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TECHNICAL BULLETIN

Description: Notice of 438 2D Reader Upgrade for cabinet base style machines as shown in the picture!

MAC401 2D Barcode Reader Retro-fit Kit

Kit Number: 389-33383-401

Introduction:

This Bulletin provides 2D Barcode Reading Instructions for 438 under the Feeder section.

Dynamic Feeder Read Mount Kit,

- Requires either Top Mount Kit, 191-26400-401 or Bottom Mount Kit, 088-30002-501.
- Also requires Lead Edge Sensor and mounting hardware included in this bulletin.



2D Read Kit, 389-33383-401, (Feeder)

For installing the 2D Camera, Lead Edge Detect Sensor and Connecting Wiring:

Part No.	Description	Qty
007-33336-600	Bracket, camera mount	1
008-32212-000	Thumb screw, 10-32 x 9/16 x 1/2 O.D.	1
014-10221010	Screw, SHCS, 10-32 x 5/8	3
014-M05021010	M5 x 10 SHCS	2
014-M06041016	M6 x 16 BHSCS, SS	1
016-010	Washer, flat #10	4
016-110	Washer, split lock #10	4
020-33338-600	Support post	1
039-29084-000	Gender Changer, 15 pin, M/F	1
041-27261-000	Switch Box	1
046-30409-000	Cable, HD15, 5-6 ft	1
046-33200-000	Cable, Serial (RS232-Mac401)	1
046-33201-000	Cable, Video, HD15F-Din7	1
046-33391-500	Reader cable, DB15-DB9	1
046-33384-000	Ethernet cable	1
057-32192-501	Edge detect sensor ass'y	1
088-33403-500	2D Reader, 60mm MAC401 Ass'y	1
157-33381-600	Trigger Sensor Slide Bar	1
172-24280	Adjusting Lever, 10-32 X .47 Long	1

Part No.	Description	Qty
172-24281	Adjusting Lever, 10-32 x .63 Long	1
320-32163-426	Lead Edge Sensor Clamp Block	1
320-33382-600	Trigger Sensor Mount Block	1
389-33331-300	Block diagram	1
529-33334-600	Clamp P&F camera	1

Standard Bottom Mount Kit, 088-30002-501, (Under Feeder not Hopper).

Cabinet mounting hardware for supporting the 2D Camera.

Part No.	Description	Qty
007-31699-000	Bracket, Angle	2
013-30283-000	Nut, Tee 10-32	2
013-30813-000	Nut, Tee 1/4-20	4
081-33430-600	Extrusion, Camera/BCR/2D Mount 17.25" lg	1
579-30916-000	Extrusion End Cap	2

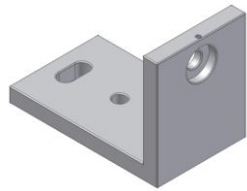


Figure 1 - 007-33336-600
- Camera Mount Bracket

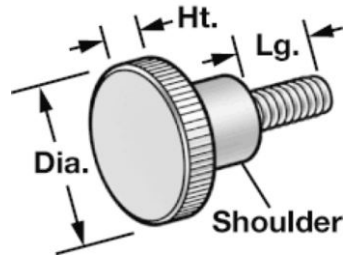


Figure 2 - 088-32212-000 -
Thumb Screw 10-32 x 9/16



046-30409-000
Cable, HD15, 5-6 ft

Figure 6 - 046-30409-000, Cable, HD15, 5-6 ft



Figure 3 -
020-33338-600 -
Support Post

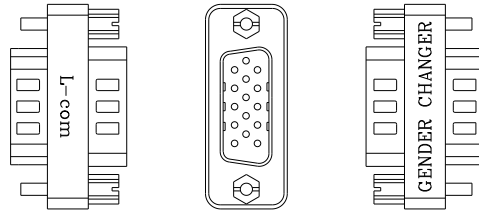


Figure 4 - 039-29084-000 -
Gender Changer



Figure 5 - 041-27261-000 - Switch Box

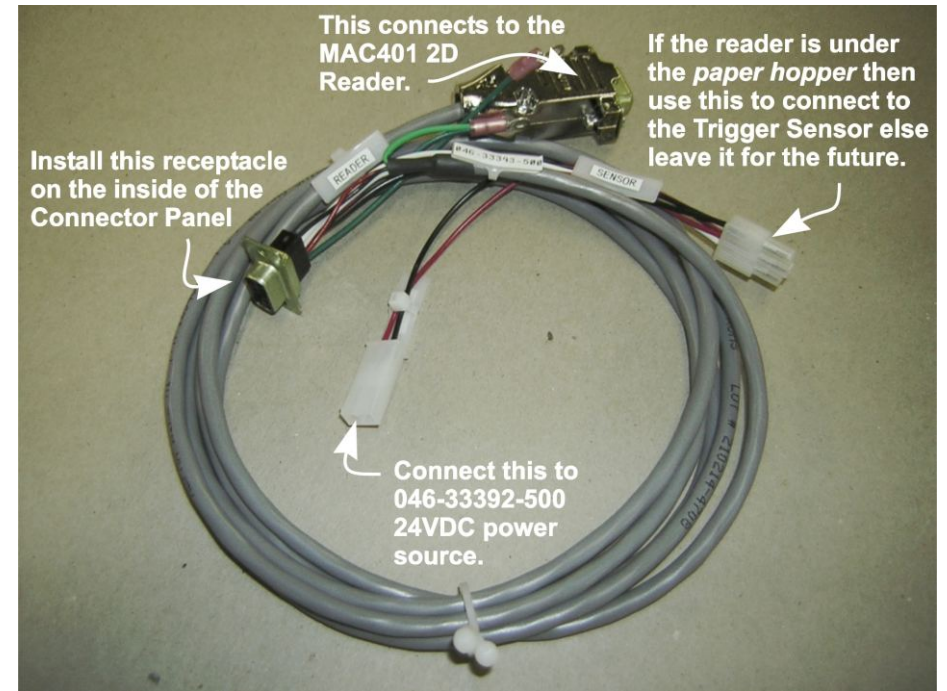


Figure 7 - 046-33392-500 - Cable Assembly Internal

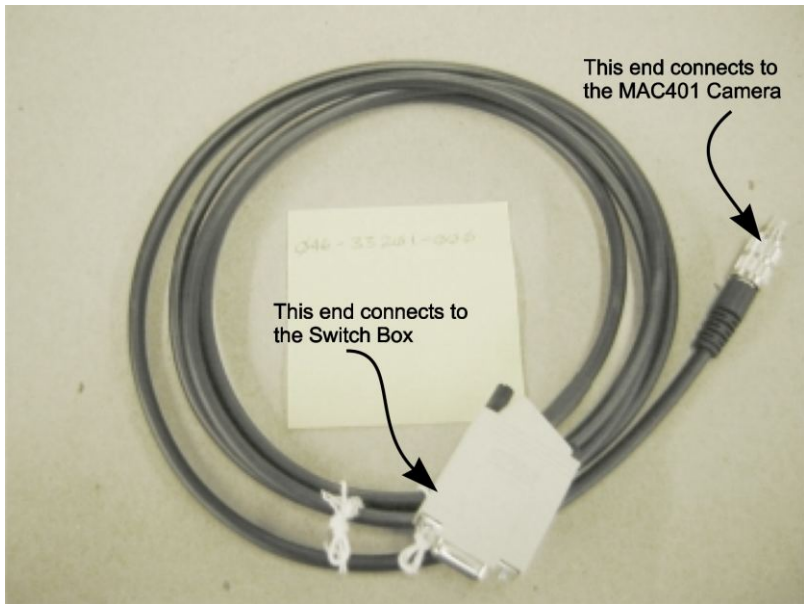


Figure 8 - 046-33201-000 - Video Cable, HD15F-Din7

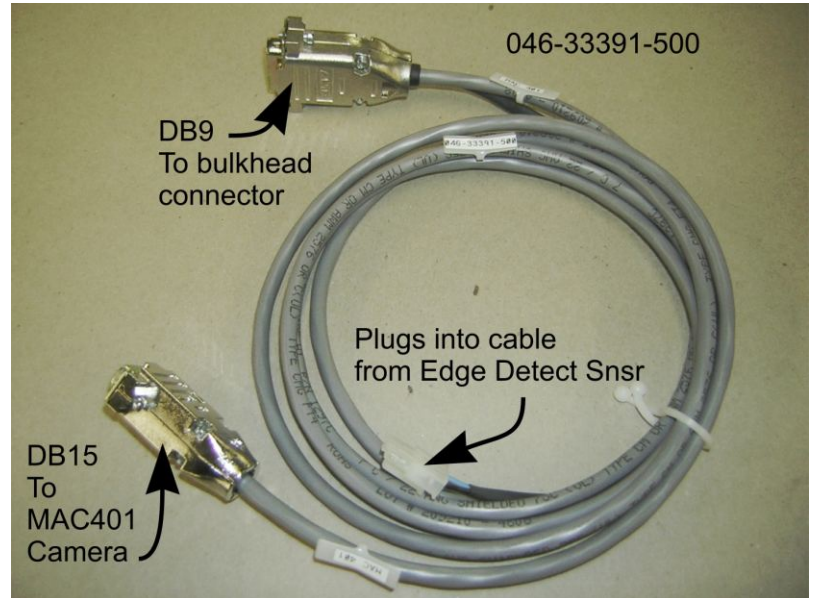


Figure 9 - 046-33391-500 - Reader Cable, DB15-DB9



Figure 10 - 046-33384-000 - Ethernet Crossover Cable



Figure 11 - 057-32192-501 - Edge Detect Sensor Assembly



Figure 12 - 088-33378-000 - 2D Bar Reader



Figure 13 - 157-33381-600 - Trigger Sensor Slide

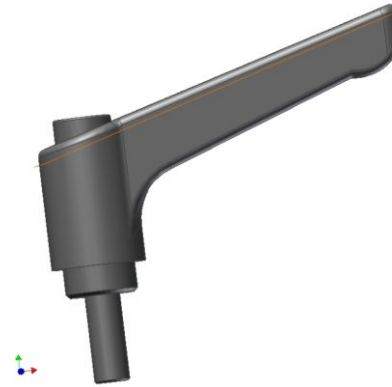


Figure 15 - 172-24280 - Adjusting Lever 10-32



Figure 16 - 172-24281 - Adjusting Lever 1/4-20

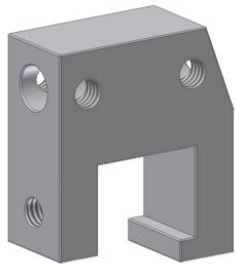


Figure 14 - 320-32163-426 - Sensor Clamp Block

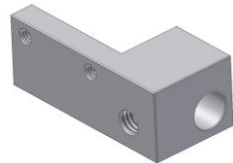


Figure 15 - 320-33382-600 - Trigger Sensor Mount Block

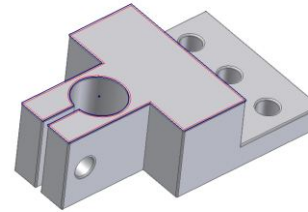


Figure 16 - 529-33334-600 - Clamp, P&F Camera



Figure 17 - 007-31699-000 - Angle Bracket

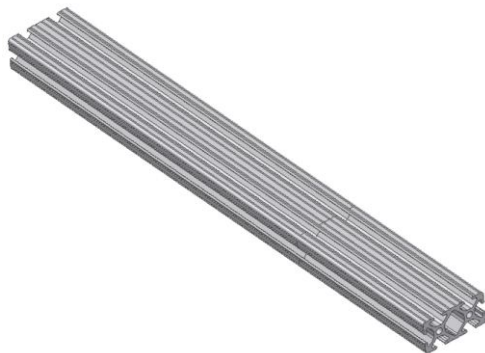


Figure 18 - 081-33430-600 - Extrusion, 1X2



Figure 19 - 013-30283-000 - T-Nut 10-32



Figure 20 - 013-30813-000 - T-Nut 1/4-20



Figure 21 - 579-30916-000 - Extrusion End Cap

Instructions for installing Feeder Read Kit 389-33383-401 (Bottom Read Kit) under the Feeder.

1. Locate the two holes on the front of the 438 Base cabinet and locate the two angle brackets (Figure 17 - P/N 007-31699-000) from the kit.

2. Mount the two angle brackets to the base cabinet using the upper pre-made hole with (1/4-20 x 1" long SHCS and split lock washers with 1/4-20 nuts). The long 1 X 2 Extrusion (P/N 081-33430-600) will be mounted to the top of the brackets using Tee Nuts (1/4-20) and (1/4-20 x 5/8" long SHCS). See Figure 27, Instructions - page 8.

3. Locate the Clamp Block (Figure 16 - P/N 529-33334-600), the Support Post (Figure 3 P/N 020-33338-600), the Camera Mount Bracket (Figure 1 - P/N 007-33336-60) and install as shown in Figure 27 using (three 10-32 Tee Nuts and 10-32 x 5/8" long SHCS) and one 10-32 Adjusting lever (Figure 15 - P/N 172-24280) to hold the support post.

4. Locate the following parts to install the Lead Edge Trigger Sensor, Sensor Clamp Block (Figure 14 - p/n 320-32163-426), Trigger Sensor Slide (Figure 13 - p/n 157-33381-600), Trigger Sensor Mount Block (Figure 15 - p/n 320-33382-600).

- Install as shown in illustration Figure 26 "View of Lead Edge Detect Parts".

5. Locate the following cables, Cable, HD15, 5-6 ft, (P/N 046-30409-000); Cable, Serial (RS232-MAC401) (P/N 046-33200-000); Cable, Video, HD15F-Din7 (P/N 046-33201-000); Reader cable, DB15-DB9 P/N 046-33377-500); and Ethernet cable (P/N 046-33384-000) ---- and refer to the Electrical Block Diagram (Figure 19, page 2, P/N 389-33331-300). Use Tie-wraps included in the kit to run the wires in an appropriate fashion.

- Install the cables in this order: (Refer to the block diagram on page 7 and the full page illustration on page 12)
- Install the 24VDC Cable from a convenient terminal block where 24VDC is found. This will be connected to the 046-33393-500 Cable harness 24VDC input connector.
- Install MAC401 Internal Adapter Cable Harness (Figure 7 - P/N 046-33393-500) inside of the GBR 438 cabinet base. This harness connects to two or three points inside depending on the location of the reader. The receptacle connector is mounted to a cutout in the bulkhead connector panel on the front of the cabinet. The DB9 connector is plugged into the COM 3 port on the computer chassis and the 24VDC connector mates with the cable from the 24VDC power source installed in the previous step. Use both drawings (Block Diagram # 389-33331-300) and (Cable Assembly DWG # 046-33393-500) for reference.

6. Install the Switch Box (Figure 5 - p/n 041-27261-000) in a convenient location under the feeder and connect the VGA cable from the Display to the center "Input - Output" connector. Connect the Video Cable (Figure 8 - p/n 046-33201-000) from the "B" connector on the Switch Box and to the MAC401 Camera. Connect Cable (Figure 6 - p/n 046-30409-000) to the Gender Changer

(Figure 4 - p/n 039-29084-000) and then attach the gender changer to the "A" connector on the Switch Box and the other end of the cable to the VGA plug on the computer.

7. Install Cable (Figure 9 - p/n 046-33391-500). Connect the DB9 end to the COM3 port on the bulkhead connector (the one previously installed) on the outside of the bulkhead connector panel on the front of the cabinet. Connect the DB15 end to the MAC401 Camera. The three wire connector plugs into the Cable that goes to the Trigger (Edge Detect) Sensor through the 3 pos connector and Cable (Figure 11 - p/n 057-32192-501).

8. Install the GBR Software # 31264.037z841 supplied in the Kit.

- **Insert the supplied floppy disk, GBR438 Bootdisk, 31264.037z841.**
- **Power up the GBR438.**
- **Within 10 seconds the MAC401 red pointer lights should light momentarily and the status light on the back should light yellow.**

The GBR Software provides the interface to the MAC401 and adds 438 Commport setup for: Baud, Bit Number, Stop Bit Number, Parity

Goto the Engineering Values screen. Enter password and goto Value 38. Set the following:

- **Baud Rate (Select the rate by item 0, 1, 2, 3, etc. 0=600, 1=1200, 2=2400, 3=4800, 4=9600, 5=19200, 6=38400, 7=57600 and 8=115200)**
- **No. of Bits (Choices are 7 or 8, select one)**
- **No. of Stop Bits (Select by item, 0 or 1, 0=1 or 1=2)**
- **Parity (Select by item, 0, 1 or 2, 0=No Parity, 1=Odd Parity, 2=Even Parity)**
- **Type (Select by item 1 thru 4, 1=AS30 2=MS9 3=DL2031 4=MAC401)**

Two Examples: (the commas are only to separate to make it clearer - do not use them when entering)

- **5,7,2,2,2 is MS9, 19200 baud, 7 Bits, 2 Stop Bits, Even Parity**
- **8,8,1,0,4 is MAC400, 115200baud, 8 Bits, 1 Stop Bits, No Parity**

9. Initialization and configuration procedure for setting up the camera using a computer browser to access the setup steps in the camera.

- **Connect the Ethernet Crossover Cable to the network connector on your computer and to the MAC401 camera.**
- **supply power and connect to the camera using IP address 192.168.2.2 - (Subnet Mask 255.255.255.0)**

Aligning the stationary reading device:

To find the ideal alignment for the device, use the two laser diodes in the stationary reading device.

- **Adjust the stationary reading device so that both points generated by the laser diodes are positioned on top of each other on the code to be read.**

This sets the ideal reading distance between the stationary reading device and the code to be read.

Camera Configuration:

When the camera is powered up and is connected to the computer via the browser the first screen will show Settings, Communication, Gallery and Language on the left side. Select Settings and the screen will show "Sensor parameters & system settings and below will be two parameters which must be set.

- **Flash duration (set to 50Usec)**
- **Gain (set to 50)**

Other General settings:

- **Timeout = None**
- **Code Alignment: (select axis aligned or no alignment)**
- **Inverse = Off**
- **Symbol size = Auto**

To set the Baud rate of the camera and at the "Command" key in "C705" and click on "send" and then "save to flash". This will set the baud rate at 115200.

GBR438 MAC401 Alignments and Test

Feed And Read

- At Run Screen press Setup button.
- At Setup Screen press Bar Read Setup Button.
- Raise Feeder Singulator Roller to allow a sheet to pass under without restriction.
- Push a sheet out positioning the barcode on the paper in the “Feed And Read” area just past the feeder pull out rollers.
- Press Bar Read Start Test Button.
 - Will display “Start Bar Read Test”
 - Will probably display continuous “Bar Read” or “Bad Read”
 - Switch VGA Switchbox to display MAC401 Video.
 - Move MAC401 to position the 2D code in the upper center of the display.
 - The code should be about 60mm (2.4 inches) from the reader window.
 - When reading the 2D read should appear in the upper left.
 - The decode time of the 2D read will appear just below the 2D reading.
- The MAC401 should be aligned to have a clear display of the code and the decode time should be minimized.
- Switch VGA Switchbox to display Bar Read Setup.
- Press Start Test Button.
 - Will display “Stop Bar Read Test”
- Switch VGA Switchbox to display MAC401 Video.
- Move the MAC401 Trigger to the lead edge of the sheet to just trigger reading.
 - The 2D code should be in the upper center of the display.
 - A reading of the 2D read should appear in the upper left.
 - The decode time of the 2D read will appear just below the 2D reading.
- Remove the sheet.
- Reset the Feeder singulator

Single cycle sheets through Feeder noting the position and consistent reading on the MAC401 Video.

See 31264.037z841 Software parameters below for Setups and Engineering Values.

GBR438 Software 31264.037z841

SYSTEM

Reader Type:

- Line
- Bar X
- None

Bar Read SETUP 4

ReadFeed Type:

- Feed&Read X Feed and Read
- Read&Feed X Hopper Read

Read&Feed

- Start Delay 0 Feed And Read
- Start Delay 20 Hopper Read

Reader Chn:

- One X
- Two
- Dual

ENGIN VALUES:

- EV26 Comm Hardware Type: 0 = DX5 88CT33; 1 = DX5 COM4A; 2 = SAT520.
- EV30 Set Commports(Cycle Mach. Power) = 20403
- EV38 Bar Read bbbbt (bbbb=Baud) (t=Type 1=AS30 2=MS9 3=DL2031 4=MAC400) = 88104

88104 = 115200baud, 8 Bits, 1 Stop Bits, No Parity, MAC401

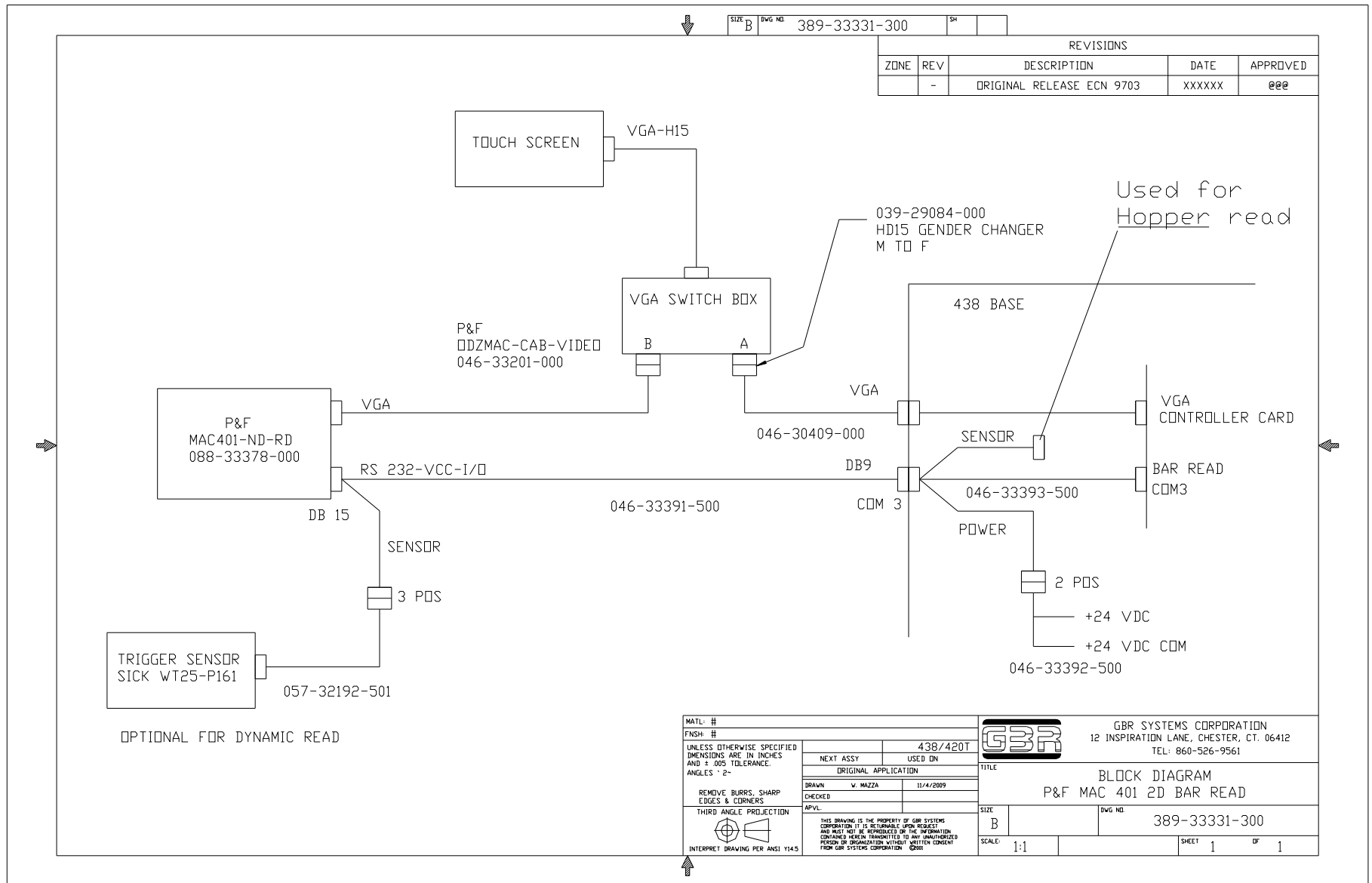


Figure 22 - 389-33331-300 - Block Diagram P&F MAC401 2D Bar Reader

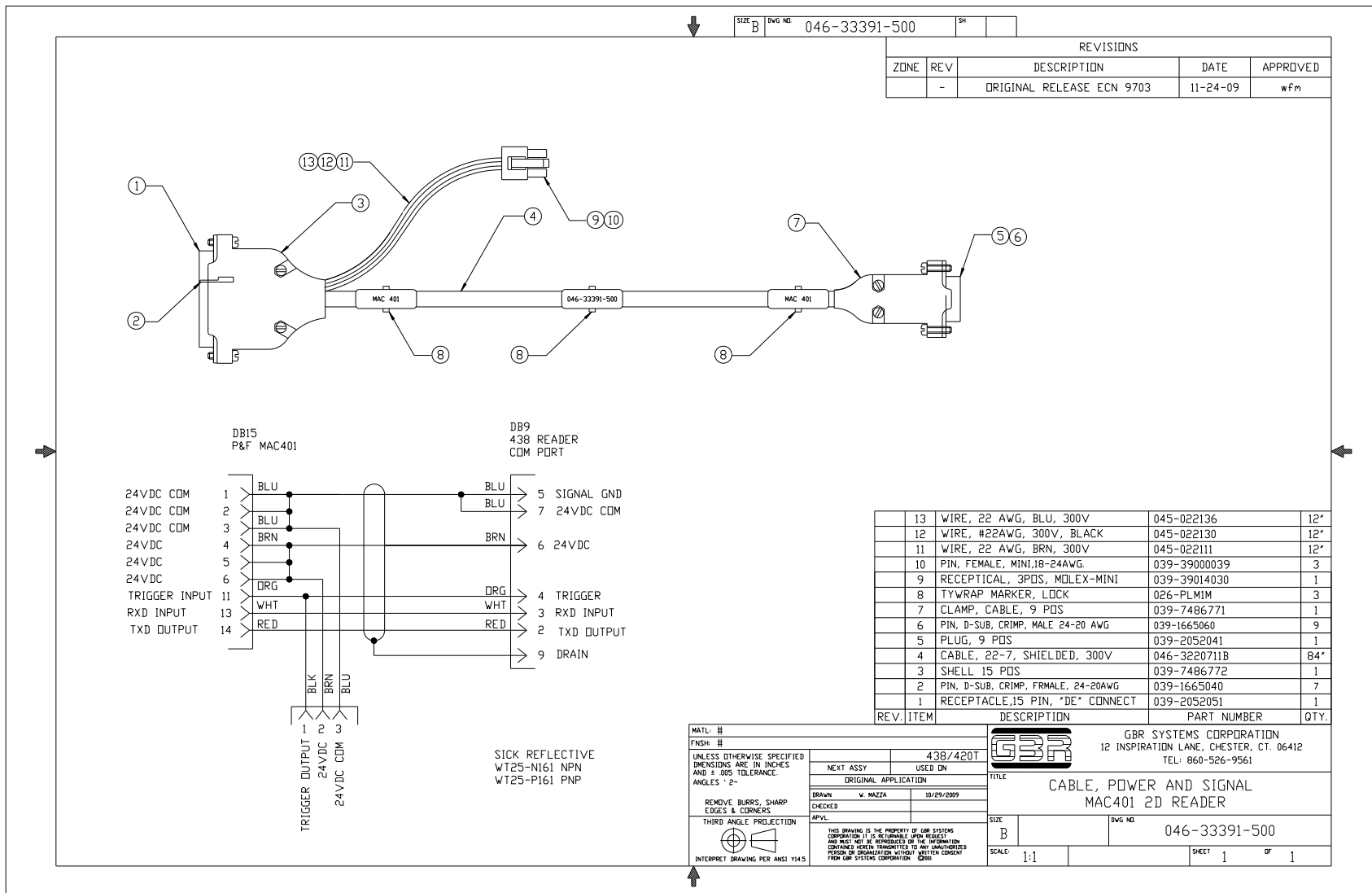
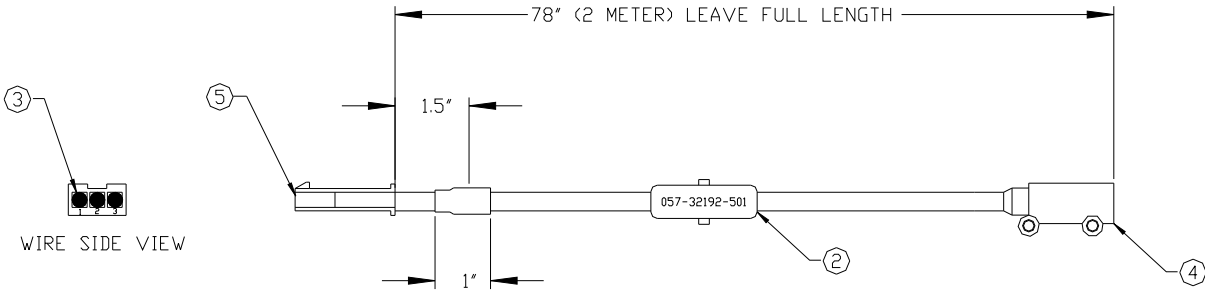


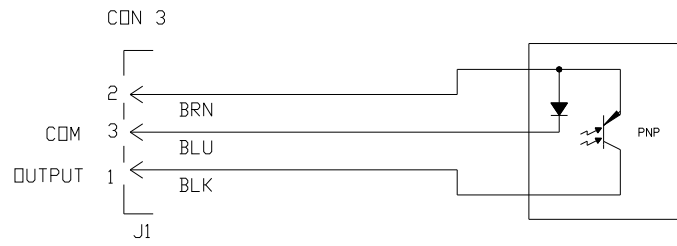
Figure 23 - 046-33391-500 - Cable, Power and Signal MAC401 2D Reader

SIZE B DVG NO 057-32192-501 SH

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	-	ORIGINAL RELEASE ECN 9703	11-24-09	wfm



WIRE SIDE VIEW



REV.	ITEM	DESCRIPTION	PART NUMBER	QTY.
	5	PLUG, MINI, 3POS SINGLE ROW	039-39014036	1
	4	SENDR, DIFFUSE REFLECTIVE	057-33380-000	1
	3	PIN, MALE, MINI, 22 -28 AWG	039-39000049	3
	2	TY-WRAP MARKER	026-PLT1MM	1
	1	SHRINK TUBING, 1/8"	026-FIT22118	1"

MATL: #
FNISH: #

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND ± .005 TOLERANCE. ANGLES ° 2-

REMOVE BURRS, SHARP EDGES & CORNERS

THIRD ANGLE PROJECTION

INTERPRET DRAWING PER ANSI Y14.5

438/420T/FPF35

USED ON

ORIGINAL APPLICATION

DRAWN: W. MAZZA 10/24/2009

CHECKED

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TITLE	SENSOR, RETRO REFLECTIVE PNP EDGE DETECT		
SIZE	B	DVG NO	057-32192-501
SCALE	1:1	SHEET	1 OF 1

Figure 24 - 057-32192-501 - Sensor, Retro-Reflective PNP Edge Detect

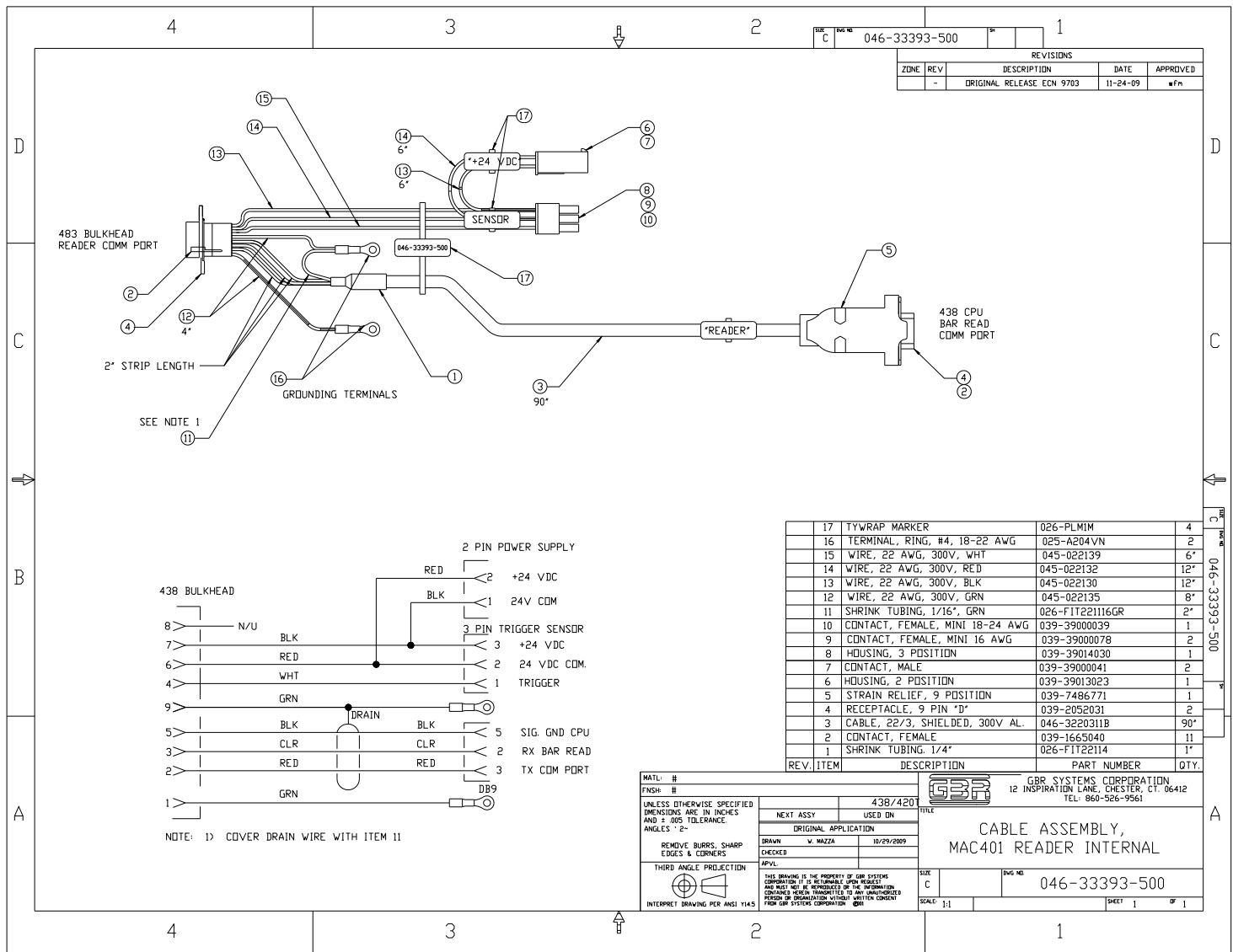


Figure 25 - 046-33393-500 - Cable Assembly MAC401 Reader, Internal

On Top of the Feeder:

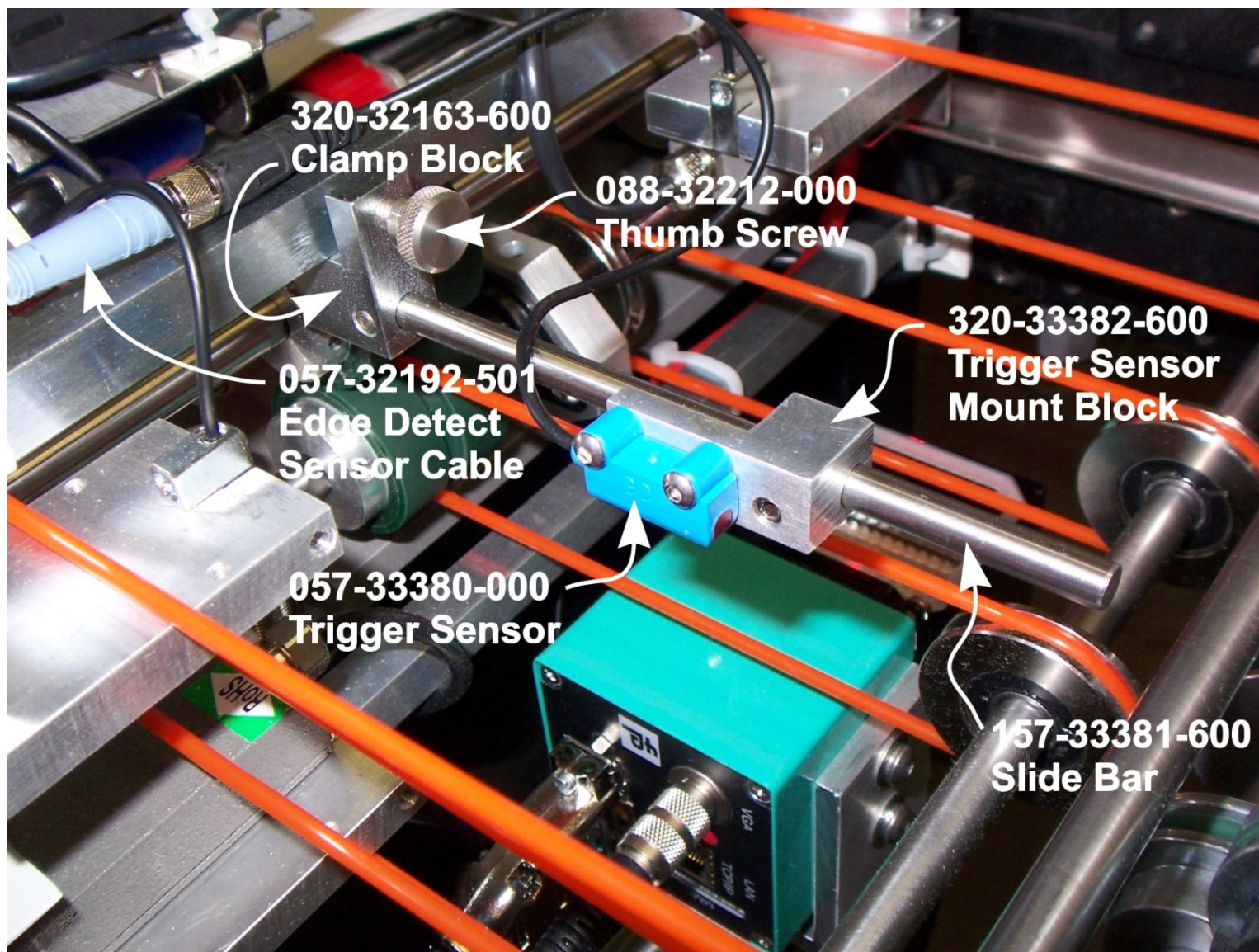


Figure 27 - View of Trigger (Lead Edge Detect) Sensor Mounting Parts

Under the Feeder, Front of Cabinet:

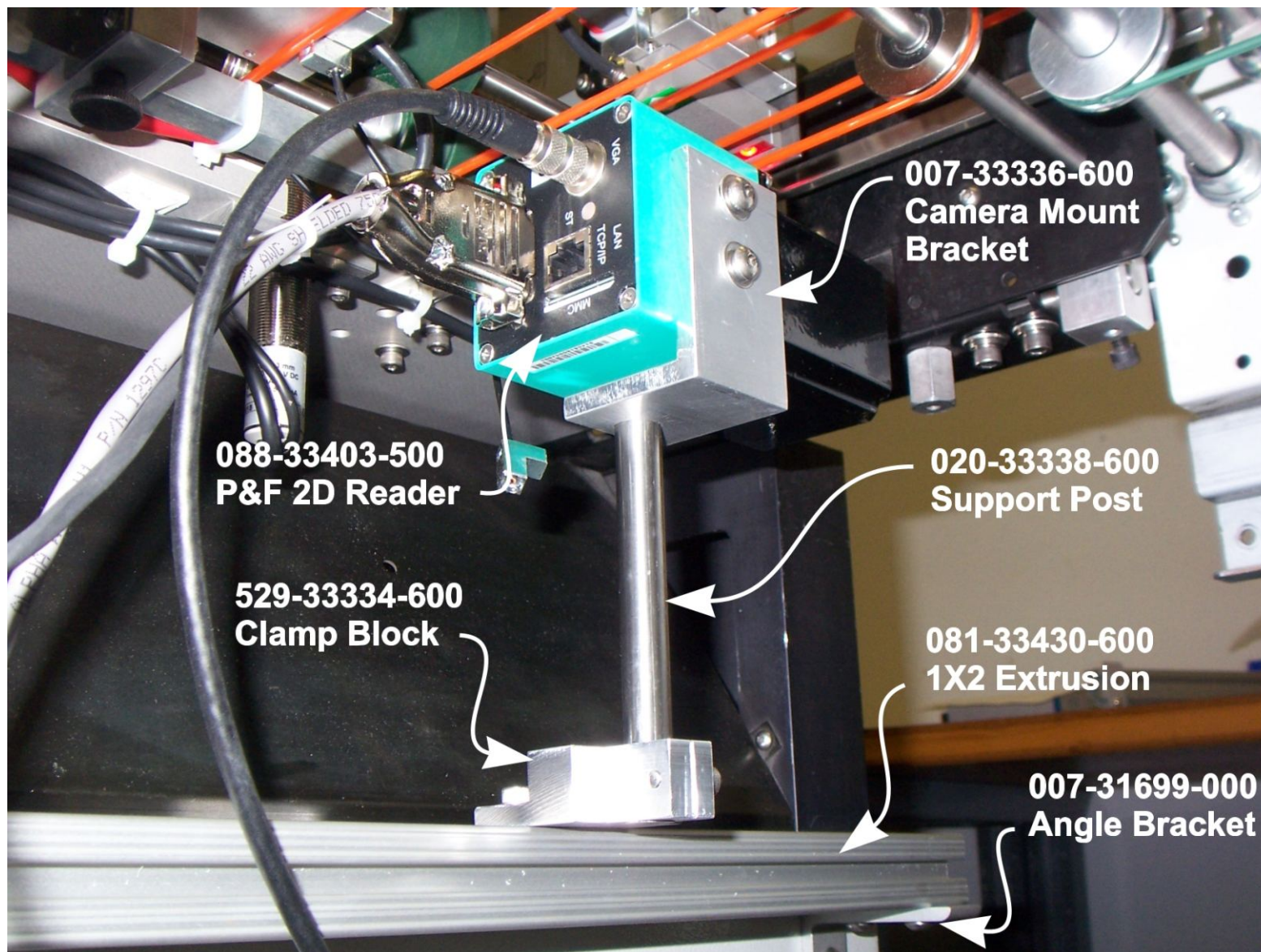


Figure 27 - View of Bottom Mount Kit Parts

Optional Top Mount Kit 191-26400-401:

Part No.	Description	Qty
005-33410-600	Laser/2D Reader Housing, short	1
007-26347-000	Slide Pile	
007-26398-600	Cover Support	1
007-27554-600	Bracket, Left Door Trim	1
007-27555-600	Bracket, Right Door Trim	1
007-27571-600	Support Bar	1
007-27572-600	Swivel Support	1
007-32368-600	Bracket, Reader Mount	1
007-DLH1154	Hinge	2
008-27575-000	Knob, Clamp	1
016-S0375062512	Shim	4
081-33407-600	Extrusion, Reader Slide 12"	1
081-33408-600	Extrusion, Reader Mount 3.5"	1
172-24280	Lever	2
172-26388-000	Door Handle	1
172-27574-000	Handle	1
191-26400-425	Alteration for short box	1
579-26393-600	Feeder Cover	1
579-27556-600	Door, Laser housing	1

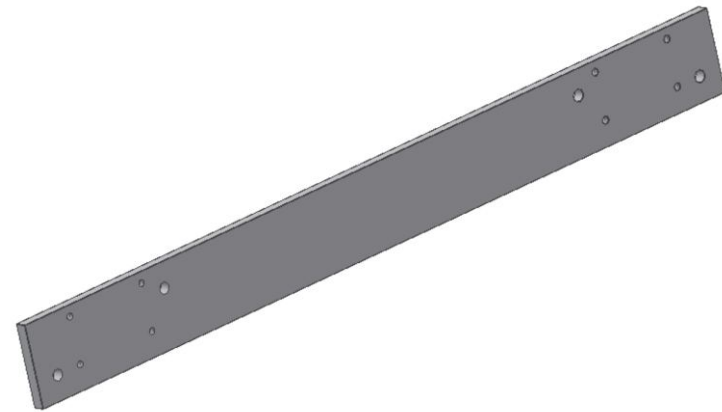


Figure 28 - 007-26398-600 - Cover Support

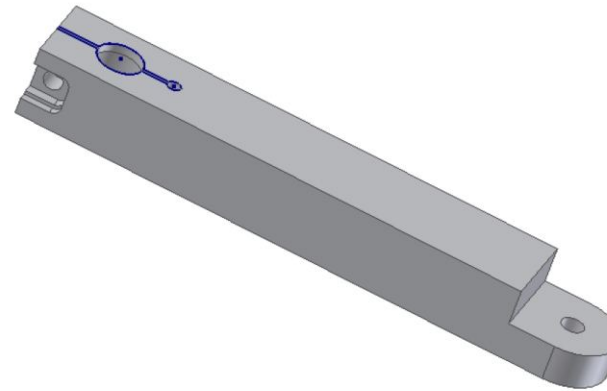


Figure 29 - 007-27571-600 - Display Support Bar

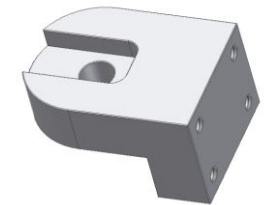


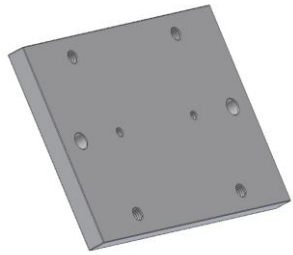
Figure 30 - 007-27572-600 - Swivel Support



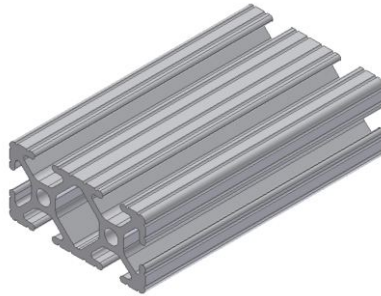
Figure 31 - 016-S0375062512 - Shim



Figure 32 - 008-27575-000 - Clamp Knob



**Figure 33 -
007-32368-600 -
Reader Mount Bracket**



**Figure 34 - 081-33408-600 -
1X2 3.5 in. Extrusion**

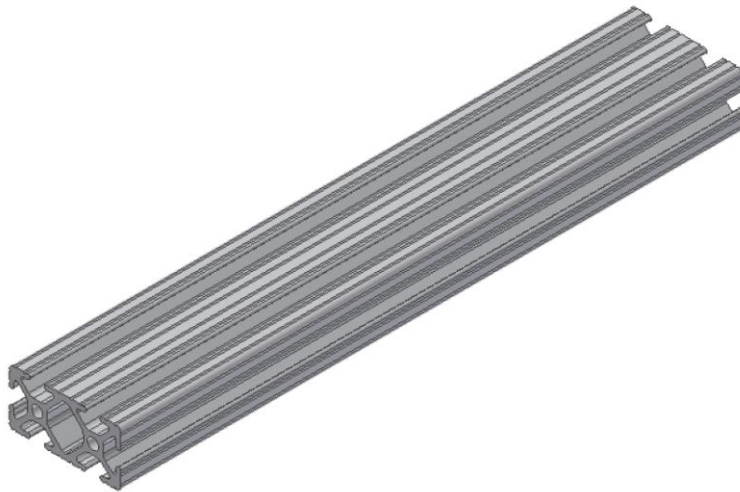


Figure 35 - 081-33407-600 - 1X2 11.125 in. Extrusion



**Figure 36 - 172-24280 - Adjusting
Lever**



**Figure 37 -
172-27574-000 - Door
Handle**

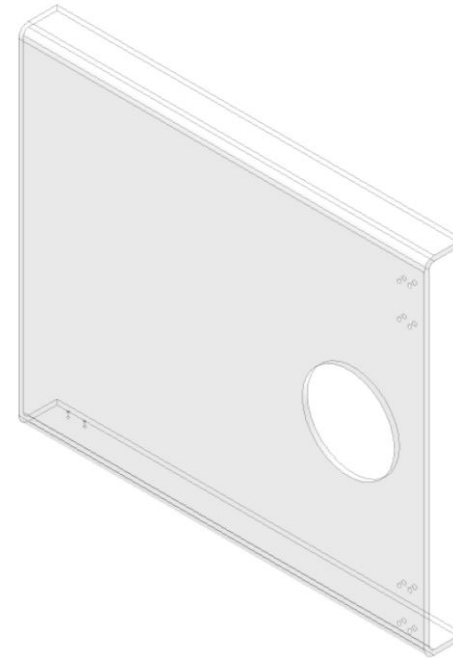


Figure 38 - 579-26393-600 - Feeder Cover

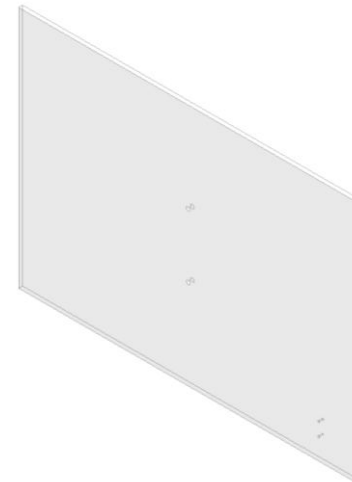


Figure 39 - 579-27556-600 - Laser Housing Door

