

FORKLIFT CAMERA SYSTEM INSTALLATION & OPERATING INSTRUCTIONS KIT# STSK7316



ROSCO INC.
90-21 144TH PLACE,
JAMAICA, NEW YORK 11435
WWW.ROSCOVISION.COM

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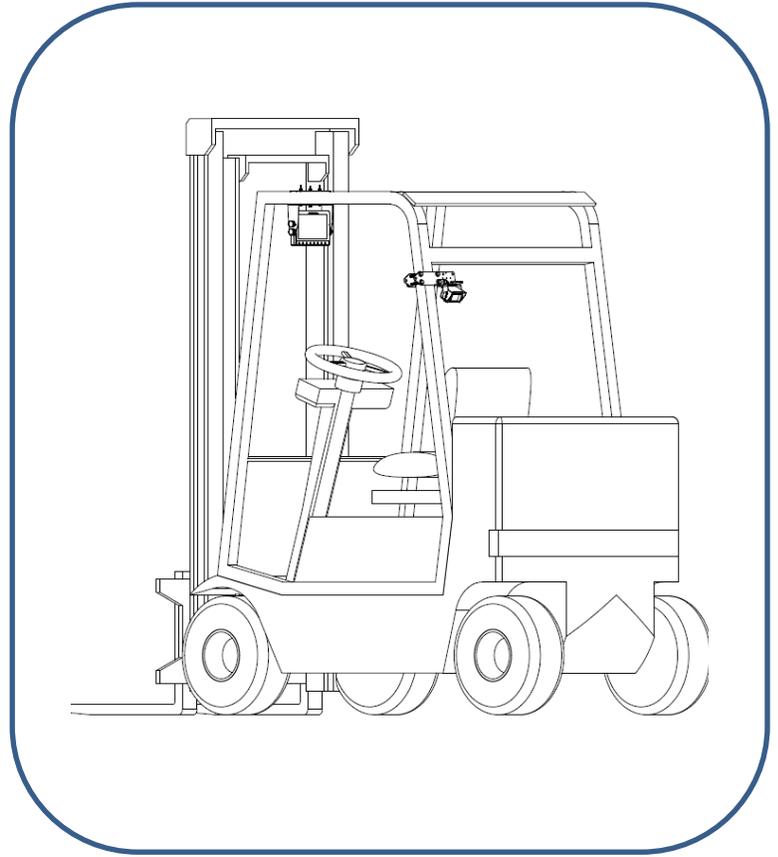
FEATURES

MONITOR

- Heavy Duty Aluminum Housing
- 7 Inch Wide WVGA Bright Display
- Waterproof (Indoor & Outdoor)
- Up to 4 Camera Inputs
- Split Screen Function

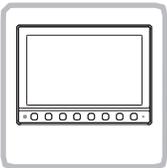
CAMERA

- Rugged Shock Resistant Metal Housing
- Stainless Steel Bracket
- Waterproof
- Heated
- Built-in IR For Night Vision
- Audio

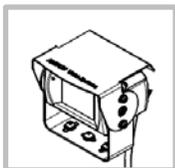


KIT CONTENTS

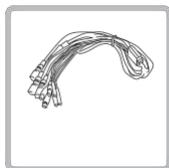
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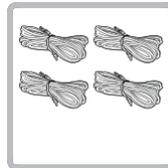
MONITOR



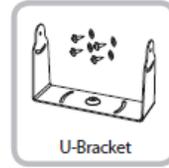
CAMERA



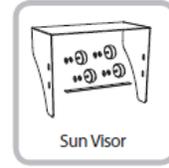
CABLES



4 SETS OF
Trigger Wires

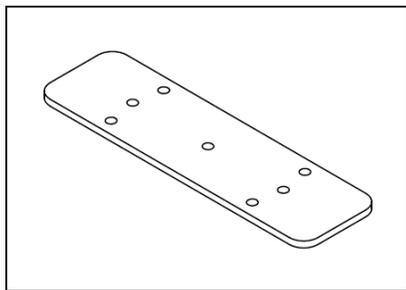


U-BRACKET

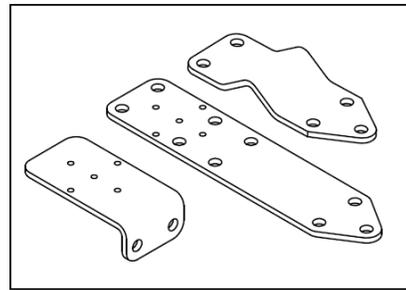


SUNSHADE (optional)

Your kit will contain the following hardware:



Monitor U-Bracket Backing Plate plus hardware

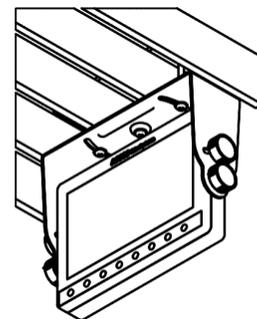
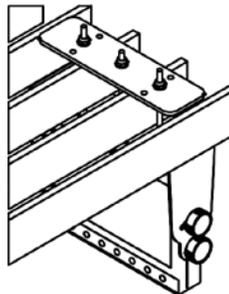
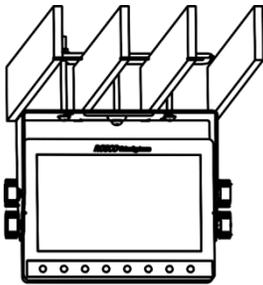
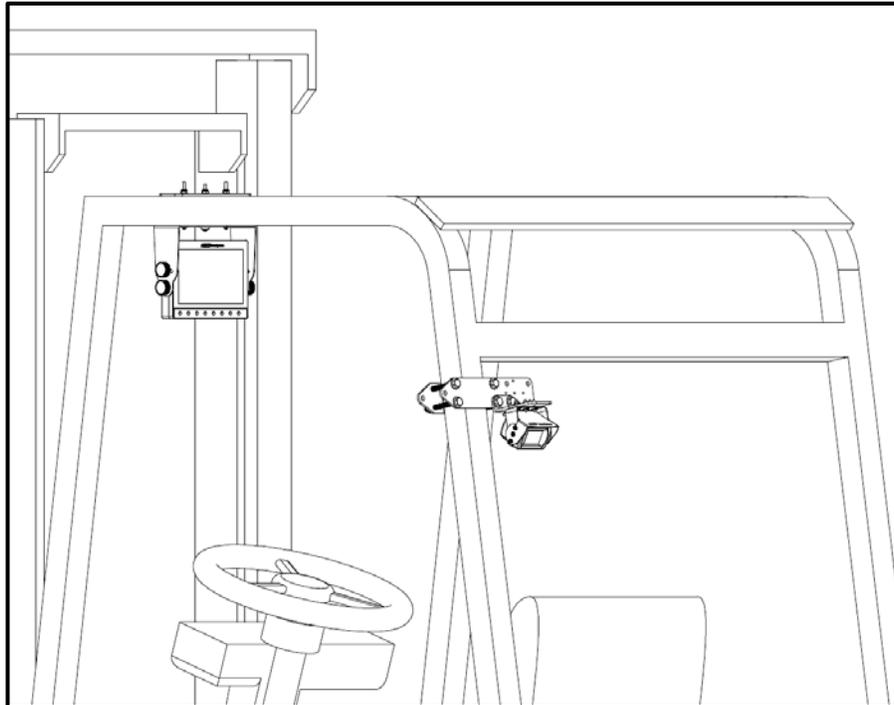


Camera Mounting Plates plus hardware

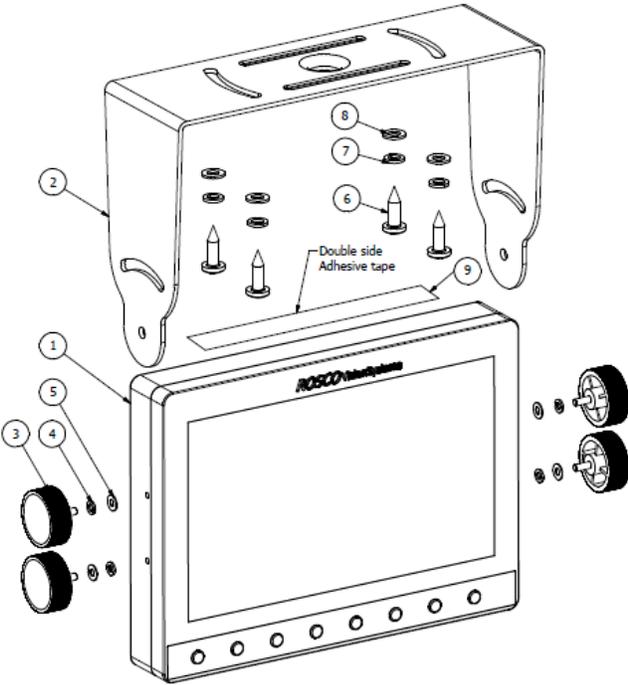
INSTALLATION

MONITOR

Locate a suitable position for monitor, using caution to make sure that the operator's forward field of vision is not obstructed. Recommended mounting is overhead, utilizing the included U-Bracket with backing plate and hardware, as shown in these examples:

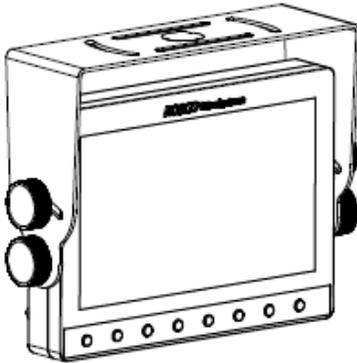


MONITOR INSTALLATION DIAGRAM



9	1	3M TAPE
8	4	M5 WASHER
7	4	M5 SPRING WASHER
6	4	M5 SCREW
5	4	M3 WASHER
4	4	M3 SPRING WASHER
3	4	TIGHTENING KNOB
2	1	U-BRACKET (STSU1001)
1	1	7" LCD MONITOR (STSM207MO)
ITEM	QTY	DESCRIPTION
PARTS LIST		

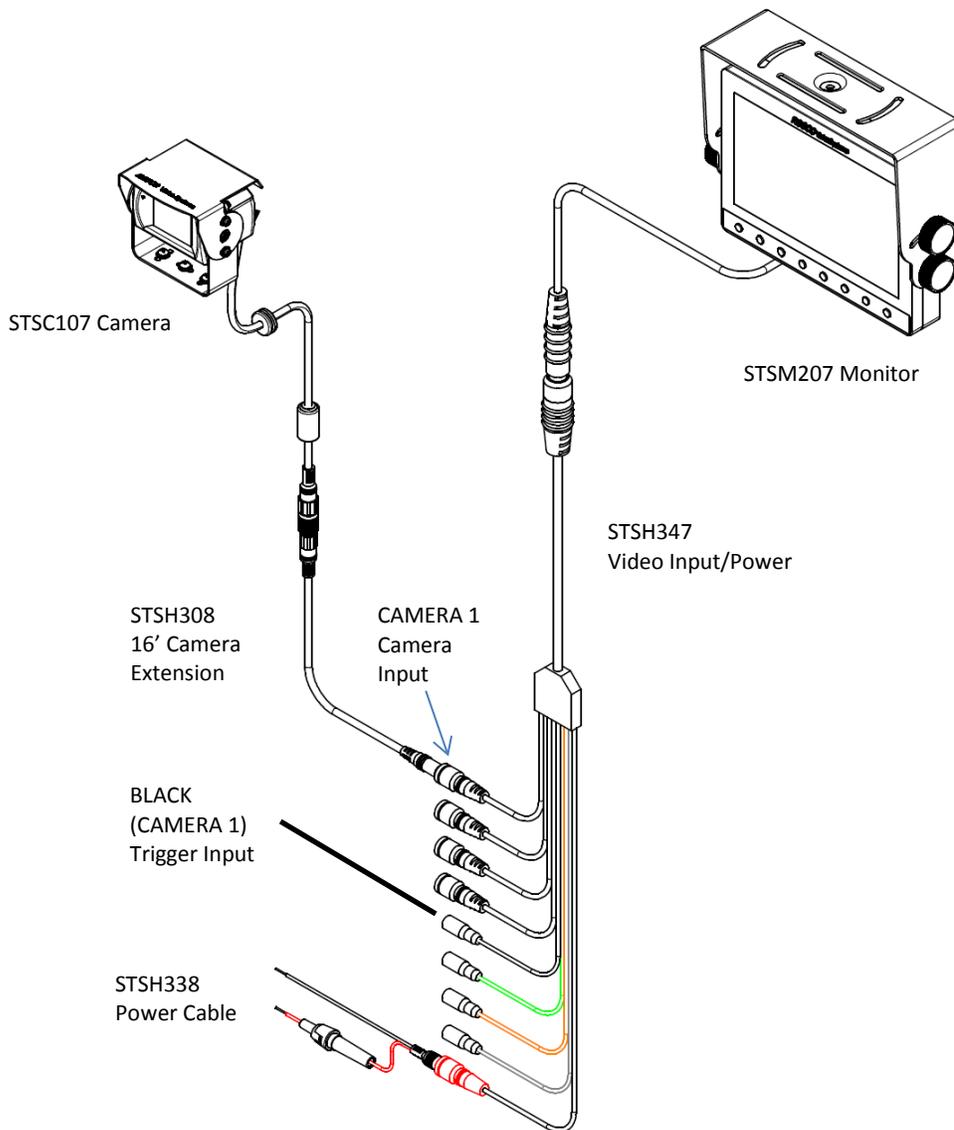
CEILING INSTALLATION



WIRING DIAGRAM

After installing the Monitor, connect it to Video Input/Power Harness as shown. The connect Power Cable to the battery or Voltage Converter (see next section). Secure the wires and activate the Monitor. Connect the Camera 1 trigger wire as desired (for example, to reverse gear or backup lights/alarm circuit). This will allow the operator to choose between having the Monitor on at all times or only active during reverse travel.

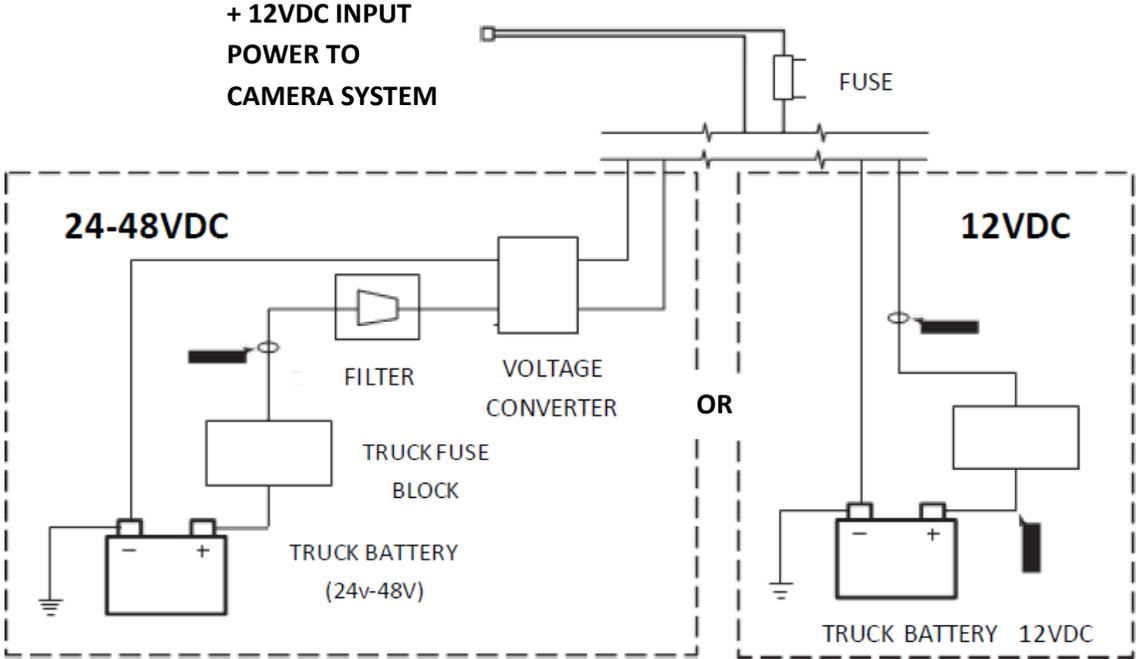
Connect the Camera Extension Cable to the Camera 1 Input on the Video Input/Power Harness, and then connect the Camera's cable to the Camera Extension Cable. This will allow the installer to determine the best possible Camera location.





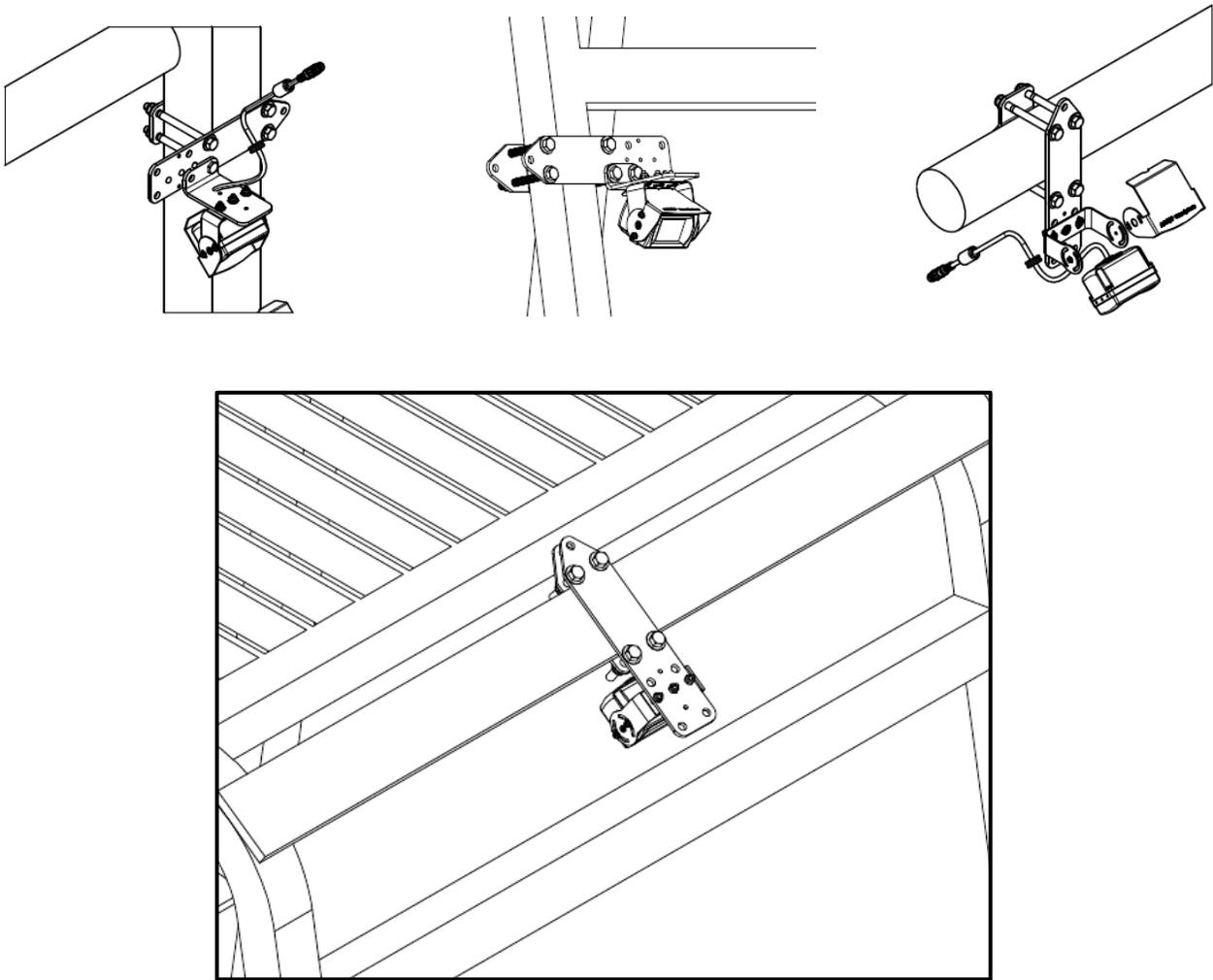
WIRING

Connect STSK7316 Power Wire (RED) to 12-24VDC source as provided on the vehicle. Note that FORKLIFT may be equipped with a Voltage Converter as shown here:



CAMERA

With the Camera powered but not permanently installed, move it around to locate a suitable position, either within the Forklift frame or in an area not susceptible to damage, which will provide a clear view of the desired area. Recommended mounting is high on the frame. Using the universal camera mounting brackets and hardware, install the camera and fasten securely as shown in these examples:



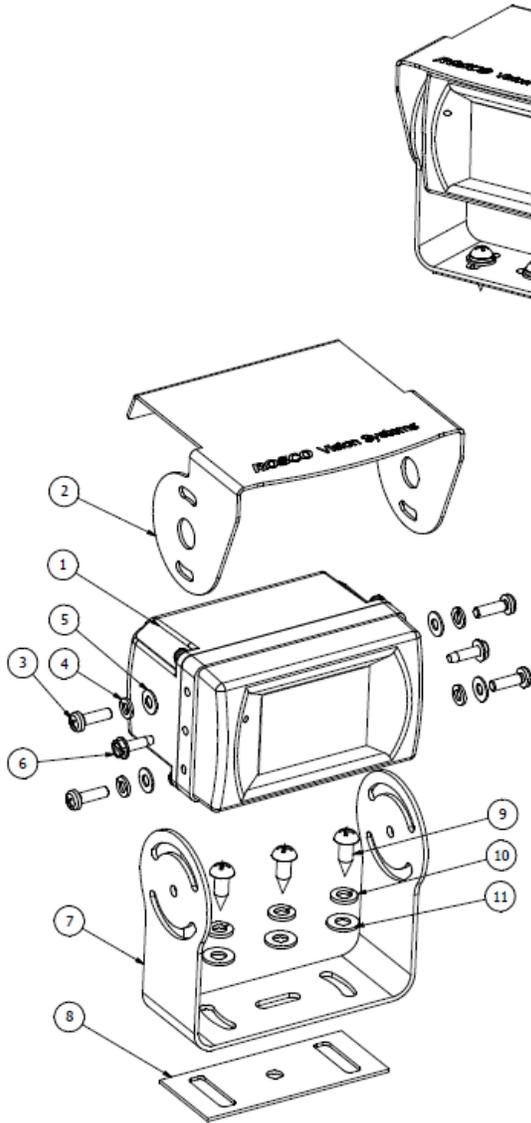
Secure all cables with tie-wraps or as otherwise necessary. The system is now ready to operate as a single-camera operation. For multiple views, additional cameras may be installed and individually connected to the appropriate inputs on the Video Input/Power Harness.



VisionSystems

CAMERA INSTALLATION DIAGRAM

Standard Installation

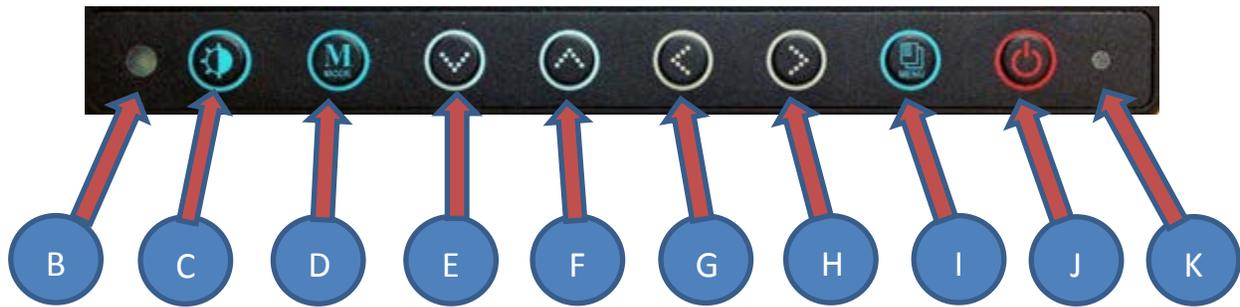


11	3	M4 WASHER
10	3	M4 SPRING WASHER
9	3	M4 SCREW
8	1	MOUNTING PAD
7	1	U BRACKET
6	2	HEX HEAD SLOTTED M3 SCREW
5	4	M3 WASHER
4	4	M3 SPRING WASHER
3	4	M3 SCREW
2	1	SUN VISOR
1	1	NITE VISION, COLOR CAMERA (ST5C107CO)
ITEM	QTY	DESCRIPTION
PARTS LIST		

MONITOR FUNCTIONS



MONITOR FUNCTION BUTTONS



	NAME	DESCRIPTION
A	LCD Screen	7" Wide VGA (800x480) LCD Display
B	Automatic Dimmer Sensor	Sensor to control LCD brightness (Day/Night)
C	Dimmer Button	Press to set up dimmer function: Day/Night/Auto
D	MODE Button	Press to select and change split screens: Full, 2, 3, 4
E	Move Button (down)	Press to move down menu options
F	Move Button (up)	Press to move up menu options
G	Select Button (left)	Press to select or adjust values of selected menu option
H	Select Button (right)	Press to select or adjust values of selected menu option
I	MENU Button	Press to open on-screen menu options
J	Power Button	Press to turn ON/OFF power
K	Stand-by LED	White LED on in stand-by mode

1. POWER

When the ignition is switched on, the monitor will be in standby mode, and the Standby LED will be lit. The trigger wire will be energized when the vehicle shifts into reverse gear, and the image captured by the selected camera will appear on the monitor.

2. Pressing the Power button will change the monitor status from standby to steady-on, even when no trigger wire is energized. Steady-on mode status will show camera view depending on user selection.

3. Adjust Volume

Power on Monitor, press [< >] button and adjust Speaker Volume. (0~100)

These buttons are also used to adjust the values within selected setting of menu option. Factory default volume is set to 30. The volume control works only in CAM1 Screen.

4. MENU Button:

Press the Power button, then press MENU button to open on-screen options.

Press MENU to cycle through choices and use [^ v] [< >] button to change your settings.

5. MODE Button:

Press MODE button to switch Full Screen => 2 Split Screen => 3 Split Screen => 4 Split Screen => Full Screen. In the split screen mode, press [^ v] button to change the different split screens.

6. Camera View Selection

In the Full Screen mode, press [^ v] button to change Camera View.

**NOTE: The reverse camera (CAMERA1) has selectable back up grid when triggered.

MONITOR SET UP

Press [◀ ▶] to increase/decrease the Volume level (0 – 100)

Press the MENU button once and set MARKER SETUP option ON or OFF.

Press ▶ to accept.

Press the MENU button twice to set desired Camera Views (MIRROR or NORMAL)

Press [↖ ↘] button to select Camera (CAM 1, CAM 2, CAM 3, and CAM 4)

Press [◀ ▶] to change option and wait 10 seconds to exit

Press the MENU button three times to set up PICTURE.

Press [↖ ↘] button to select the menu options (Dimmer, Contrast, Brightness, Color, Tint, Language, Video System and RESET)

Press [◀ ▶] to change or increase/decrease values.

Wait 10 seconds to exit setup mode.

Press the MENU button four times to set MARKER SELECT.

Press [◀ ▶] to select desired marker position. (P1 ~ P7)

Wait 10 seconds to exit setup mode.

Press the MENU button five times to set MARKER ADJUST.

Press [↖ ↘] to select Horizontal or Vertical Marker

Press [◀ ▶] to adjust marker values and set up position

Press MENU button once or wait 10 seconds to exit setup mode.

IMPORTANT:

At first power up after installation, the monitor may display split screen. Once the operator selects single camera view (either manually or by reverse trigger), this setting will be memorized and will appear upon subsequent system starts.

On-screen menu commands may only be selected when monitor is in Steady-on mode.

For your safety, never change settings while operating vehicle.

TROUBLESHOOTING

SYMPTOM	CAUSE	REMEDY
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No Power	Power Cable	Check the voltage & fuse in the power cable
No Image	Camera	Check the voltage in the camera cable, secure connector
	Monitor	Check the reverse trigger wire connection, re-secure camera input connector.
	Extension Cable	Check for cable damage and secure the connector.
Image is not clear	Camera Lens	Check and clean dirt or moisture on the glass with a slightly damp soft cloth. Check and fix if the camera is not in the proper position or blocked. Check if the camera lens is damaged
	Monitor Color	If the screen image is fuzzy, adjust color, brightness and contrast controls using the MENU options in the monitor. Check and fix if Day/Night/Auto Dimmer option is not set properly.
Blue/Black Screen	Camera	Check the camera cable connection and secure it
	Monitor	Power on/off Monitor and see if it clears the problem Check and see if MENU button is working normal
Can't adjust on-screen menus	Menu disabled	For safety reasons, on-screen menus lock out while in trigger mode. Only adjust on-screen menus in steady-on mode.
Split screens appear while reversing the vehicle	Monitor	Press MODE button few times and change split screens to show Channel 1 full mode screen only. Once operator selects single camera view (either manually or by reverse trigger), this setting will be memorized and will appear upon subsequent system starts.
No video signal appears while reversing the vehicle	Camera	Check and secure the reverse trigger wire connection and also secure the camera video input connection.

TECHNICAL SPECIFICATIONS

STSM207 MONITOR SPECIFICATIONS

ROSCO PART NUMBER: **STSM207**
PRODUCT NAME: **7" COLOR WATERPROOF MONITOR**



FEATURE DESCRIPTION

ROSCO's STSM207 7" Color Waterproof Monitor display live videos as selected by Forklift operator. The monitor has 7 inch WVGA (800x480) Wide LCD Panel which accepts 4-Camera Input view with 2, 3, 4 Split Screen Function.

ELECTRICAL SPECIFICATIONS

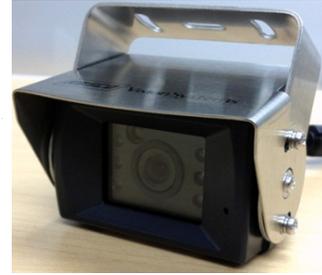
- Input Voltage: 12VDC ~ 24VDC
- Power Consumption: 450mA Max.

TECHNICAL SPECIFICATIONS

- Screen: 7 inch Color TFT LCD
- Resolution: WVGA (800x480), Contrast Ratio 300:1
- Brightness: 400cd/m²
- Input System: NTSC/PAL
- Frequency: NTSC (H: 15.734KHz / V: 59.94Hz), PAL (H: 15.625 KHz / V: 50Hz)
- Effective Pixels: NTSC 250,000 Pixel, PAL 290,000 Pixel
- Viewing Angles (L/R/U/D): 70° / 70° / 50° / 70°
- Speaker: 8 Ohms, 0.5W Max.
- Audio Input Signal: Mono,
- Video Input Signal: Composite Video (CVBS)
- Language Display Selection: ENGLISH-FRANCH-GERMAN-ITALIAN-SPANISH
- Operating Temperature: -30°C to +70°C (-22°F to +158°F)
- Storage Temperature: -40°C to +80°C (-40°F to +176°F)
- Housing: Aluminum die-casting
- Dimmer Sensor: built-in, Sun Shade: Included
- Weight: 780g (monitor only)
- Dimension: 181 (W) x 134 (H) x 28 (D) mm
- Waterproof: IP-67

STSC107 CAMERA SPECIFICATIONS

ROSCO PART NUMBER: **STSC107**
PRODUCT NAME: **COLOR CAMERA**



FEATURE DESCRIPTION

STSC107 Color Camera provides views of areas behind the Forklift operator. The camera provides up to a 30-foot range view and a 145° diagonal field of vision. Mount the camera universally to the back side of the vehicle, and adjust the camera mount to view and use it as a backup camera.

ELECTRICAL SPECIFICATIONS

- Input Voltage: 12 VDC
- Power Consumption: 200mA Max.

TECHNICAL SPECIFICATIONS

- Image Sensor: 1/3" COLOR CCD Image Sensor
- TV System: NTSC
- Effective Pixels: NTSC 250,000 Pixel, PAL 290,000 Pixel
- Viewing Angles: 145° (D) / 114° (H) / 85° (V)
- Audio Function: Yes
- LED Light: 6 IR LEDs for Night Vision
- Auto Light Sensor: Yes
- Minimum Illumination: 0.1 lux
- White Balance & Gain control: Auto
- Sync System: Internal Sync.
- Video Output: 1.0Vp~p, 75Ω
- Operating Temperature: -30°C to +70°C (-22°F to +158°F)
- Storage Temperature: -40°C to +80°C (-40°F to +176°F)
- Heating function built-in
- Aluminum die-casting housing
- Waterproof: IP-67
- Dimension: 70 (W) x 44 (H) x 57 (D) mm
- Weight: 400g (with bracket)

SPARE PARTS LIST

ROSCO P/N	DESCRIPTION
STSK7316	COMPLETE FORKLIFT CAMERA SYSTEM KIT
STSM207	COMPLETE MONITOR KIT, CONTAINS ALL OF THE MONITOR PARTS BELOW
STSM207MO	MONITOR, 7" WATERPROOF LCD MON OPT, 4 CAM
STSU1001	U BRACKET, MONITOR MOUNT WITH THUMB SCREWS (4)
STSH338	BARREL CONNECTOR, FUSE & POWER FOR STSM207 MONITOR
STSH344	TRIGGER EXTENSION CABLES (4pcs)
STSH347	HARNESS, COLOR MONITR INPUT/POWER, 4 CAM
STSC107	COMPLETE CAMERA KIT, CONTAINS ALL OF THE CAMERA PARTS BELOW
STSC107CO	CAMERA, COLOR, HEATED, NITE VISION, AUDIO, 145° (D) FOV
STSC107MT	MOUNTING KIT FOR STSC107
STSH308	HARNESS, 16.5', 6 PIN M MINIDIN PUSH, 6 PIN FML TWST
SCR7153	SCREW KIT, MOUNTING HARDWARE, LIFTTRUCK MONITOR, STSM207MO
SCR7149	SCREW KIT, MOUNTING HARDWARE, LIFTTRUCK CAMERA, STSC107CO

OPTIONAL PARTS LIST

ROSCO P/N	DESCRIPTION
STSH307	HARNESS, 60', 6 PIN M MINIDIN PUSH, 6 PIN FML TWST
STSH309	HARNESS, 16.5', EXTENSION ONLY, M/F 6 PIN TWIST
STSC117	COMPLETE TILT CAMERA KIT, CONTAINS ALL OF THE CAMERA PARTS BELOW
STSC117CO	CAMERA, COLOR, HEATED, TILT, NITE VISION, AUDIO, 120° (D) FOV
STSC117MT	MOUNTING KIT AND MANUAL FOR STSC117
STSC127	COMPLETE SHUTTER CAMERA KIT, CONTAINS ALL OF THE CAMERA PARTS BELOW
STSC127CO	CAMERA, COLOR, HEATED, SHUTTER, NITE VISION, AUDIO, 120° (D) FOV
STSC127MT	MOUNTING KIT AND MANUAL FOR STSC127
STSC128	COMPLETE UNIVERSAL SIDE-VIEW CAMERA KIT
STSC128CO	CAMERA, COLOR, UNIVERSAL SIDE CAM, 30FT RANGE, 110° (D) FOV
STSC128MT	MOUNTING KIT AND MANUAL FOR STSC128

COMMERCIAL WARRANTY

We warrant that all ROSCO mirror, camera, sun visor, and electronic vision products are free from defects in workmanship and materials for a period of ONE (1) YEAR from the date of receipt of the product. During the warranty period, we agree to provide a replacement for (or at our option, repair) the ROSCO product and/or any one or more component parts of a ROSCO product which malfunctions under normal use and service.

Upon discovering a defect, the customer must contact ROSCO for a return authorization and then must return the product, and/or component part, together with proof of date of receipt of the product, to ROSCO INC. 144-31 91st Ave. Jamaica, New York 11435. The customer and not ROSCO will be responsible for the payment of all removal, installation and transportation charges for return of defective products or components to ROSCO. Transportation charges for such return must be prepaid. The repaired or replaced equipment will be returned to the customer with transportation charges prepaid by ROSCO. Replacement (or repaired) products and/or component parts are warranted only for the unexpired term of the original warranty.

This warranty does not cover defects caused by neglect, misuse, incorrect application, incorrect installation, water damage, vehicle wash facilities, alteration or repair in any manner outside ROSCO's factory. Damage caused by the return shipment due to inadequate packaging or mishandling will not be covered. If the alleged defect is due to any of these causes, the customer will be advised of the findings and asked what action is to be taken. If ROSCO is requested to repair the product, a repair charge estimate will be prepared and the customer's written permission (purchase order, repair, etc.) will be necessary to proceed with the repair of the product and/or component part. Transportation charges for such returns will be the responsibility of the customer.

This warranty may not be expanded by oral representation, written sales information, and drawings or otherwise. Repair or replacement is the exclusive remedy for defective products under this warranty. This warranty is expressly in lieu of all other warranties, including any implied warranty of merchantability or any implied warranty of fitness for a particular purpose on any ROSCO product. ROSCO shall not be liable for any consequential or incidental damages for breach of any express or implied warranty on any ROSCO product.