# **MICANAN SYSTEMS INC.**

## INSTALLATION AND INSTRUCTION MANUAL

## MODELS: PRO-GT



## 2 YEAR WARRANTY

Model :

Serial #

Installation Date:

Wiring Diagram:\_

Feb. 2009

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# WARNING

DO NOT CONNECT TO ELECTRICAL POWER DURING INSTALLATION OR SERVICING OF OPERATOR

## IMPORTANT

## FOR ANY QUESTIONS CONCERNING THE SAFETY OR OPERATION OF THIS OPERATOR PLEASE CONTACT MICANAN SYSTEMS AT 1-877-888-1116

## VERIFICATION OF OPERATOR AND HARDWARE

Upon delivery of your MICANAN SYSTEMS heavy-duty gearhead trolley door operator, please inspect the unit carefully for damage. Verify that operator horsepower, voltage, phase and amperage correspond to available power supply and door application. Check that along with your operator you have received the following standard hardware.

1 x OPEN/CLOSE/STOP 3-button control station:



- 1 x Set of trolley tracks (door height + 2'6'')
- 1 x Drive chain package (door height x 2 + 5' 6" (1.65m) c/w connecting link



- 1 x Trolley carriage and 3/8 take-up bolt assembly
- 1 x Trolley track end bracket
- 1 x Front idler



2 x Trolley spreader bars



1 x Trolley arm assembly



1 x Set of Warning signs



## **PRO-GT SPECIFICATIONS**

PRO-GT heavy-duty gearhead trolley operator is designed for standard lift overhead sectional garage doors.

#### STANDARD OPERATOR WEIGHT: 95-150 Lbs.

MOTOR: Continuous duty 1725 RPM industrial type motor.

- Full overload protection
- Horsepower range : 1/2HP, 3/4HP, 1HP, 1.5HP, 2HP(3-phase only)

Voltage:	115V 1-phase	230V 3-phase
0.707	230V 1-phase	460V 3-phase
	200	575V 3-phase

**REDUCTION:** Primary: Heavy duty worm gear reducer 20:1 (standard) or 40:1 reduction Secondary: #41 chain and sprockets.

OUTPUT SHAFT SPEED: 86 RPM DOOR SPEED: 10"/second

- BRAKE: Solenoid actuated drum and brake shoe braking system to prevent coasting and maintain door position.
- WIRING TYPE (STANDARD): C-2 Wiring constant pressure on close, momentary contact on open and stop. Wired to accept reversing edge, radio control, photocells, loops and OPEN/CLOSE devices. NOTE: If momentary contact on close (B2) wiring is desired: Move "white" wire from terminal #5 to terminal #3.
- **TRANSFORMER**: 24VAC control circuit, supplies power to drive control relays with 15VA power available for external devices.
- LIMIT ADJUSTMENT: 4 micro switches that control door travel. These limit switches are activated by fully adjustable screw type cams.
- EMERGENCY DISCONNECT: Quick release disconnect door arm to allow person to disengage operator drive chain from door for manual operation.
- CLUTCH: Adjustable in-line friction clutch to minimize damage to door operator, door or vehicles.

#### **OPERATOR DIMENSIONS:**



## SAFETY INSTRUCTIONS

## WARNING

TO REDUCE THE RISK OF INJURY OR DEATH:

READ AND FOLLOW ALL INSTRUCTIONS

- Do not allow children to play with door.
- Before installation, be sure that operator is suited for type of door and application
- Connect a reversing device to prevent entrapment if door is located near pedestrian traffic.
- Place control device within clear sight of the door but at a minimum distance from the door so that user cannot reach moving door parts when operating.
- Outdoor external devices should have security features to prevent unauthorized operation of the door.
- Never cross under a moving door.
- Press the "OPEN" device or activate quick release disconnect device if a person is trapped under the door.
- Do not use disconnect mechanism or manually operate door unless power has been electrically disconnected.
- Keep doors properly maintained. Test door and service regularly. Have a qualified service person make repairs. *An unmaintained door system could cause injury or death.*
- The owner or users must understand the safety and operation of door system. Insure that this
  installation manual be located close to the door system.

## INSTALLATION INSTRUCTIONS

## WARNING

#### DO NOT INSTALL THIS OPERATOR BEFORE READING THIS MANUAL CAREFULLY.

- Note: Installation of operator must be done by a qualified installer. Door must be properly installed and working smoothly. Remove all door locks prior to installation.
- 1. Install control station away from all moving door parts, within sight of the door and a minimum of 5 ft (1.5 m) from the ground.
- 2. Install entrapment warning sign next to control station.



3. Do not remove emergency release tag attached to disconnect handle.



#### **PREPARATION:**

- 1. Lay out operator and trolley tracks on ground in front of door with door operator motor facing away from door.
- 2. Install track spacers evenly to track assembly.
- 3. Install 3/8" take-up bolt to carriage using two 3/8" hex nuts and lock washer provided.
- 4. Slide trolley carriage through end of tracks towards operator with take-up bolt facing operator.
- 5. Install front idler assembly to the second set of holes end of trolley tracks.
- 6. Bolt rail assembly to operator frame using four 3/8" x <sup>3</sup>/<sub>4</sub>" bolts and 3/8" serrated hex nuts provided.



7. Attach one end of drive chain to carriage using connecting link provided. Run chain around front idler, over the track spacers, around drive sprocket and connect to take-up-bolt using connecting link provided. Adjust take-up-bolt so that chain sags approximately 3" (7.5 cm) at midpoint of tracks. Remove links from drive chain if necessary to make proper adjustment.



#### WALL MOUNTING BRACKET AND OPERATOR INSTALLATION:

NOTE: Trolley type operators should generally be mounted directly over the center of the door and the trolley tracks should clear the tracks by 2-1/2" (6.5 cm). However, if interfering structures or other reasons do not allow for centered mounting, it is possible to install it up to 18" off-center for torsion spring doors.

- 1. Locate the center of door by measuring door width and mark a vertical line above the door.
- 2. Determine the highest point of door travel by manually opening the door. Using a carpenter's level, project a line from where the top section of door reaches its highest point. Mark the spot where this line (high arc) intersects with the vertical line drawn earlier.



3. Mount a wood block or angle iron to the wall above the door opening as shown below. The wall mounting bracket has 3 holes for anchoring to wood block or angle iron. Bracket should be centered with door and positioned so that these holes are 2-1/2" (6.5 cm) above the high arc line of door. Secure wall mounting bracket using suitable hardware.



LIGNE DE L'ARC ELEVE

4. While allowing motor to rest on floor, raise front end of track assembly and secure (but not tighten) to wall mounting brackets with 3/8" bolts and nuts provided.



5. Swing the operator and track assembly above the level of the door tracks and temporarily secure in place with rope or chain. Carefully open door. Align operator and rails with center of door. Using the door as support, shim the operator so that there is 3" (7.5cm) clearance between door and bottom of operator. Tighten wall mounting bracket bolts.



 Install hanging brackets (braces) from ceiling or structure to any of the 3/8" holes located on operator frame. For tracks over 14' long it is recommended to install braces to the tracks at 4'(1.2m) to 5' (1.5m) from operator.



## TROLLEY ARM INSTALLATION

- 1. Manually close door to fully closed position. Slide trolley carriage towards front idler and latch trolley arm to carriage spring pin by pulling on rope. When installed the open side of notch should face the door.
- 2. Using 3/8" bolts and nuts provided, align the mounting holes of straight arm and curved arm so that pivot bolt on door bracket is in line with the top rollers of the door. Align door bracket with centerline of door and secure to door using suitable hardware.



3. When properly installed the door arm should lean slightly away from door when door is fully closed.



4. At this time, check all bolts for tightness.

IMPORTANT

5. After installation is complete, remove red activation pin on reducer breather plug.

## LIMIT SWITCH ADJUSTMENT

Adjustment of door travel is done by moving the limit cams on the threaded shaft. The position of the 4 limit switches are factory adjusted and should not be altered. The limit switches are:

- "Open" limit switch: End of door travel in the fully open position
- "Closed" limit switch: End of door travel in the fully closed position
- "Advanced Open" limit switch: Used for open/close devices or timer to close features
- "Advanced Closed" Limit switch: Used to prevent reversing device from reversing door when door is almost fully closed.

## WARNING

## TO REDUCE THE RISK OF INJURY OR DEATH:

DO NOT ATTEMPT TO MAKE LIMIT SWITCH ADJUSTMENTS UNLESS POWER HAS BEEN ELECTRICALLY DISCONNECTED

To adjust door travel:

- 1. **Open cycle**: Depress cam plate and spin "Open" limit cam away from "Open" limit switch to increase door travel or spin "Open" limit cam towards the "Open" limit switch to decrease door travel. After each adjustment ensure that cam plate fully engages in slots of both limit nuts.
- 2. Adjust "Open" limit cam so that door stops at the desired fully open position.
- Close cycle: Depress cam plate and spin "Close" limit cam away from "Close" limit switch to
  increase door travel or spin "Close" limit cam towards the "Close" limit switch to decrease
  door travel. After each adjustment ensure that cam plate fully engages in slots of both limit
  nuts.
- 4. Adjust "Close" limit cam so that door stops at the desired fully closed position.



## **CONNECTION OF POWER SUPPLY AND CONTROL STATION**

## WARNING

## COMPARE AVAILABLE POWER SUPPLY VOLTAGE TO OPERATOR NAMEPLATE PRIOR TO ELECTRICAL CONNECTION. FAILURE TO CONNECT APPROPRIATE POWER SUPPLY VOLTAGE MAY CAUSE SERIOUS DAMAGE TO OPERATOR.

Refer to electrical diagrams inside control box cover or at the end of this manual prior to connection of power supply or control station.

# WARNING TO REDUCE THE RISK OF INJURY OR DEATH: ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY A QUALIFIED SERVICE PERSON DO NOT ATTEMPT TO MAKE ELECTRICAL CONNECTIONS TO OPERATOR UNLESS<br/>POWER SUPPLY HAS BEEN DISCONNECTED AT FUSE BOX OPERATOR MUST BE CONNECTED IN ACCORDANCE TO LOCAL ELECTRICAL CODES<br/>AND GROUNDED TO GREEN GROUND LUG LOCATED INSIDE CONTROL BOX

POWER WIRING: Use 1-1/8" (2.85 cm) diameter holes for all power wiring.

- 1. <u>Single phase</u>: Connect single phase power supply to terminals L (line) and N (neutral) on three-pole power terminal strip.
- <u>Three-phase</u>: Connect three phase power supply to terminals L1, L2 and L3 on three-pole power terminal strip.





**CONTROL WIRING:** Use 7/8" (2.22 cm) diameter holes for all control wiring. Note: Do not run control wires and power wires in same conduit.

- Install control station within clear sight of door but away from all moving parts of door or hardware. Install Entrapment warning sign next to control station. Connect 3-button (open/close/stop) push button station to terminals 2, 3, 4 and 5. Refer to electrical diagram for connection of two 3-button stations.
- **NOTE**: After electrical connections are made, manually move door to mid-position and, using the control station press the "Open" button for several seconds and then press the "Stop" button. If door did not move in correct direction verify wiring control station. For 3-phase operators, if door still moves in wrong direction reverse any two of the three incoming power supply leads to correct rotation.

## CONNECTION OF A REVERSING EDGE DEVICE AND CONTROL ACCESSORIES

1. Reversing Edge device (must be normally open contact):

Note: If the door is controlled by any device or wired in such a manner that the door is not controlled by constant pressure on close then an appropriate reversing edge must be installed.



2. External interlock: Remove jumper between terminals 1 and 2 and wire interlock between these two terminals.



3. Radio control receiver: Wire standard radio receiver to separate radio strip on side of control box or to terminals 7, 8 and 9 on control terminal strip inside control box.



4. Single button open/close device: Wire to terminals 7 and 8 on control terminal strip.



5. Loop detectors, photocells and other reversing devices: Wire to terminals 3 and 6 on control terminal strip.



6. 24 Volt power: Wire to terminals 1 and 9 on control terminal strip



## **CLUTCH ADJUSTMENT**

- 1. Loosen bolts on clutch cover and slide cover towards motor to access clutch.
- 2. Loosen the two set screws on clutch adjustment nut.
- Rotate clutch nut counterclockwise (loosen) until there is insufficient tension to permit clutch to drive door. NOTE: When adjusting nut, make sure to secure input shaft to not allow shaft to rotate when tightening or loosening nut.
- Gradually tighten clutch nut (adjust ¼ turn at a time) until the tension is sufficient to permit clutch to drive door smoothly but will allow clutch to slip if door is obstructed. It should be possible to stop moving door by hand if clutch is properly adjusted.
- 5. Tighten the 2 set screws after each time the unit is tested for clutch adjustment. After adjustment is completed make sure set screws are locked in place. Re-install clutch cover.



## **BRAKE ADJUSTMENT**

The brake adjustment is factory set and should only require minor adjustment after extensive use.
 Verify brake adjustment by manually holding in solenoid plunger. When brake is properly
adjusted, the brake shoe pads should make complete contact with brake drum with sufficient brake
spring tension to stop and maintain door when solenoid is de-energized. When solenoid is
energized, brake shoes should release from drum with sufficient clearance to avoid contact
between shoes and drum.

- To adjust brake tension, tighten (to increase) or loosen (to decrease) nylon lock nut on brake spring bolt. Observe solenoid during electrical testing of brake. Brake spring tension must be adjusted so that solenoid should pull and release smoothly and quietly. Too much or too little tension on brake spring may cause solenoid to burn out.

- To adjust individual brake shoes, loosen nut on brake shoe adjustment bolt and adjust bolt. When properly adjusted, there should be a small clearance between adjustment bolt and solenoid bracket when solenoid is de-energized. When solenoid is energized, brake shoes should move away from drum with sufficient clearance to avoid friction between brake shoe pad and drum. After adjustments are made be sure to tighten nuts on brake shoe adjustment bolts.



## EMERGENCY MANUAL OPERATION

- The operator is equipped with a quick release disconnect system to manually operate door in case of emergency. This feature should not be used to manually operate a malfunctioning door.



- 1. Pull the release cord downwards to disconnect trolley arm from carriage and manually operate door.
- 2. To reconnect door arm to carriage, pull emergency release cord and re-insert trolley arm to trolley carriage spring pin.



## **OPERATOR MAINTENANCE**

## WARNING

#### TO REDUCE THE RISK OF INJURY OR DEATH:

DO NOT ATTEMPT TO SERVICE THE OPERATOR UNLESS POWER SUPPLY HAS BEEN DISCONNECTED

 Inspect manual function of the door every 3-months. Make sure that door runs smoothly. If door does not manually open or close freely, have a qualified service person make repairs. Do not attempt to electrically operate a malfunctioning door.

#### Every 3 months:

- 1. Verify that door area is kept clean. Remove any obstructions that would prevent proper door operation.
- 2. Check for any excessive slack in chains. If chain adjustment is required verify and adjust limit switches, if necessary.
- 3. Verify and adjust clutch and brake (Do not lubricate).
- 4. Lubricate chains, bearings and limit shaft.
- 5. Verify that motor, solenoid and operator runs smoothly and quietly. Verify that carriage runs smoothly on tracks.

#### - Every 6 months:

- 1. Verify tightness of all fasteners and set screws.
- 2. Verify that operator is properly secured.
- 3. Inspect manual disconnect.
- Every 12 months:
  - 1. Perform a complete service check.
  - 2. Verify that inside of control box is clean and that grounding wires, terminations and power terminations do not show signs of corrosion.
  - 3. Verify tightness of all terminal strip screws and electrical connections.
  - 4. Verify power supply, voltage of input terminals during operation.
  - 5. Verify that current consumption of operator corresponds to nameplate information



# Replacement parts list PRO-GT

CODE	_	DESCRIPTION (PRO-GT)	QTY 1
MC00044	1 2 A	MOTOR GEAR REDUCER CH 55 20:1 (1/2, 3/4, 1HP)	1 1
MC00044 MC00045	2 A 2 B	GEAR REDUCER CH 35 20:1 (1/2, 3/4, 1/17)	1 *
MM000045	3	FRAME GEARHEAD MSI0030	1
MM00004	4	SOLENOID LEVER GEARHEAD MSI0030	1
MM00009	5	IGT TUNNEL FRAME MSI0047	1
MK00026	6 A	ISOLENOID 120V	1.
MK00026 MK00027	6 B	ISOLENOID 120V	1 .
MK00027 MK00028	6C	SOLENOID 220V	1 *
MK00028 MK00029	6 D	SOLENOID 400V	1.
MM00029	7	SOL-COVER GEARHEAD MSI0032	1
MH00007	9	COLLAR 1" ID	2
MM00007	10	GEARHEAD FRAME SUPPORT C-BRACKETS MSI0036	3
MH00009	10	FLANGE BEARING 1" IDx2"OD	2
MM00003	13	CONTROL BOX MSI0001	1
MM00002	13	CONTROL BOX COVER MSI0005	1 1
MM00001	15	CONTROL BOX HINGE	2
MM00024	15	CAM PLATE MSI0013	1
ME00001	10	LIMIT SHAFT 3/8-1/2 x 9.75"	1 1
MM00005	17	BACK COVER (FRAME PRO-G) MSI0037	1
and the second se	10	SPROCKET 41B14 X 1"	3
MD00300	1	BRONZE T-BUSHING 3/8" ID	2
MH00001	21	MILD STEEL BUSHING 9/32ID x 13/32OD x1-1/16	1
MH00002	22	#41 DRIVE CHAIN (63 LINKS (#55 RED), 65 LINKS (#70 RED)	1
MD00029 ME00017	23	#41 DRIVE CHAIN (03 LINKS (#35 RED), 65 LINKS (#70 RED)	4
ME00017 MF00046	24	H.H. SLOTTED SELF ROUNDING WASHER HEAD SCREW 10-32 UNF x 1/2"	7
MJ00001	25	BRAKE SHOE LEFT	1
MJ00001 MJ00002	20	BRAKE SHOE LEFT	1
MJ00002 MJ00003	28	BRAKE DRUM	1
MG00013	29	RIBBED HEX NUT 3/8" - 16UNC	4
MG00030	30	LIMIT CAM 1/2-20 UNF	2
MM00027	31	REAR BRACKET GH (RED 55, 63, 70, 80) (MSI0038)	1
MD000021	32	SPROCKET 410B12 X 3/8"	1
MD00005	33	SPROCKET 410B23 x 1" bore	1
MH00006	34	COLLAR 3/8 ID	1
MD00036	35	CONNECTING LINK #41	1
MG00003	36	DOUBLE NUT FOR LIM-SW.	4
MJ00006	37	LIMIT SWITCH DOUBLE SPACER 3/4" LONG	4
MD00225	38 A	#410 ROLLER CHAIN 67 LINKS C/W CON. LINK (FOR REDUCER #55)	1.
MD00226	38 B	#410 ROLLER CHAIN 69 LINKS C/W CON. LINK (FOR REDUCER #70)	1 1 *
MO00001	39	CAM PLATE COMPRESSION SPRING (.178IDx.032GX.55L)	2
MO00002	40	BRAKE COMPRESSION SPRING (5/16"ID05G-2.50L)	1
MQ00001	42	COTTER PIN 1/8 x 1.5	i
MQ00005	44	SPRING PIN 3/16" x 1-1/2" Long	1 1
MQ00009	46	SET SCREW 1/4" - 20	3
MQ00008	47	SET SCREW 5/16" -18	12
MF00045	49	H.H. SLOTTED SELF ROUNDING WASHER HEAD SCREW 8-32UNF x 3/8"	18
MF00003	50	R.H. PHILLIPS MACHINE SCREW 4-40 UNCx1-1/2	8
MF00004	51	R.H. PHILLIPS MACHINE SCREW 6-32 UNC x1	2
MF00005	52	R.H. PHILLIPS MACHINE SCREW 10-32 UNF x 5/8"	1
MF00048	55	ROUND HEAD SLOTTED BOLT 1/4-20UNCx1-1/4" (Full thread)	
and the second se	<b>U</b> U		2
ME00076	56		2
	56 57	HEX HEAD BOLT 1/4-20UNC x 2" (full thread)	1
MF00011	57	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4"	1 2
MF00011 MF00044	57 58	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread)	1 2 1
MF00011 MF00044 MF00032	57 58 59	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG	1 2 1 4
MF00011 MF00044 MF00032 MF00019	57 58 59 60	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread)	1 2 1 4 2
MF00011 MF00044 MF00032 MF00019 MG00006	57 58 59 60 61	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC	1 2 1 4 2 2
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007	57 58 59 60 61 62	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC	1 2 1 4 2 2 2 2
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008	57 58 59 60 61	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC	1 2 1 4 2 2 2 1
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009	57 58 59 60 61 62 63 64	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC	1 2 1 4 2 2 2 1 2
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG000011	57 58 59 60 61 62 63 64 65	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX NEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 6-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC	1 2 1 4 2 2 2 1 2 1 2 1 2 1
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG000011 MF00020	57 58 59 60 61 62 63 64 65 66	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread)	1 2 1 4 2 2 2 1 2 1 2 1 6
MF00011 MF00044 MF00032 MF00019 MG000007 MG00008 MG00008 MG00009 MG000011 MF00020 MG00016	57 58 59 60 61 62 63 64 65 66 70	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER	1 2 1 4 2 2 2 1 2 1 2 1 6 1
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00017	57 58 59 60 61 62 63 64 65 66 70 71	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER	1 2 1 4 2 2 2 2 1 2 1 2 1 6 1 4
MF00076 MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00007 MG00009 MG00009 MG00011 MF00020 MG00016 MG00017 MG00018 MK00004	57 58 59 60 61 62 63 64 65 66 70 71 72	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8"	1 2 1 4 2 2 2 1 2 1 6 1 4 10
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00017 MG00018 MK00004	57 58 59 60 61 62 63 64 65 66 70 71 72 75	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) HEX HEAD BOLT 3/8-16UNC X 14" LONG HEX NUT 0.14-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD)	1 2 1 4 2 2 2 2 2 1 1 2 1 6 1 4 4 10 4
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00017 MG00018 MK00004 ME00018	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG	1 2 1 4 2 2 2 2 1 1 6 1 6 1 4 4 10 4
MF00011 MF00044 MF00032 MF00019 MG00000 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00016 MG00018 MK00004 ME00018 MG00010	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 78	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF	1 2 1 2 2 2 2 1 2 1 6 1 4 10 4 1 4
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG000011 MF00020 MG00011 MF00020 MG00017 MG00018 MK00004 ME00018 MG00010 ME00006	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 78 80	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF INTERMEDIARY SHAFT (PRO-HHD/GT) 1" X 10-7/16"	1 2 1 4 2 2 2 2 2 1 2 2 1 2 2 1 2 2 1 2 1
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00010 MG00016 MG00017 MG00018 MK00004 ME00018 MG00010 ME00055	57 58 59 60 61 62 63 64 85 66 70 71 72 75 77 77 78 80 84	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF	1 2 1 4 2 2 2 2 2 1 2 2 1 2 2 1 2 2 1 1 2 1 4 1 4
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00010 MG00011 MF00020 MG00016 MG00016 MG00018 MK00004 ME00018 MG00010 ME00055 ME00050	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 77 78 80 84 141	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC X 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF INTERMEDIARY SHAFT (PRO-HHD/GT) 1" X 10-7/16" KEYSTOCK 3/16" X 1-3/4" LONG FRAME SUPPORT SHAFT 3/4" X 6" LONG	1 2 1 4 2 2 2 2 1 2 1 1 6 1 1 4 1 1 4 1 1 2 1
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00016 MG00018 MG00018 MG00010 ME000065 ME00055 ME00050 MG00042	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 75 77 78 80 84 141 142	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF INTERMEDIARY SHAFT (PRO-HHD/GT) 1" X 10-7/16" KEYSTOCK 3/16" X 1-3/4" LONG FRAME SUPPORT SHAFT 3/4" X 6" LONG LOCK WASHER 5/16"	1 2 1 4 2 2 2 2 1 2 1 6 1 4 10 4 1 4 1 2 1 4
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00018 MG00018 MG00010 ME00050 ME00050 MG00042 MX00031	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 78 80 80 84 141 142 160	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF INTERMEDIARY SHAFT (PRO-HHD/GT) 1" X 10-7/16" KEYSTOCK 3/16" X 1-3/4" LONG FRAME SUPPORT SHAFT 3/4" X 6" LONG LOCK WASHER 5/16" IN-LINE TORQUE CLUTCH ASSEMBLY	$ \begin{array}{c} 1\\ 2\\ 1\\ 4\\ 2\\ 2\\ 2\\ 1\\ 1\\ 6\\ 1\\ 4\\ 1\\ 4\\ 1\\ 2\\ 1\\ 4\\ 1\\ 2\\ 1\\ 4\\ 1\\ 1\\ 1\\ 4\\ 1\\ 2\\ 1\\ 4\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\ 1\\$
MF00011 MF00044 MF00032 MF00019 MG00006 MG00007 MG00008 MG00009 MG00011 MF00020 MG00016 MG00016 MG00018 MG00018 MG00010 ME000065 ME00055 ME00050 MG00042	57 58 59 60 61 62 63 64 65 66 70 71 72 75 77 75 77 78 80 84 141 142	HEX HEAD BOLT 1/4-20UNC x 2" (full thread) HEX HEAD BOLT 3/8" - 16UNC x 3/4" HEX HEAD BOLT 1/4-20UNC x 4" (Not full thread) H.H. BOLT 5/16"-18UNC X 3/4" LONG HEX HEAD BOLT 3/8-16UNC x 1 (Full thread) HEX NUT 1/4-20UNC HEX NYLON LOCK NUT 6-32UNC HEX NYLON LOCK NUT 10-32 UNF HEX NYLON LOCK NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC RIBBED HEX NUT 1/4-20UNC HEX HEAD BOLT 3/8-16UNC x 1-1/4" (Full thread) #10 FLAT WASHER 1/4" FLAT WASHER LOCK WASHER 3/8" LIMIT SWITCH (STANDARD) KEYWAY 3/16 SQ. x 1-1/4" LONG RIBBED HEX NUT 10-32 UNF INTERMEDIARY SHAFT (PRO-HHD/GT) 1" X 10-7/16" KEYSTOCK 3/16" X 1-3/4" LONG FRAME SUPPORT SHAFT 3/4" X 6" LONG LOCK WASHER 5/16"	1 2 1 4 2 2 2 2 1 2 1 6 1 4 10 4 1 4 1 1 2 1 4





## WARRANTY

MICANAN SYSTEMS warrants that materials and workmanship are free from defects for a period of two years from the date of invoice. Materials returned to Micanan deemed defective after examination will be returned at the option of Micanan with repaired, new or re-manufactured parts.

MICANAN SYSTEMS will not be responsible for any extra charges incurred in the process of returning defective material. All returned material must be received pre-paid or it will not be accepted.

This warranty is limited, and in lieu of all other warranty expressed or implied. There is no expressed liability due on the part of the seller.



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