



US III Transporter

Ultra Shorty III

OPERATION & MAINTENANCE MANUAL
P/N TX901, Revision 4: 072220



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Styles and specifications are subject to change without notice. First version published in 2009.
Printed in the United States of America.

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INTRODUCTION: Ultra Shorty III (US III)

Track Transporter

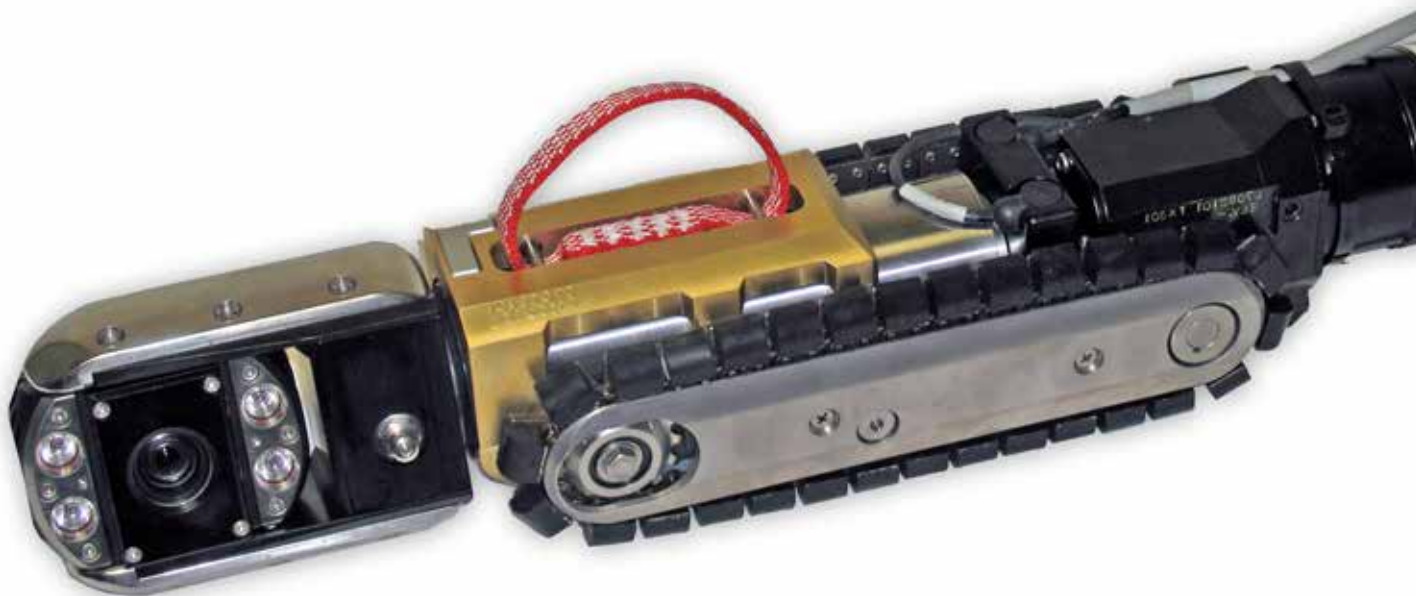
Ultra Shorty III

Track Transporter

This manual includes setup, operation, troubleshooting, and maintenance instructions for the CUES Ultra Shorty III Track Transporter. CUES uses proven video technology to provide a versatile tool to assist with sewer line inspections.

The instructions provided in this manual are for *multi-conductor* systems. First, determine if the existing system is multi-conductor or single conductor before proceeding. Multi-conductor cable is approximately ½" in diameter and contains 8 to 12 conductors depending on the age of the system. If you are uncertain about what type of system you have, please call our Customer Service Department at 1-800-327-7791.

If the unit is being used with an existing TV system, modifications might need to be made to the end of the TV cable and/or the truck's electrical wiring, depending on the specific system. If you're uncertain about the modifications required for the system or need more information regarding a retrofit, please call our Customer Service Department at 1-800-327-7791.



USIII shown with optional OZIII Pan Tilt and Optical Zoom Camera

The CUES Ultra Shorty III transporter is designed to:

- Operate as one component of a multi-conductor inspection system.
- Inspect 6 inch relined through 24 inch pipelines without prior stringing or other setup procedures; can operate in 5" pipe with 3/8" clearance.
- Inspect dead end lines or lines without accessible exits.
- The Ultra Shorty III with OZ III can be used with any 12-pin multi-conductor system.
- Existing CUES 12-pin configuration truck systems can operate the transporter. CUES trucks with 5/4 cable ends will require a 5/4/12 pin adapter to operate the unit.
- Ultra Shorty III operates most efficiently with the new CUES platinum lightweight /high strength multi-conductor video cable. The auto-payout reel system is recommended to optimize inspection distance when operating the USIII on gold-cable setups.
- The Ultra Shorty III package includes a track transporter with built-in locking connector, protective housing for direct insertion of the OZIII camera, self-cleaning drive sprockets, dual track fasteners, and contoured high traction cleats.
- "Quick-change" weighted adapters (optional equipment) are installed with (1) screw.

Features & Benefits:

- Reduced camera/tractor length to 23.5" with optical zoom pan & tilt camera [OZ III]; allows line entry through inverts with limited space and traverses 22, 45, and 90 degree sweeps in smaller diameter lines.
- Built in connector and protective housing for direct insertion of the OZIII camera. No camera interface cables are required.
- Reduced width (4.25") enables full pan and tilt / zoom capabilities in 6" relined pipe.
- Proven transmission with power forward, freewheel and power reverse; high speed retract without running over the cable and easy to back out of a dropped manhole.
- Weighted track extenders to optically center the camera; greater weight for increased traction, increase bottom clearance as pipe diameter increases.
- Waterproof motor with bulkhead connector; protection against leaks and motor damage.
- Self-cleaning drive sprockets; maximum performance in mud and sand.
- Contoured high traction cleats; maximum pipe wall contact for greater traction.
- Inspection speed can be optimized to match pipe size and conditions.
- Operates in 6" relined to 24" lines; maximum versatility and applications.
- Dual track fasteners; increases track and cleat life.
- Cone-shaped motor housing and shorter length facilitates easier, less restricted passage through severe offsets.
- Increased ground-clearance.
- Cam-lock to transporter connector and forward camera retention feature.

SYSTEM DESCRIPTION: Ultra Shorty III

CUES offers the Ultra Shorty III for customers that require a shorter transporter to operate in 6" diameter relined pipe and storm drains/wastewater pipelines up to 24 inches and can operate in 5" pipe with 3/8" clearance. The main difference is the transporter length (smaller diameter), 18" in lieu of it's predecessors, the Ultra Shorty 21 and Ultra Shorty, which are 21" and 24" long. This provides the ability to insert the transporter into shallow manholes without the need to setup the equipment at the downstream manhole.

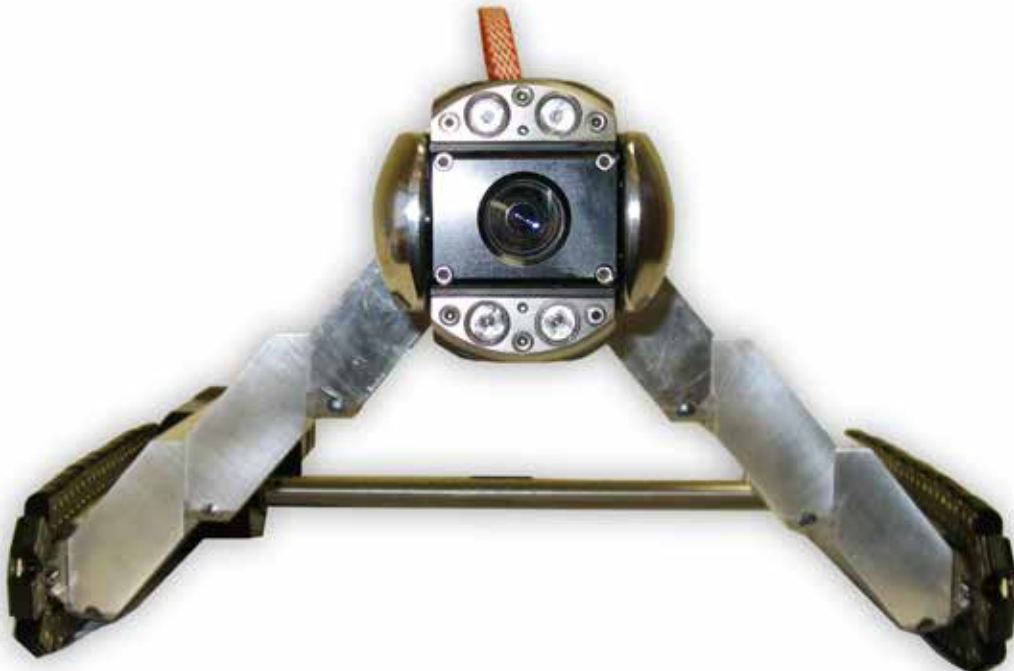
The system is equipped with a self-propelled power forward, power reverse, neutral multi-conductor transporter. The transporter has full variable speed in the forward or reverse mode, from 0 to 62 feet per minute running capability. The freewheel clutch is engaged and disengaged with the transporter controller at the operator's station.

The transporter is designed to carry the CUES OZIII pan tilt and optical zoom style sewer line TV camera. The transporter is capable of inspecting pipes up to 24" diameter with the repositioning of the tracks (downward and outward) by installing a set of adapters between the tracks and the camera carrying body. The camera assembly is designed so that it can be used independently with standard towing skids and a hand or power winch if necessary.

The transporter is equipped with a power track drive system designed to maximize traction in each pipe size. Two chains fitted with rubber pads, rounded for better traction with the pipe wall, are mounted on the transporter (one on each side). The pads are easily replaceable.

A kit with additional chain links and rubber pads is supplied. The drive motor is specially designed to meet the power requirements of the system. The motor is mounted in a heavy duty waterproof metal case. A waterproof bulkhead connector is incorporated into the motor housing for connection of the transporter to the TV cable.

The Ultra Shorty III can be controlled by several CUES multi-conductor transporter controllers. Each transporter controller is equipped with an ON/OFF switch, an ON indicator light, motor current draw monitoring, and a speed control with built in automatic OFF positioning for safety when the operator releases the control. The speed control allows for infinite speed adjustments of the transporter from stop to maximum speed in both forward and reverse.



System Configurations:

P/N TX360 - TRANSPORTER ASSY, USIII

P/N MZ330 - CAMERA ASSY,M/C,OZ III

System Weights:

Refer to Chapter 5 for system weight breakdowns for all configurations.

System Lengths:

Transporter & camera assembly: 23.5"

Transporter: 18.05"

Camera: 13.05"

Optional Kits:

TX308 - ADAPTER ASSY,SINGLE WIDTH,USIII,AL

TX331-1 / TX330-1 - ADAPTER ASSY,SNGL WID,USIII,BRASS

TX309 - ADAPTER ASSY,TRIPLE WIDTH,USIII,AL

TX333-1 - ADAPTER ASSY,TRPL WID,USIII,BRASS

TX911 - KIT,EXTENSION,F/18-24"PIPE,AL,USIII

* TX919 - KIT,EXTENSION,F/8"-15"PIPE,AL,USIII

MC224 - KIT,ACCESSORIES,SHORTY2,FWC

MC907 - SPROCKET ASSY,FRONT,U-SHORTY & 21

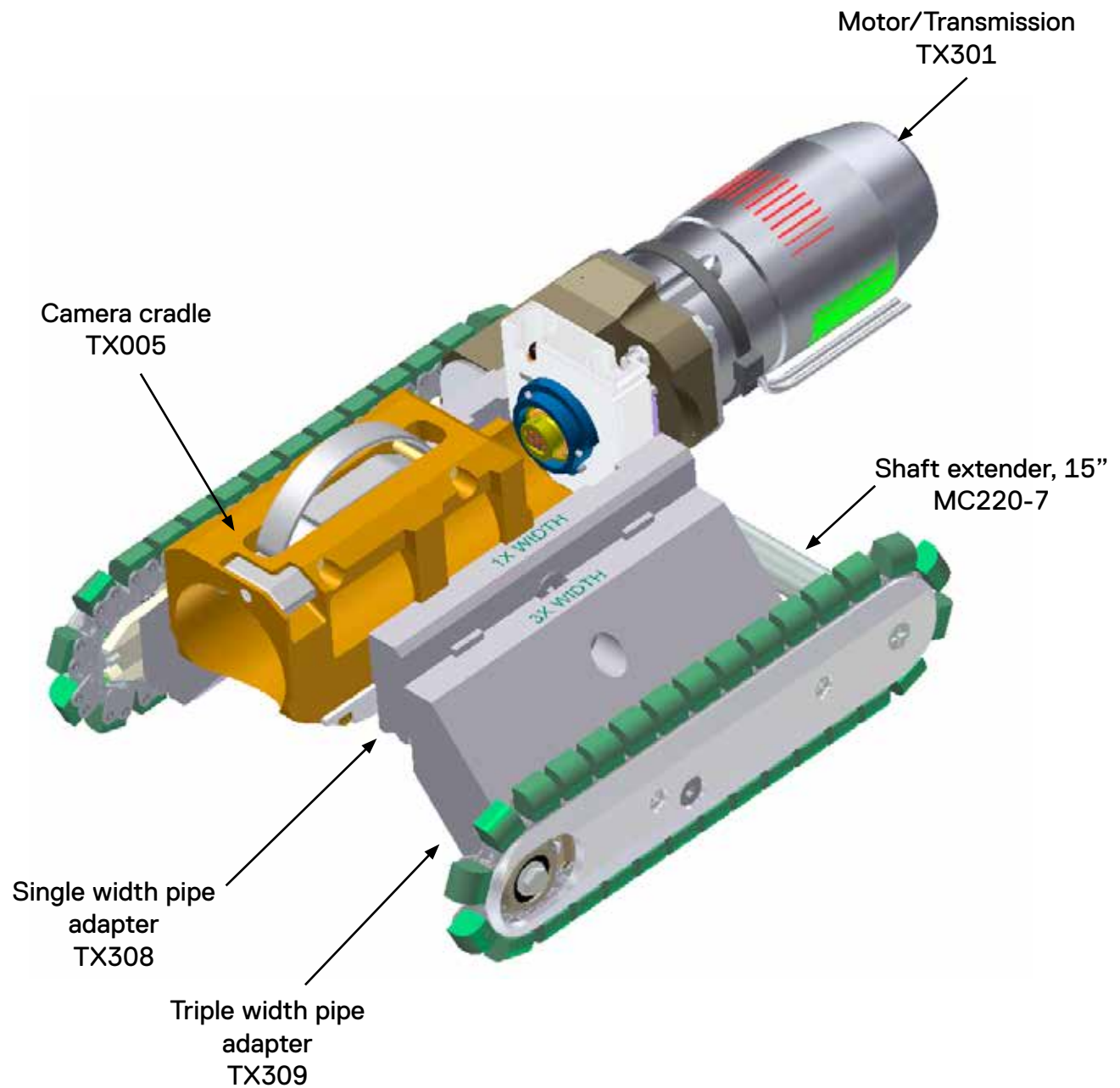
MC908 - DRIVE ASSY,REAR,U-SHORTY & 21

MC226 - MASTER LINK,F/CHAIN MC207,SHORTY2

* Extension kit includes extended length motor to bulkhead cable.



Ultra Shorty Transporter shown in a 15" pipe configuration



Check to make sure that all equipment including the generator is OFF (0) before making any of the necessary connections involving the Ultra Shorty III system. Changing connections with power to the system can cause harm to the operator and/or equipment failure.

ULTRA SHORTY III ASSEMBLY:

The Ultra Shorty III transporter is a variable weight, motorized, tracked vehicle. It is capable of carrying a CUES multi-conductor camera quickly down long distances of pipeline. The track widths are adjustable to allow for inspections of 6" relined through 24" pipelines. Weights of the transporter in various configurations can be found in the "Adapting the Ultra Shorty III transporter to different size pipes" in Chapter 5.

SETTING THE TRACK WIDTH:

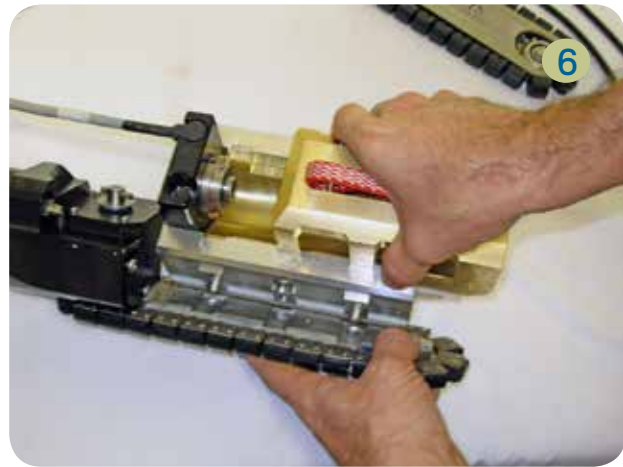
The adaptation of the transporter to different size pipes is accomplished by adding adapters between the camera supporting cradle and the tracks. These adapters not only widen the base of the transporter but raise the camera cradle to the point that the optical axis of the camera lens is maintained approximately in the center of the pipe. This keeps the transporter relatively simple, rugged and, with a base width that increases as the pipe size increases, stable in operation.

Disassemble the transporter:

1. Disconnect the small cable that's connected to the motor transmission. NOTE: Disconnect the over-molded bulkhead cable connectors by pulling straight up to avoid bending the connector pins and cable damage. Remove the camera, if installed.
2. Cut the large tie-wrap that's retaining the large cable to the motor-transmission housing.
3. Loosen the captive cap screw on the right side of the transporter (looking from rear towards the front on the right side).
4. Remove the side plate and set off to the side.
5. Turn the transporter over with the other side facing up. Loosen the captive cap screw on the left side of the transporter (looking from rear towards the front on the left side)
6. Separate the track assembly/motor-transmission assembly from the cradle. NOTE: Do not disassemble track assembly from the motor-transmission assembly.
7. As shown: There are the three main subassemblies.



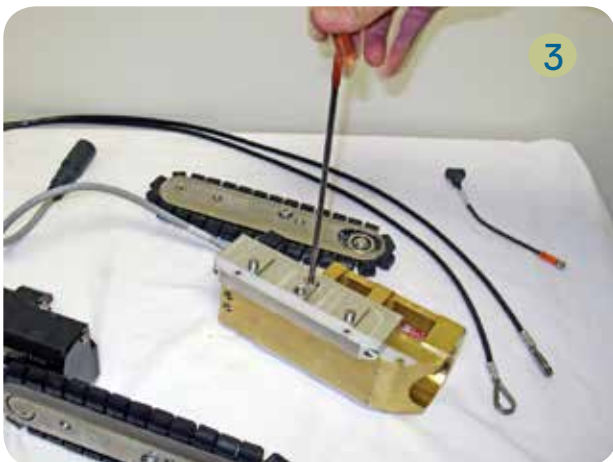
SYSTEM SET-UP & INSTALLATION 4



To Mount the Pipe Adapters:

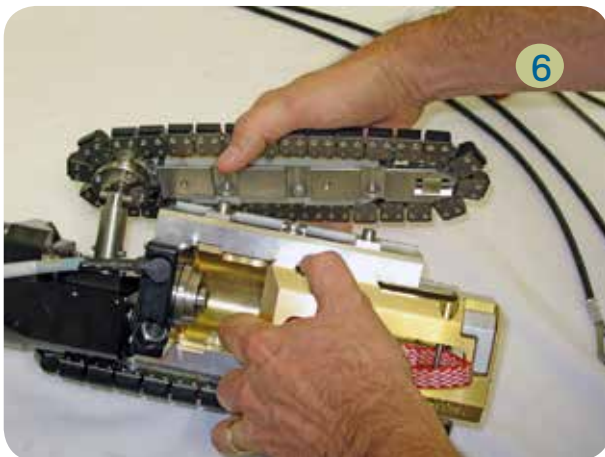
Each adapter comes with (1) captive cap screw. These screws are fastened in the camera cradle or in the preceding adapter according to the configuration table in the “Adapting the Ultra Shorty III transporter to different size pipes” section in Chapter 5.

1. Orient the cradle with the motor/transmission facing up. NOTE: This will make it easier to add the shaft extender (Installed later). Select the applicable adapter(s) that will be used per Chapter 5.
2. Align the pins with the holes and install the adapter on the motor/transmission side of the cradle.
3. Tighten the screw with a T-handle Allen wrench, or equivalent. Install additional adapters, if needed.
4. Install the motor/transmission side plate on the adapter(s) and tighten the screw with a T-handle Allen wrench, or equivalent.
5. Rotate the assembled motor/transmission side over to expose the pins and screw hole on the other side. Select the appropriate shaft extender and install on the transmission shaft. NOTE: The pipe size is engraved on the side of the shaft (refer to the example shown).
6. Install the adapters and side plate to the other side of the transporter (repeat the instructions per above). NOTE: Align the slot on the rear of the side plate with the pin on the shaft extender. Verify proper alignment before tightening the screw.
7. Reinstall the applicable cable and tie wrap that were removed earlier when the transporter was disassembled. Ensure that the connectors are clean and free of debris before reconnecting and verify that the pins are not deformed or damaged. Align pins and press firmly to ensure proper engagement.





5



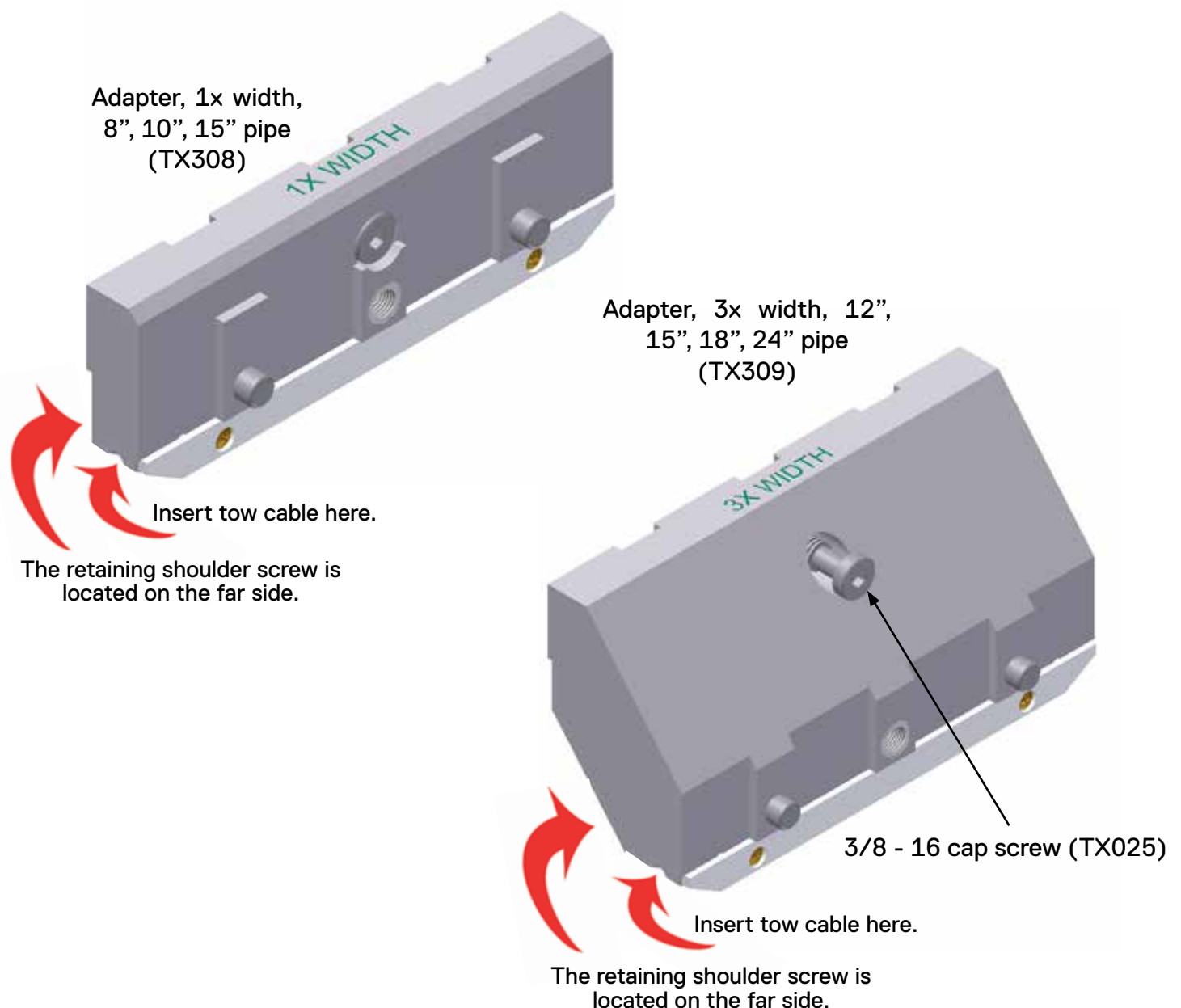
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7

To switch tow cable anchors:

When operating in 8 inch or larger pipe configuration, it is necessary to move the tow cables from the anchors on the motor/transmission housing to the anchors on the adapters closest to the tracks. Freeing the cable ends from the transmission is just a matter of removing the retaining shoulder screw. It should be noted that these screws are not captive and can be easily lost. It is advisable to screw them back in their cavities as soon as the cable is removed. Mounting the cable in the adapter is merely a matter of pushing its end in the cavity and screwing back the shoulder screw until tight.

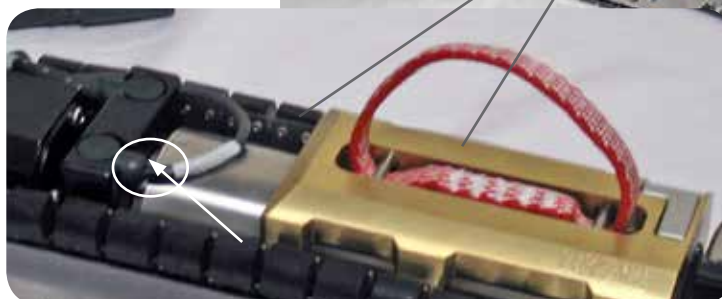


ELECTRICAL CONNECTIONS FOR THE CAMERAS:

NOTE: Before performing any of the following connections, make sure that the PCU (Power Control Unit) and other components are OFF (0).

CUES OZIII Optical Zoom Pan & Tilt Camera is 'plug and go' and can be easily installed on the Ultra Shorty III. To connect the OZIII to the transporter, perform the following:

1. Ensure that all of the equipment is OFF before making any of the necessary connections involving the transporter or camera. Visually inspect the connectors to ensure that they are clean and free of debris prior to mating. Clean with commercially available electrical contact cleaner, if necessary.
2. Locate the indicator line on the top of the camera tube.
3. With the camera indicator line facing upwards, Insert the camera into the transporter camera cradle while depressing the camera locking latch. Ensure that the camera indicator line is aligned with the transporter indicator line (located on top of the bulkhead plate).
4. Ensure that the camera and transporter indicator lines are visible in the opening at the top of the camera cradle.



- 4 Ensure that the camera indicator line is visible in the camera cradle opening.

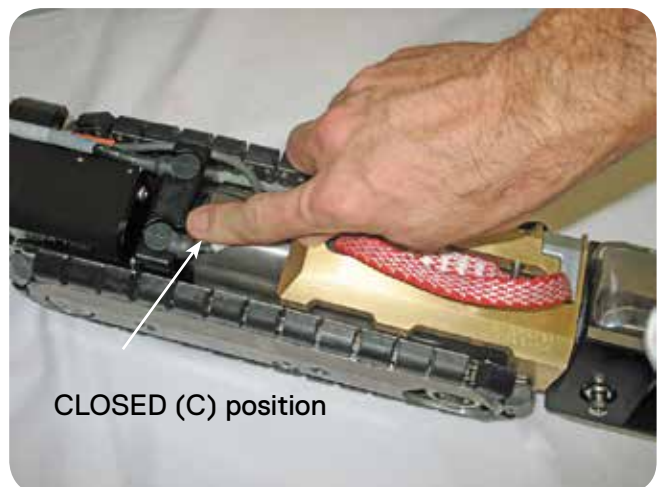
4 SYSTEM SET-UP & INSTALLATION

Locate the 'C' and 'O' that's located on the stainless steel plate (near the connector) inside the cradle.

5. Using the camera connector tool, P/N MZ073TL, move the transporter locking connector ring to the OPEN (O) position. Slide the camera in until it's docked in the bulkhead.
6. Ensure that the camera is secured to the transporter connector and the forward camera locking latch is engaged with the camera bulkhead.



7. Using the camera connector tool, P/N MZ073TL, move the locking ring to the CLOSED (C) position to lock the camera into place. When finished, remove the Camera Connector Tool from the unit and stow.



SYSTEM SET-UP & INSTALLATION

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TRANSPORTER CONTROLLER OPERATIONS:

First make sure that the power has been turned off. Then make all the necessary electrical connections including the camera. Attach the tow cables and ensure that the TV cable has at least three or four inches of slack when the tow cables are taut. Set the transporter into the pipeline and power up the system.

When moving the Ultra Shorty III transporter, gradually adjust the controller. When you intend to advance at full throttle, gently accelerate to speed. This helps to reduce wear on the motor and other electrical components. When you stop moving forward, you are in freewheel forward.

When changing from forward to reverse freewheel, allow the transporter to come to a complete stop before moving in the opposite direction. After the transporter has stopped, drive the motor in reverse to momentarily disengage the clutch. The transporter is now ready to freewheel. Now you can use your winch or reel to pull the transporter back towards the control point and entry manhole.

NOTE: The Ultra Shorty III was not designed to plow through heavy grease or other obstructions. Damage to the equipment will result from improper use.

MAINTENANCE:

The Ultra Shorty III transporter is a sensitive piece of electronic equipment. Power surges and abrupt shut downs can cause it to fail. We strongly suggest that you keep your mobile generator properly adjusted. The generator should deliver a steady 110 to 120 volts. Should the Engineering Panel indicate that your generator is operating outside these guidelines, see your Generator Manual for the proper adjustments or contact authorized service personnel.

The camera and transporter **must** be cleaned with detergent and water after each day of use. After cleaning your Ultra Shorty III, oil the tracks with heavy chain lubricant. This will keep the tracks clean, functional and well protected from the outside environment.

Before operating your Ultra Shorty III, always check the cables coming out of the motor housing. Look for cuts or worn areas. If wear on the cables is discovered, the cables should be repaired or replaced immediately. Do not operate the Ultra Shorty III transporter with worn or cut cables.

Never remove the cover from the motor or controller. Each of these areas contains delicate electronic components. ***Opening any of these areas will result in the warranty being voided.***



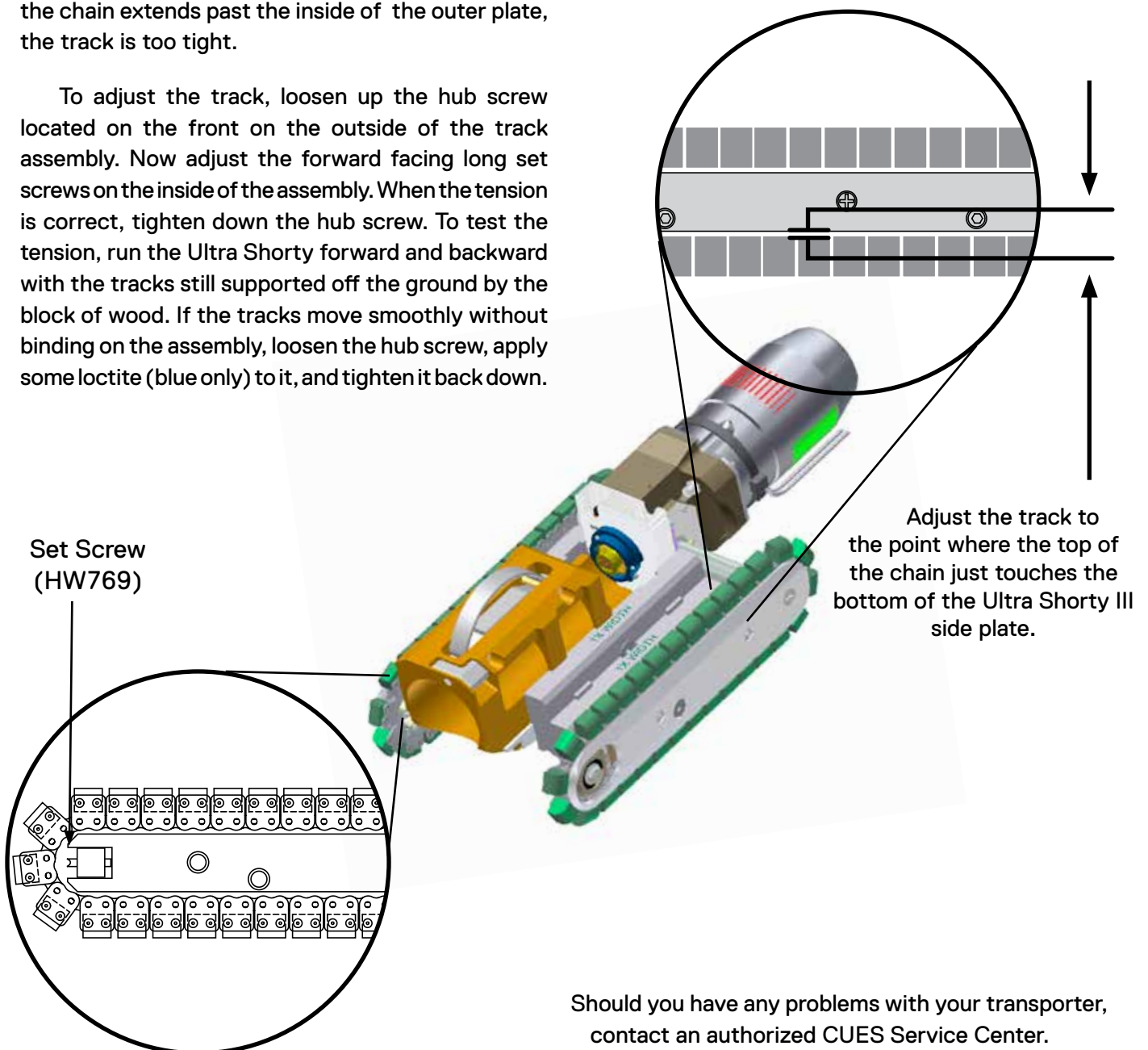
CHAIN TENSION ADJUSTMENT:

Chain tension must be checked before each use. To adjust the track tension, first place the Ultra Shorty III on a block of wood (2" x 4" x 12"). Both tracks should straddle the block with tracks hanging free.

Observe the slack in the track. At the center of the transporter there should be no gap between the top of the chain and the bottom of the outer plate. If there is a gap, the track is too loose. If the top of the chain extends past the inside of the outer plate, the track is too tight.

To adjust the track, loosen up the hub screw located on the front on the outside of the track assembly. Now adjust the forward facing long set screws on the inside of the assembly. When the tension is correct, tighten down the hub screw. To test the tension, run the Ultra Shorty forward and backward with the tracks still supported off the ground by the block of wood. If the tracks move smoothly without binding on the assembly, loosen the hub screw, apply some loctite (blue only) to it, and tighten it back down.

NOTE: Lubricating the tracks will help to protect them from the harsh environment of the pipeline and prevent friction within the track system. However, a track that is too tight, even though well oiled, will overload the motor and cause a malfunction. Poorly cleaned or maintained tracks can lead to equipment failure. Improper maintenance can also lead to your warranty being voided.



Should you have any problems with your transporter, contact an authorized CUES Service Center.

ADAPTING THE ULTRA SHORTY III TRANSPORTER TO DIFFERENT SIZE PIPE

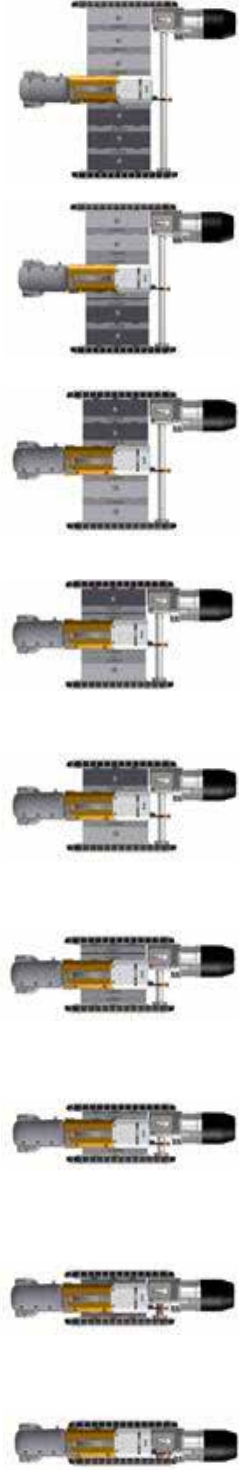
As the transporter is taken apart to adapt to different pipe sizes, debris and sand may accumulate on the mating faces of the cradle and the expanders, causing the mating faces to no longer be in contact and no longer be parallel. If this is the case, a small angle is formed which increases significantly the space between the two tracks resulting in the shaft extension potentially getting loose and falling off. A hosing or wiping down of the mating faces when the transporter is disassembled should prevent the problem.

The following table shows the quantity and type of shaft extenders/pipe adapters and braces needed for the different pipe sizes.

ULTRA SHORTY III CONFIGURATIONS

CONFIGURATION	6 INCH	8 RELINED	8 INCH	10 INCH	12 INCH	15 INCH	18 INCH	21 INCH	24 INCH
KIT NUMBER		TX919	TX919	TX919	TX919	TX919	TX911	TX911	TX911
ADAPTERS xQTY		TX334 TX335	TX308 x2	TX308 x4 TX309 x2	TX309 x2	TX308 x2 TX309 x2	TX309 x4	TX308 x2 TX309 x4	TX309 x6
SHAFT EXTENDER		TX107	MC220-1	MC220-3	MC220-5	MC220-7	MC220-13	MC220-21	MC220-15
KIT NUMBER		TX903	TX903	TX903	TX903	TX903	TX912	TX912	TX912
ADAPTERS xQTY		TX334 TX335	TX330 TX331	TX330 x2 TX331 x2	TX332 TX333	TX330 TX331 TX332 TX333	TX332 x2 TX333 x2	TX332 x2 TX333 x2	TX332 x3 TX333 x3
SHAFT EXTENDER		TX107	TX336-8	TX336-10	TX336-12	TX336-15	TX336-18	TX336-21	TX336-24
CONNECT STRIP & SCREWS						TX337-15 WM098-1 x2	TX337-18 WM098-1 x2	TX337-21 WM098-1 x2	TX337-24 WM098-1 x2
MOTOR CONN 4-PIN CABLE	TX342 8.5 LG	TX342 8.5 LG	TX342 8.5 LG	TX342 8.5 LG	TX342 8.5 LG	TX342 8.5 LG	TX342-1 16.0 LG	TX342-1 16.0 LG	TX342-1 16.0 LG
WEIGHT w OZ III	32.45 lbs	33.63 lbs	34.8 lbs	37.2 lbs	39.6 lbs	42.0 lbs	46.85 lbs	49.15 lbs	53.91 lbs
WEIGHT wo OZ III	23.6 lbs	24.8 lbs	25.95 lbs	28.35 lbs	30.75 lbs	33.15 lbs	38 lbs	40.3 lbs	45.06 lbs

WTR III
ALTERNATE



ULTRA SHORTY III - PIPE ADAPTER KITS

TX919 - Kit, Extension, for 8" - 15" Pipe, Ultra Shorty III			
0001	SHAFT,EXTENDER,DRIVE,8"PIPE	MC220-1	1
0002	SHAFT,EXTENDER,DRIVE,10"PIPE	MC220-3	1
0003	SHAFT,EXTENDER DRIVE,F/12"PIPE	MC220-5	1
0004	SHAFT,EXTENDER,DRIVE,15"PIPE	MC220-7	1
0005	ADAPTER ASSY,SINGLE WIDTH,USIII,AL	TX308	4
0006	ADAPTER ASSY,TRIPLE WIDTH,USIII,AL	TX309	2
0007	SKID PLATE,8"+TRCK/18"+WHL,WTRIII	TX093	1
0008	SCREW,FLAT,8-32X3/4	103063	2
0009	INSTR.SHT,SKID PLATE,WTRIII	TX093-INST	1
0010	ADAPTER ASSY,1X W,LH,BRASS,WTRIII	TX331-1	1
0011	ADAPTER ASSY,3X W,LH,BRASS,WTRIII	TX333-1	1

TX911 - Kit, Extension, for 18" - 24" Pipe, Ultra Shorty III			
0001	SHAFT,EXTENDER,DRIVE,18"PIPE	MC220-13	1
0002	SHAFT,EXTENDER,DRIVE,21" PIPE	MC220-21	1
0003	SHAFT,EXTENDER,DRIVE,24"PIPE	MC220-15	1
0004	ADAPTER ASSY,TRIPLE WIDTH,USIII,AL	TX309	4
0005	CABLE ASSY,4-PIN,WTRIII/USIII,16"L	TX342-1	1
0006	SKID PLATE,8"+TRCK/18"+WHL,WTRIII	TX093	1
0007	SCREW,FLAT,8-32X3/4	103063	2
0008	INSTR.SHT,SKID PLATE,WTRIII	TX093-INST	1
0009	ADAPTER ASSY,3X W,LH,BRASS,WTRIII	TX333-1	1

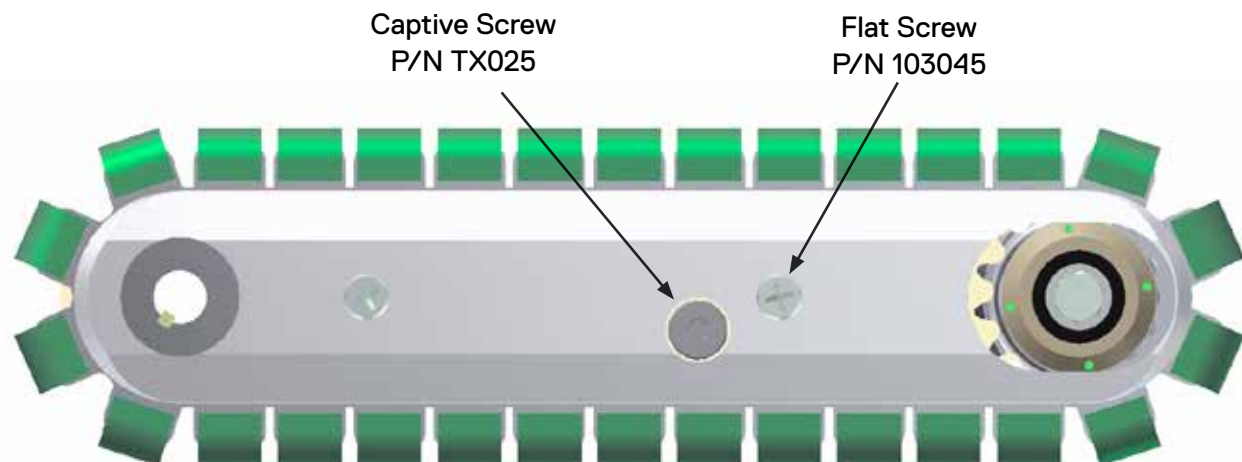
NOTES:

MC224 (KIT,ACCESSORIES,SHORTY2,FWC) can be used with USIII.

MC907 (SPROCKET ASSY,FRONT,U-SHORTY & 21) can be used with USIII.

MC908 (DRIVE ASSY,REAR,U-SHORTY & 21) can be used with USIII.

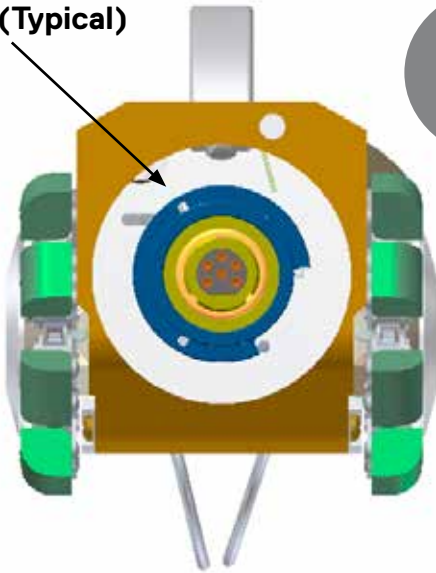
MC226 (MASTER LINK,F/CHAIN MC207,SHORTY2) can be used with USIII.



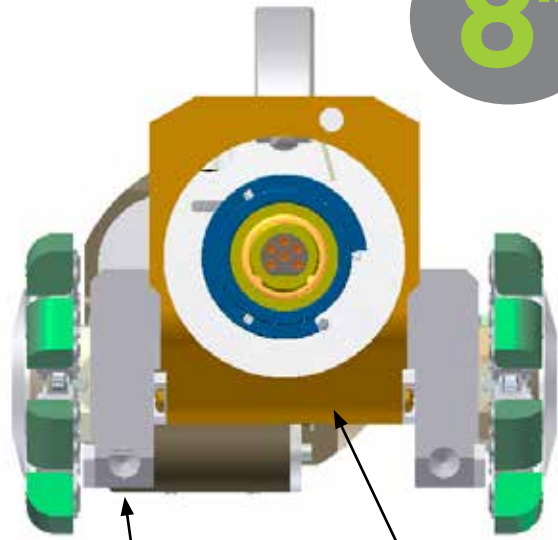
5 OPERATING THE TRANSPORTER

Camera (Typical)

6"



8"

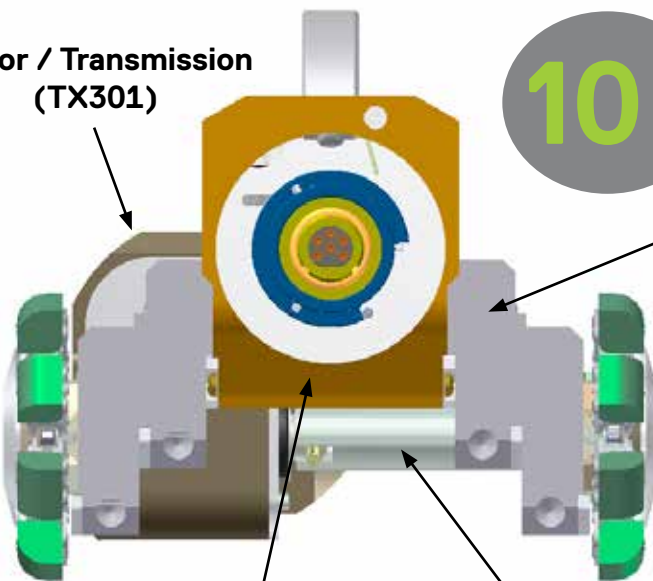


Single width pipe adapter
(TX308) x2

Shaft extender, 8"
(MC220-1 not seen)

Motor / Transmission
(TX301)

10"

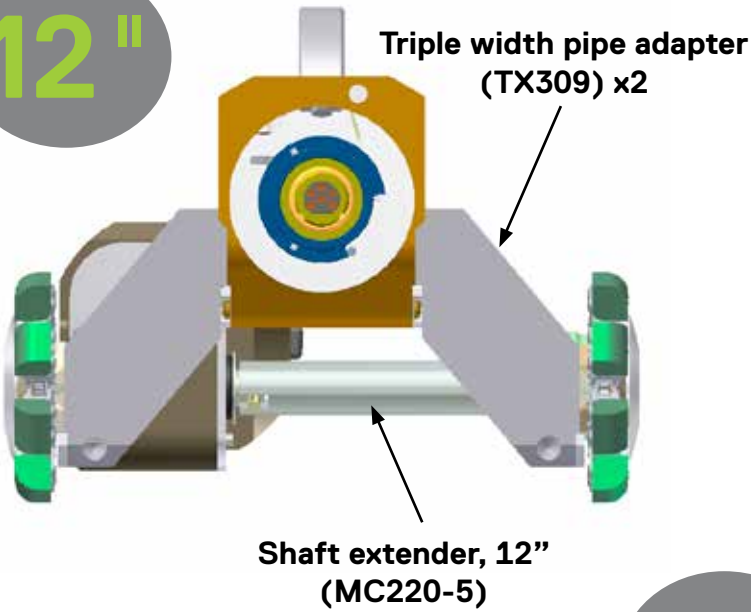


Single width pipe adapter
(TX308) x4

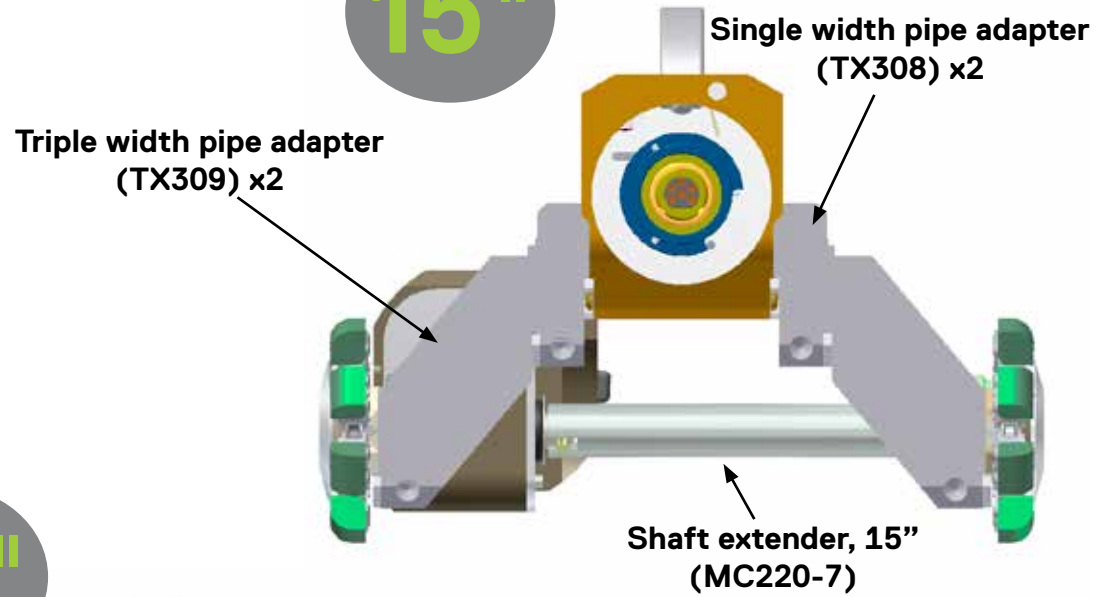
Camera cradle
(TX005)

Shaft extender, 10"
(MC220-3)

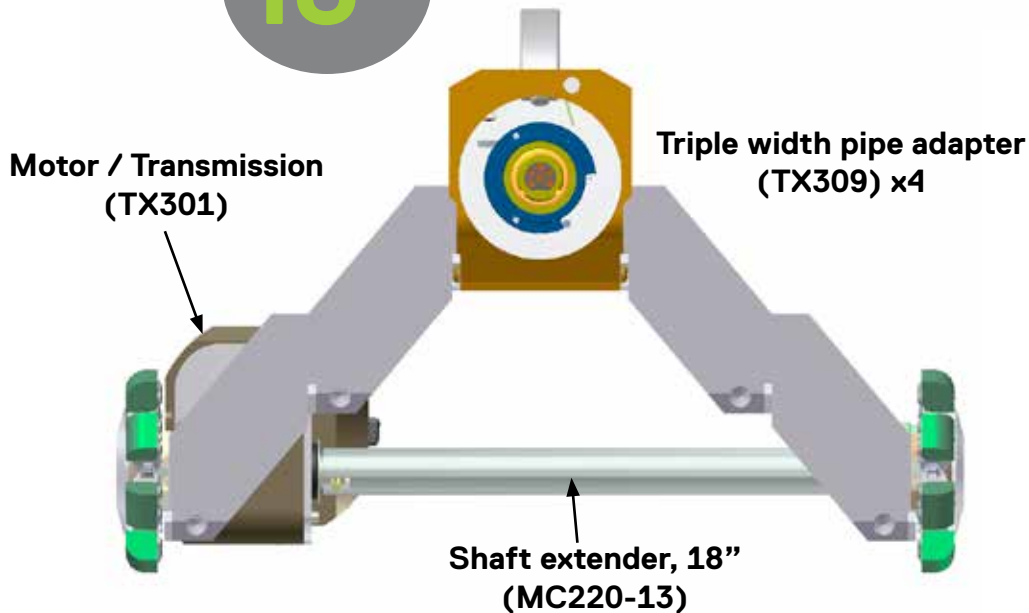
12"



15"

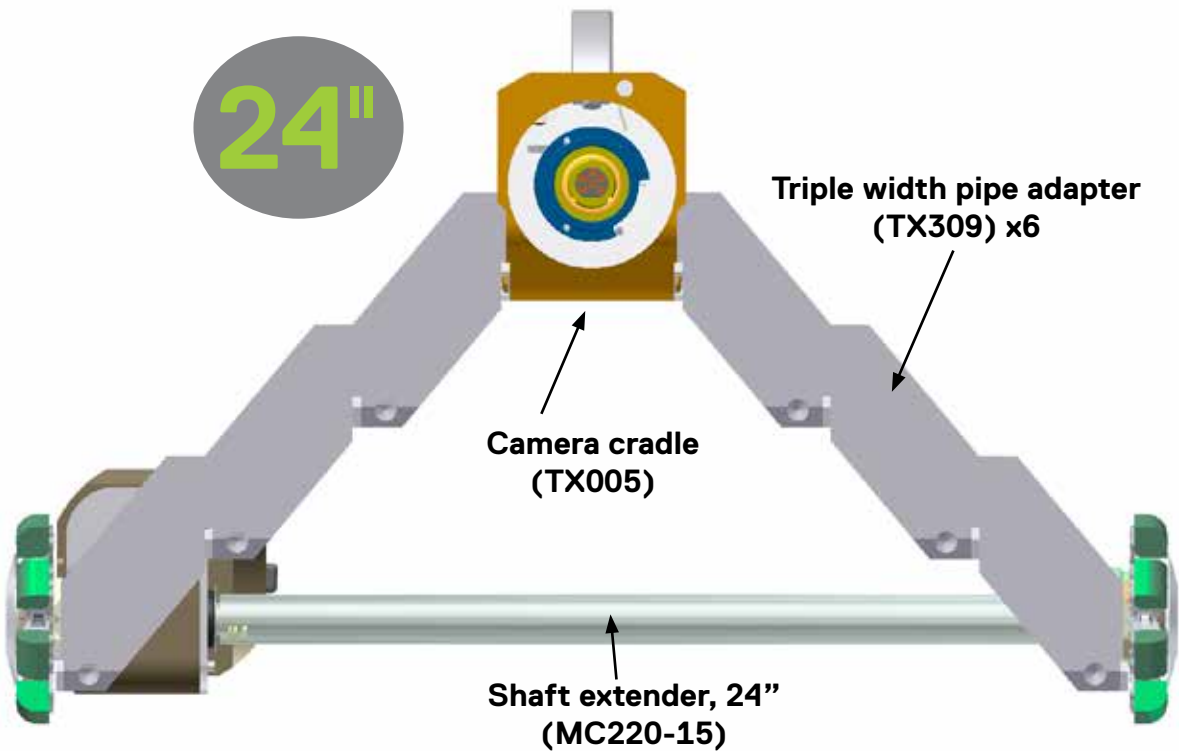
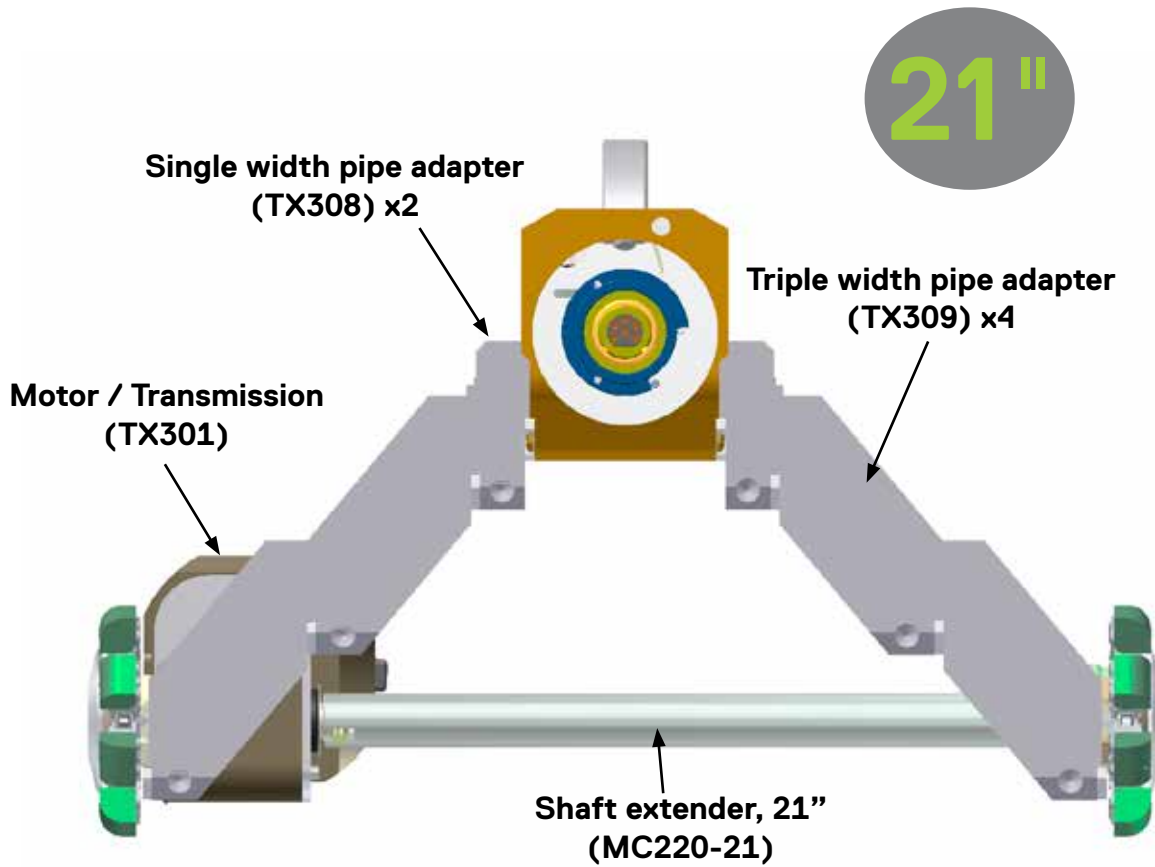


18"



5

OPERATING THE TRANSPORTER

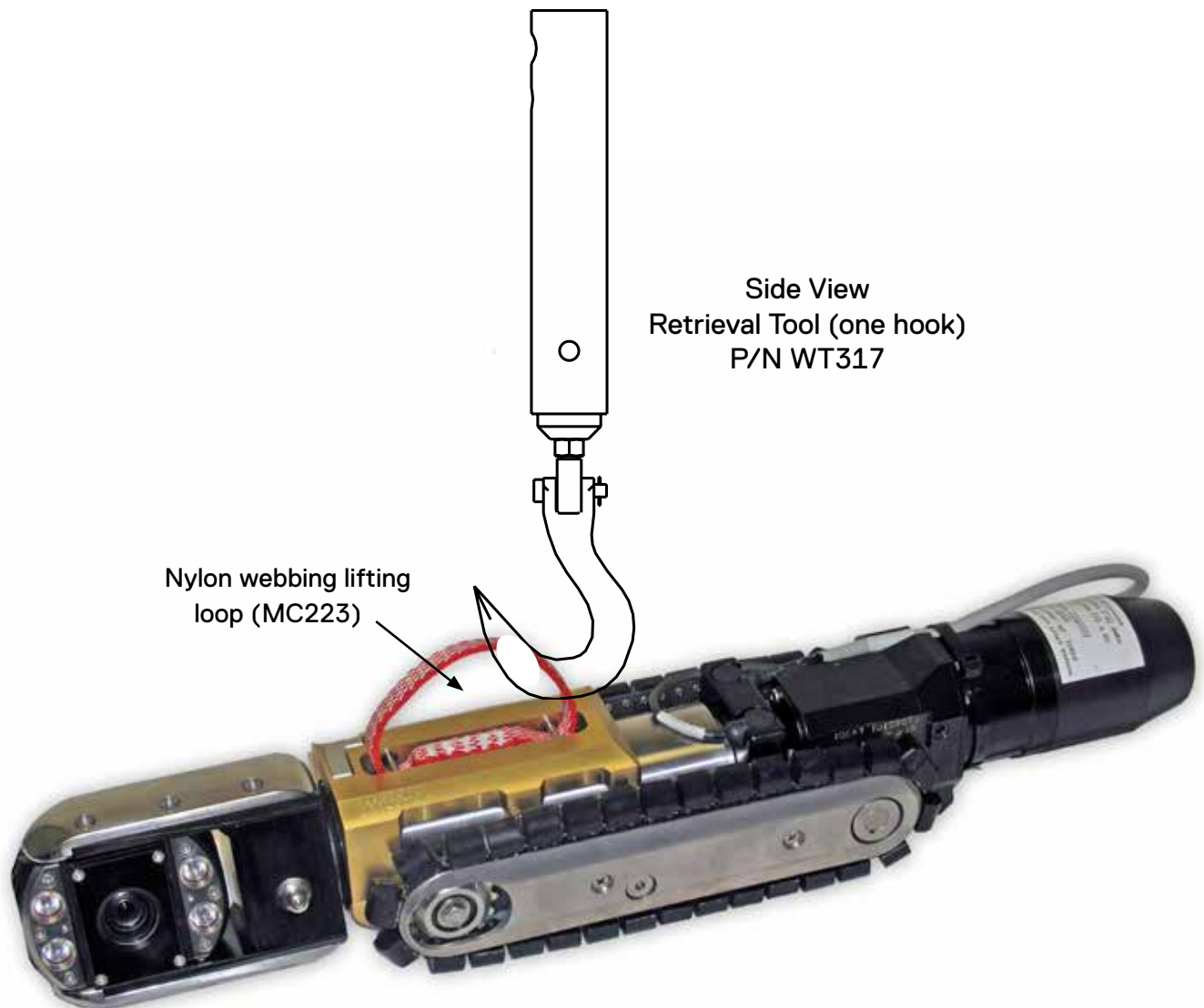


AFTER THE INSPECTION: Retrieving the Ultra Shorty III

Always shut the system down before retrieving the Ultra Shorty III from the manhole. This will help to protect you and your equipment from electrical shock. Always carry the Ultra Shorty III transporter by its lift strap or track assembly rather than the TV cable or camera.

If desired, use the optional Retrieval Tool, P/N WT317, shown on this page. The retrieving tool is an extendible pole with one hook at the end, which is used to catch the nylon webbing lifting loop (P/N MC223) that's included with the transporter.

The retrieval tool can be expanded to the needed length by pressing the release button. Make sure that the pole is firmly locked at the new length before attempting to lift the transporter.



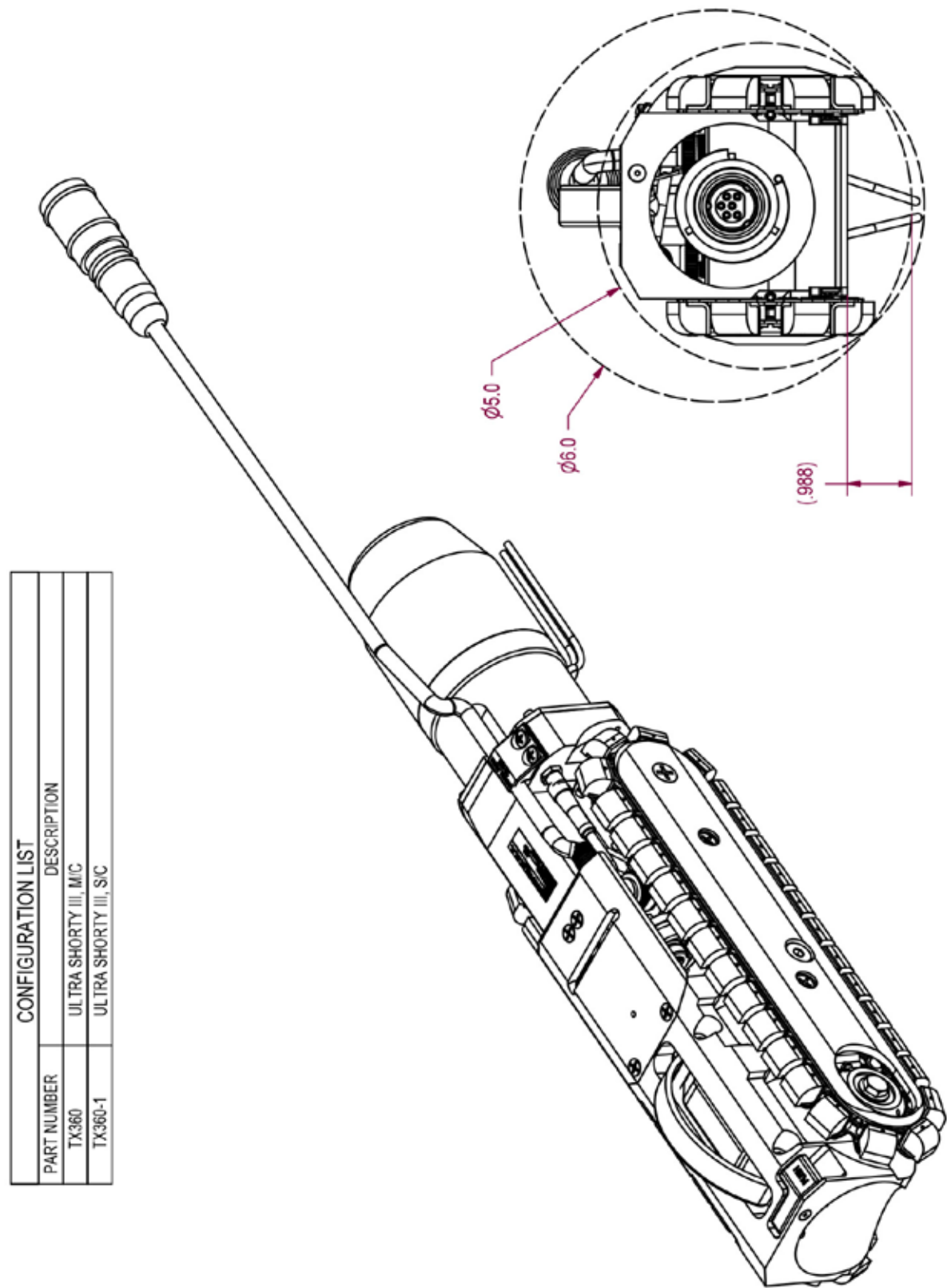


Figure 1a. Transporter Assembly, Ultra Shorty III, TX360

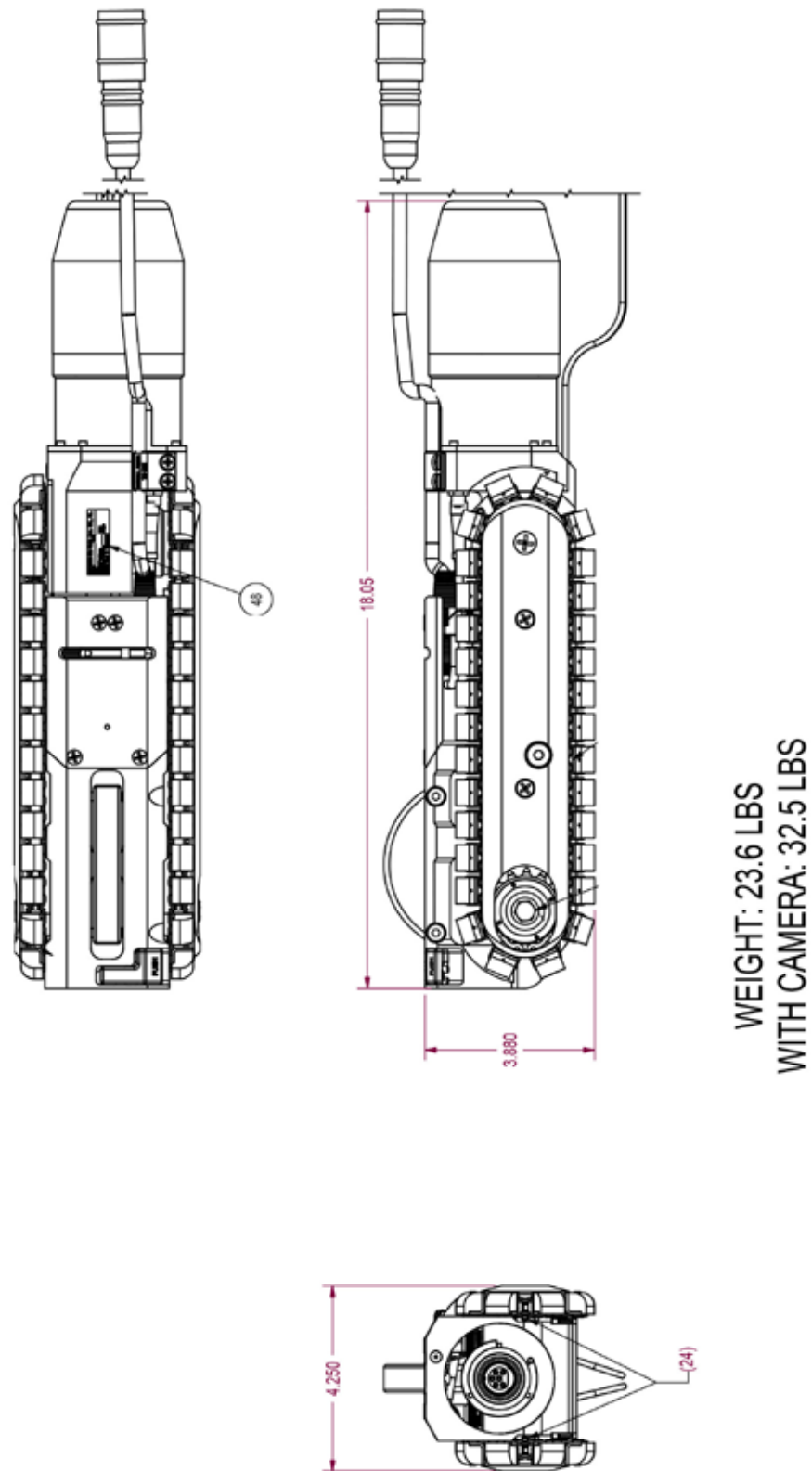


Figure 1b. Transporter Assembly, Ultra Shorty III, TX360

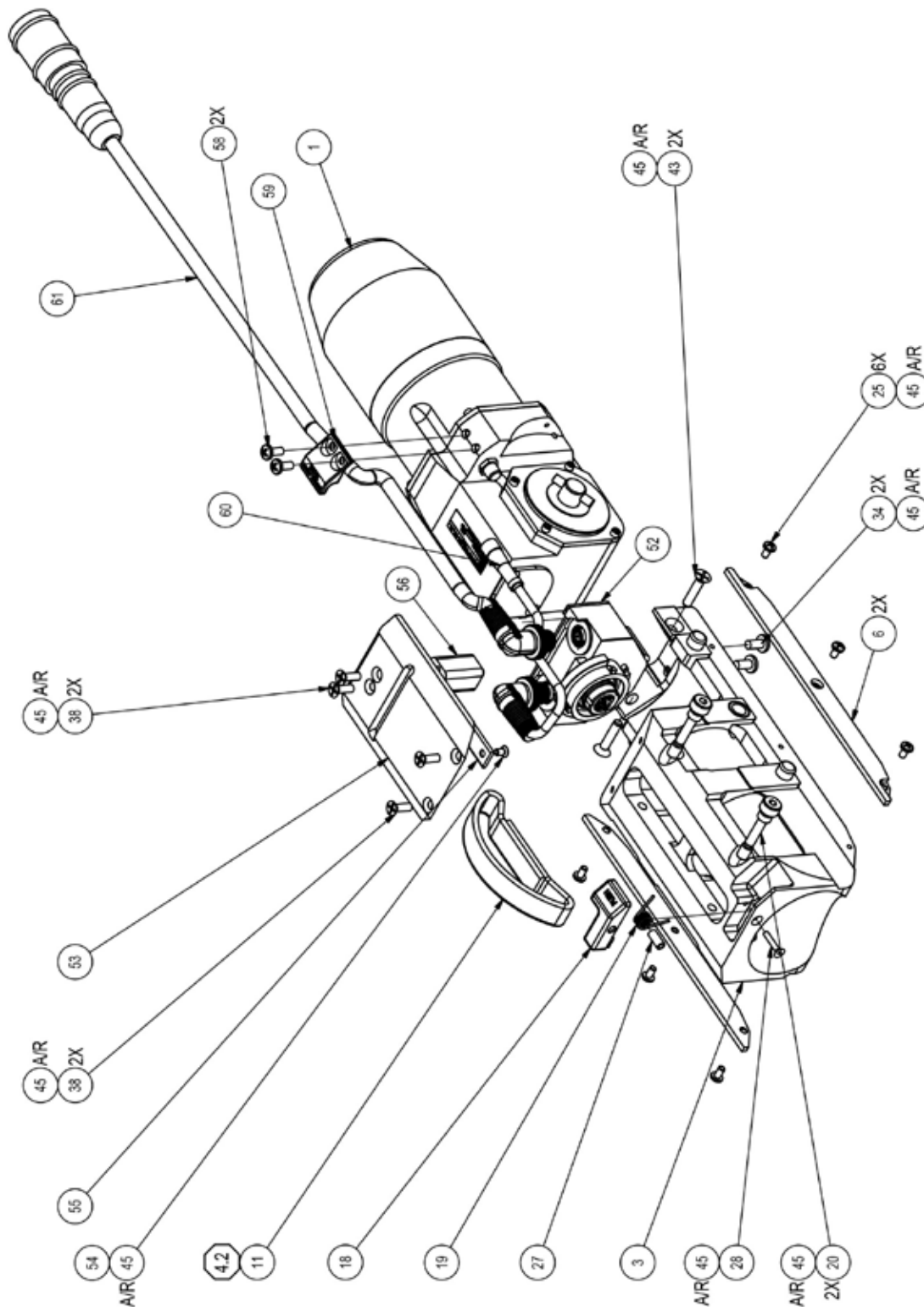


Figure 1c. Transporter Assembly, Ultra Shorty III, TX360

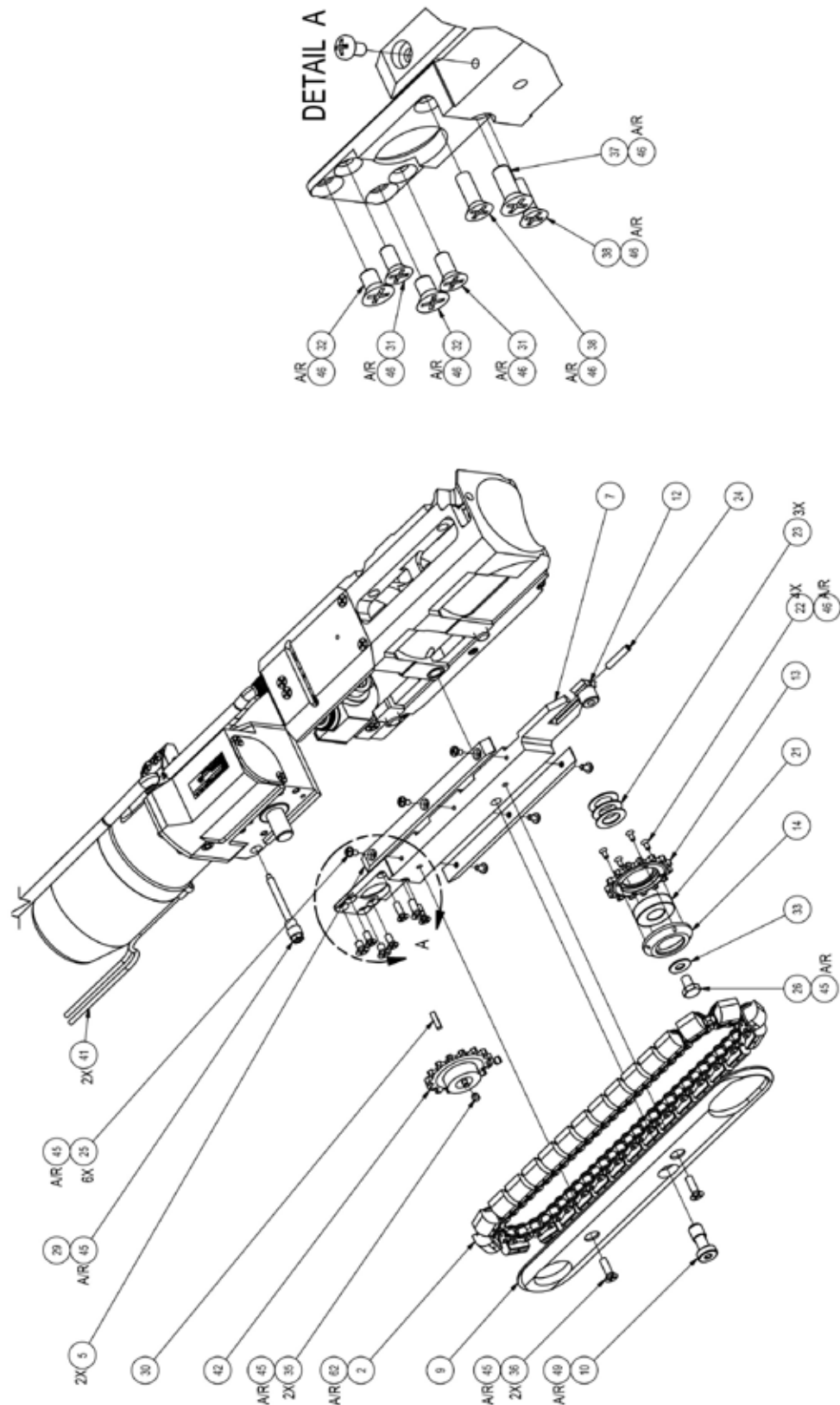


Figure 1d. Transporter Assembly, Ultra Shorty III, TX360

Transporter Assembly, Ultra Shorty III, TX360

Fig#	Description	P/N	Qty
1-	Transporter Assembly, Ultra Shorty III (<i>See Fig. 1</i>) Rev. C	TX360	1
0001	TRANS/MTR,FWD/NEU/REV,USIII	TX301	1
0002	TRACK ASSY,RND CLEAT, 30 CNT, USIII	TX305	2
0003	BODY,USIII	TX005	1
0004	GUIDE PLATE,PORTSIDE,USIII	TX007	1
0005	WEARSTRIP,TOP AND BOTTOM,USIII	TX008	4
0006	WEARSTRIP,SIDE,USIII	TX009	2
0007	PLATE,MOTOR MTG,SPRCKT,USIII	TX010	1
0008	PLATE,OUTER,PORT,USIII	TX011	1
0009	PLATE,OUTER,STARBOARD,USIII	TX012	1
0010	SCREW,CAPTIVE,LOW,3/8 X.83,17-4SS	TX025	2
0011	LOOP,LIFTING,WEBBING,U-SHTY,WTR,CPR	MC223	1
0012	SPINDLE,IDLER SPROCKET	MC267	2
0013	SPROCKET,35P,15T,FACE MOUNT	MC268	2
0014	HUB,IDLER SPROCKET	MC269	2
0015	SPROCKET,DRIVE,#35,15T,FWC	MC270	1
0016	SPINDLE,DRIVE SPROCKET COUPLING	MC272	1
0017	COUPLING,TRANSMISSION,FWC	MC273	1
0018	BUTTON,LATCH CAMERA	WM086	1
0019	SPRING,TORSION,.357 OD X .045,MOD	WM102	1
0020	SCREW,SHOULDER LIFT STRAP,CPR	WM107	2
0021	BEARING,SEALED.5B X 1.125ODX.312THK	HW018	3
0022	SCREW,FLAT,4-40X5/16,SS	HW266	8
0023	WASHER,1/2IDX7/8ODX1/32THK,SST	HW267	6
0024	SCREW,SET,8-32X1LG,LOK,CONEPT	HW769	2
0025	SCREW,PAN HD,6-32 X 1/4,BRASS,PHIL	HW1224	18
0026	SCREW,CAP,HX,1/4-28X3/8,SS,NYL PLT	HW1069	2
0027	SPACER,.188 OD X .115 ID X .406 LG	HW1581	1
0028	SCREW,CAP,4-40 X 5/8LG,FH,SS	HW1582	1
0029	STUD,RETAINING,TOW CABLE,WTRIII	TX112	1
0030	KEYSTOCK,1/8"SQ X1/2LG,ZINC PLATED	8874	1
0031	SCREW,FLAT,8-32X3/8 PHIL SST	100146	2
0032	SCREW,FLATHEAD,10-32X5/16 PHIL SST	101426	2
0033	WASHER,FLAT,1/4"SST	101736	2
0034	SCREW,PAN,10-32X3/8 SST	103031	2
0035	SCREW,SET,10-32X3/16 SST	103038	2
0036	SCREW,FLAT,10-32X5/8 PHIL SST	103045	4
0037	SCREW,FLAT,10-32X1/2 SST	103052	1
0038	SCREW,8-32X1/2 FL,PH,SS	103062	6
0039	SCREW,FLATHEAD,1/4-20X1/2 PHIL SST	103079	1
0040	SCREW,CAP,SKT HD,4-40X1/2,SST	105061	4
0041	CABLE,TOW,F/WTRIII & USIII,54"	120165	2
0042	SPROCKET,35P 15T 1/2B	300432	1

Transporter Assembly, Ultra Shorty III, TX350

Fig#	Description	P/N	Qty
1-	Transporter Assembly, Ultra Shorty III (<i>See Fig. 1</i>) Rev. C	TX360	1
0043	SCREW,FLAT,10-32X7/8,PHILLIP,SS	712444	2
0044	MRO-LUBRICANT,O-RING 2 OZ TUBE	439986	1
0045	MRO-REMOVABLE LCK,ND 121200-50,BLUE	440061	1
0046	MRO-PERMANENT LOCK,ND 140500-2,RED	CS238	1
0047	TOOL,CHISEL,5/32TIP X 5/16HEX X5L	HW1886	1
0048	LABEL,THERMAL XFR,1.500"W X .500"H	CS221	1
0049	MRO-ANTI-SEIZE,LPS NICKEL,P/N 03908	CS407	1
0050	MANUAL,ULTRA SHORTY III	TX901	1
0051	INSTRUCTION SHEET,ULTRA SHORTY	MC253	1
0052	BULKHEAD ASSY,WTRIII/USIII	TX345	1
0053	GUARD,CONNECTOR PROTECTIVE,WTRIII	TX084	1
0054	SCREW,FLT UNDCUT,6.32X.25,18-8,SS	HW1975	1
0055	PLATE,CABLE HOLDER,WTR III	TX092	1
0056	BUMPER BLOCK,CONN.GUARD PLT,WTRIII	TX090	1
0058	SCREW,PAN,8-32X3/8 PHIL SST	103065	2
0059	CLAMP,CABLE,USIII	TX094	1
0060	CABLE ASSY,4-PIN,WTRIII/USIII,8.5"L	TX342	1
0061	CABLE ASSY,12P>8P,WTR3/US3/OZ3 ADAP	TX343	1
0062	MRO-LUBRICANT,LPS CHAINMATE,11-OZ	CS478	1

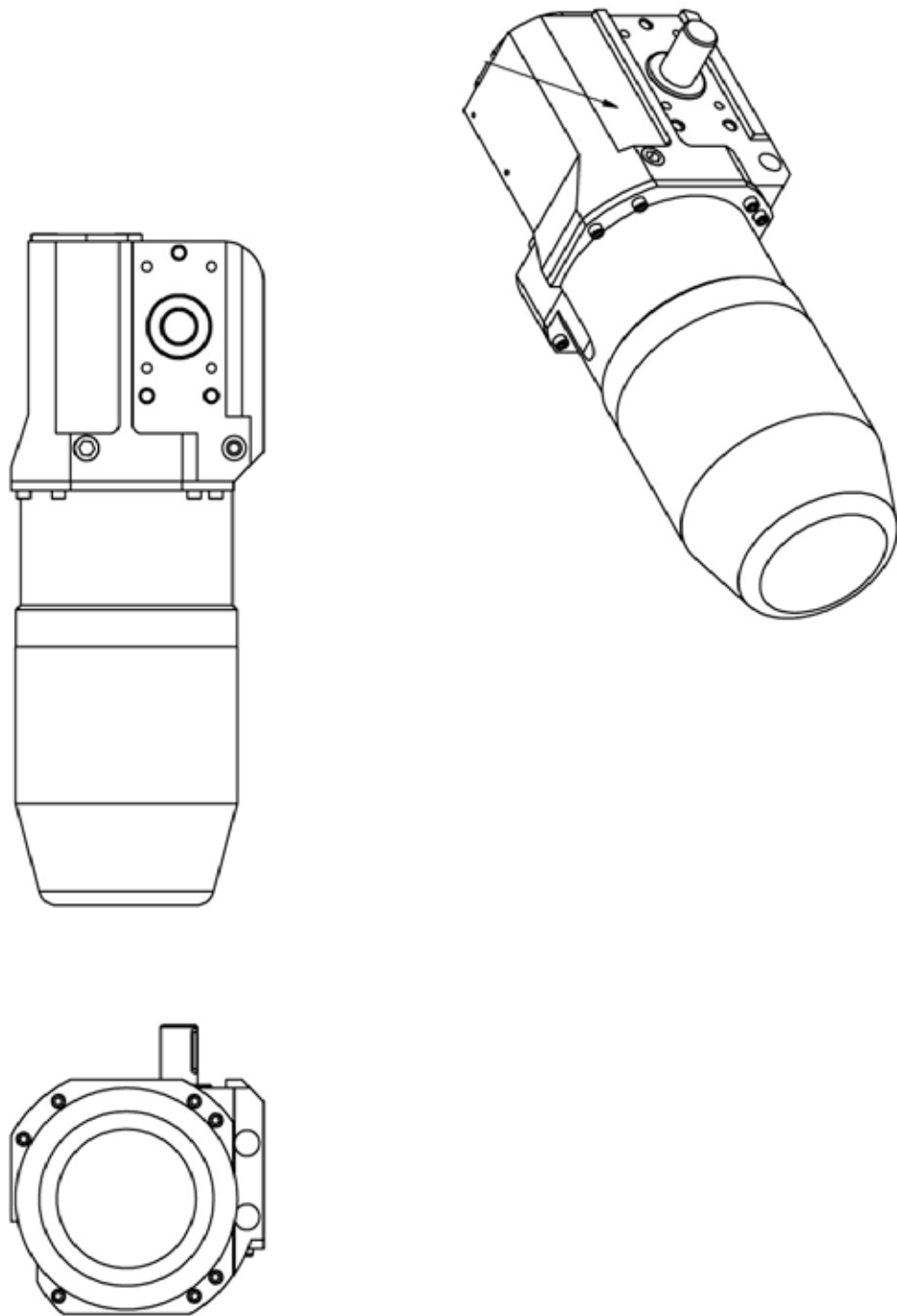


Figure 2a. TRANS/MTR,FWD/NEU/REV, USIII, TX301

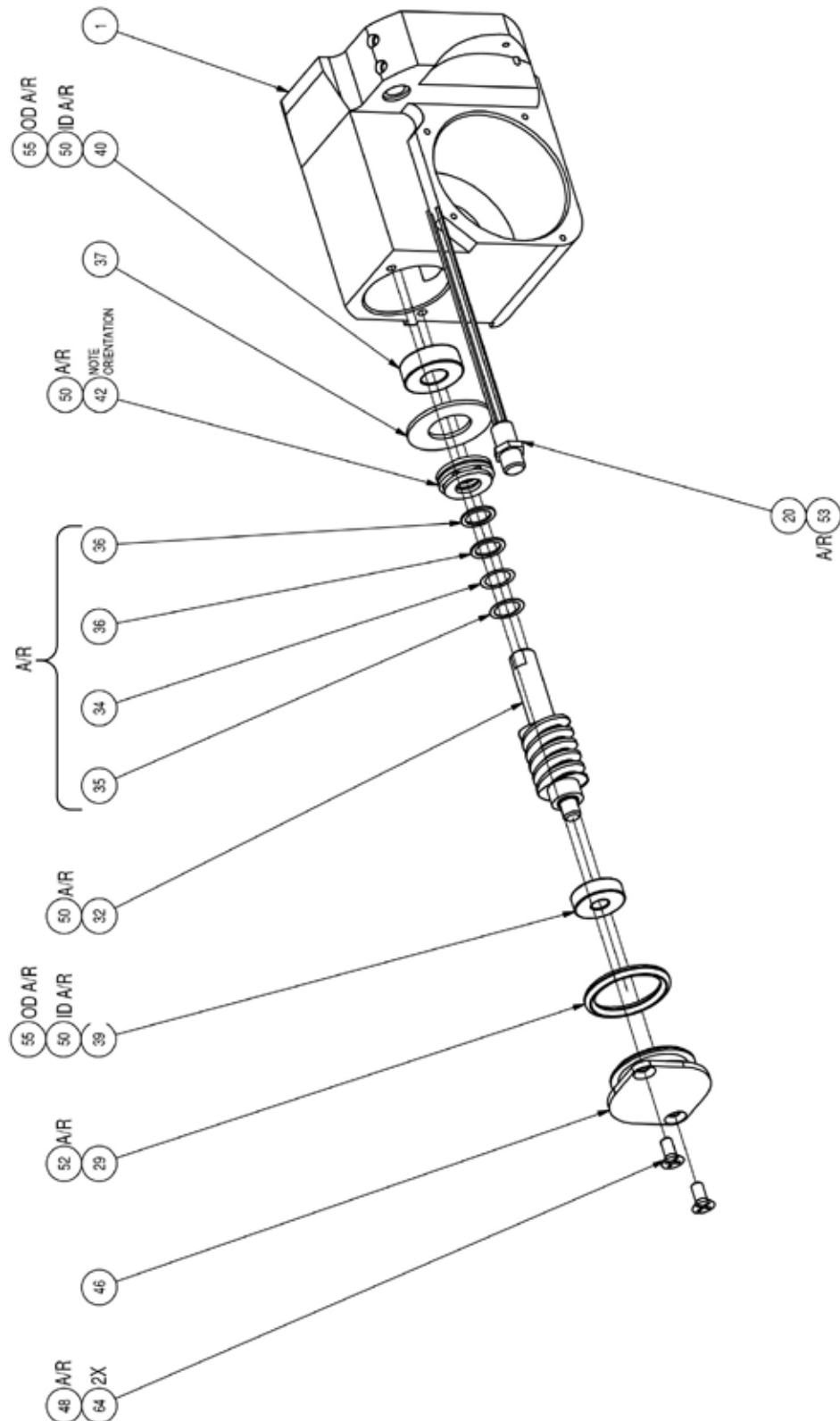


Figure 2b. TRANS/MTR,FWD/NEU/REV, USIII, TX301

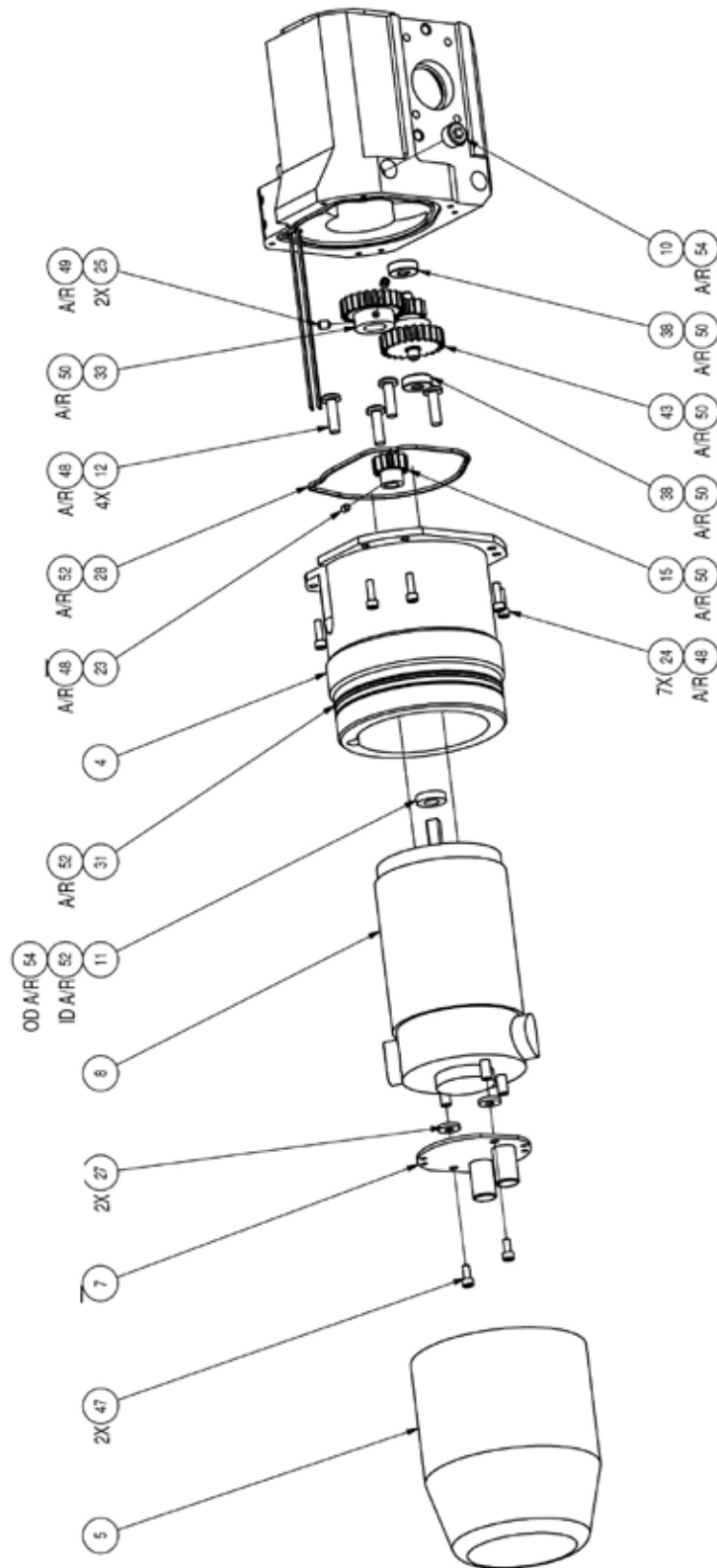


Figure 2c. TRANS/MTR,FWD/NEU/REV, USIII, TX301

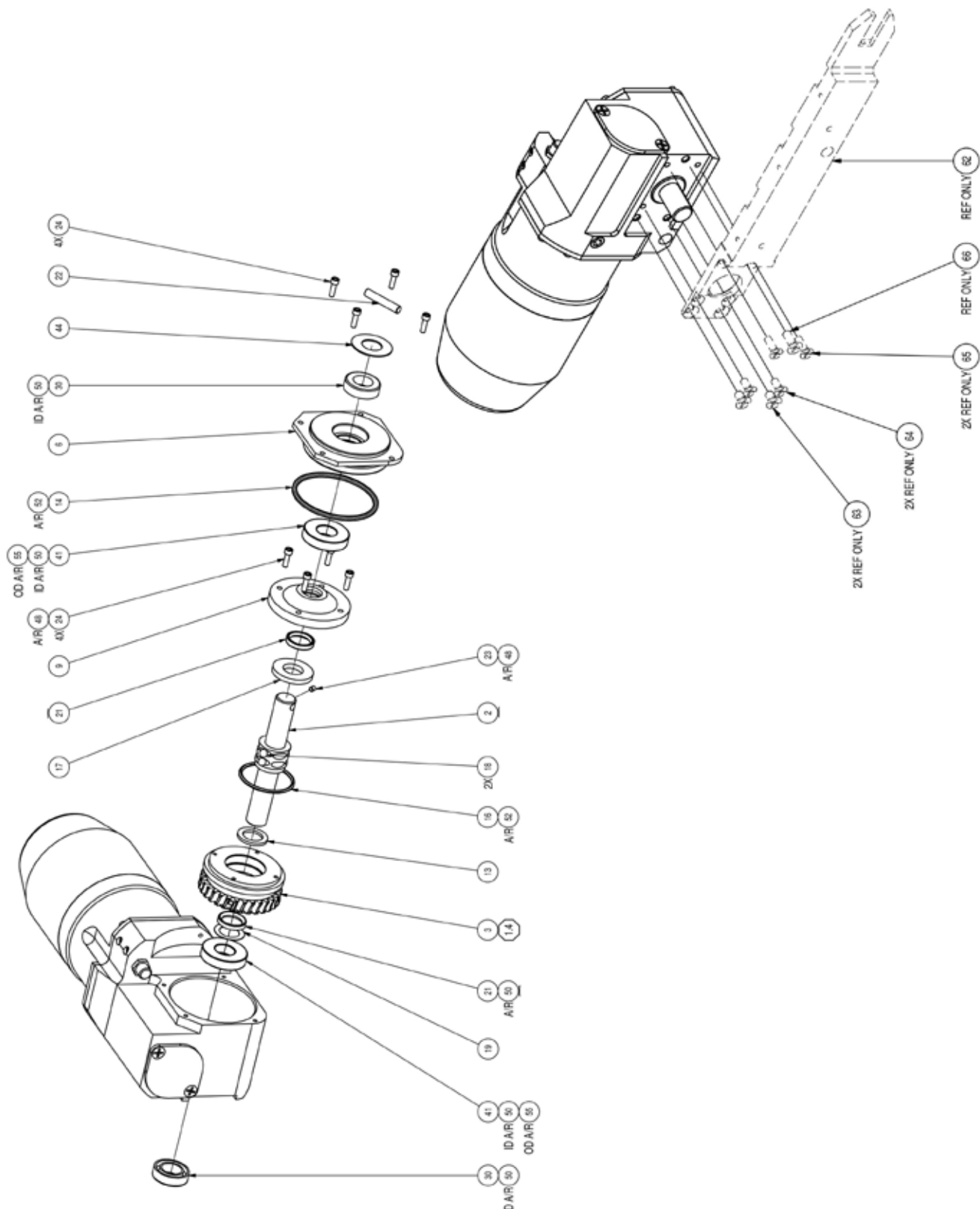


Figure 2d. TRANS/MTR,FWD/NEU/REV, USIII, TX301

TRANS/MTR,FWD/NEU/REV, Ultra Shorty III, TX301

Fig#	Description	P/N	Qty
1-	TRANS/MTR,FWD/NEU/REV (See Fig. 2) Rev. J	TX301	1
0001	HOUSING,TRANSMISSION,USIII	TX001	1
0002	SHAFT,DRIVE,USIII	TX002	1
0003	CLUTCH ASSY,USIII	TX302	1
0004	MOUNT,MOTOR & TRANSMISSION,USIII	TX016	1
0005	MOTOR CAN,CONE,USIII,WTRIII,US21	TX023	1
0006	COVER,TRANSMISSION,USIII	TX026	1
0007	PCB ASSY,FILTER,NON-FUSED	WS406	1
0008	MOTOR,140VDC,.12HP,W/STANDOFF,TRANS	TL052	1
0009	COVER,CLUTCH,F/N/R	MC243	1
0010	PLUG,LOW PROFILE,1/8 NPT	MS039	1
0011	SEAL,OIL,.25 BORE X.5 OD .125THK	HW003	1
0012	SCREW,SEAL(8-32X9/16L)PHIL HEAD	HW004	4
0013	BEARING,THRUST,BRONZ,.502X.753X1/16	HW321	1
0014	O-RING,2-135,BUNA,195 IDX.103	HW438	1
0015	GEAR,DRIVE,SPUR,12T/24P,TEARDROP	HW552	1
0016	O-RING,2-026 BUNA	HW903	1
0017	BEARING,.502IDX1.004 ODX1/8THK	HW905	1
0018	BALL,BEARING,3/16DIA,TUNGSTEN CARBI	HW1052	2
0019	SHIM,.50 ID X.75 OD X.010THK,316SST	HW1128	1
0020	RECEPTACLE,4PIN,BH 45460-001	EL497	1
0021	SEAL,OIL,.500DIA X.685 BORE,.093	050681	2
0022	PIN,DRIVE SST .187X1"	097551	1
0023	SCREW,SET,4-40X1/8 SST	100050	2
0024	SCREW,CAP,SKT HD,4-40X3/8,SST	100054	15
0025	SCREW,SET,6-32X3/16 SST	100991	2
0026	SCREW,PAN,8-32X3/8 PHIL SST	103065	2
0027	WASHER.375X.136+.005-0IDX.062T,PHEN	HW2327	2
0028	O-RING,EP 2-038	130141	1
0029	O-RING,2-214,EP	130145	1
0030	SEAL,OIL,.5ID X.875 OD X.252THK	130305	2
0031	O-RING,2-039 EP	132215	1
0032	GEAR,WORM,W/SHAFT	299963	1
0033	GEAR,MODIFIED	299981	1
0034	SPACER,3/8IDX1/2 ODX.005 SST	300041	1
0035	SPACER,3/8"IDX.010	300044	1
0036	SPACER,SST,3/8ID X1/2 OD X.031 THK	300047	2
0037	SPACER,1.240 ODX.630IDX.060THK	300049	1
0038	BEARING,BALL,3/16 ID X 1/2 OD X5/32	300280	2
0039	BEARING,BALL,1/4 ID X 3/4 OD X 7/32	300281	1
0040	BEARING,BALL,SLD,3/8 IDX7/8 ODX9/32	300282	1
0041	BEARING,BALL,1/2 ID X 1-1/8 OD X1/4	300284	2
0042	BEARING,THRUST	300285	1
0043	GEAR,TANDEM	300407	1

TRANS/MTR,FWD/NEU/REV, Ultra Shorty III, TX301

Fig#	Description	P/N	Qty
1-	TRANS/MTR,FWD/NEU/REV (See Fig. 2) Rev. H	TX301	1
0044	SPACER,SPROCKET-TRANSPORTER	305071	1
0045	MRO-TIE,CABLE,14"X5/16"BLACK	440305	1
0046	HOUSING,BEARING,OUTER,TRANS,WTRIII	TX081	1
0047	SCREW,CAP,SKT HD,4-40X1/4,W/NYLOK	712389	2
0048	MRO-REMOVABLE LCK,ND 121200-2,BLUE	CS036	1
0049	MRO-PERMANENT LOCK,ND 140500-2,RED	CS238	1
0050	MRO-GREASE,MOBIL 1 SYNTHETIC	CS419	1
0051	MRO-LOCTITE 42540 F/PLASTIC	429791	1
0052	MRO-LUBRICANT,O-RING 2 OZ TUBE	439986	1
0053	MRO-SEALANT,POURABLE TRANSLUCENT	445066	1
0054	MRO-SEAL.HGH PRESS,ND 440400-50,BRN	445091	1

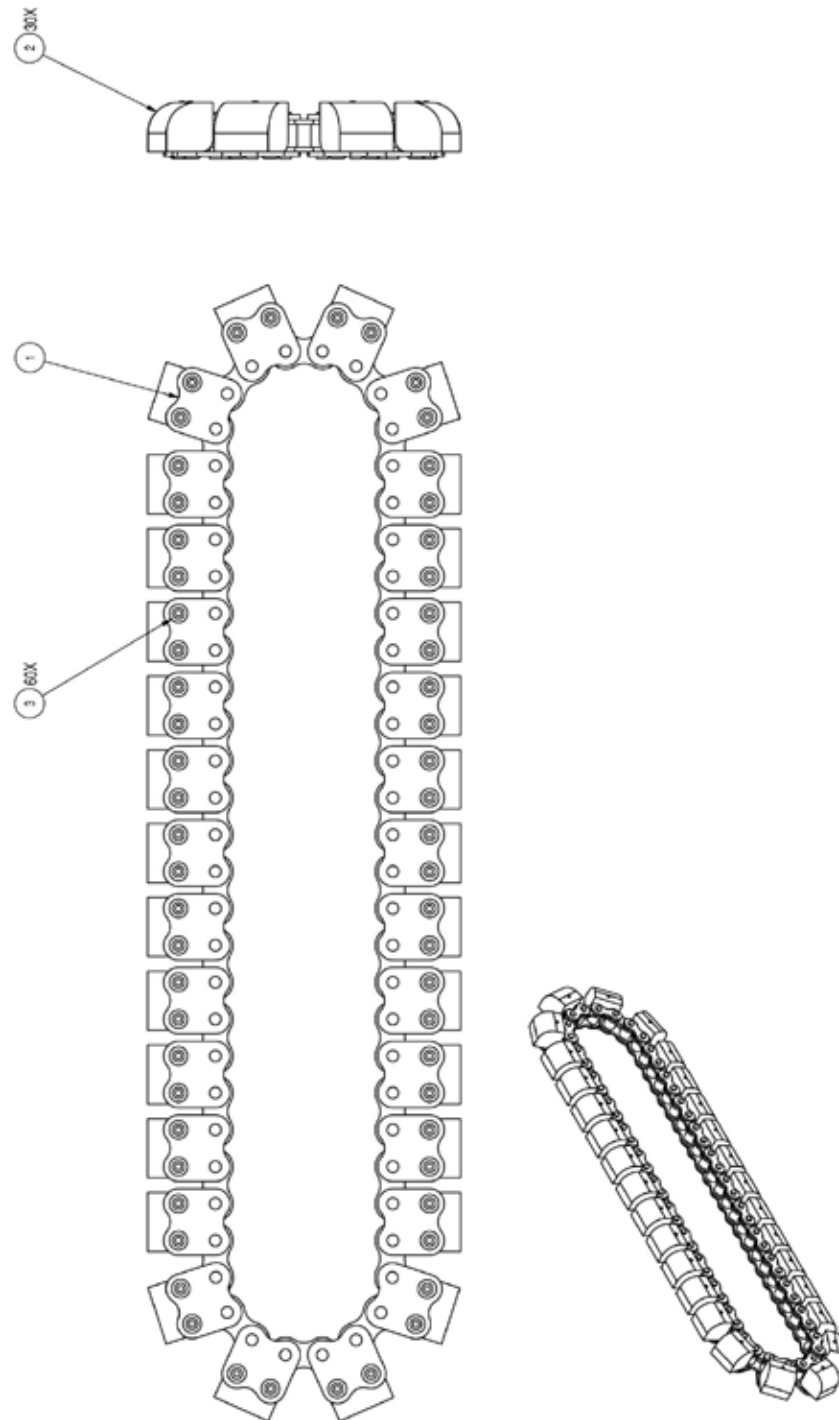


Figure 3. TRACK ASSY,RND CLT,60LINK,USIII, TX305

TRACK ASSY,RND CLT,60LINK,USIII, TX305

Fig#	Description	P/N	Qty
1-	TRACK ASSY,RND CLT,60LINK (See <i>Fig. 3</i>) Rev. A	TX305	1
-1	CHAIN,CARBON STL,TWO HOLE,60 LNK	MC207-3	1
-2	CLEAT ASSY,ROUNDED,TRANS.TRACK	MC206	30
-3	RIVET,3/32 X 1/8 SS	HW1078	60

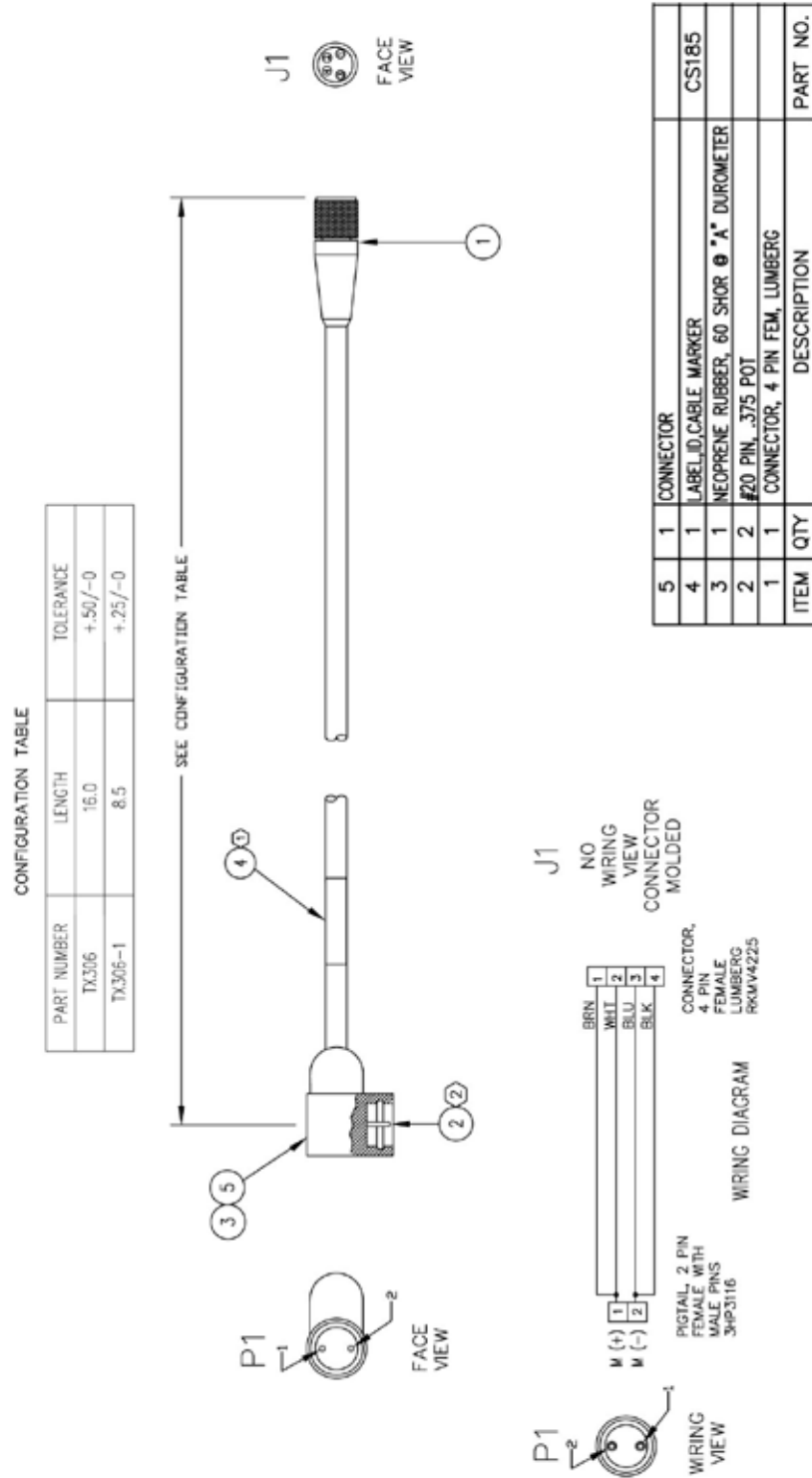


Figure 4. CABLE ASSY,2-P >4-P,MTR,18.5L,USIII, TX306

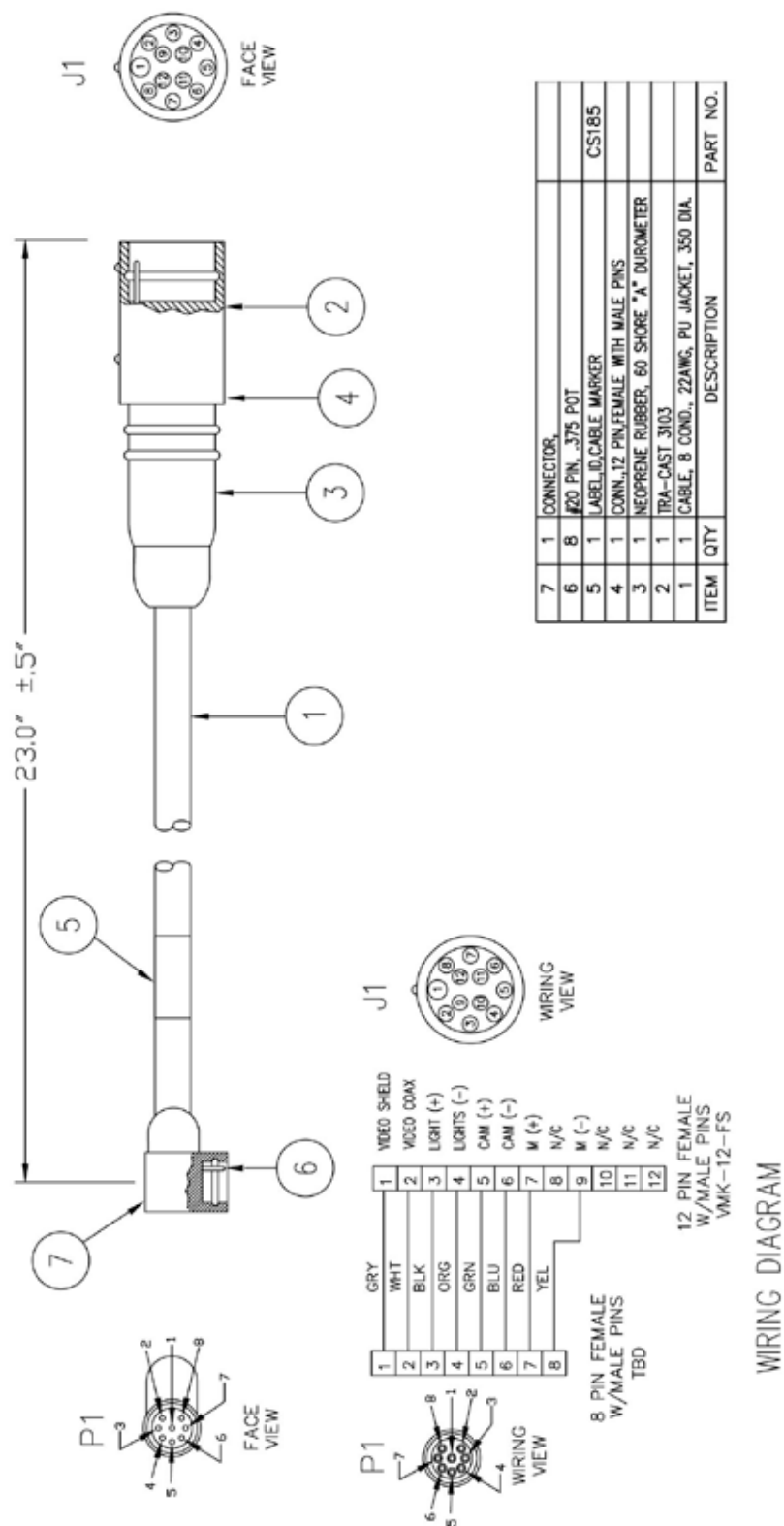


Figure 5. CABLE ASSY,12-P>8P,USIII, TX307

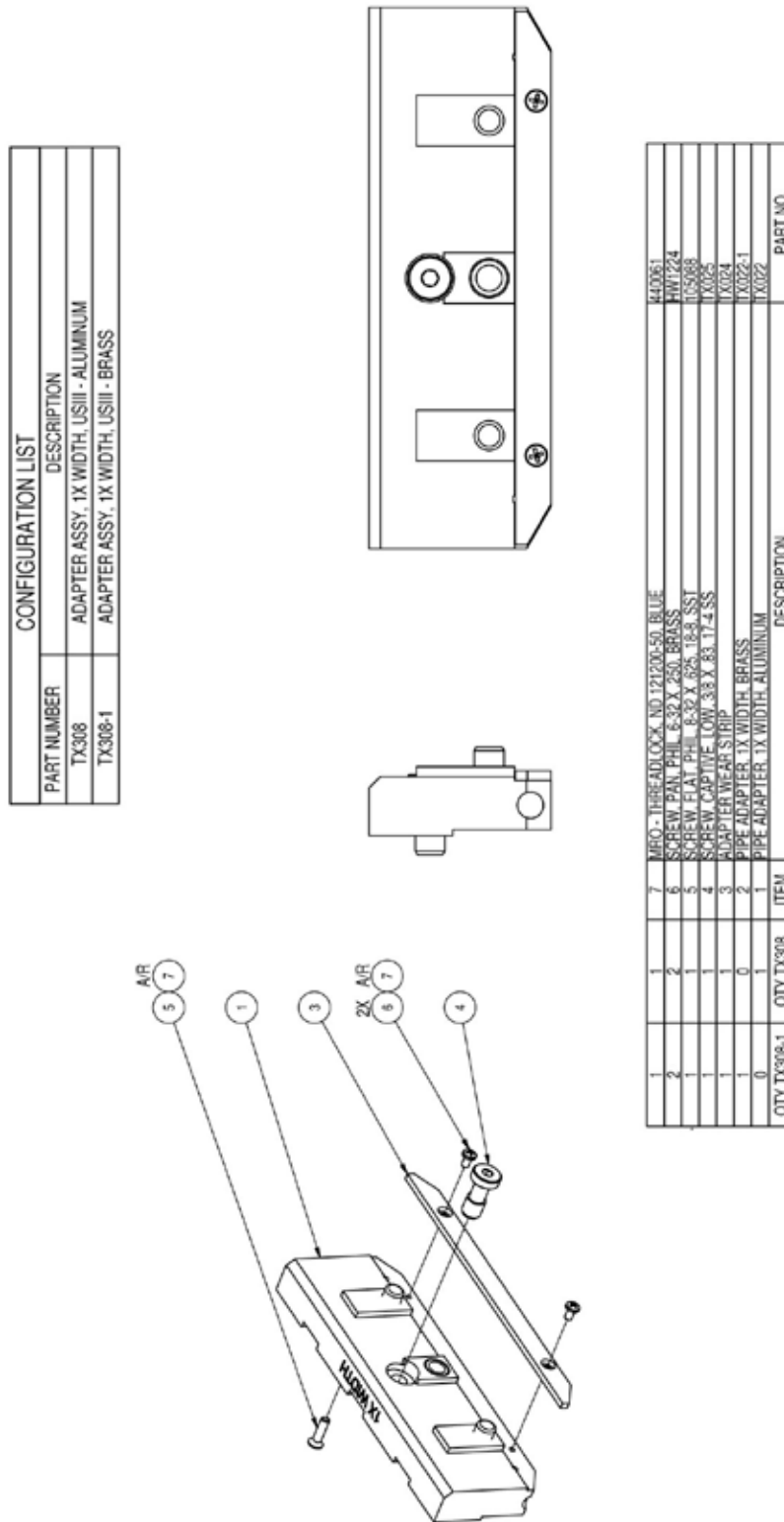


Figure 6. ADAPTER ASSY,SINGLE WIDTH,USIII,AL, TX308

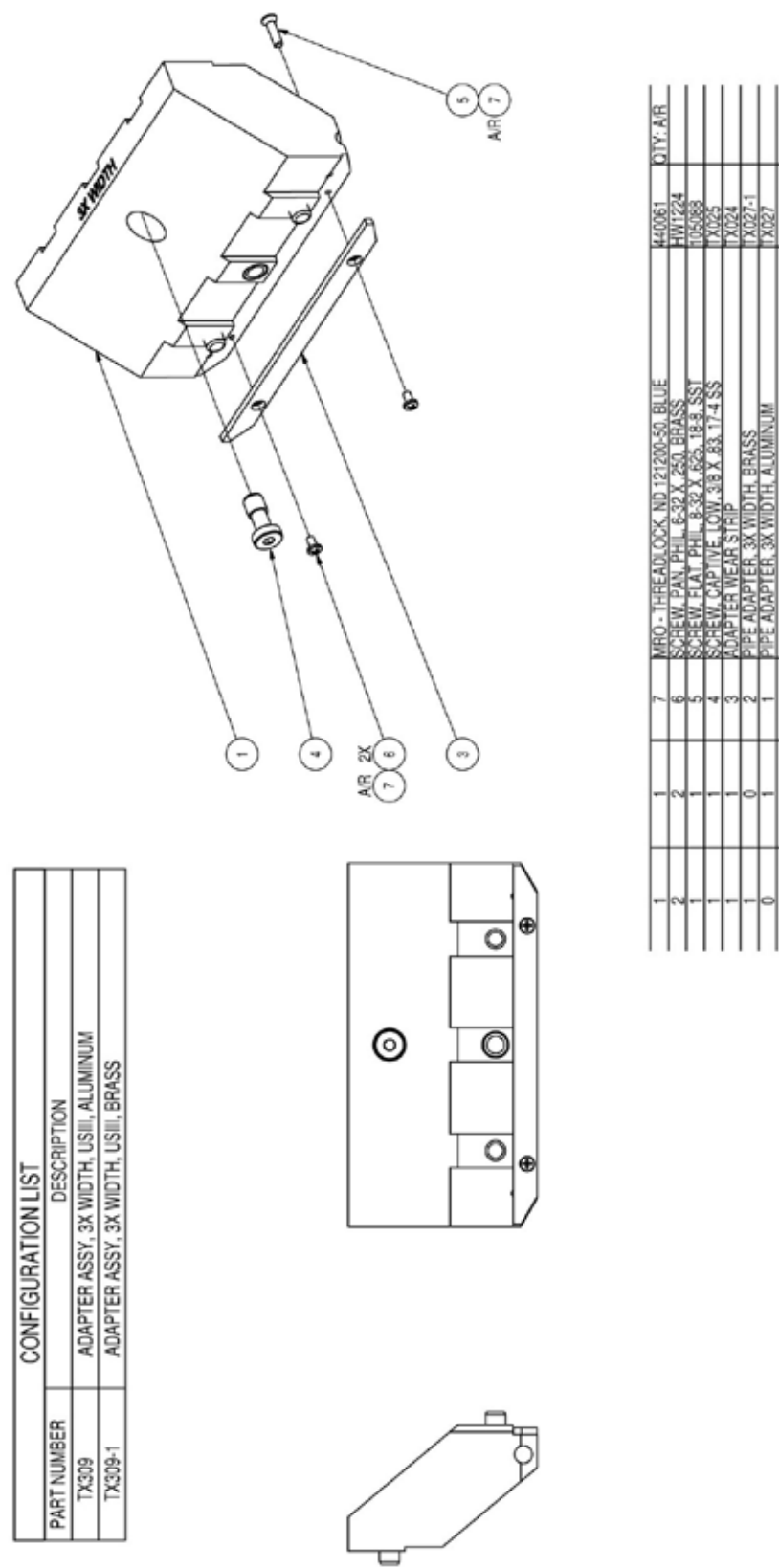


Figure 7. ADAPTER ASSY,TRIPLE WIDTH,USIII,AL, TX309



CUES STANDARD 12 MONTH WARRANTY

CUES (“CUES”) warrants that all parts, components, and equipment manufactured by CUES shall be free from defects in material and workmanship under normal use and service for which it was intended for a period of twelve (12) months from the date of shipment of materials by CUES to the purchaser. CUES’ obligation under this warranty is limited, at CUES’ option, to replacing or repairing, free of charge, any defective materials returned, freight prepaid, to the CUES designated service facility. For all warranty claims, the materials must be returned in accordance with CUES Material Return Policy.

Major items of equipment, such as vehicles, generators, etc., furnished, but not manufactured by CUES, will be covered only under the warranty of the third party manufacturer of such equipment. Expendable parts, such as light bulbs, fuses, connectors, etc., are excluded from this warranty.

Purchaser must notify CUES of a breach of warranty not later than the last day of the warranty period; otherwise, such claims shall be deemed waived.

CUES does not warrant the materials to meet the requirements of the safety codes of any federal, state, municipal or other governmental or administrative jurisdiction. Purchaser assumes all risk and liability whatsoever resulting from the use of its products, whether used singly or in combination with other products, machines or equipment.

This Warranty shall not apply to any materials, or parts thereof, which have; (a) been repaired or altered by anyone other than CUES without CUES’ written consent; (b) been subject to misuse, abuse, negligence, accident, or damage; (c) not been installed or operated in accordance with CUES’ printed instructions, or; (d) been operated under conditions exceeding or more severe than those set forth in the specifications of design tolerance of the equipment.

THIS WARRANTY AND THE OBLIGATION AND LIABILITIES OF CUES HEREUNDER ARE EXCLUSIVE AND IN LIEU OF (AND PURCHASER HEREBY WAIVES) ALL OTHER WARRANTIES, GUARANTEES, REPRESENTATIONS, OBLIGATIONS, OR LIABILITIES, EXPRESSED OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, REGARDLESS WHETHER OR NOT OCCASIONED BY CUES’ NEGLIGENCE.

CUES SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE RESULTING, DIRECTLY OR INDIRECTLY, FROM THE USE OR LOSS OF USE OF THE MATERIALS, OR FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, ECONOMIC LOSSES, LOSS OF PROFITS, LOSS OF BUSINESS, OR LOSS OF BUSINESS OPPORTUNITY. Without limiting the generality of the foregoing, this exclusion from liability embraces Purchaser’s expenses for downtime or for making up downtime, damages to property, and injury to or death of any persons.

CUES neither assumes nor authorizes any person (including employees, agents, or representatives of CUES) to assume for it any other liability, guarantee, or warranty in connection with the sale or use of the materials, and no oral agreements, warranties, or understandings exist collateral to or affecting this warranty.

This warranty shall not be extended, altered, modified, or waived except by a written instrument signed by CUES.

SAFETY PRECAUTIONS

Precautions must always be taken when operating electronic equipment. Exposed wires, damaged equipment, or improper operation can lead to a dangerous situation.

Please take a few minutes and read this entire manual prior to operating the equipment. Follow all safety procedures and thoroughly inspect equipment prior to use each day. This will help the equipment retain it's full value and will reduce the risk of injury, property, and/or equipment damage.



- Read the entire manual before attempting to connect or operate any equipment.
- Connect and disconnect cables only when the electric power is turned OFF.
- Never remove protection covers from the equipment or power generator. Internal repairs should only be done by an authorized CUES technician.
- If using a portable generator, always place it in an open area away from other equipment, manholes or obstructions prior to start-up; do not use a portable generator in an enclosed area.
- Upon receipt of the equipment, check for visible damage. If there is any evidence of rough handling, if damage is found, or if any equipment is missing, please contact the CUES Customer Service at 1-800-327-7791.

PERSONAL SAFETY EQUIPMENT & TRAINING

CUES stresses the use of appropriate safety equipment while working in and around manholes and during system operation. Safety should constantly remain the utmost priority. NOTE: The user of CUES products is responsible for all training and operation under federal, state and local guidelines and regulations for both confined space entry and traffic control. Recommended safety equipment includes but is not limited to the following:

- Safety goggles
- Work gloves
- Steel-toed boots
- Reflective vests
- Hard hats
- Filter masks (full respirators may be necessary)
- Flashlights
- Safety lines
- Traffic warning signs
- Traffic cones
- Gas detectors
- Ventilation fans

CUES ® makes no warranty for the use of its products and assumes no responsibility for any errors or omissions in this document or for incidental or consequential damages resulting from misuse of the products.

CUES MATERIAL RETURN POLICY

To ensure the orderly return of CUES products from our customers and to assure proper credit and warranty replacements handled in a timely manner, CUES has implemented a MATERIAL RETURN AUTHORIZATION (MRA) SYSTEM. Please read and follow the instructions below to ensure your MRA is handled properly and efficiently:

1. Once it is determined that a CUES product needs to be returned, call the CUES Parts Department in Orlando at 1-800-327-7791.
2. CUES will provide an MRA number by phone and ask a few questions.
3. CUES will then mail or fax the MATERIAL RETURN AUTHORIZATION (MRA) FORM with the MRA number, or include it with the replacement parts, if applicable.
4. Follow all instructions on the MRA Form. Make 2 copies - one for your records and the other will be used as a packing list.
5. Place an MRA sheet in with the parts that are shipped back to CUES along with a copy of the original packing slip or invoice, if possible. Send only the parts originally agreed upon with your Parts Representative. Any deviations/changes will require an additional MRA.
6. Make sure to include a copy of the MRA form for a packing slip.
7. Write the MRA number on the outside of the box.
8. Please take care in packing the parts that are to be shipped back to CUES. Parts must be individually protected from each other and appropriate packing material must be used to prevent damage during shipping.
9. Freight on the material returned is to be prepaid by the customer. Depending on the warranty determination, CUES, at its' option, may credit freight charges both ways.
10. The parts must be returned to CUES within 5 days of receipt of the MRA for credit to be granted.

Under normal circumstances, a warranty determination can be made within 30 days, and if under warranty, the part will be replaced at no charge. A credit will be issued if you have already received a replacement part. No credits will be issued until CUES receives the defective part.

*****NOTE*****

CUES will not warrant look-alike parts sold by competitors and reserves the right to charge a restocking fee. CUES shall not be liable for any loss or damage resulting, directly or indirectly, from the use of the materials, or for special, indirect, or consequential damages, economic losses, loss of profits, loss of business, or loss of business opportunity.

Without limiting the generality of the foregoing, this exclusion from liability embraces purchaser's expenses for downtime or for making up downtime, damages to property, and injury to or death of any persons.

CUES neither assumes nor authorizes any person (including employees, agents, or representatives of CUES) to assume for it any other liability, guarantee, or warranty in connection with the sale or use of the materials, and no oral agreements, warranties, or understandings exist collateral to or affecting this warranty. This warranty shall not be extended, altered, modified, or waived except by a written instrument signed by an authorized CUES representative.

CUES MATERIAL RETURN AUTHORIZATION

Cust #:	Name:	Contact:	Date: 4/21/2004
Original SO #: N/A	SO Orig:	Dated:	New SO #:
Return For:	Reason:	Territory	Prod. Ref. Cd: 51200
S.O. To Be Credited:			
Orig:			
Explanation:			
Items Returned			
1			
2			
3			
4			
5			
6			

To ensure your MRA is handled properly and efficiently, please follow the instructions below.

1. Ship parts back within five (5) business days of receiving your MRA number. Parts ordered in error are subject to a restocking fee.
 2. Send only the parts originally agreed upon with your customer service representative. Any deviations will require an additional MRA.
 3. Make a copy of this sheet and keep the original for your records. Use the copy as a packing slip.
 4. Write the MRA number on the outside of the box.
 5. Parts must be individually protected from each other (original packaging would be best) and appropriate packing material must be used to prevent against damage during shipping.
- Note:** If parts are not well protected and arrive at our facility damaged in any manner, we will automatically reject them and return them to you without credit.

PARTS WILL BE RETURNED TO CUSTOMER AT CUSTOMER EXPENSE WITHOUT AN MRA NUMBER DOCUMENTED ON BOX. CUES IS NOT RESPONSIBLE FOR SHIPMENT FROM CUSTOMER TO CUES.

Use this section as a Packing Slip.

**Please remember to write the
MRA number on the box.**

MRA #:

XXXX

Return To:

Cues
3600 Rio Vista Avenue
Orlando, FL 32805
(407) 849-0190
FAX (407) 425-1569
WATS 800-327-7791

At CUES, we realize your return on investment is directly related to daily production in the field. By stocking the largest inventory of OEM equipment in our industry, CUES strives to ship all parts orders on the same day or within 24 hours after receipt of the order.

Whether you need a camera or a fuse, CUES will quickly process and ship your order in accordance with your schedule requirements! Our experienced parts professionals can help you with parts identification, shipping methods, equipment operation questions, and connect you to the correct specialist for troubleshooting!

CUES offers four convenient stocking locations that contain a large assortment of parts, finished products, portable, and truck mounted systems. Texas, Arizona, Oklahoma and Louisiana customers can be serviced by our local dealerships. Contact us at your most convenient stocking location! For authorized dealer locations, log onto our website at www.cuesinc.com.

Parts can be ordered via phone or facsimile! For operating hours, contact information, and locations, log onto our website at www.cuesinc.com. Contact us at your most convenient stocking location! Log onto our website at www.cuesinc.com to view the CUES Parts Department & Dealers hours & locations.

CUES Parts Department: Parts turnaround is normally within 24 hours after receipt of order. Please note that special shipping arrangements can be made at the time of the order. All return shipments received at CUES freight collect will be refused upon delivery unless previously authorized by CUES personnel. Normal operating hours are 8am to 5pm, EST., Phone: 800-327-7791, Fax: 800-831-1184.

CUES Service Depot: Service turnaround is normally 72 hours or less upon receipt at our depot, excluding weekends and holidays. All return shipments received at CUES freight collect will be refused upon delivery unless previously authorized by CUES personnel. Normal operating hours are 8am to 5pm, EST., Phone: 800-327-7791.

West Coast

For West Coast Customers:

The parts and service depot is located at
1943 S. Augusta Court, Ontario, CA, 91761.
Normal operating hours are 8am to 5pm, PST
Phone: 800-544-8695

Canada

For Canadian Customers:

The parts and service depot is located at
1675 Sismet Road, Unit 2 & 3, Mississauga,
Ontario L4W1P9
Phone: 905-238-9178

Midwest

CUES Midwest:

www.cuesmidwest.com
2325 Parklawn Drive, Suite K
Waukesha, WI 53186
Phone: 262-717-3165
Fax: 262-717-3167

CUES RECORD OF REVISIONS

This Record of Revision page is designed to allow the manual user to determine the engineering/manufacturing level to which the manual is written. As engineering changes to this hardware are made at CUES, necessary information in the manual will be revised to reflect those changes. The latest change level and the rationale for any change(s) will be explained in tabular format on this page to allow the manual user to be better equipped should the need arise to call CUES regarding technical information.

Original Manual	Rev	Date	Change Description
Ultra Shorty III	1	010109	Initial preliminary release.
	2	021515	Added new wheel matrix and various other updates required.
	3	030415	Wheel matrix was updated to reflect 8" relined kit, P/N TX919.
	4	072220	Updated the manual procedures and drawings/BOMs. For Rev5: Awaiting new photos with the cover plate over the cable connection and the transmission housing is no longer black; Instructions to be updated to include plate (TX084) removal.

Innovation for over 50 Years

CUES is the world's leading manufacturer of closed circuit television video (CCTV) inspection, rehabilitation, pipe profiling equipment and asset inspection/decision support software. For over 50 years, **CUES** has provided innovative pipeline inspection technology and solutions to enable accurate condition assessment and proactive maintenance programs for buried infrastructure.

In addition to inspection equipment, **CUES** also designs, manufactures, and sells a broad range of pipeline rehabilitation and profiling equipment. These include chemical grouting systems for sewer line pipe joints capable of using a wide variety of grouting products. **CUES** also manufactures lateral reinstatement cutting systems which enable the reinstating of laterals in mainline sewers after they have been relined with any of a wide variety of liner materials. Pipe profiling is accomplished via Laser for Sonar based systems.

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