PR II & SPR II Transporters

Pipe Ranger II & Steerable Pipe Ranger II

OPERATION & MAINTENANCE MANUAL

P/N WS930, Revision 6: 10.2026

*REFER TO ADDENDUM P/N CMA00013-MAN FOR UPDATED REAR-VIEW CAMERA INSTRUCTIONS.





8" Rubber



8" Steel



10"- 15" Rubber



10" - 15" Steel



12" Pneumatic



18" - 72" Knobby

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*REFER TO ADDENDUM P/N CMA00013-MAN FOR UPDATED REAR-VIEW CAMERA INSTRUCTIONS.

FYI

We’re Always Here To Help

Thank you for purchasing our CCTV pipeline inspection equipment! We truly appreciate your business and are confident that our products will meet your pipeline inspection needs. Should you require further assistance, please do not hesitate to reach out to us through one of the weblinks listed below. Your satisfaction is our priority, and we are here to support you every step of the way!

To find your local CUES Regional Sales Manager or Dealer:	https://cuesinc.com/dealers
CUES’s Service & Support:	https://cuesinc.com/pages/contact-us
CUES’s Return Material Authorization:	https://cuesinc.com/pages/parts
CUES’s Purchasing Terms & Conditions:	https://cuesinc.com/pages/purchasing-terms-and-conditions
CUES’s Terms & Conditions:	https://cuesinc.com/pages/cues-terms-and-conditions-of-sale
CUES’s Parts Department:	https://cuesinc.com/pages/parts



INTRODUCTION:

PIPE RANGER II (PR II) & STEERABLE PIPE RANGER (SPR II)

The Pipe Ranger II / Steerable Pipie Ranger II are rugged and versatile robotic camera transporters designed to traverse silt, mud and debris commonly found in storm and sanitary sewers. The PR II / SPR II are designed with single-point wheel removal to facilitate speedy configuration changes for various pipe diameters and conditions. Optional high traction wheels are available for extreme slippery conditions.

The transporters are designed to operate with all CUES inspection systems with up to 2000' of single-conductor or multi-conductor cable to inspect 8" relined pipe through 72" diameter pipe. The unique built-in two (2) speed transmission doubles the torque of the unit to produce maximum pulling power in large diameter pipe when the 10.5" diameter tires are installed. The SPR II includes full proportional steering enabling traversal of meandering pipe with 45° and 90° turns.

This manual includes setup, operation, troubleshooting, and maintenance instructions for the Pipe Ranger II (PR II), Steerable Pipe Ranger (SPR II), Lite Ranger II (LR II), and Steerable Lite Ranger II (SLR II) transporters. The instructions in this manual are for the PR II / SPR II versions and their components only.

The PR II / SPR II transporters can operate as part of any new or existing CUES multi or single conductor system. All existing CUES systems can be retrofitted to operate the transporter. If the transporter is being used with an existing TV system, modifications might need to be made to the end of the TV cable and/or the trucks electrical wiring, depending on the specific system. If uncertain about the modifications required for the system or in need of more information regarding a retrofit, please call our Customer Service Department at 1-800-327-7791.

CUES PR II / SPR II transporters include the following:

- Optional tires/wheels are available to accommodate various pipe conditions
- Operates with all CUES mainline cameras: pan-and-tilt and optical zoom
- Operates with the CUES Digital Side Scanning Camera (DUC)
- Freewheel, powered reverse, forward variable speed control
- Designed to provide clearance in a 7" diameter pipe; can inspect 8" relined pipe
- Optional remote operated electronic camera lift or manual camera lift
- Single point removal of wheels
- Two-speed transmission doubles the torque and maximizes traction in larger diameter pipe or in difficult pipe conditions
- Rear tip-up bulkhead connector minimizes strain on the cable connection during the inspection and retrieval



CUES Steerable Pipe Ranger II Shown in the 10"-15" Configuration with a CUES OZII Camera & Steel Wheels

1 INTRODUCTION

SYSTEM DESCRIPTION:
PIPE RANGER II / STEERABLE PIPE RANGER II VERSIONS

The system is equipped with a self-propelled power forward, power reverse, neutral, multi conductor or single conductor, wheeled transporter. The transporter has full variable speed in the forward or reverse mode, with running capabilities of 45' per minute for pipe configurations up to 15" and 65' per minute for 18" and larger pipe configurations. The freewheel clutch is engaged and disengaged with the transporter controller at the operator's station.

The transporter is designed to carry a 3" diameter standard, pan and tilt style, or optical zoom (OZII and OZIII with adapter tube) sewer line TV cameras. The transporter is capable of inspecting pipes up to 72" in diameter and can be equipped with optional manual or powered camera lifts. The camera lifts are designed to keep the camera in the center of pipelines up to 36" in diameter and includes a y-eliminator with light tap to add an external light source, if necessary.

The transporter is equipped with a heavy-duty drive motor designed to meet the power requirements of the system. The 2- speed transmission maximizes torque when used with the larger diameter wheels and includes a protected manual shifter for quick gear ratio changes.

The wheeled transporter utilizes existing power sources within the multi conductor or single conductor TV system to drive the six tires in relined 8" - 15" diameter pipe sizes. For 18" and larger diameter pipe sizes, the transporter uses 4-wheel drive. The wheel assemblies for 18" and larger diameter pipe sizes are available in two different tread patterns to maximize traction in different pipe conditions.

The two small diameter tires, located on the center axle, are designed to negotiate offsets in large pipes and remain attached to the transporter, regardless of pipe size being inspected. Since the transporter is self-propelled, it can be utilized in lines that do not have usable exit manholes.

LITE RANGER II AND STEERABLE LITE RANGER II VERSIONS

CUES offers the Lite Ranger II (Pipe Ranger II with an aluminum body) for customers that require a light-weight transporter for their inspection needs. The system description differs from the Pipe Ranger II as follows:

- Refer to the System Set-up and Installation section in this manual for additional information.
- Refer to the Weights Configuration Table in this manual for weight information on the Lite Ranger and Steerable Lite Ranger.



CUES Steerable Pipe Ranger II
(Shown in the 8" Configuration with a CUES OZII Camera)

PR II / SPR II consists of the following features. Refer to the Equipment Matrices and BOM / Exploded View Drawings in this manual for additional information.

1. Self-propelled camera transporter with all wheel drive
2. Six tires and/or 13 wheel assemblies available in three different types; rubber, steel, and pneumatic wheel configurations are available
3. Two-speed transmission
4. Electrical connection for a camera
5. Manual or electric camera lift (optional)
6. Optional external lightheads; electrical connection for an external lighthead
7. Locking swivel cable connection

1 Self-propelled camera transporter with all-wheel drive - The self-propelled camera transporter transports the pan and tilt camera through storm drains/wastewater pipelines during inspection. The carrier is equipped with all-wheel drive and has full, variable speed in power forward or power reverse modes.

2 The transporter includes six wheel or four wheel assemblies, depending on the transporter configuration for the pipe size to be inspected. The six wheels are used in relined 8”- 15” pipe sizes. The wheel assemblies are available in multiple sizes to maximize traction in pipes ranging from 18” or larger in diameter.

3 Two-speed transmission - The transporter includes a two-speed transmission to double the torque and optimize traction in difficult pipe conditions or in larger diameter pipe. The protected manual shifter assembly on the transporter is used to facilitate quick gear ratio changes.

4 Electrical connection for a camera - An electrical connection for a camera is located at the top-rear portion of the transporter.

5 Manual or electric camera lift (optional) - The camera lifts are used in pipelines ranging from 18” and up in diameter and helps keep the camera near the center of the pipe to provide full inspection in heavy flow pipelines up to 36” in diameter.

6 Electrical connection for an external lighthead (not shown) - If additional lighting is needed, the camera y-eliminator cable, used in conjunction with the camera and camera lift, includes a lighttap to power external lights.

7 Locking swivel cable connection - The locking swivel cable connection ensures retention of the electrical connection and minimizes strain on the cable connection during the inspection and retrieval.

WS904 - KIT, WHEEL, 7", STEEL, 10/12 GRIT			
Item#	DESCRIPTION	P/N	QTY
0001	WHEEL,STL,6"PVC P,CPR,W/ 10/12 GRIT	WM096-1	6
0002	SCREW,HEX,5/16-24X1,17-4PH SST	HW2819	6
0003	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0004	MRO-CARTON,SHIPPING 6X6X6	440004	1
0005	SCREW, CAPT, HEX, 5/16-24UNF x 0.625	WM098-1	6



WM096-1, Steel, 6" PVC, 10/12 Grit

WS905 - KIT, WHEEL, 7", RUBBER, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	TIRE,RUBBER,6"RELINED,QUICK CHG	WM097	6
0002	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0003	MRO-CARTON,SHIPPING 6X6X6	440004	1
0004	SPACER,.25,QUICK CHANGE,CPR	WM223	6
0005	SCREW,CAPTIVE,HEX,5/16-24 X 1,17-4PH SST	HW2819	6



WM097, Tire, Rubber

WS906 - KIT, WHEEL, 8", STEEL, 10/12 GRIT			
Item#	DESCRIPTION	P/N	QTY
0001	WHEEL,STEEL,8" SINGLE PT 10/12 GRIT	WS112-1	6
0003	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0004	MRO-CARTON,SHIPPING 6X6X6	440004	1



WS112-1, Steel, 8", 10/12 Grit

WS907 - KIT, WHEEL, 8", RUBBER, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	ASSY, WHEEL, 8", SINGLE, SPR II	WS322	6
0002	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
00063	MRO-CARTON,SHIPPING 6X6X6	440004	1



WT090, 8" Rubber, 4.5" O.D.

WS908 - KIT, WHEEL, 10 15", STEEL, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	WHEEL,STL,10-15",SPR/PR,10/12 GRIT	WT081-1	4
0002	ADAPTER,3 SCREW > SINGLE PT,FLUSH	WS117	4
0003	SCREW,HEX,5/16-24X1,17-4PH SST	HW2819	4
0004	SCREW,FLAT,10-32X1/2 SST	103052	12
0005	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0006	MRO-CARTON,SHIPPING 12X7X7	440014	1
0007	MRO-REMOVABLE LCK,ND 121200-2,BLUE	CS036	1
0008	MRO-REMOVABLE LCK,ND 121200-50,BLUE	440061	1



WT081-1 Steel Wheel, 10"-15",
10/12 Grit

WS909, KIT, WHEEL, 10"-15" RUBBER, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	TIRE,10-15"PIPE,PIPE RANGER	WT052	6
0002	HUB,OUTER,10-15"P,QUICK CHANGE,CPR	WM091	6
0003	HUB,INNER,8-15"P,QUICK CHANGE,CPR	WM089	6
0004	SCREW,HEX,5/16-24X1,17-4PH SST	HW2819	6
0005	SCREW,CAP,SKT HD,10-32X1/2,SST	102001	18
0006	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0007	MRO-CARTON,SHIPPING 12X7X7	440014	1
0008	MRO-REMOVABLE LCK,ND 121200-2,BLUE	CS036	1



**WT052, Tire,
10-15" Rubber**

WS910, KIT, WHEEL, 12-15" PNEUMATIC, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	TIRE ASSY,200MMX50MM,12-15"PIPE	WT331	4
0002	ADAPTER,HUB,PNEU,12-15",SPM,FLUSH	WS118	4
0003	SCREW,HEX,5/16-24X1,17-4PH SST	HW2819	4
0004	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0005	MRO-CARTON,SHIPPING 12X7X7	440014	1
0006	MRO-REMOVABLE LCK,ND 121200-50,BLUE	440061	1



WT331, Tire Assembly, 12-15"

WS911 - KIT, WHEEL, 18"+, KNOBBY, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	TIRE ASSY,KNOBBY,18-48"PIPE,P-RANGR	WS313	4
0002	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1



WT313, Knobby Tire Assembly

WS912 - KIT, WHEEL, 18"+, CHEVRON, SPR II			
Item#	DESCRIPTION	P/N	QTY
0001	TIRE ASSY,(R),CHEV.18-48"PIPE,SPR	WS314	2
0002	TIRE ASSY,(L),CHEV.18-48"PIPE,SPR	WS314-1	2
0003	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1



WS314 & WS314-1, Chevron Tire Assembly

WHEEL MATRIX for PIPE RANGER II STEERABLE PIPE RANGER II

	7 in STEEL	7 in RUBBER	8 in STEEL	8 in RUBBER	10 in STEEL	10 in RUBBER	12 in STEEL	12 in RUBBER	15 in STEEL	15 in RUBBER	12-15 in PNEUMATIC	18+ in PNEUMATIC	18+ in CHEVRON PNEU
KIT NO.	WS904	WS905	WS906	WS907	WS908	WS909	WS908	WS909	WS908	WS909	WS910	WS911	WS912
ADAPTER				WS109	WS117		WS117		WS117		WS118	WS104	WS104
OUTER HUB				WT024		WM091		WM091		WM091			
INNER HUB						WM089		WM089		WM089			
HUB SCREWS PER WHEEL					(3x 103052)	(3x 102001)	(3x 103052)	(3x 102001)	(3x 103052)	(3x 102001)	(3x 101425)	(4x HW030 NUT)	(4x HW030 NUT)
TIRE	WM096-1	WM097	WS112-1	WT090	WT081-1	WT052	WT081-1	WT052	WT081-1	WT052	WT331	WS313	WS314/WS314-1
SPACER KIT NO.		WS905					WS963	WS963	WS963	WS963			
SPACERS PER WHEEL		WM223					WM061	WM061	2x WM061	2x WM061			
MTG SCREW	HW2819	HW2819	HW2819	HW2819	HW2819	HW2819	HW2809	HW2809	HW2810	HW2810	HW2819	HW2819	HW2819
ANTI-SEIZE	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488
LNGTH, TYPE	1.0, HEX	1.0, HEX	1.0, HEX	1.0, HEX	1.0, HEX	1.0, HEX	2.0, HEX	2.0, HEX	3.0, HEX	3.0, HEX	1.0, HEX	1.0, HEX	1.0, HEX
QTY per KIT	6	6	6	6	4	6	4	6	4	6	4	4	4
WEIGHT w/CAM (lbs)	76.3	76.3	78.3	78.3	79.7	82.05	83.35	88.05	87.7	94.05	84.1	103.9	105.3

PR/SPR MANUAL LIFT:
ADD 6 lbs

PR/SPR POWER LIFT:
ADD 10 lbs

TORQUE MTG SCREWS:
25 ft-lbs



12-15 in WS PNEUwLIFT
WS910
WS118
(3x 101425)
WT331
WM058
HW2894
CS488
1.5, HEX
4

NOTE: INSTALLING WS112-1 STEEL WHEELS ON MIDDLE AXLE WHEN USING 12-15 in. STEEL WHEEL KIT TO HELP DRIVING OVER OFFSETS IS RECOMMENDED (USE OF SPACERS OPTIONAL)

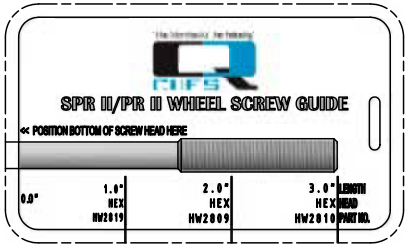
WHEEL MATRIX for SINGLE POINT MOUNT PIPE RANGER WITH COMPACT PIPE RANGER (cpr) WHEELS

	7 in STEEL	7 in RUBBER	8 in STEEL	8 in RUBBER	10 in STEEL	10 in RUBBER	12 in STEEL	12 in RUBBER	15 in STEEL	15 in RUBBER	12-15 in PNEUMATIC
KIT NO.	WM307	WM907	WM308-1	WM308	WM310-2	WM310	WM310-2	WM310	WM310-2	WM310	WM312
ADAPTER					WS117		WS117		WS117		WM100
OUTER HUB				WM090		WM091		WM091		WM091	
INNER HUB				WM089		WM089		WM089		WM089	
HUB SCREWS PER WHEEL				(3x 103052)	(3x 103052)	(3x 102001)	(3x 103052)	(3x 102001)	(3x 103052)	(3x 102001)	(3x 101425)
TIRE	WM096-1	WM097	WM094	WM092	WM108-1	WM093	WM108-1	WM093	WM108-1	WM093	WT331
SPACER KIT NO.		WS905					WM317	WM317	WM317	WM317	
SPACERS PER WHEEL							WM061	WM061	2x WM061	2x WM061	
MNTG SCREW	WM098-1	WM098-1	WM099-1	WM099-1	HW1567	HW1567	HW1568	HW1568	HW1569	HW1569	HW1568
ANTI-SEIZE	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488	CS488
LENGTH, TYPE	.63, HEX	.63, HEX	1.0, HEX	1.0, HEX	1.5, SHCS	1.5, SHCS	2.0, SHCS	2.0, SHCS	2.5, SHCS	2.5, SHCS	2.0, SHCS
QTY per KIT	6	6	6	6	4	6	4	6	4	6	4

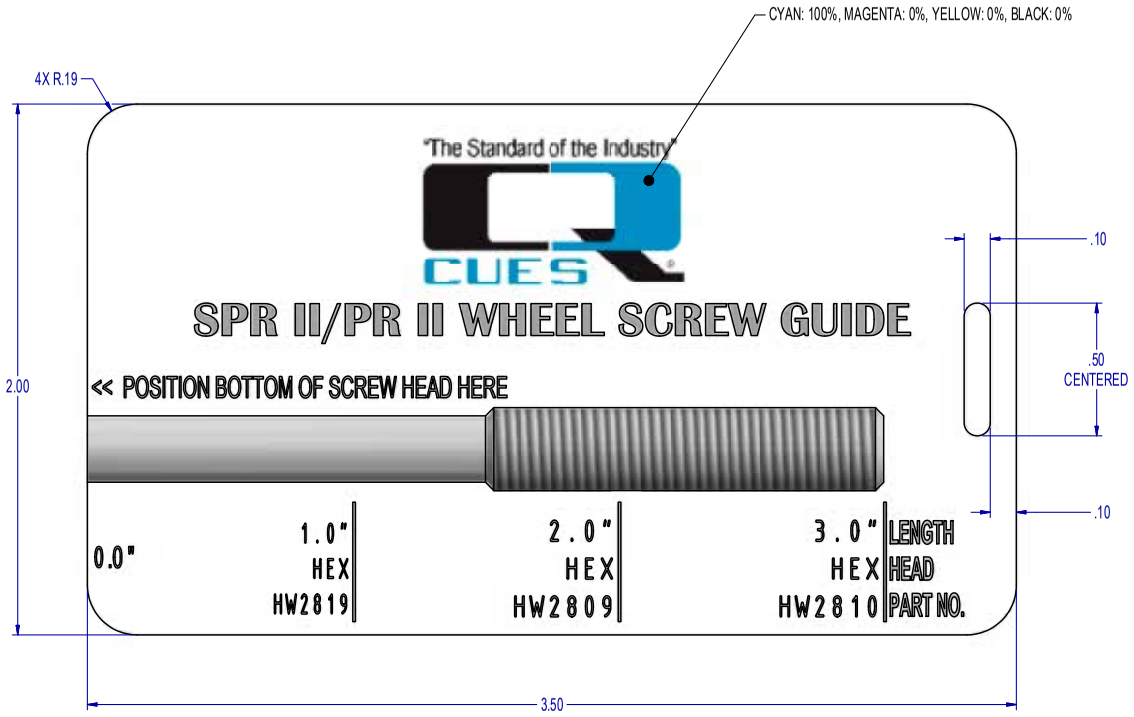
NOTE: INSTALLING WM094 STEEL WHEELS ON MIDDLE AXLE WHEN USING 12-15 in. STEEL WHEEL KIT TO HELP DRIVING OVER OFFSETS IS RECOMMENDED (USE OF SPACERS OPTIONAL)

DIFFERENCES IN CLEARANCE BETWEEN SPR II & CPR WHEELS MOUNTED ON SPR II/PR II											
TOP	NONE	-.10	+.12	-.10	+.28	NONE	+.28	NONE	+.27	NONE	N/A
BOTTOM	NONE	+.10	-.12	+.10	-.28	NONE	-.28	NONE	-.27	NONE	N/A
SIDE	NONE	-.13	+.20	+.10	NONE	NONE	+.10	NONE	-.27	NONE	N/A

This TRANSPORTER WHEEL SCREW GUIDE (P/N WM961) quick card provides a method of quickly and easily measuring screw length. Simply align the screw head with the narrow end of the card as indicated and look at where it ends to determine length. Then use wheel matrix to determine which configuration the screw is used in.



FRONT VIEW
SCALE: 1 : 1



FRONT VIEW
SCALE: 2.5 : 1

3 SYSTEM SET-UP & INSTALLATION

ELECTRICAL & PHYSICAL CONNECTIONS

If any PR II / SPR II is installed on an existing TV system, modifications may need to be made to the truck equipment layout and electrical wiring, depending on the specific system. If uncertain about the modifications that are required for the system or in need of more information regarding a retrofit, please contact CUES Customer Service Department at 1-800-327-7791.

PROCEDURE: Connecting the System (Multi-conductor PR II / SPR II and/or Lite Ranger II)

IMPORTANT: PR II / SPR II lubrication and maintenance is to be performed prior to each use.

1. Ensure that all of the equipment is OFF before making any of the necessary connections involving the transporter. Verify that the 12-pin TV connector pins are clean and free of debris and moisture. Apply Corrosion X HD, P/N CS496, to the pins and sockets of the 12-pin TV connections. Failure to do so can cause pin corrosion and an inoperable unit.
2. Lightly lubricate the lead in bore of the 12-pin TV connector and mating pigtail with a non-conductive lubricant, CUES P/N 940700, prior to connecting to the transporter. NOTE: Do not over-lubricate! Reapply as needed on a regular basis to prevent cable damage and easier insertion.
3. Connect the 12-pin female TV cable to the 12-pin male connector located at the rear of the transporter. NOTE: It is easier to insert the cable in a vertical direction.
4. Depending on each specific TV system, the stand-alone, desktop, or Summit Gamepad Controller should already be connected. NOTE: Ensure that the controller is connected and functional before placing the transporter in the pipe. Refer to the K2 User Manual, P/N MD910, for additional operating instructions.



Lightly lubricate the lead-in bore of the 12-pin connector with P/N 940700. Apply Corrosion X HD, P/N CS496, to pins.



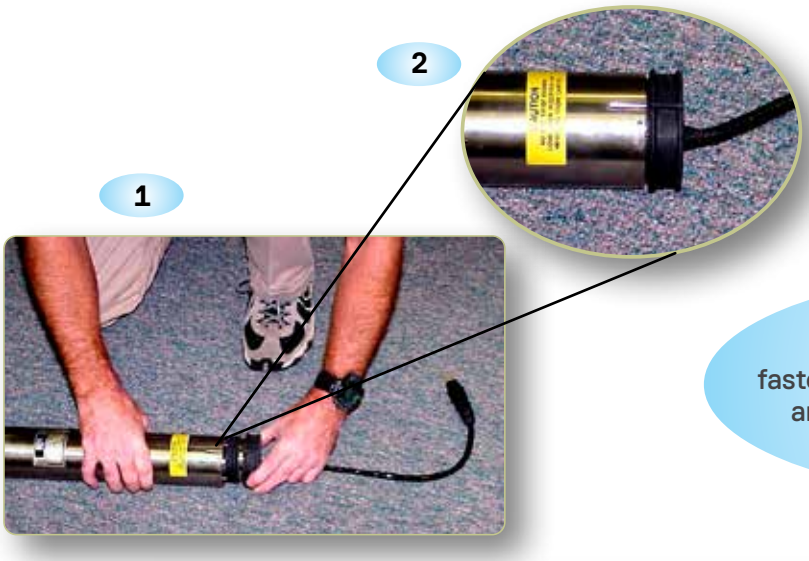
Lightly lubricate the 12-pin connector with P/N 940700.
Apply Corrosion X HD, CS496 to the sockets.

*PR II / SPR II lubrication and maintenance to be performed prior to each use.

PROCEDURE: Using a Pan and Tilt Camera with all versions of the PR II / SPR II

Refer to the pictures on this page. CUES OZII & OZIII cameras are 'plug and go'. The 12-pin connector provides the single connection required to operate the camera with the PR II / SPR II.

1. Verify all connectors are clean and free of debris. Apply Corrosion X HD, P/N CS496, to the pins and sockets prior to mating the connectors. Attach the appropriate y-eliminator to the camera as shown. For additional information, refer to the y-eliminators section in this manual.
2. Ensure that the notch located on the y-eliminator and rear of the camera are aligned straight up in the 12 o'clock position as shown.
3. All versions of PR II / SPR II: Place the camera in the transporter camera cradle and attach the clamshell, P/N WS113, as shown. Verify the camera body does not move after securing the clamshell.
4. Attach the y-eliminator cable to the camera connection at the rear of the transporter.



IMPORTANT!
When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407 to all fastener threads!



PROCEDURE: Adapting PR II / SPR II Versions to Different Pipe Configurations

The adaptation of the transporter to different pipe sizes is accomplished by changing the wheels and spacers. A torque wrench (supplied with new units) is necessary to secure wheel fasteners. Failure to do so can result in the wheel fasteners coming loose and the the wheel possibly falling off while in the pipe.

To Remove the Wheels:
1. Remove each screw located on each wheel.
2. Separate wheels from the Pipe Ranger II body.

To Mount the Wheel:
Various combinations of wheels can be configured for adapting the PR II / SPR II to the applicable pipe. The standard configurations are shown in the matrix, but additional configurations are possible. Always verify proper clearance in the pipe prior to performing the inspection(s).

NOTE: When using wheel sets from the Compact Pipe Ranger (CPR), LAMP II, or WTR III, the fasteners must be replaced with the higher-strength fasteners that are specified in the wheel matrix. Apply anti-sieze compound, P/N CS407, to all fastener threads. Install spacers, if applicable. **Torque each fastener to 25lb-Ft.**

1. Select the appropriate wheel and spacer per the wheel matrix for the pipe size to be inspected.
2. For 8” configurations, align the wheel assembly tri-lobe pocket with the tri-lobe on the shaft.
3. For 10” to 15” configurations, the wheel assembly tri-lobe pocket needs to align with the raised tri-lobe on the spacer.
4. Hold the wheel and spacer against the PR II / SPR II shaft and torque the appropriate screw to 25lb-Ft using the torque wrench.



Kit, Tire, Knobby, P/N WS911

Steerable Pipe Ranger II Shown in the 18”+ Pipe Configuration

PROCEDURE: Attaching the Lighthead

An optional external lighthead can be used with the PR II /SPR II for extra lighting in large pipes.

Lighthead - The HPL 10+ (LH323) is designed to work in conjunction with the PR II / SPR II to clearly illuminate any size pipe.

The LH323 lighthead will only work when using a manual or eletric lift.



LH323



3 SYSTEM SET-UP & INSTALLATION

PROCEDURE: Installing and Operating the Manual Camera Lift (optional)

NOTE: Although the original Pipe Ranger is referenced in the following photos, the installation procedure is the same for all steerable and non-steerable PR II / SPR II configurations.

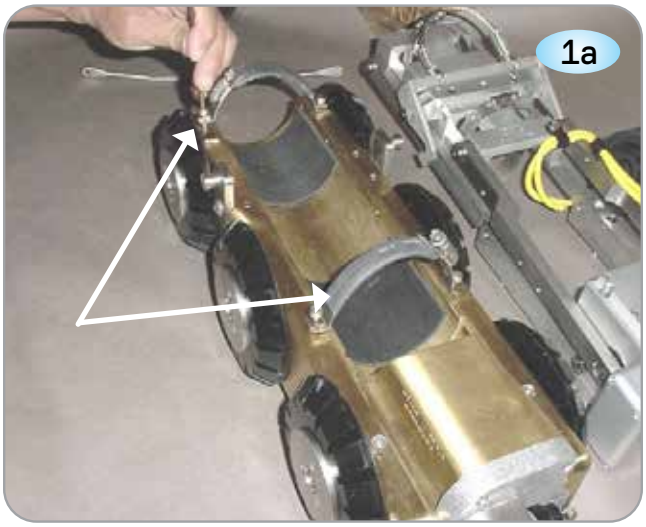
IMPORTANT! When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407, to all fastener threads!

The remote-operated mechanical camera lift is designed for use with the Lite Ranger II, Pipe Ranger II, Steerable Pipe Ranger II, and all PIpe Ranger II versions, to prevent the need for an operator to enter the manhole to position and reposition the camera height. In addition, the electric camera lift is designed for pipeline inspections ranging from 18" and up in diameter to help keep the camera near the center of the pipe to provide full inspection in heavy flow pipelines up to 36" in diameter.

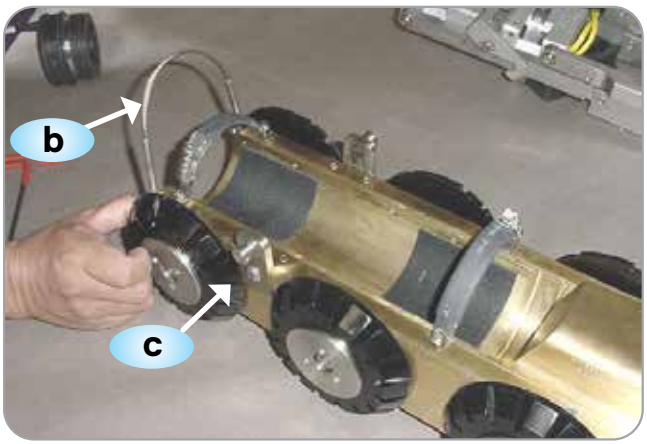
To attach the manual camera lift:

1. Using an allen wrench, remove the following items from the transporter as shown below.
   a. Remove the camera clamshell:





   b. Remove the hoisting cable and y-eliminator, if applicable:





   c. Using an Allen Wrench, attach the lifting lugs until secure. Do not use thread locker.

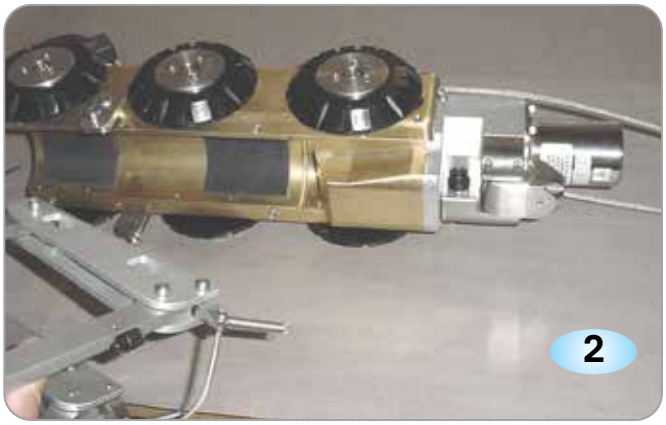
Install the manual lift assembly P/N WT310 as follows:

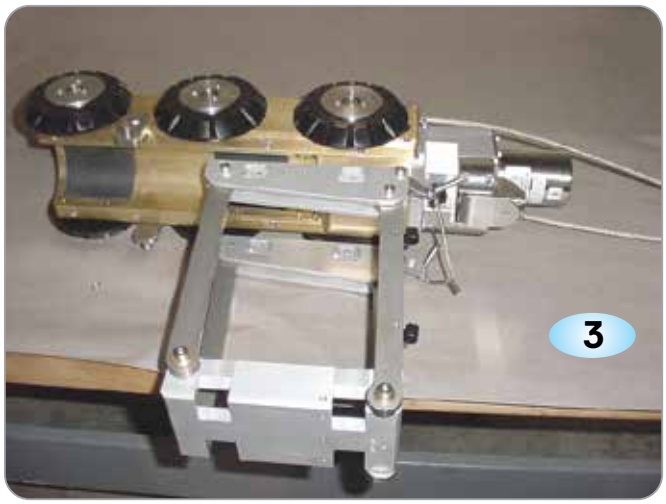
2. Place the Pipe Ranger II on it's side (rotate it 90 degrees, wheels faced-down as shown).

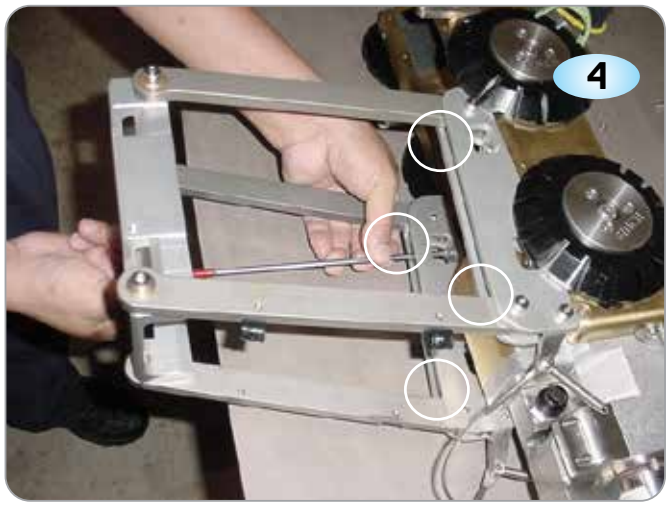
3. With the lift assembly in the upright position, align the lift assembly with the transporter as shown.

4. Insert (1) screw and (1) washer in (4) places on the inner-side of the lift and secure to the transporter using an allen wrench as shown.


Manual Lift Assembly, P/N WT310





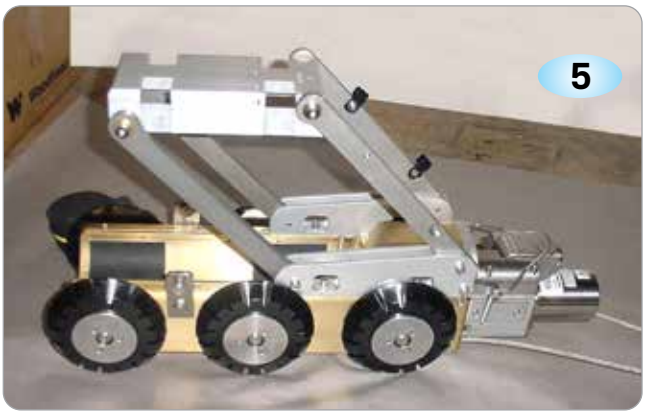


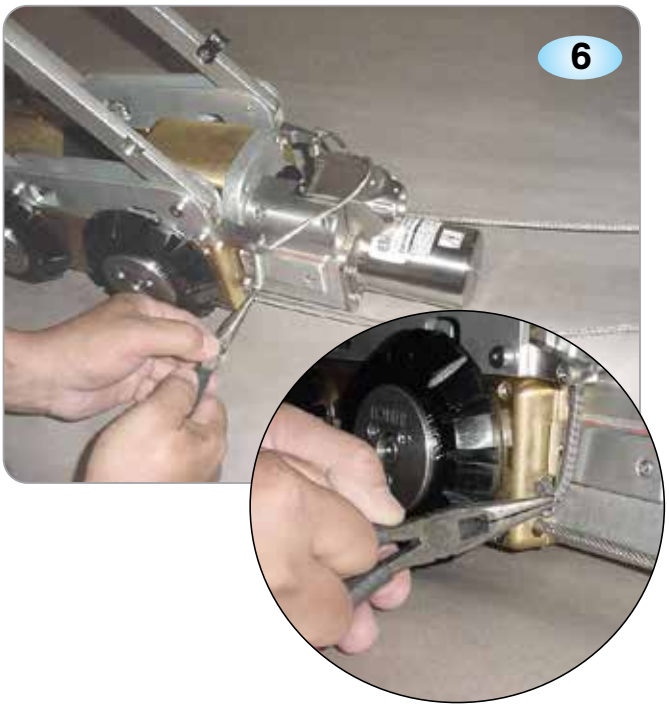
PROCEDURE: Installing and Operating the Manual Camera Lift (optional) Continued

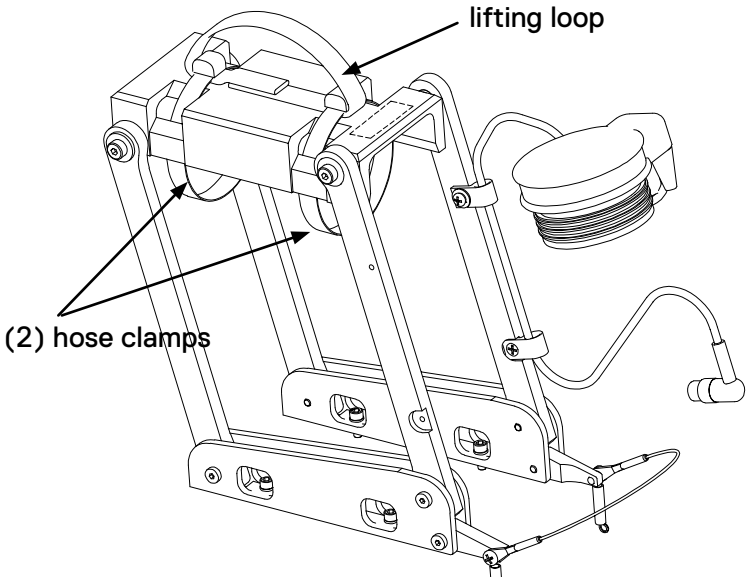
5. Place the tranporter back in the upright position.

6. Using needle-nose pliers, attach the (2) pawl spring cables, one on each side of the transporter, to the hooks located on the front of the transporter body.

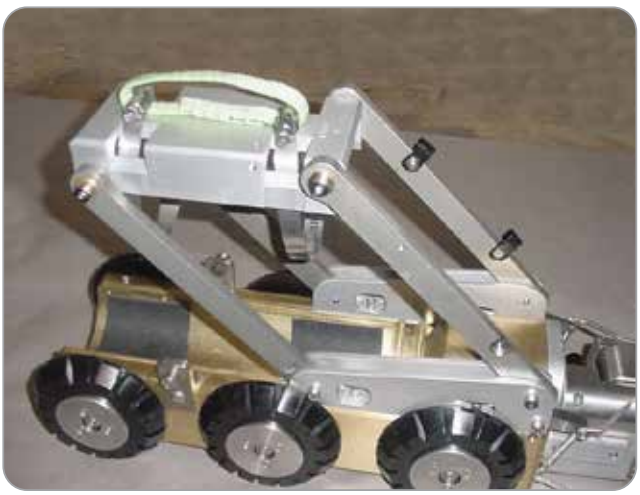
7. Route the (2) hose clamps through the openings at the top of the camera cradle and lifting loop as shown. Ensure that both clamps are routed through the lifting loop! Using a nut driver or screwdriver, secure each of the hose clamp ends together.







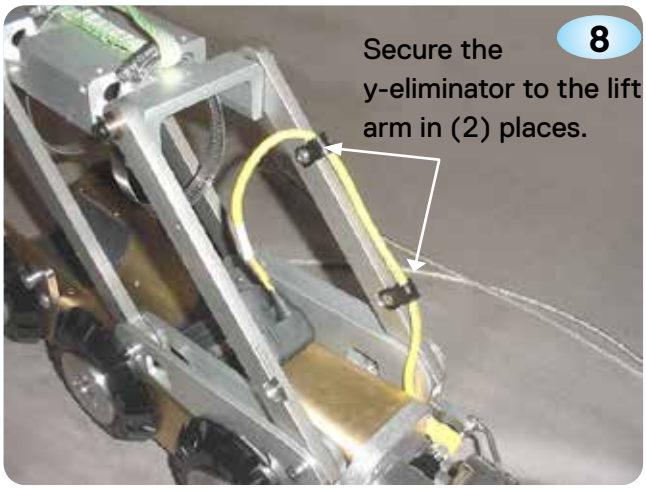


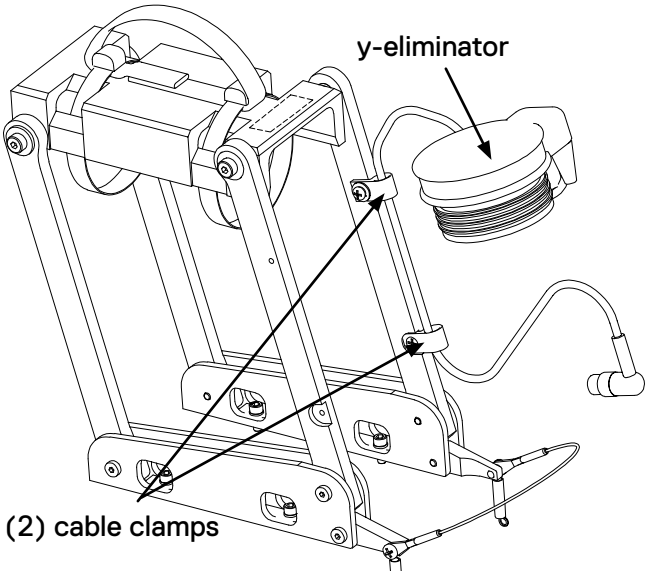


IMPORTANT! When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407, to all fastener threads!

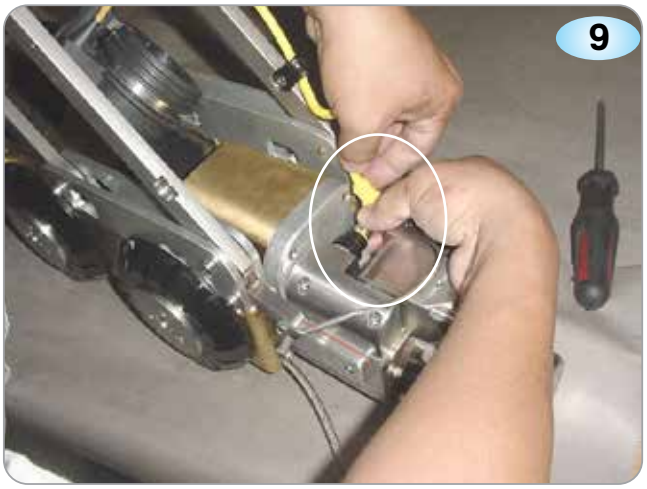
To attach the y-eliminator:

8. Route the y-eliminator cable through the (2) cable clamps as shown. Using a phillips screwdriver, secure the cable clamps to the lift arm (2 places).





9. Plug the power cable from the y-eliminator into the transporter as shown, making sure that the connection is secure.

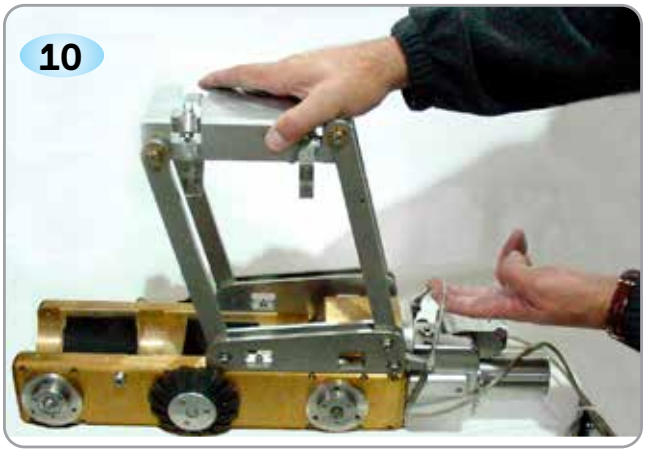




PROCEDURE: Installing and Operating the Manual Camera Lift (optional) Continued

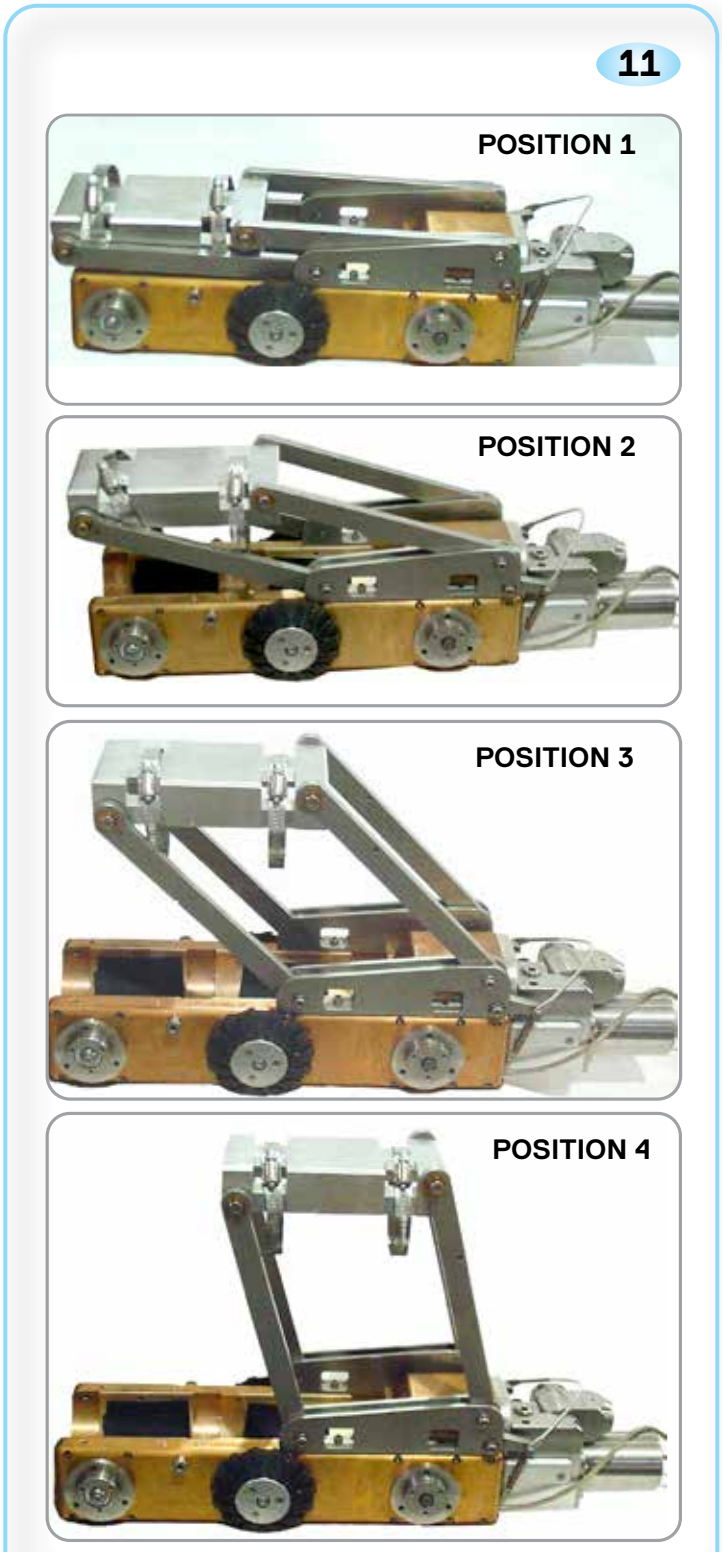
For instructions regarding camera connections, refer to the Electrical Connections for the OZII Camera in this chapter.

10. To lower the lift, pull up on the pawl cable and allow the camera to descend to the recess in the transporter body as shown below.



11. Place the manual camera lift in the desired position before lowering the Pipe Ranger II into the manhole (refer to the pictures to the right).

    NOTE: There are four different positions available for the camera lift. The optimal camera lift position for each inspection will vary depending on pipe size, type, and condition (silt and debris).





The PR II / SPR II are designed to provide clearance in a 7” diameter pipe; can inspect 8” relined pipe. Refer to WHEEL SET MATRIX, P/N WS964-INST, for more information.

PROCEDURE: Installing and Operating the Electric Camera Lift (optional)

NOTE: Although the original Pipe Ranger is referenced in the following photos, the installation procedure is the same for all steerable and non-steerable Pipe Ranger II configurations.

IMPORTANT! When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407, to all fastener threads!

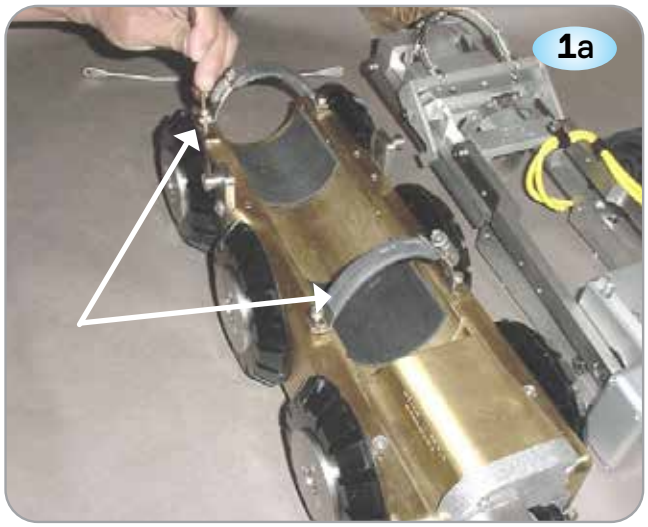
The electronic, remote-operated camera lift is designed for use with the Lite Ranger II, Pipe Ranger II, Steerable Pipe Ranger II and all versions of Pipe Ranger II to prevent the need for an operator to enter the manhole to position and reposition the camera height. In addition, the electric camera lift is designed for pipeline inspections ranging from 18" and up in diameter to help keep the camera near the center of the pipe to provide full inspection in heavy flow pipelines up to 36" in diameter.

To attach the electric camera lift:

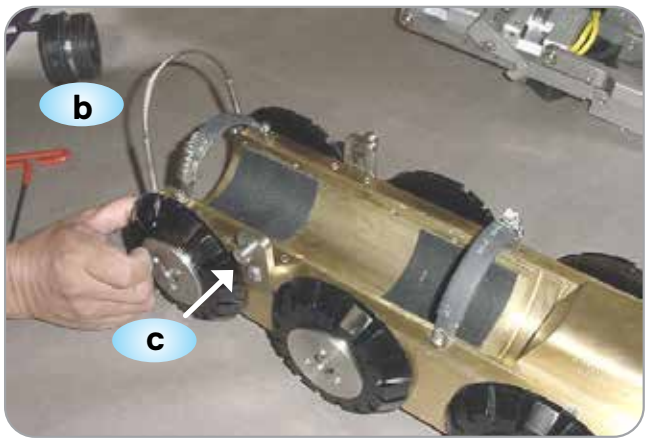
1. Using an allen wrench, remove the following items from the transporter as shown below.

   a. Remove the camera clamshell:





   b. Remove the hoisting cable and y-eliminator, if applicable:





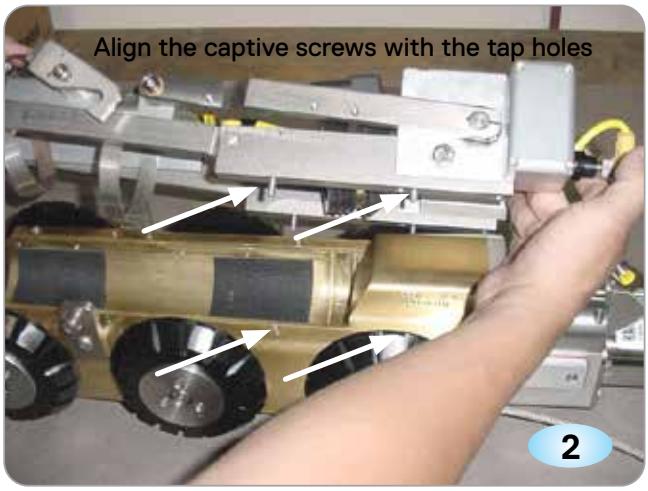
   c. Using an Allen Wrench, attach the lifting lugs until secure. Do not use thread locker.

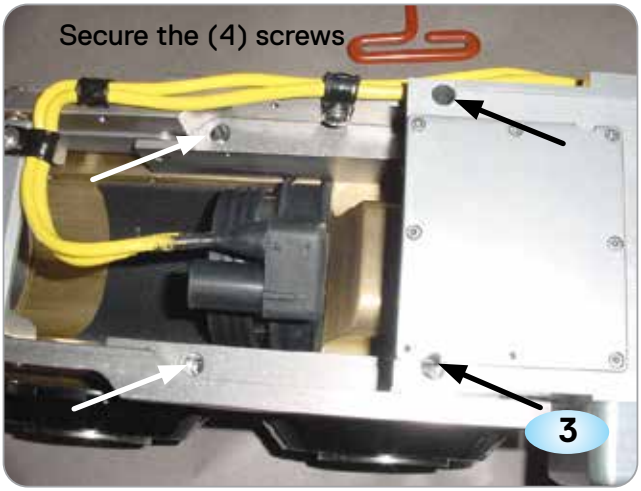
PROCEDURE: Installing and Operating the Electric Camera Lift (optional) Continued

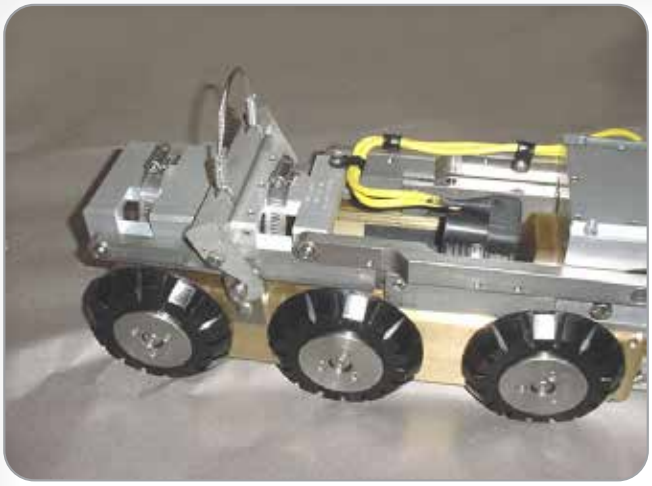
2. Place the lift on top of transporter as shown, ensuring that the captive fasteners on the lift are aligned with the tap holes on the transporter.

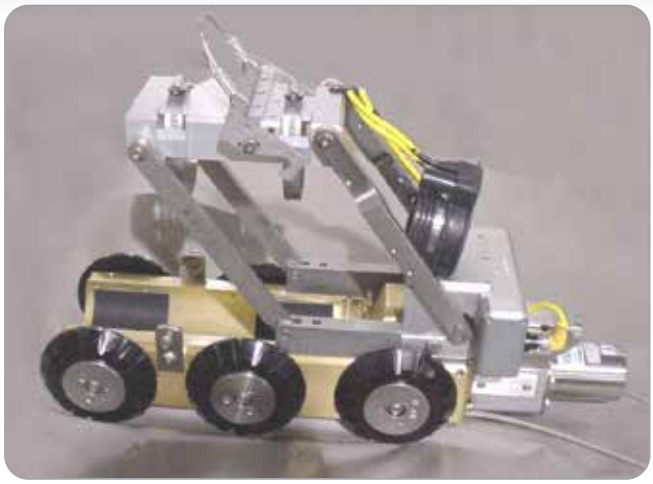
3. Using an allen wrench, secure the (4) captive fasteners located on the top of the lift to the transporter.

IMPORTANT! When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407, to all fastener threads!









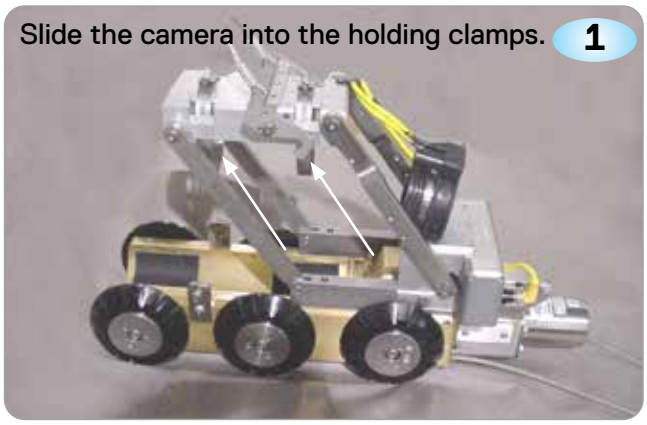
PROCEDURE: Electrical Connections for the OZII Camera

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

1. Slide the camera into the (2) camera holding clamps on the lift as shown. Make sure the clamps are secure so that the camera doesn't rotate or slide freely.

2. Attach the y-eliminator that was supplied to the back of the camera. Align the pins correctly before pressing it completely into the rear of the camera.

3. Ensure that the y-eliminator tap connection is facing upwards as shown.







PROCEDURE: Electrical Connections for the OZII Camera Continued

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

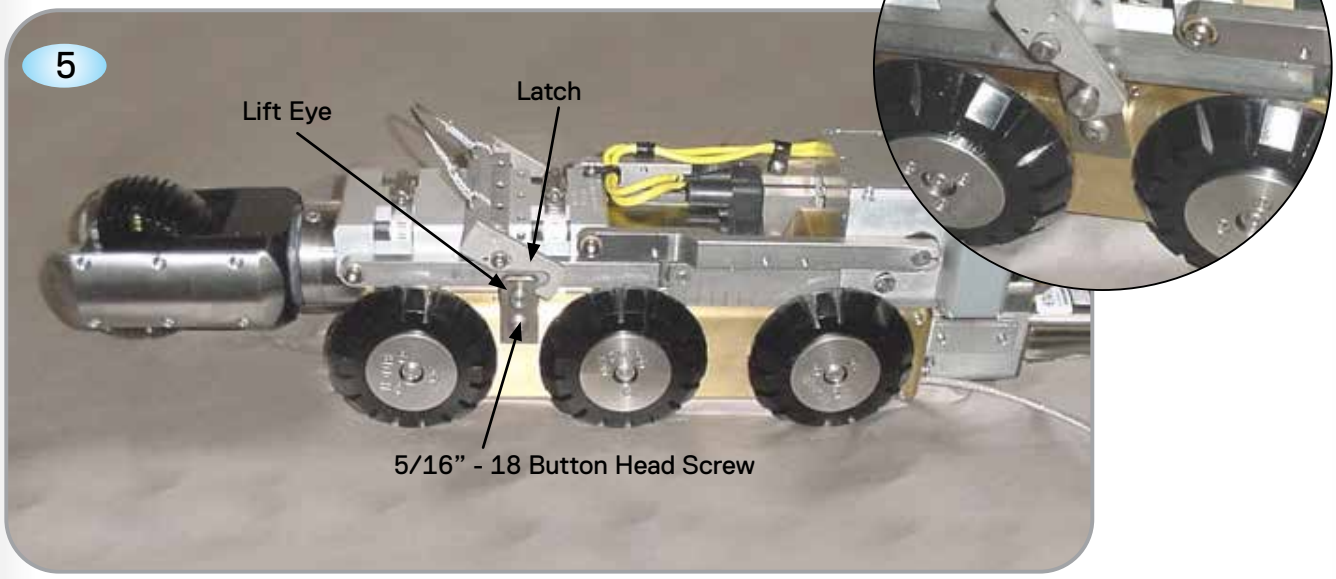
4. Plug the power cable from the y-eliminator into the transporter as shown, making sure that the connection is secure.

IMPORTANT! When removing or installing fasteners on the lift or camera clamps, apply anti-sieze compound, P/N CS407, to all fastener threads!





5. Ensure that the latch engages into the lift eye properly. If necessary, loosen the 5/16”- 18 button head screw and adjust the lift eye.



4 OPERATING THE COMPACT PIPE

OPERATING THE TRANSPORTER -

IMPORTANT! The instructions in this section only apply to all PR II / SPR II transporter versions!

PROCEDURE: Gear Shifting

When switching from small tires to large tires, perform the following gear shifting procedure to maintain transporter pulling power. 'L' indicates low speed for large tires (18" or larger pipe); 'H' indicates high speed for small tires (8"-15" pipes).

CRITICAL!

To prevent equipment damage, DO NOT operate the transporter in high gear when utilizing the larger tires (18" or larger pipe)!

Always operate in LOW GEAR when utilizing the larger tires (18" or larger pipe)!

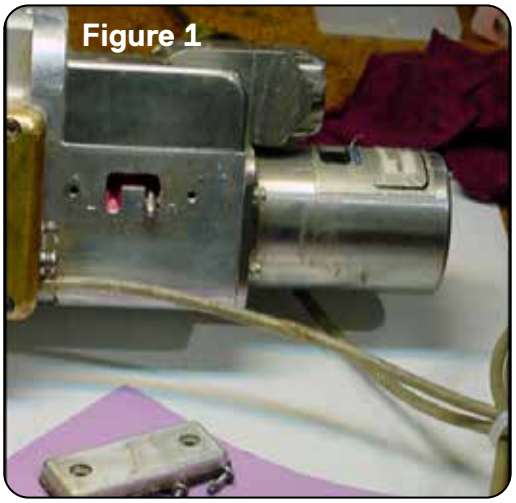
For addition information regarding the proper tire to use in the various pipe sizes, refer to the PIPE SIZE CONFIGURATIONS matrix in this manual.

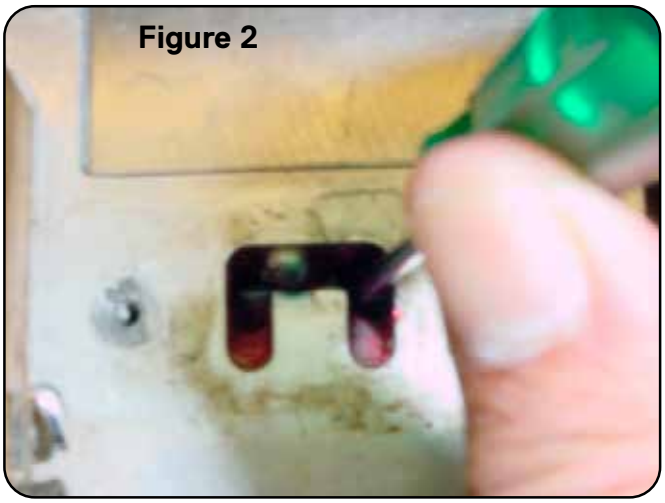
NOTE: The gears in the transmission were designed for maximum durability. For this reason, they do not have a synchronizing apparatus.

1. Ensure transporter controller is OFF.
2. Using a Phillips screwdriver, remove the shifter cover (left side or top of the transmission housing; refer to the figures below.
3. Make sure to press the direction rocker switch on the transporter controller to REV.
4. Turn the transporter controller power ON.
5. Pull the gear shifter handle out of the slotted pocket.
6. Slowly drive the transporter in reverse while attempting to shift the gear handle. Repeat this process until the gears are fully engaged (or the shifter handle is aligned with the other slot). If necessary, use a small flat screwdriver blade to push the flat top of the shifter cylinder rod against the slot to shift (refer to Figure 2).

DO NOT USE A HAMMER ON THE SHIFTER HANDLE!

7. Fold the shifter neatly into its slotted pocket.
8. Inspect the gasket on the access cover and replace if torn.
9. Re-install the shifter cover.
10. Reverse the procedure when changing from large to small wheel configurations.





The Pipe Ranger is shown above. The SPR II shifter is located on top of the transmisson housing under the swivel connector.

PROCEDURE: Transporter Operations (PR II / SPR II versions)
NOTE: It's suggested to perform the following before lowering the PR II / SPR II into the manhole to ensure equipment functionality and verify all camera and transporter functions.

1. Ensure that the power is turned OFF and make all electrical connections, including the camera and lighthead, if used, as described in the previous chapters.
2. Using Retrieval Tool P/N WT317, set the transporter into the pipeline and power up the system.
3. Use controller to drive at low speed.



IMPORTANT! Slowly accelerate speed to reduce wear on the motor and other electrical components!

To retrieve the transporter:

4. After the transporter has stopped moving, drive motor in reverse momentarily to engage freewheel (transporter should not actually move.) The clutch will disengage after approximately two seconds and the transporter will be ready to freewheel.
5. Use the winch or reel to pull the transporter back towards the control point and entry manhole.
6. To use the power reverse, adjust the joystick.



CRITICAL! When shifting gears, make sure to follow all instructions in the previous GEAR SHIFTING procedure!

PROCEDURE: Operating the Electric Lift Assembly
NOTE: It's suggested to perform the following before lowering the PR II / SPR II into the manhole to ensure equipment functionality:

- For K2, use the gamepad to position the lift per P/N MD912 Controller Guide.
- For legacy controllers only, perform the following:

1. Turn the power control unit ON and set the voltage to 80v minimum.
2. Turn ON the camera controller.
3. Turn ON all other video equipment, as required.
4. Press UP or DOWN on the lift toggle switch and ensure that the lift raises and lowers to the desired position.

PROCEDURE: Equipment Maintenance

1. Adjust the mobile generator to deliver a steady 110 to 120 volts. See the generator manual for the proper adjustments or contact authorized service personnel.
2. Clean the camera, lighthead, and transporter with detergent and water after each day of use.
3. Prior to use, check all of the cables coming from the motor housing for cut or worn areas. If wear on the cables is evident, the cables should be repaired or replaced immediately. Do not operate the PR II / SPR II transporter with worn or cut cables.

NOTE: 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 a voided warranty.

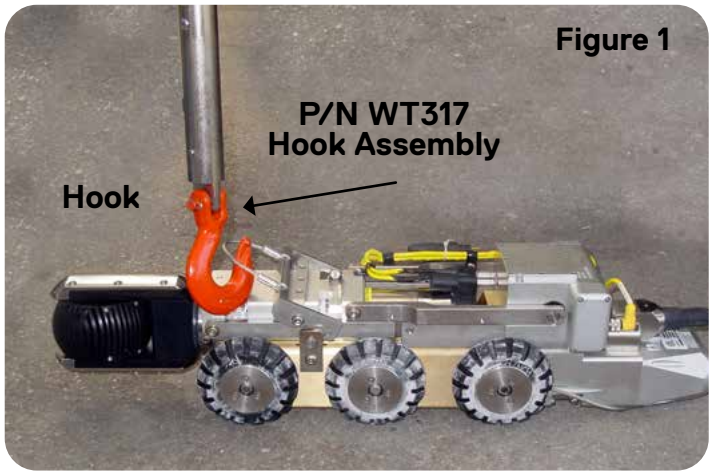
PROCEDURE: Pipe Ranger II/Steerable Pipe Ranger II Deployment/Retrieval Instructions

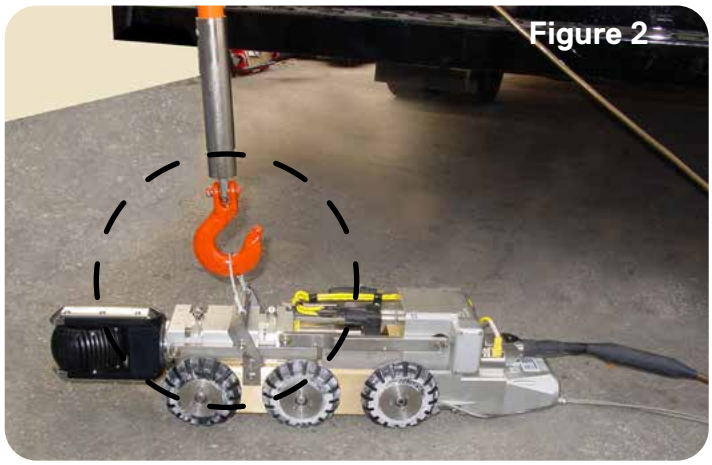
The following procedure is recommended for the deployment and retrieval of the CUES Pipe Ranger II and Steerable Pipe Ranger II Transporters equipped with a camera lift. This procedure requires two operators to safely handle the pole and the TV cable.

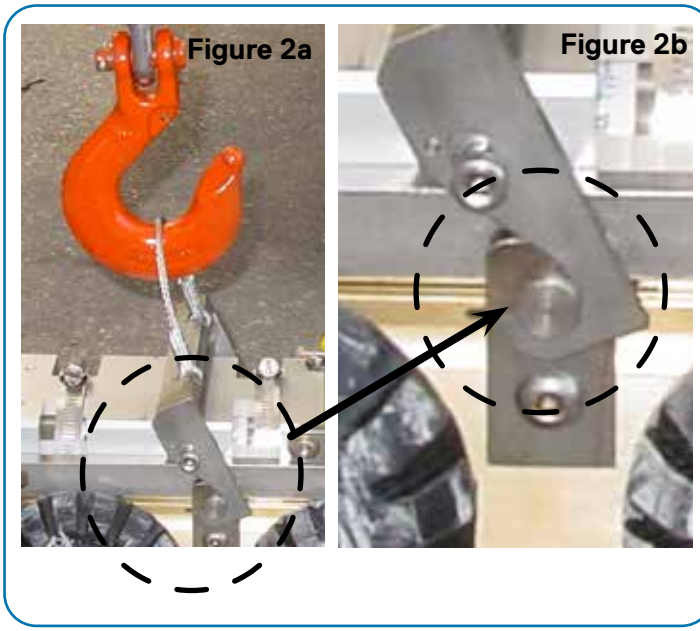
CAUTION: Prior to deployment / retrieval operations, ensure that the pole and hook assemblies are securely connected and the strain relief/tow cables are properly adjusted between the transporter and TV cable. The TV cable should have approximately (2) inches of slack between the transporter and strain relief clamp with the tow cables pulled taught.

Using the WT317 Hook Assembly (Ref. Figure 1) attached to the WT319 Pole Assembly (not shown), engage the lift cable loop from the forward end of the transporter with the hook throat facing aft using a lateral motion relative to the transporter position (Ref. Figure 1). Do not attempt to apply a vertical lifting force until the lift cable bracket is fully engaged with the lift pins on the transporter.

Full engagement of the lift bracket to the transporter lift pins is reached when the bracket rotates to a near vertical position (Ref. Figure 2 and View A & B). Maintaining constant hook pressure towards the aft end of the transporter prior to lifting will ensure full engagement.



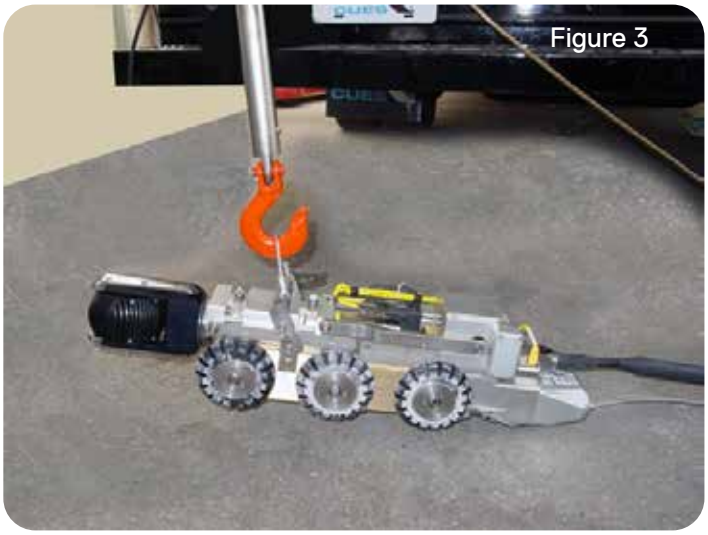


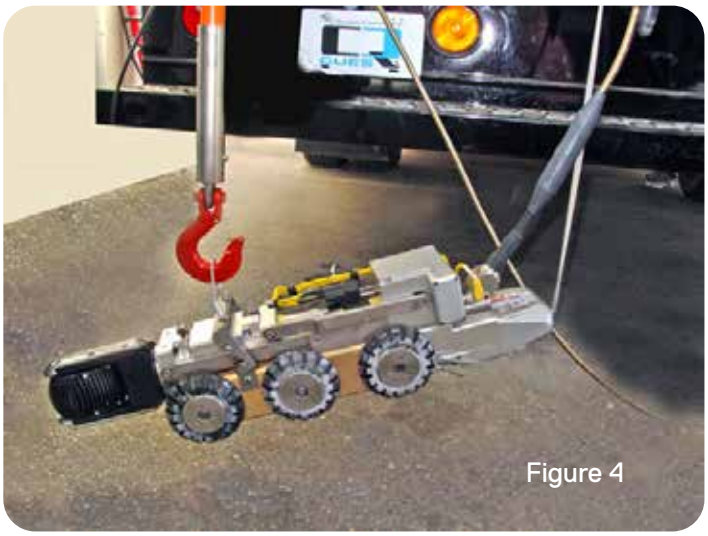


PROCEDURE: Pipe Ranger II/Steerable Pipe Ranger II Deployment/Retrieval Instructions

With the lift cable bracket fully engaged with the transporter lift pins, the transporter can be raised for deployment or retrieval (Ref. Figure 3).

The TV cable must be tended during deployment/retrieval operations to maintain the transporter at a level or slightly nose down position (Ref. Figure 4).


Figure 3

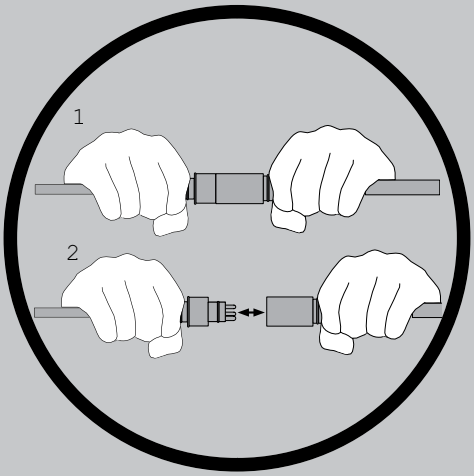

Figure 4

PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND

IMPORTANT CABLE INSTRUCTIONS!



Do not bend or flex when plugging or unplugging the cable connectors !



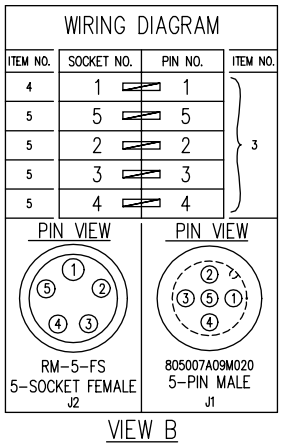
1 Firmly grasp connectors, not cables!
2 Pull apart as shown to prevent internal connector damage!

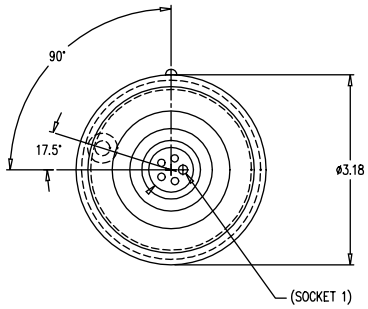
IMPORTANT NOTE:
It is recommended to apply a thin coat of Dow Corning DC111 (CUES P/N 940700) prior to plugging connectors together.

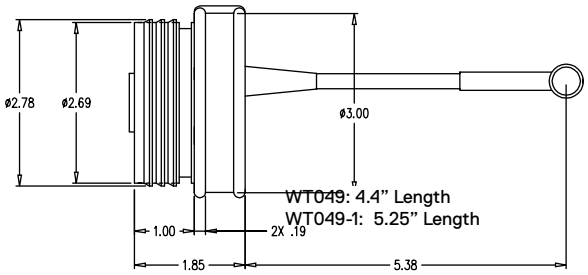
PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS - *FOR M/C PAN & TILT CAMERAS*

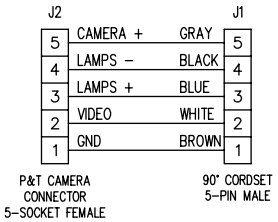
Y-eliminator, Double, 90 Degree, M/C, P/N WT049 (for use with the non-steerable M/C Pipe Ranger)

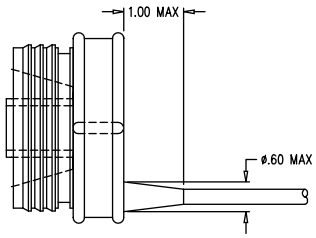
Y-eliminator, Double, 90 Degree, M/C, P/N WT049-1 (for use with the steerable M/C Pipe Ranger)

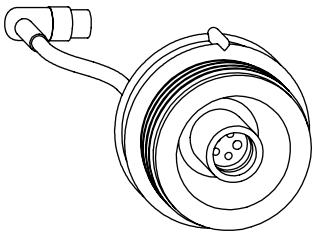






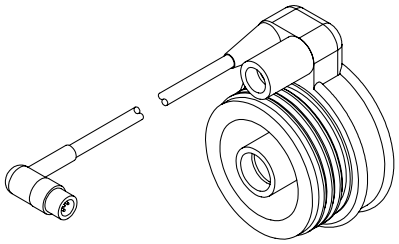


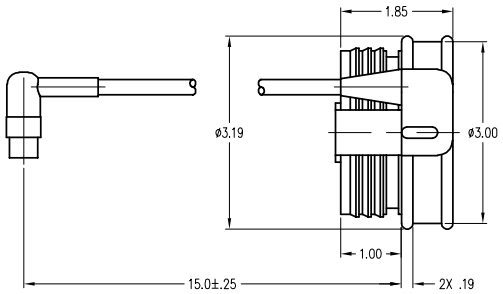


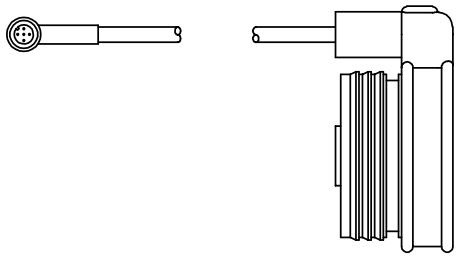


PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS -
FOR M/C PAN & TILT CAMERAS WITH CAMERA LIFT

Y-eliminator, 90 Degree, Long Cable, w/Tap, P/N WT311

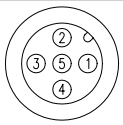


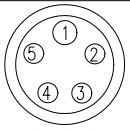


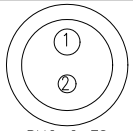


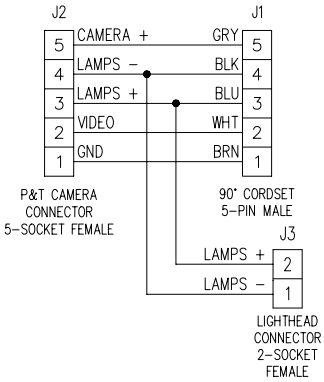
WIRING DIAGRAM

PIN NO.	PIN NO.	PIN NO.
1	1	
5	5	
2	2	
3	3	2
4	4	1


805007A09M020
5-PIN MALE
J1


RM-5-FS
5-SOCKET FEMALE
J2

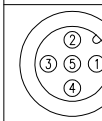

RMG-2-FS
2-SOCKET FEMALE
J3

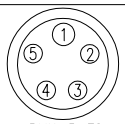


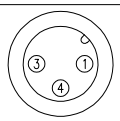
'Y' Eliminator, 90 Degree w/Tap, Long, Cable Power Lift, P/N WS050

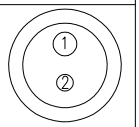
WIRING DIAGRAM

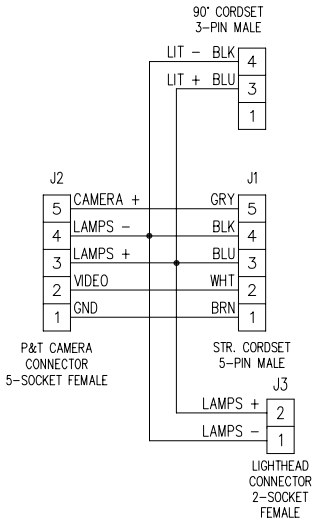
PIN NO.	PIN NO.	PIN NO.	PIN NO.
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5	5		
2	2		
3	3	3	2
4	4	4	1

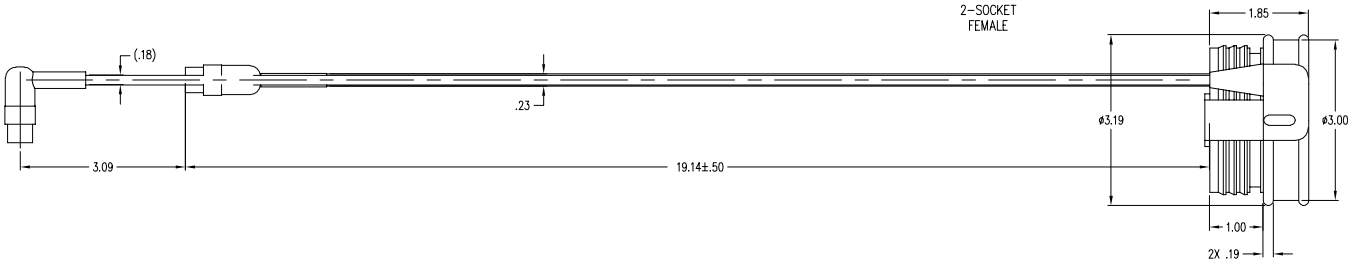

RST5-612/2M
5-PIN MALE
J1


RMK-5-FS
5-SOCKET FEMALE
J2


RSWT3-610/2M
3-PIN MALE
J4

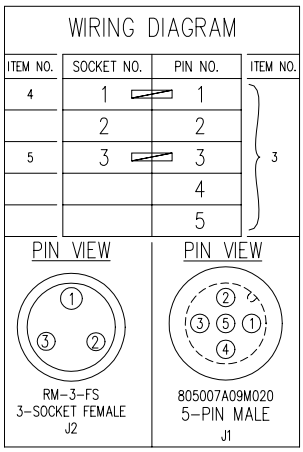

RMG-2-FS 2-SOCKET FEMALE
J3

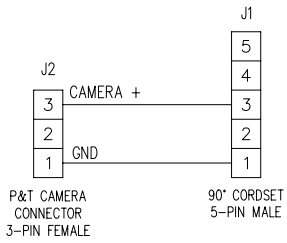


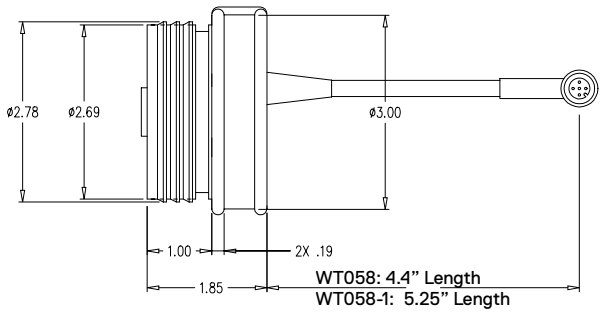


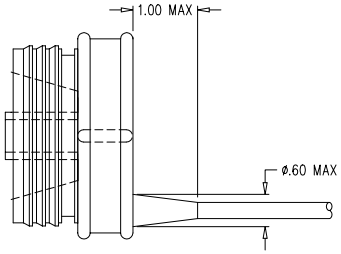
PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS - *FOR S/C CAMERAS*

Y-eliminator, 90 Degree, Short Cable w/o Tap, 4.40”, S/C 2000, P/N WT058
Y-eliminator, 90 Degree, Short Cable w/o Tap, 5.25”, S/C 2000, P/N WT058-1

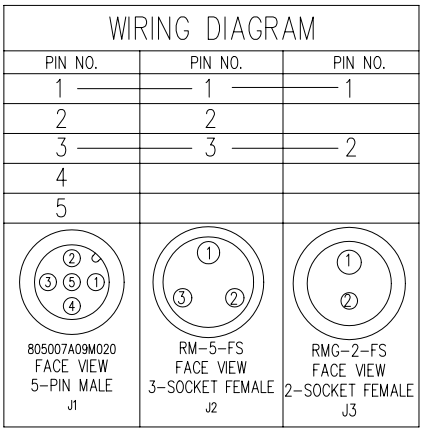


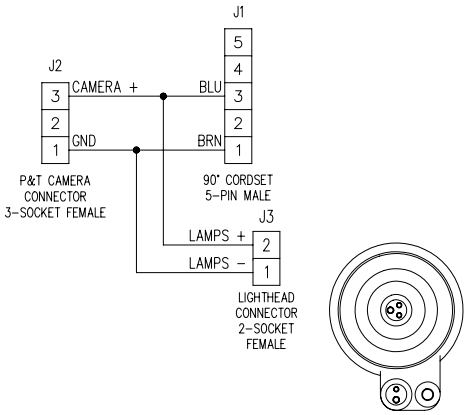


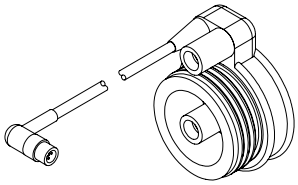


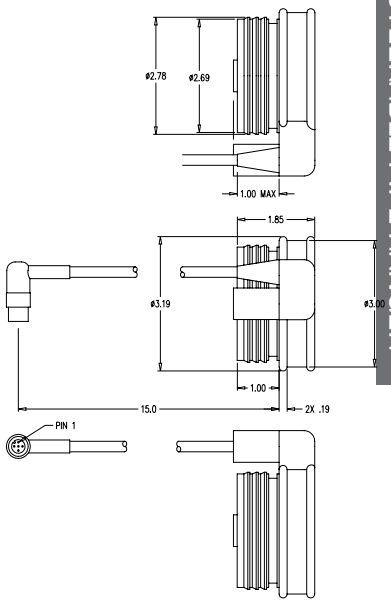


Y-eliminator, 90 Degree, Long Cable, w/Tap, 15”, S/C 2000, for Pipe Ranger II with Lift, P/N WT066



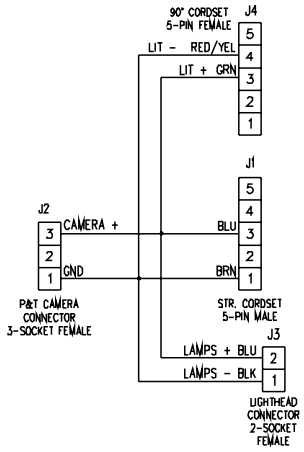






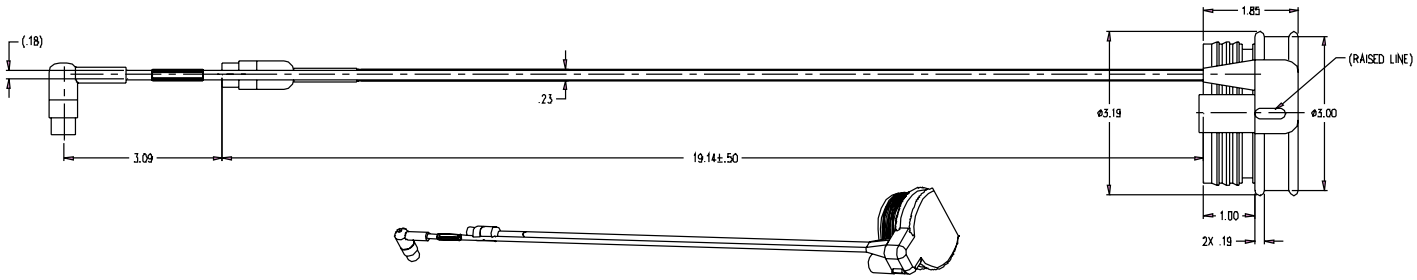
PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS - *FOR S/C CAMERAS CONTINUED*

Y-eliminator, 90 Degree, Long Cable, w/Tap, S/C 2000, for Pipe Ranger with Power Lift, P/N WS051



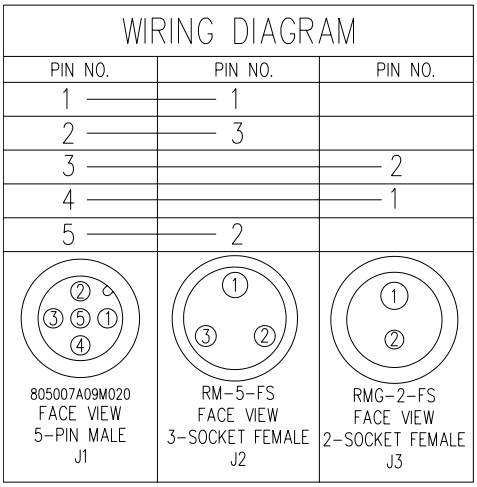
WIRING DIAGRAM

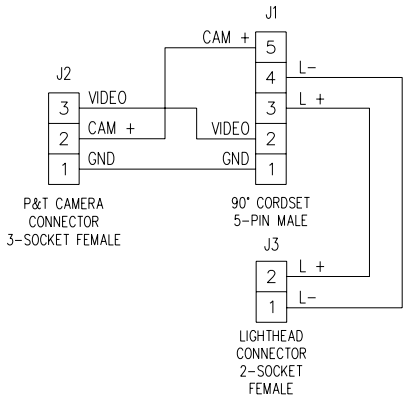
PIN NO.	PIN NO.	PIN NO.	PIN NO.
1	1	1	4
2	2		5
3	3	2	3
4			2
5			1
RKT5-612/2M 5-PIN MALE J1	RM-3-FS 3-SOCKET FEMALE J2	RMG-2-FS 2-SOCKET FEMALE J3	RKWT 5U-673/3F 5-PIN FEMALE J4

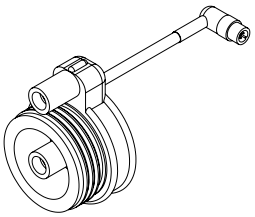


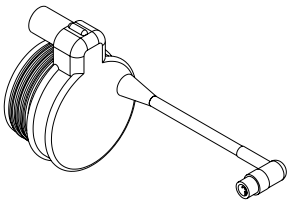
PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS - *FOR M/C STRAIGHTLINE CAMERAS*

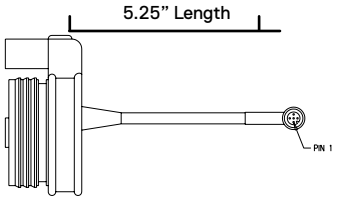
'Y' Eliminator, 90 Degree, w/Tap, Short Cable, M/C, Straight Line, P/N WT105



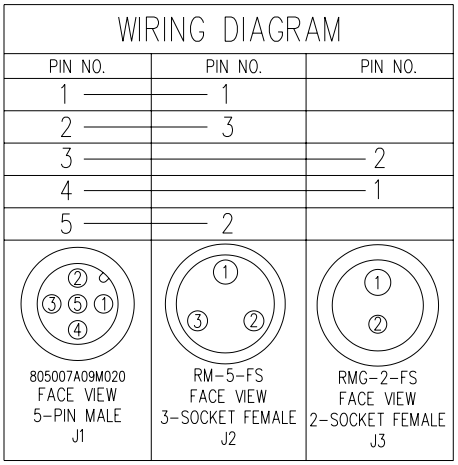


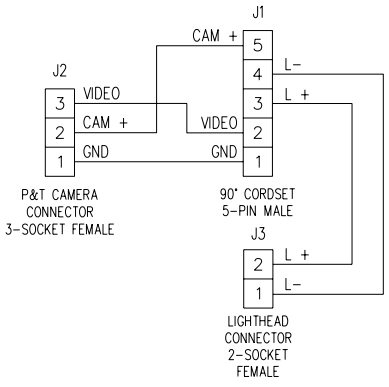


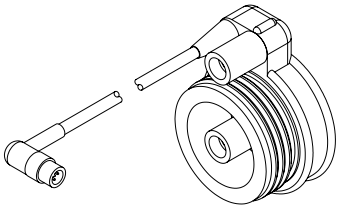


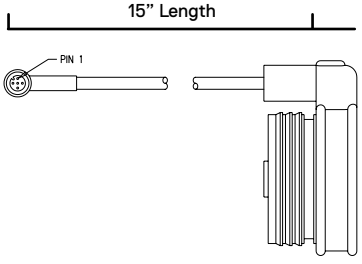


'Y' Eliminator, M/C, f/Lift, RVC, CVC, Pipe Ranger, P/N WT106



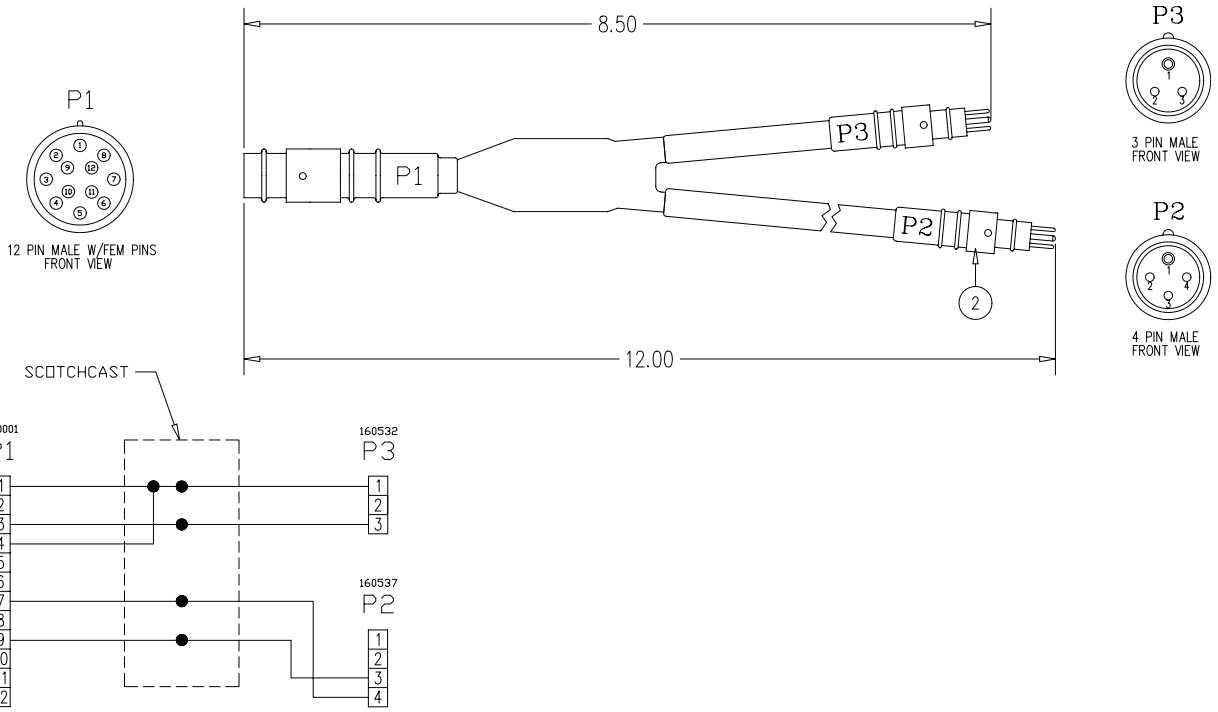




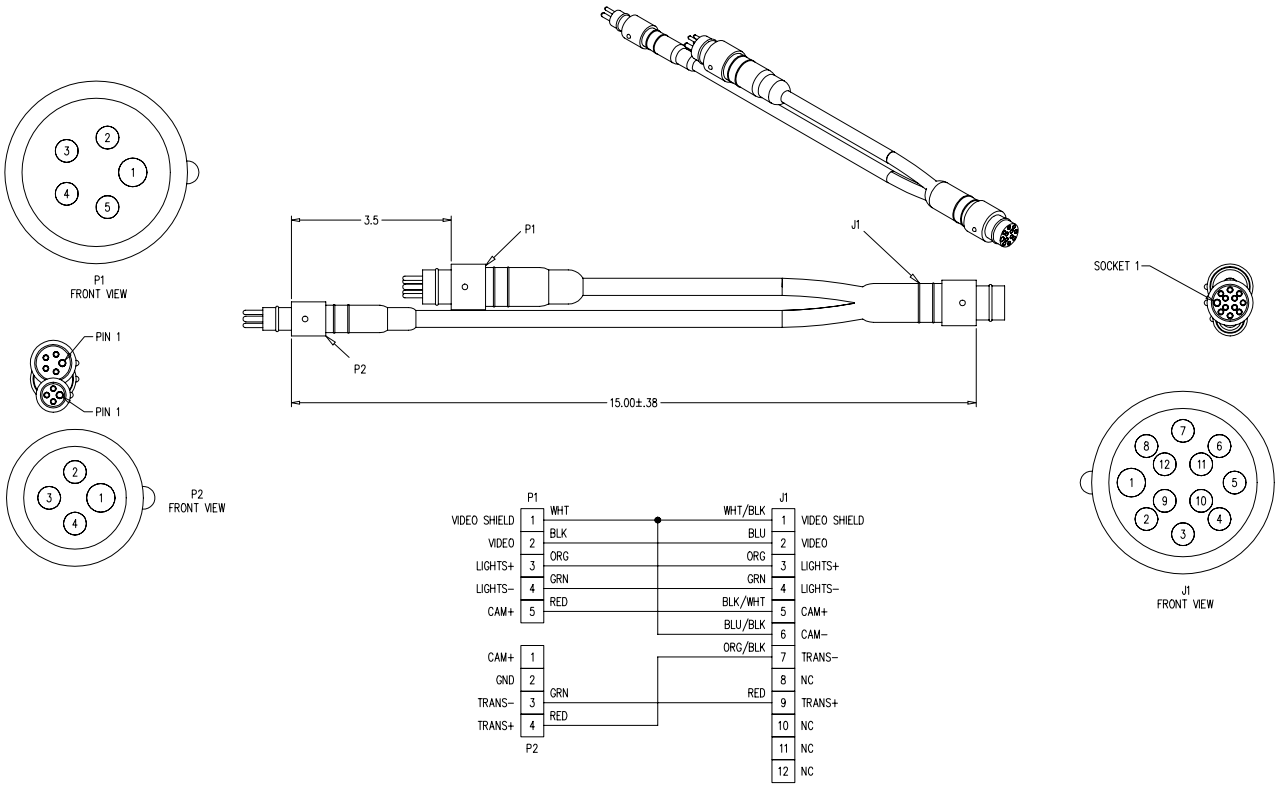


PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS - *ADAPTER CABLES*

Adapter, Cable, Single Conductor Plus, Pipe Ranger, P/N WT092



Adapter, Cable, 5/4/12, P/N WT312
(use with a 5/4 cable end to a non-steerable Pipe Ranger)



PIPE RANGER II / STEERABLE PIPE RANGER II Y-ELIMINATORS AND ADAPTERS -
ADAPTER CABLES CONTINUED

Adapter, Cable, S/C 2000, Pipe Ranger, P/N WT071

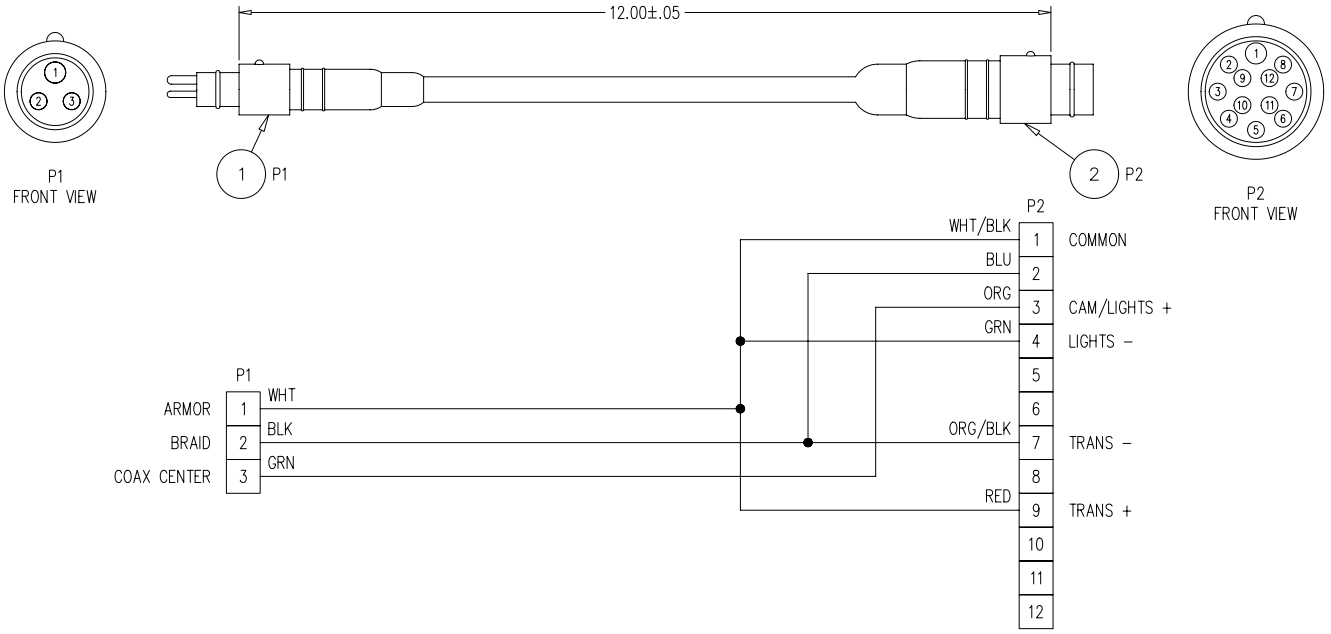


FIGURE 1A. TRANSPORTER ASSY, M/C, SPR2, WS360

CONFIGURATION TABLE				
PART NUMBER	DESCRIPTION	BODY	WHEELS	WEIGHT
WS360	TRANSPORTER ASSY, SINGLE POINT, SPR, MC	BRASS	RUBBER	60 LBS
WS360-1	TRANSPORTER ASSY, SINGLE POINT, SPR, MC, LIGHT	ALUM	STEEL	42 LBS
WS360-2	TRANSPORTER ASSY, SINGLE POINT, SPR, SC	BRASS	RUBBER	60 LBS
WS360-3	TRANSPORTER ASSY, SINGLE POINT, SPR, SC, LIGHT	ALUM	STEEL	42 LBS

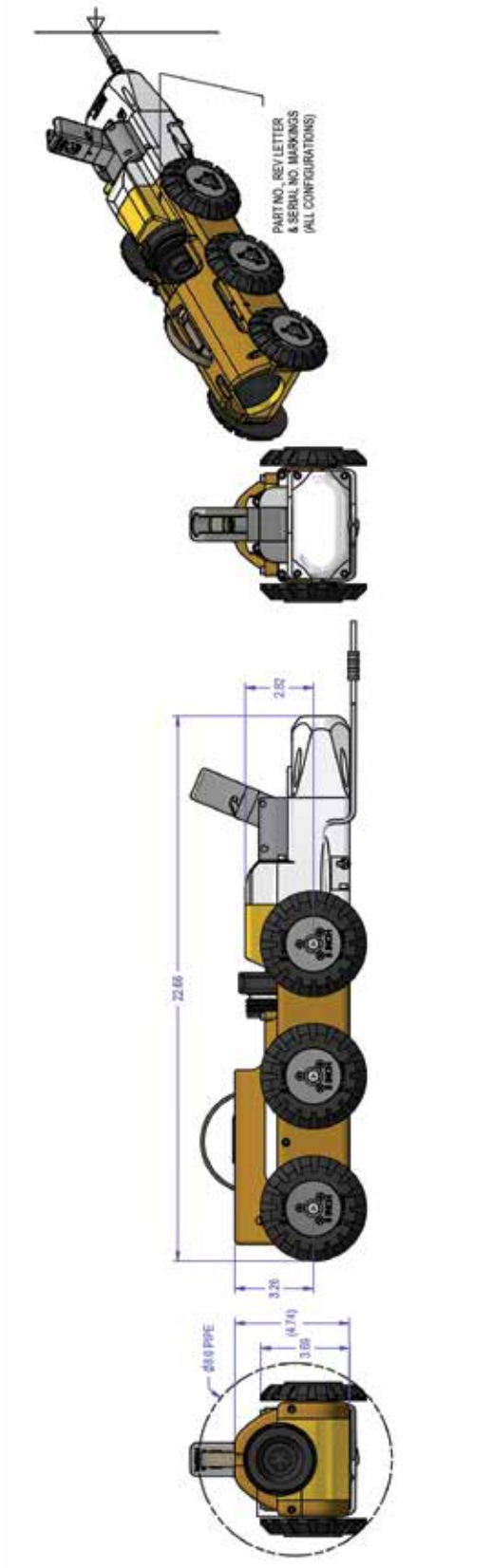


FIGURE 1B. TRANSPORTER ASSY, M/C, SPR2, WS360

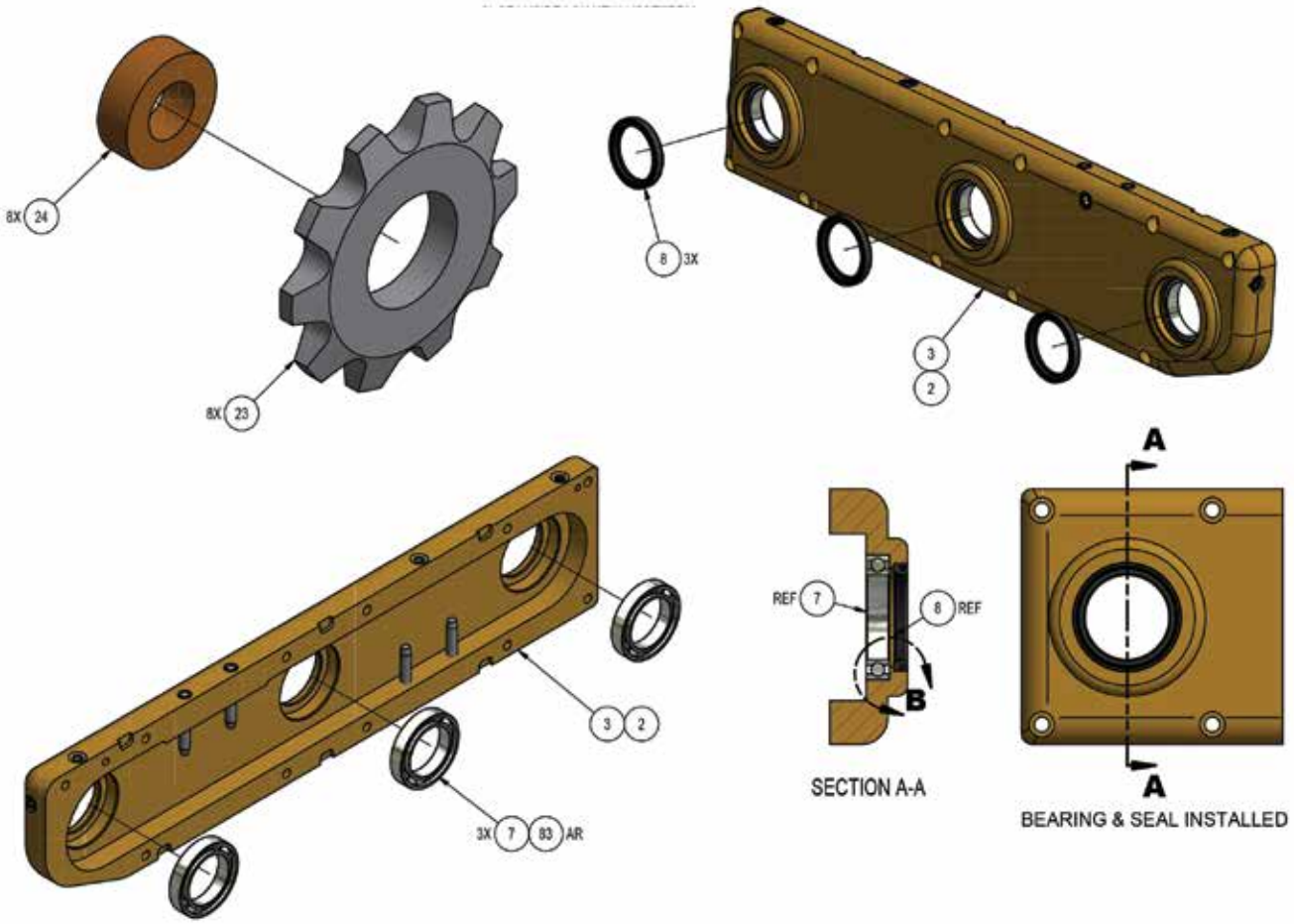


FIGURE 1C. TRANSPORTER ASSY, M/C, SPR2, WS360

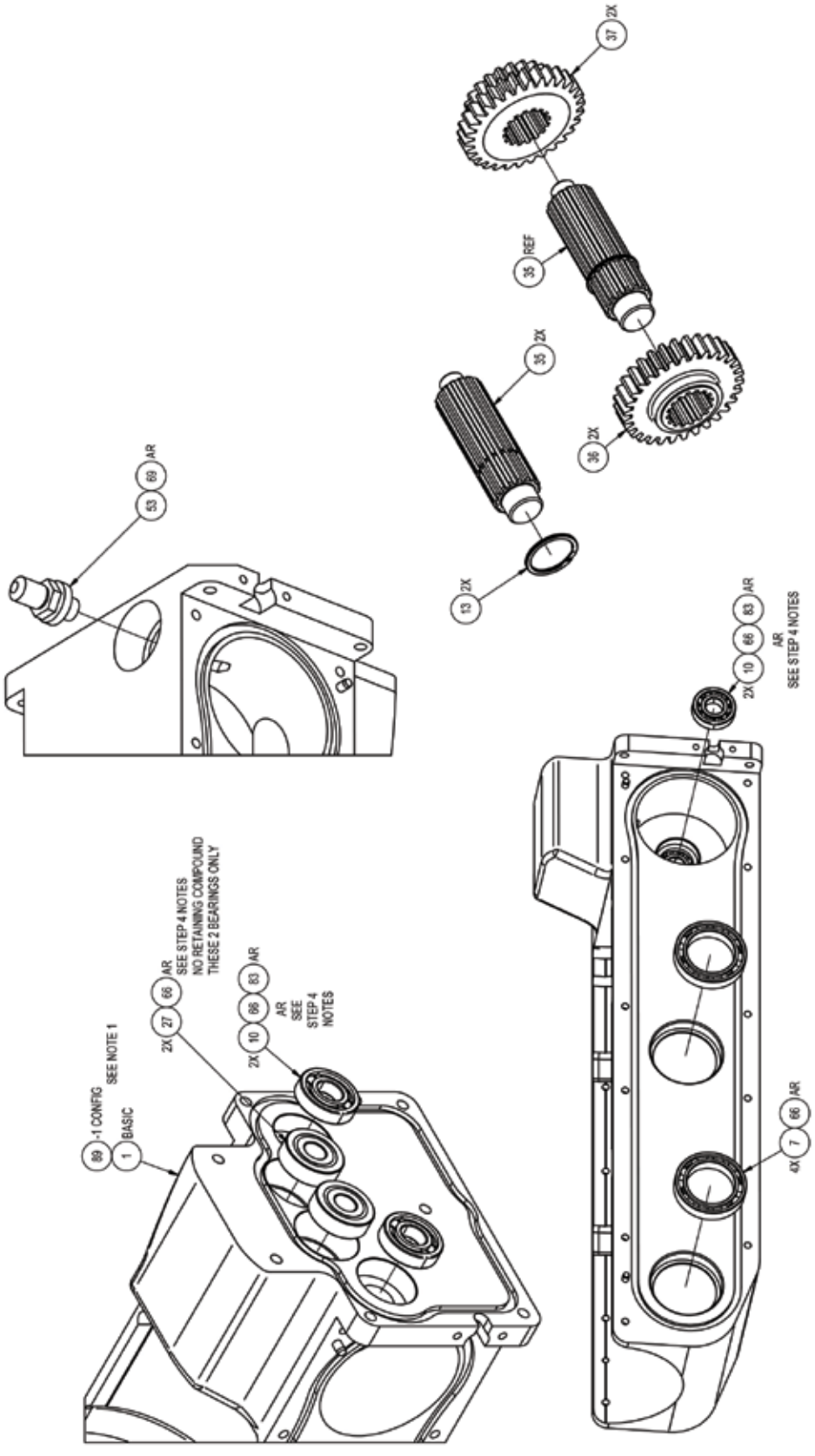


FIGURE 1D. TRANSPORTER ASSY, M/C, SPR2, WS360

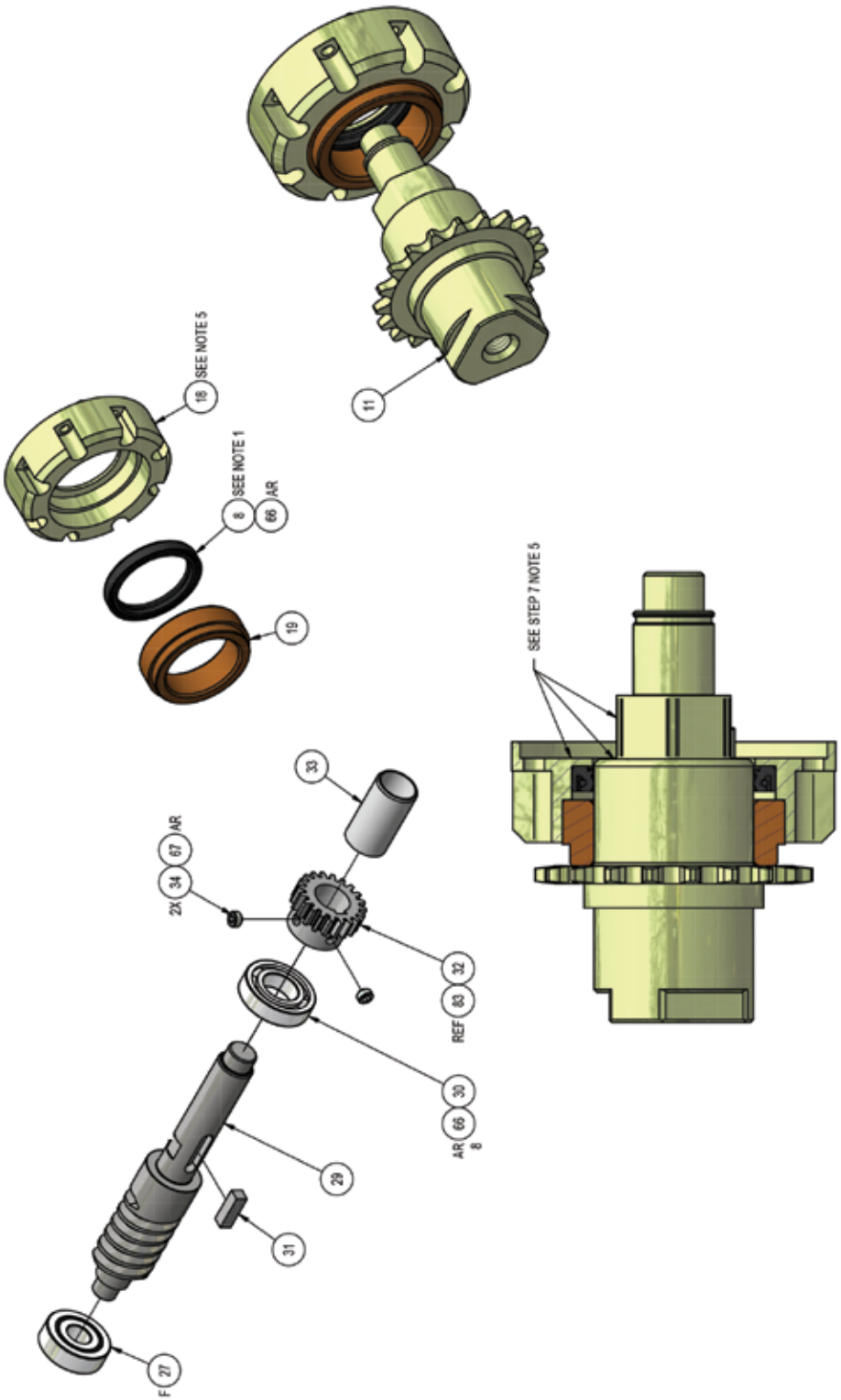


FIGURE 1E. TRANSPORTER ASSY, M/C, SPR2, WS360

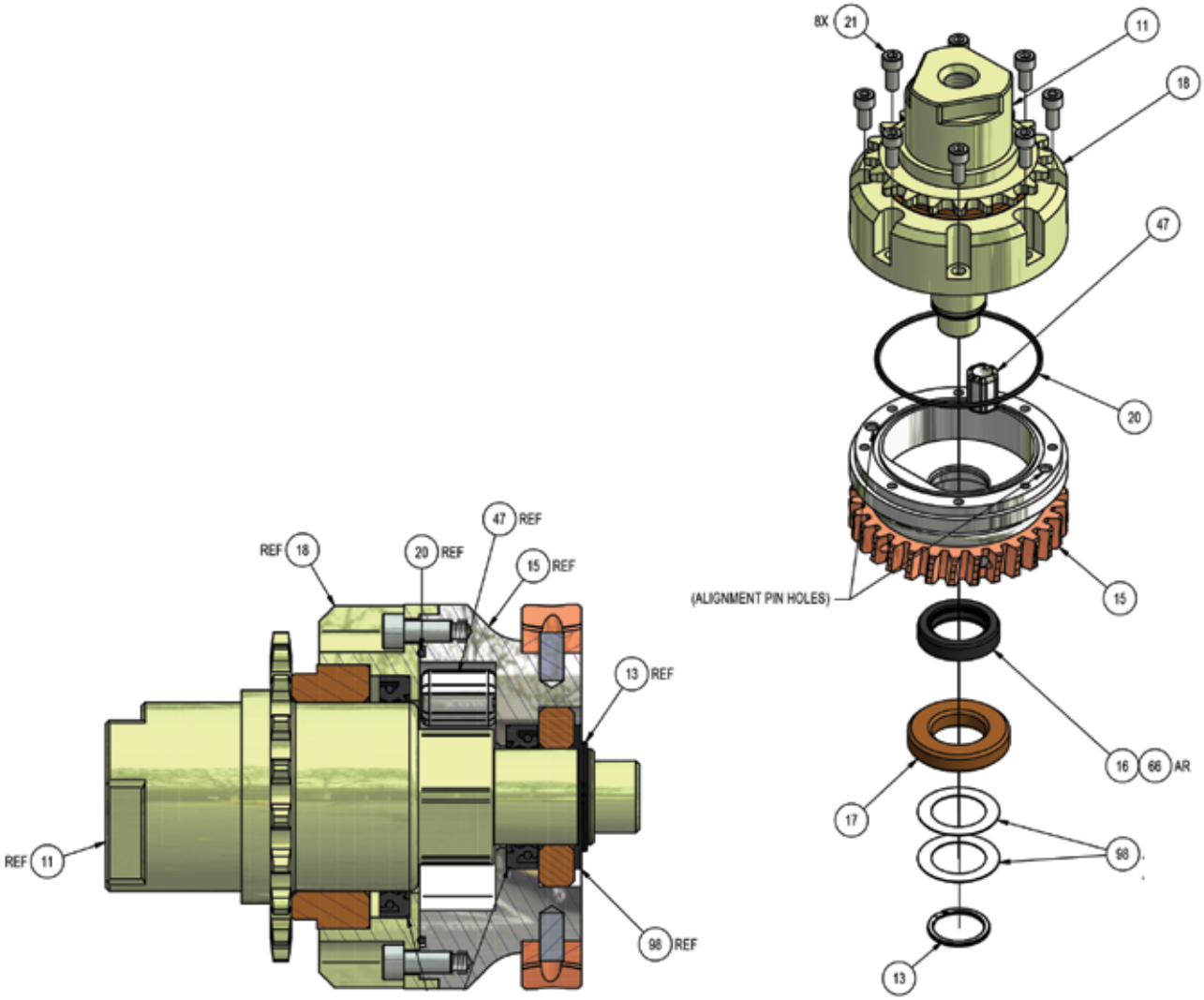


FIGURE 1F. TRANSPORTER ASSY, M/C, SPR2, WS360

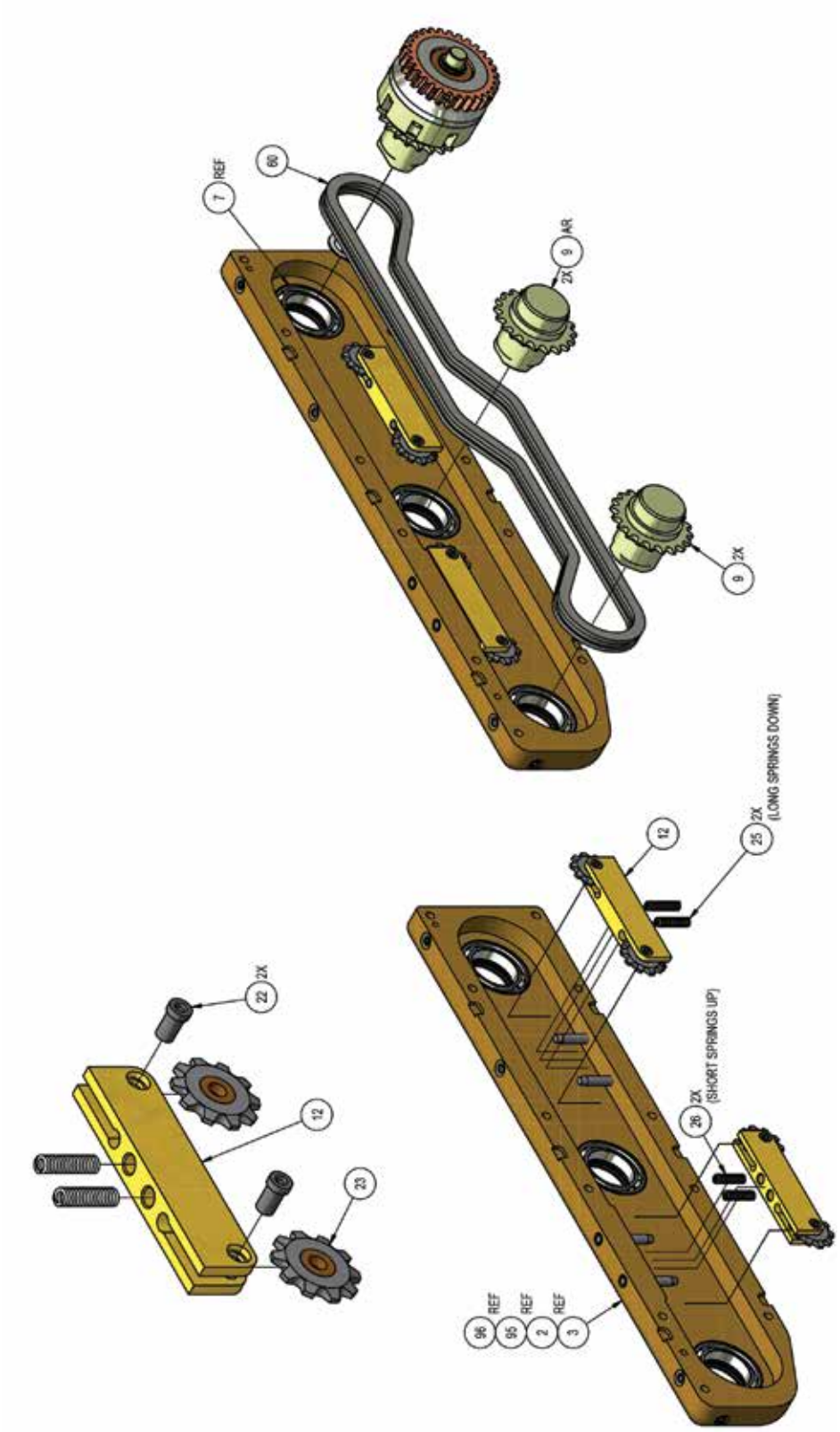


FIGURE 1G. TRANSPORTER ASSY, M/C, SPR2, WS360

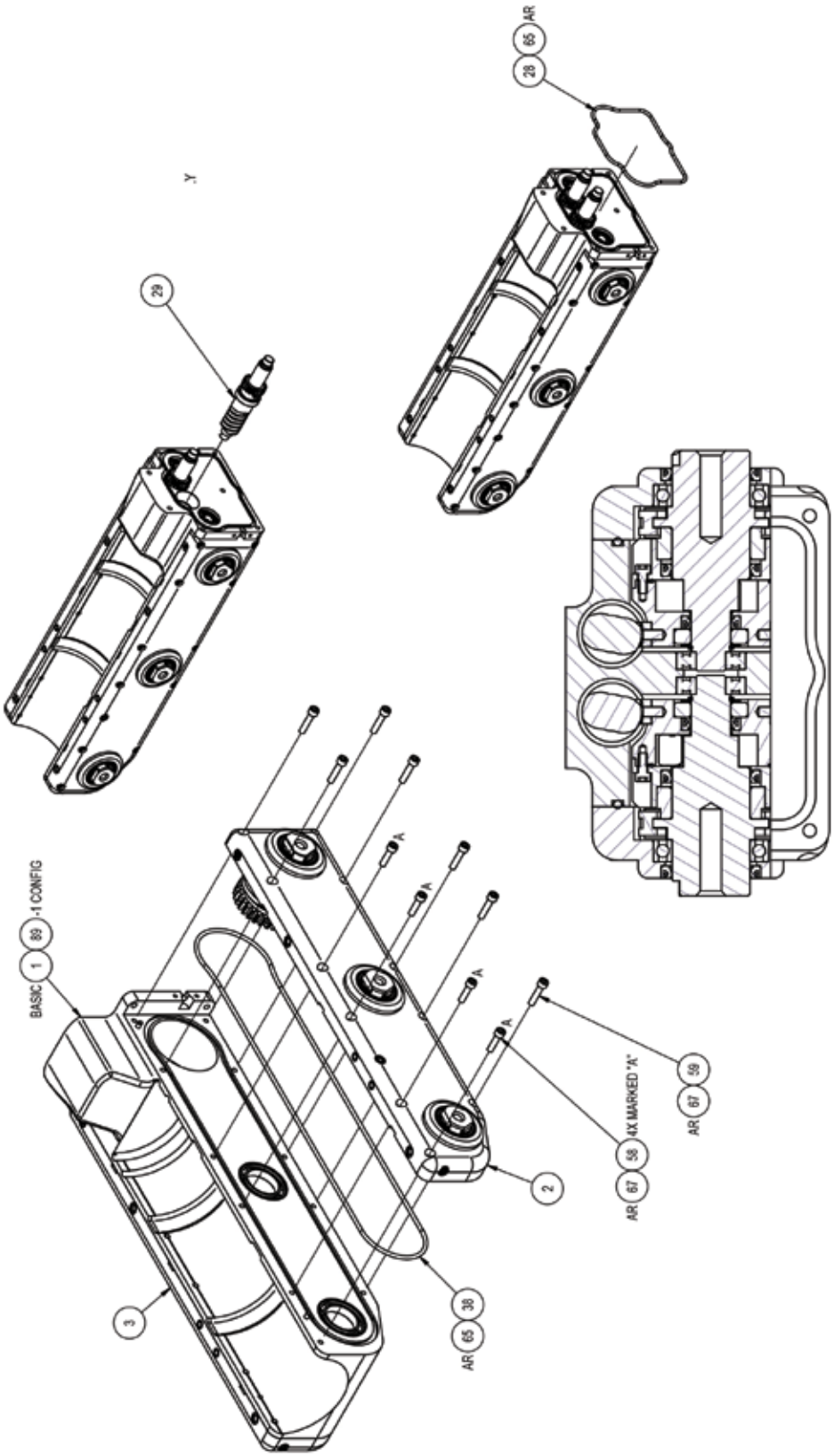


FIGURE 1H. TRANSPORTER ASSY, M/C, SPR2, WS360

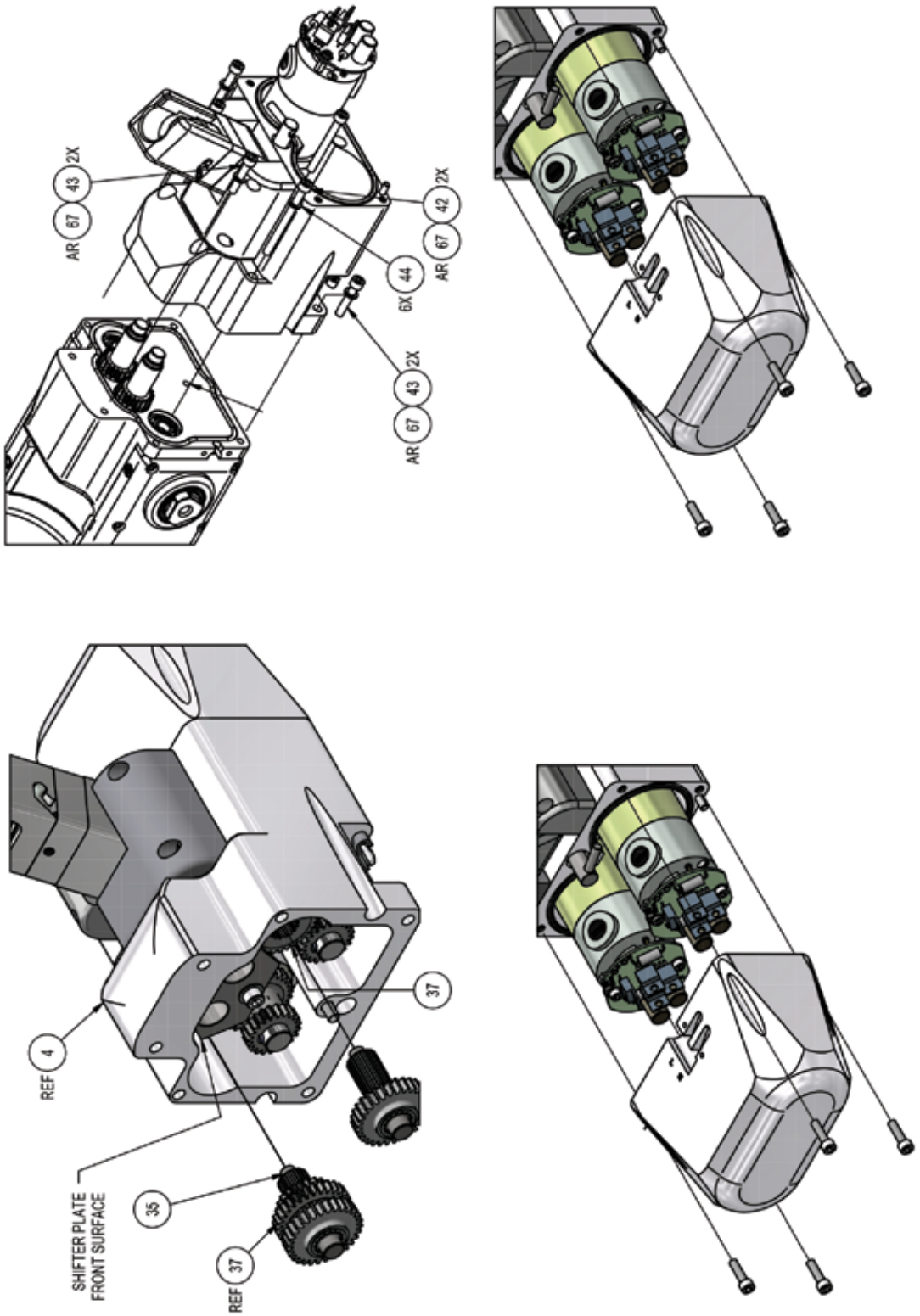


FIGURE 1I. TRANSPORTER ASSY, M/C, SPR2, WS360

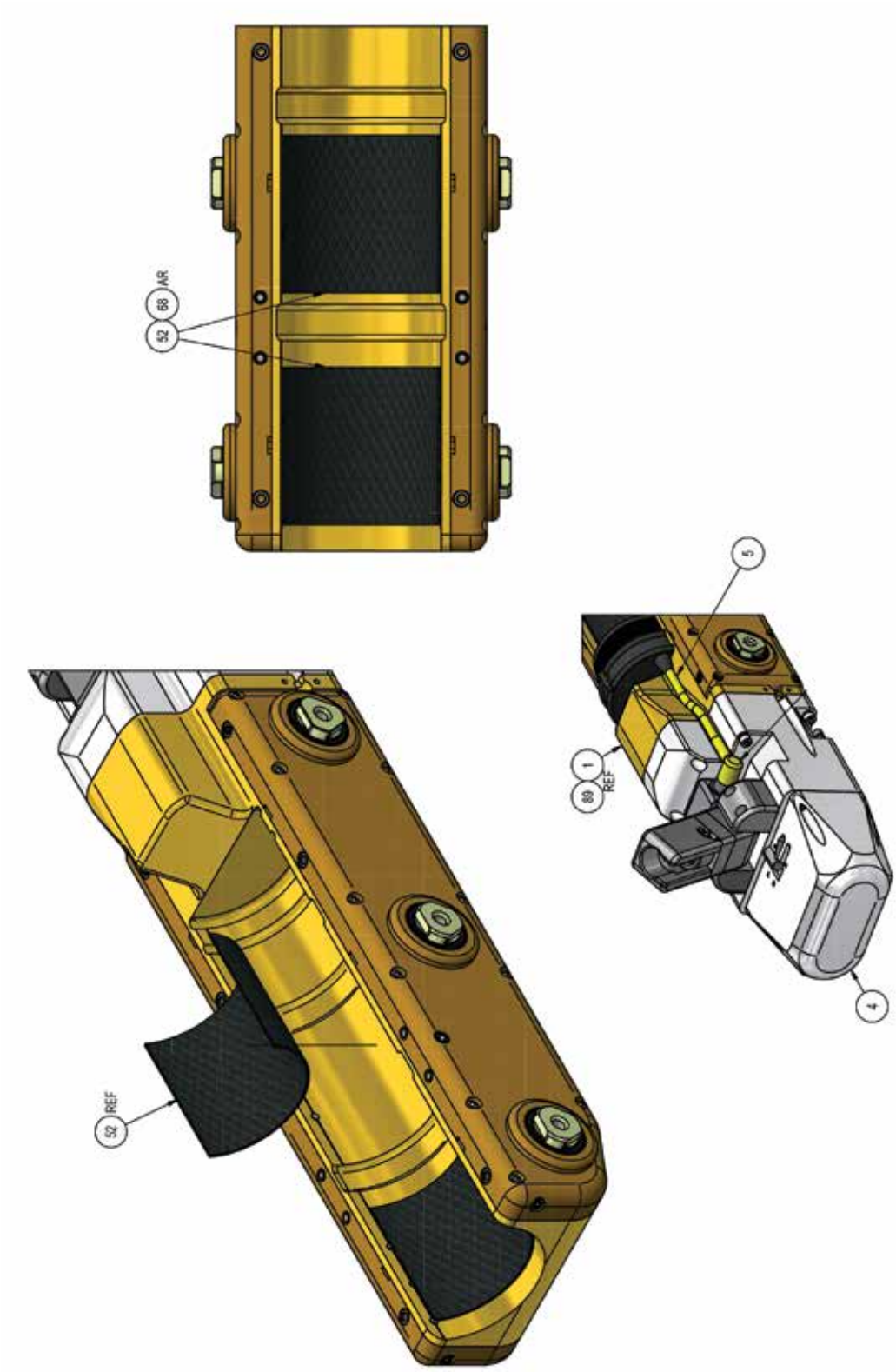


FIGURE 1J. TRANSPORTER ASSY, M/C, SPR2, WS360

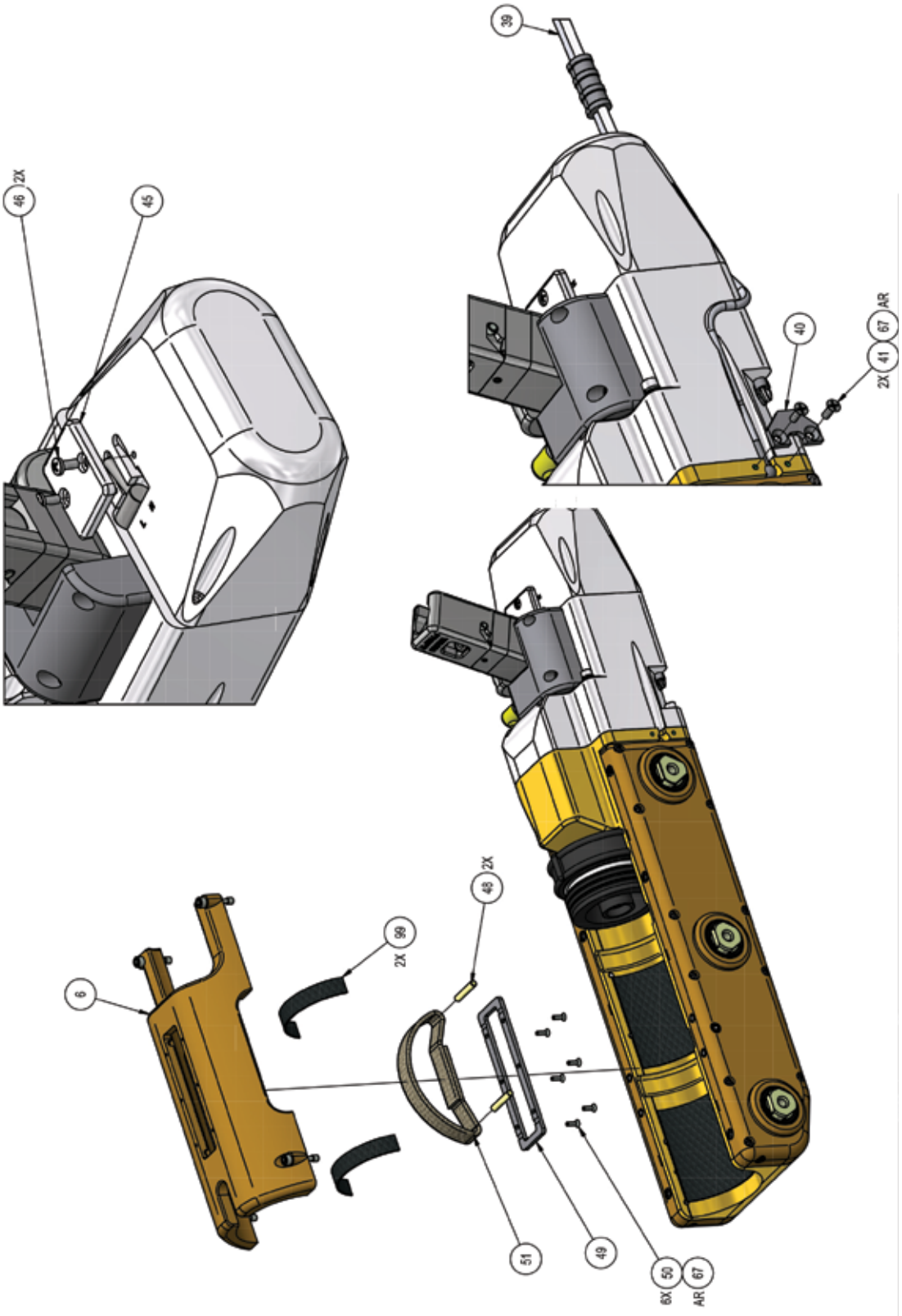


FIGURE 1K. TRANSPORTER ASSY, M/C, SPR2, WS360

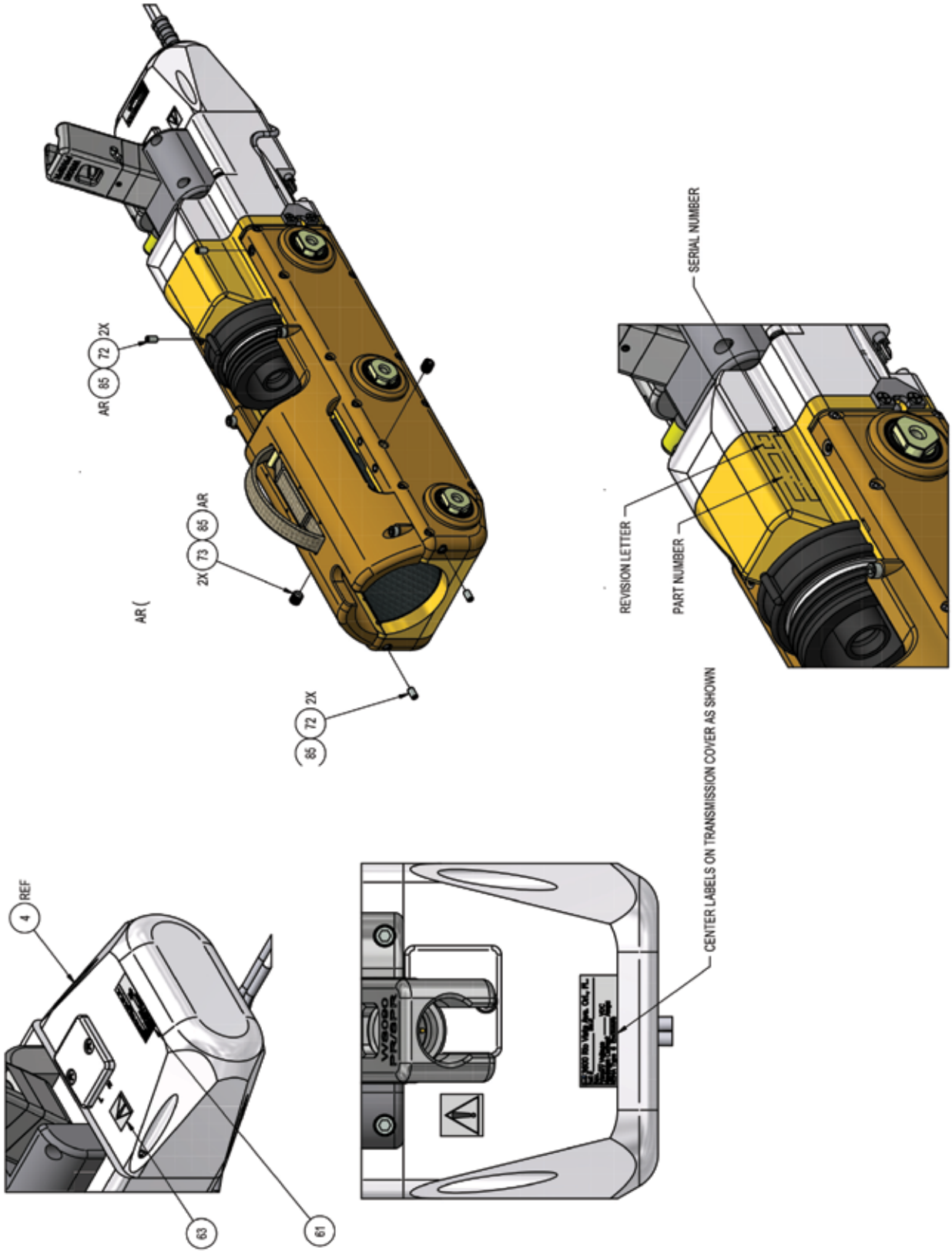


FIGURE 1L. TRANSPORTER ASSY, M/C, SPR2, WS360

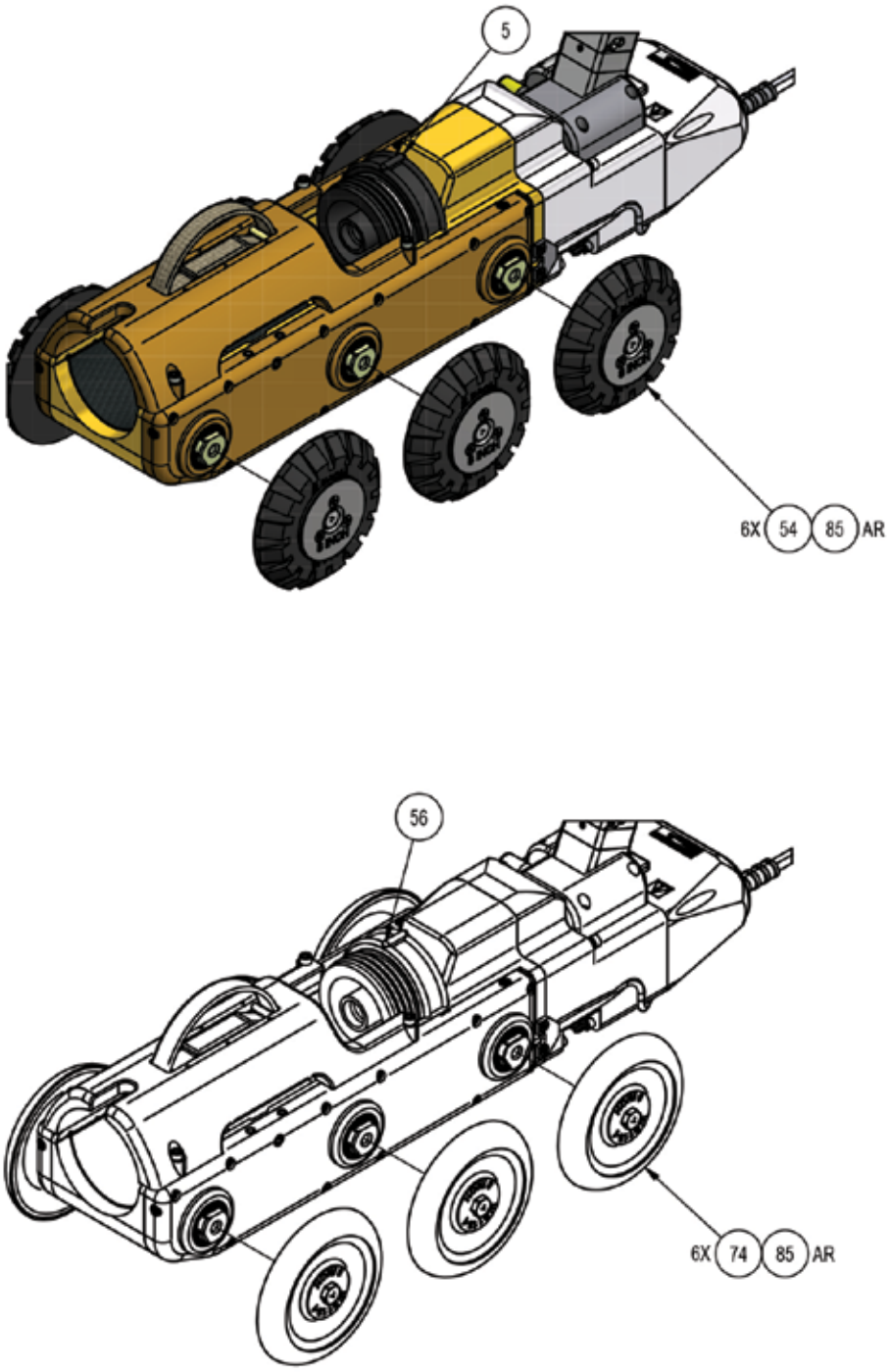
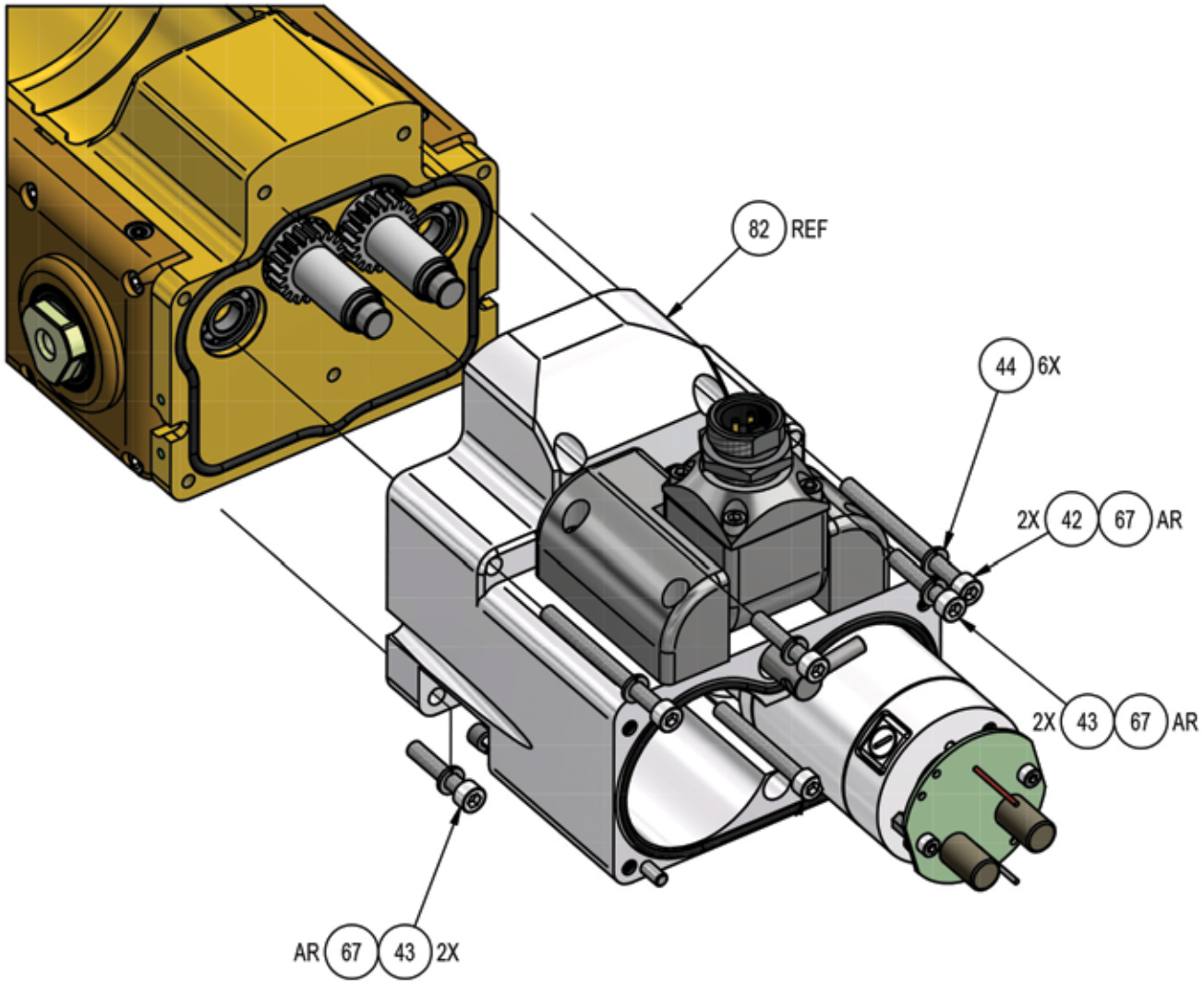


FIGURE 1M. TRANSPORTER ASSY, M/C, SPR2, WS360



TRANSPORTER ASSY, M/C, SPR2 (See Figure 1),Rev. H, WS360			
Item #	Description	P/N	Qty
0001	MAIN BODY, SPR2	WS093	1
0002	COVER,LEFT DRIVE TRAIN,SINGLE POINT	WS094	1
0003	COVER RT DRIVE TRAIN,SINGLE POINT	WS095	1
0004	MOTOR ASSY,W/FILTERS,SPR2	WS321	1
0005	Y ELIMINATOR,M/C,5.25",W/O TAP,SPR	WT049-1	1
0006	CLAMSHELL,CAMERA HOLD,BRASS PR1/PR2	WS113	1
0007	BEARING,BALL,37MMX25MMX7MM	HW1921	10
0008	SEAL,25ID X 32OD X 4MM W,RUBBER	HW1563	8
0009	SHAFT, DRIVEN, SINGLE POINT	WS097	4
0010	BEARING,.375"ID X .875"OD	HW568	4
0011	SHAFT, DRIVE, SINGLE POINT	WS111	2
0012	SPRING BLOCK,TENSIONER	WT014	4
0013	RING,RETAIN.,SPIRAL,.500ID,.035 THK	HW605	4
0015	RACE&WORM GR,CLUTCH,SINGLE POINT	WS101	2
0016	SEAL,1/2X.749X.165,DBL LIP	HW2788	2
0017	BEARING,PLAIN 1/2"X15/16"ODX3/16	WS106	2
0018	COVER, CLUTCH, SINGLE POINT	WS098	2
0019	BEARING,PLAIN, D SHAFT,SINGLE POINT	WS100	2
0020	O-RING,37X1MM,BUNA-N 70	HW2799	2
0021	SCREW,CAP,SOC HD 4-40X1/4 SST	103089	16
0022	PIN,AXLE,SPOCKET,TENSIONER	WT028	8
0023	SPROCKET,IDLER TENSIONER	WT016	8
0024	BEARING,.190IDX.372ODX.120T	WS073	8
0025	SPRING,.180"ODX.110"IDX,.68"LG,SST	HW1816	4
0026	SPRING,COMP,.18ODX.035D,.61 SL,SST	HW2789	4
0027	BEARING,BALL,(METRIC)8X22X7	300273	2
0028	O-RING,2-155 BUNA	HW1000	1
0029	SHAFT,TRANS,WORM,STEERABLE PR	WS017	2
0030	BEARING,BALL,12MM IDX24MM ODX6MM TK	HW1002	2
0031	KEYSTOCK,4MM SQR X ½",SST	LT125	2
0032	GEAR,20T,IDLER	WS007	2
0033	BEARING,SLEEVE,12IDX14ODX25LG,PLAS	HW1056	2
0034	SCREW,SET,10-32X1/8 SST	101027	4
0035	SHAFT,IDLER,SPLINE,SPR REV.E&HIGHER	WS021	2
0036	GEAR,30T,IDLER	WS020	2
0037	GEAR,21/30T,SPLINED,SPR	WS022	2
0038	O-RING,2-175,BUNA,F/ PR SIDE COVERS	WT046	2
0040	RETAINER,TOW CABLE,SPR	WS019	2
0041	SCREW,FLAT,6-32X3/8 PHIL SST	103058	4

TRANSPORTER ASSY, M/C, SPR2 (See Figure 1),Rev. H, WM360			
Item #	Description	P/N	Qty
0042	SCREW,CAP,SKT HD,10-32 X 2¼,SST	HW1054	2
0043	SCREW,CAP,SKT HD,10-32X1,SST	101425	4
0044	WASHER,SPLIT LOCK,#10 SST	101739	6
0045	COVER,GEAR SHIFTER,STEERABLE PR	WS003	1
0046	SCREW,PAN,6-32X5/16 PHIL SST	101088	2
0047	WEDGE, HEX, CLUTCH	WS103	2
0048	PIN,DRIVE SST .187X1”	097551	2
0049	RETAINER,PIN,CLAMSHELL CAMERA HOLD	WS113-1	1
0050	SCREW,FLAT,4-40X 3/8 PHIL SST	100055	6
0051	LOOP,LIFTING,WEBBING,U-SHTY,WTR,CPR	MC223	1
0052	PAD,CAMERA YOKE	1302001	2
0053	VALVE,PURGE,P&T	CP063	1
0054	ASSY,WHEEL,RUBBER,8”,SINGLE,SPR2	WS322	6
0058	SCREW,CAP,SKT HD,8-32X5/8,SST	100141	8
0059	SCREW,CAP,SKT HD,#8-32 X 3/4 SST	HW809	14
0060	CHAIN,112LINK,28.0 LG,RIVET,CONTIN	WS115	2
0061	LABEL,THERMAL XFR,1.500”W X .500”H	CS221	1
0063	LABEL,LASERTAB MARKER, .560 X .560	CS222	1
0064	MRO-PERMANENT LOCK,ND 140500-50,RED	440060	1
0065	LUBE,ORING, SUPER O LUBE, 2 OZ TUBE	439986	1
0066	MRO-GREASE,SUPERLUBE 41150 -14.1-OZ	CS476	1
0067	MRO-REMOVABLE LCK,ND 121200-2,BLUE	CS036	1
0068	MRO-ADHESIVE,WEATHERSTRIP(TUBE)	440065	1
0069	MRO-GASKET MAKER,FASTGASKET,BLK	445067	1
0070	TUBE,SHRINK,BLACK 1/4”RNF	712576	1
0071	TUBE,SHRINK,BLACK 1/8”	712789	1
0072	SCREW,SET,10-32X3/8 SKT SST	101602	4
0073	SCREW,SET 5/16-18 X 3/8LG,18-8 SS	HW1560	2
0083	MRO-RET.COMP,.015GP,ND541200-50,GRN	CS092	1
0084	MRO-TAG,WARNING FOR PR & SPR	WT095	1
0085	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0087	MANUAL,USER,OPERATION,SPR2	WS930	1
0092	TOOL,3/8DR,1/2”X6POINT SOCKET	CS486	1
0093	TOOL,TORQUE WRENCH,3/8”DR.MICROMETR	CS472	1
0094	TOOL,3/8” SQUARE DRIVE,6” EXTENSION	CS593	1
0098	SHIM,.50 ID X.75 OD X.010THK,316SST	HW1128	1
0100	PAD,CAMERA CLAMP,4.5 X .5	WS120	2
0102	CABLE,TOW,REAR VIEW CAM TO SPR 54”	WS062-1	1
0103	QUICK CARD, WHEEL SCREW GUIDE	WM961	1

FIGURE 2A. TRANSPORTER ASSY,M/C,PR2, WT360

CONFIGURATION TABLE			
PART NUMBER	DESCRIPTION	BODY	WHEELS
WT360	TRANSPORTER ASSY,M/C,PR2	BRASS	RUBBER
WT360-1	TRANSPORTER ASSY,M/C,PR2 LIGHT	ALUM	STEEL
WT360-2	TRANSPORTER ASSY,S/C,PR2	BRASS	RUBBER
WT360-3	TRANSPORTER ASSY,S/C,PR2 LIGHT	ALUM	STEEL

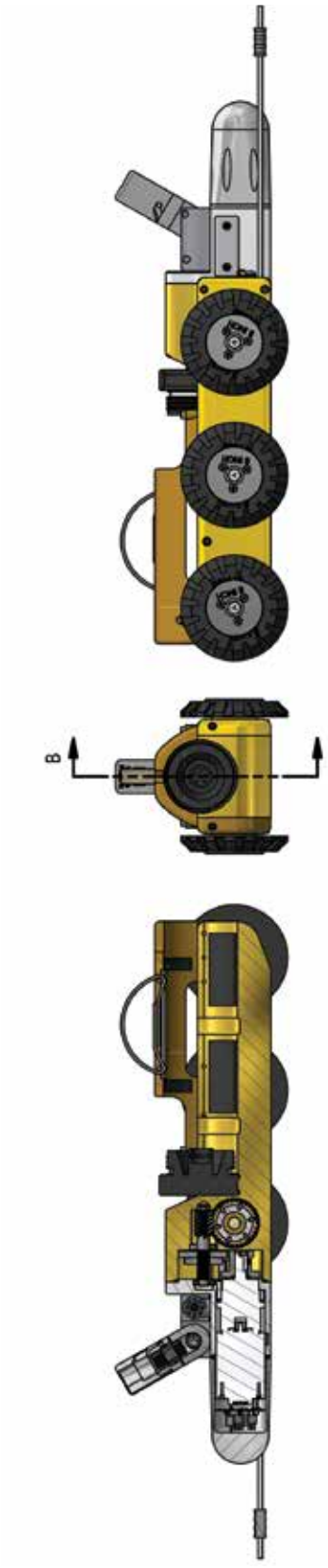


FIGURE 2B. TRANSPORTER ASSY,M/C,PR2, WT360

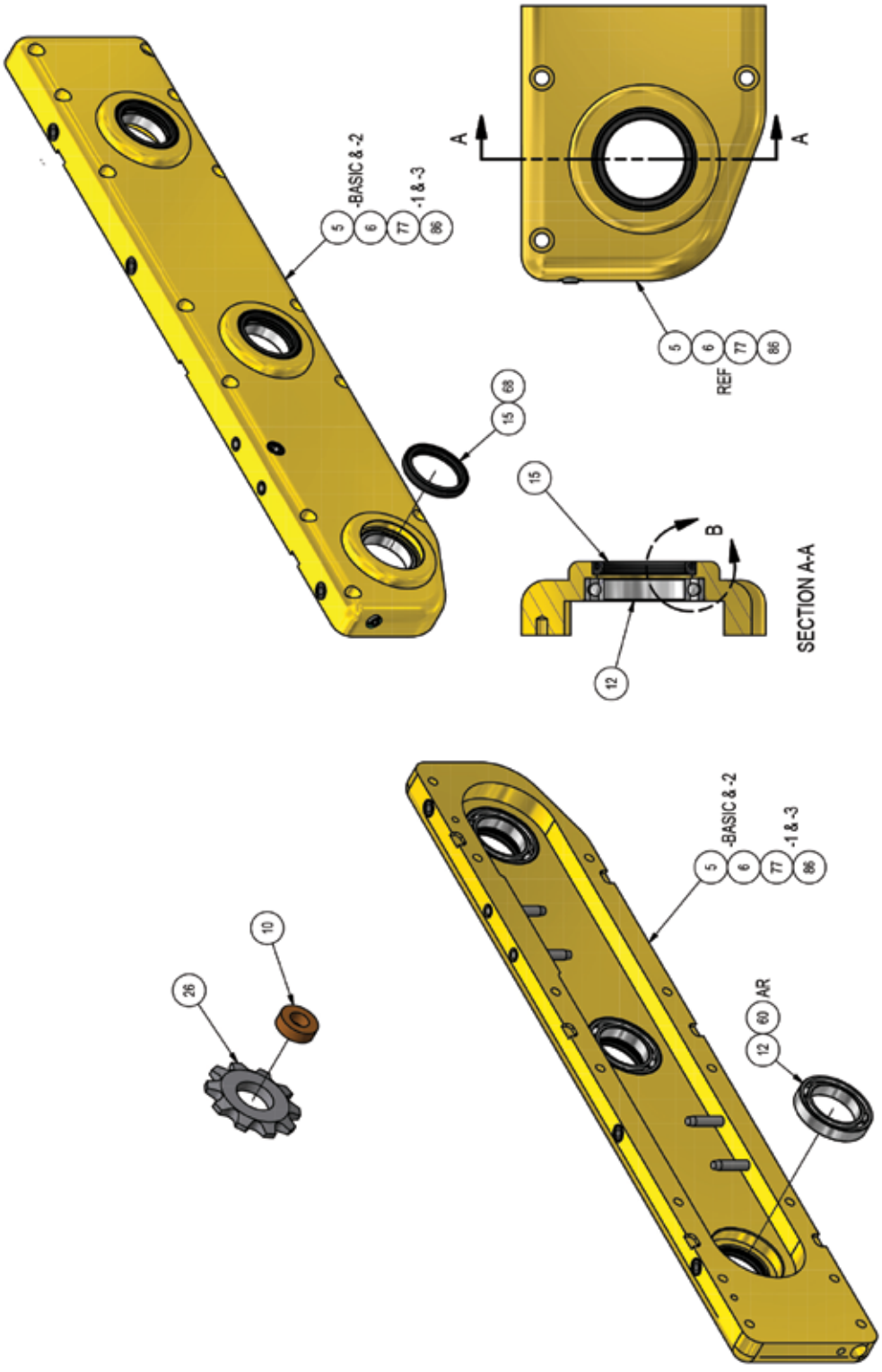


FIGURE 2C. TRANSPORTER ASSY,M/C,PR2, WT360

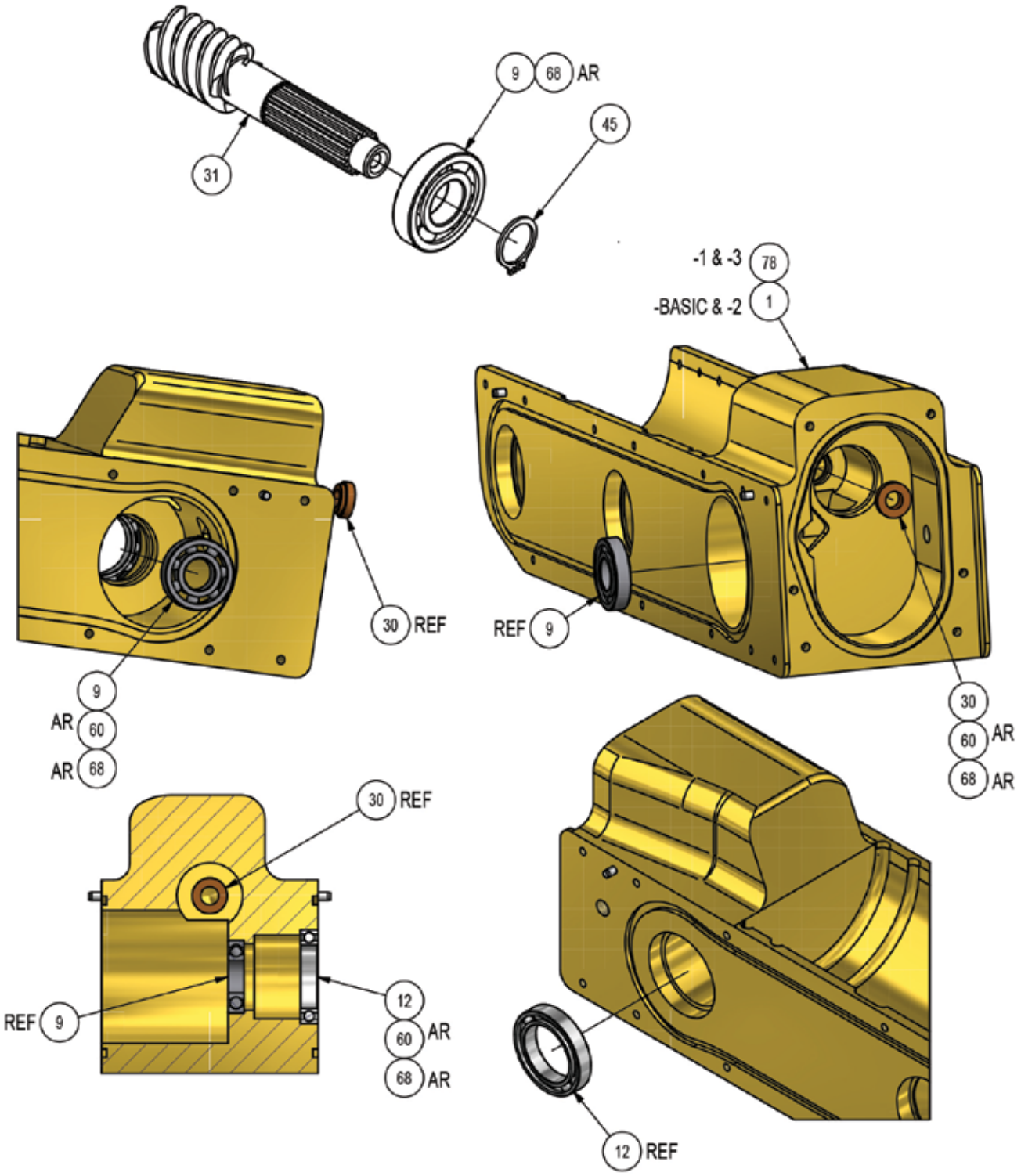


FIGURE 2D. TRANSPORTER ASSY,M/C,PR2, WT360

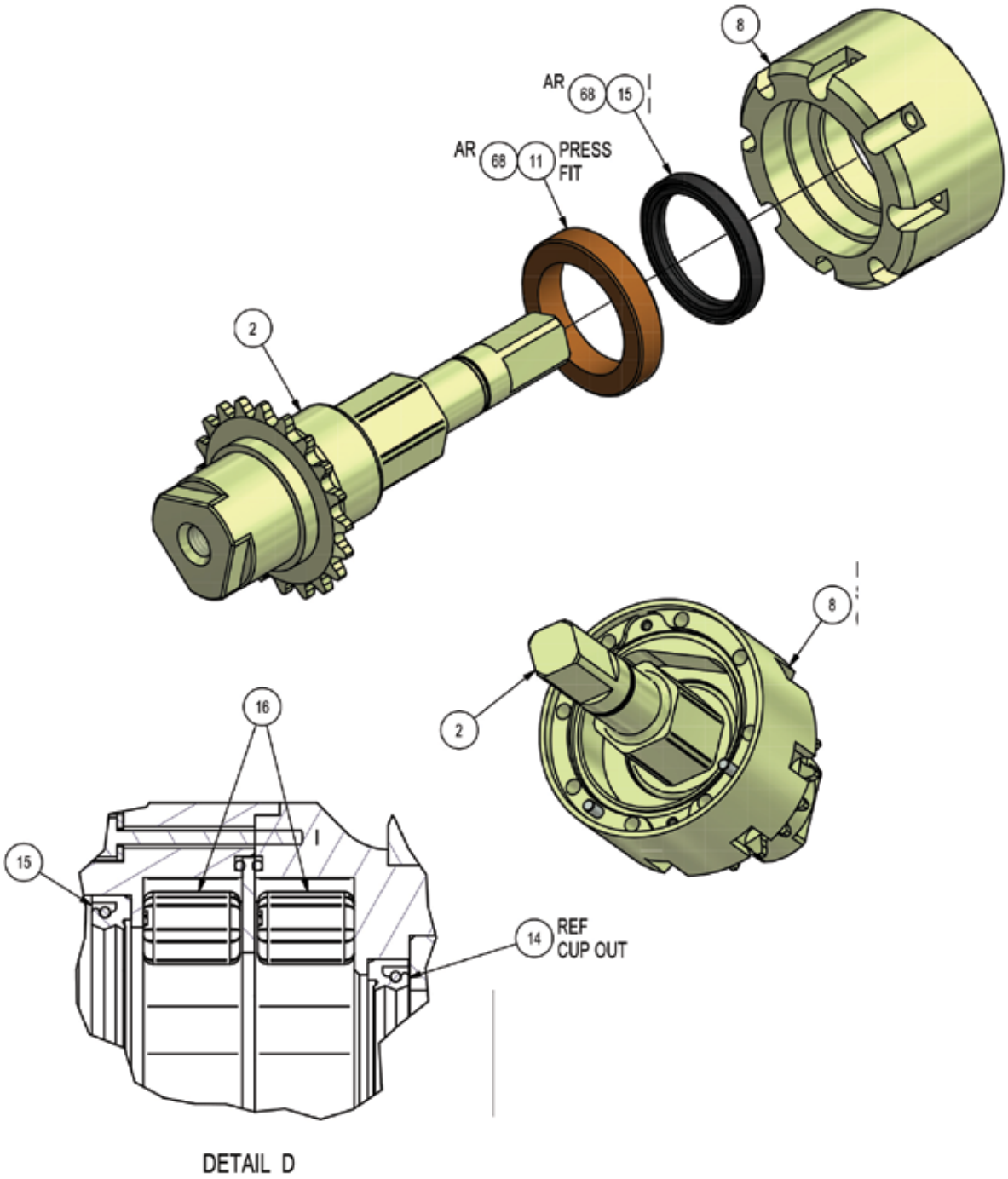


FIGURE 2E. TRANSPORTER ASSY,M/C,PR2, WT360

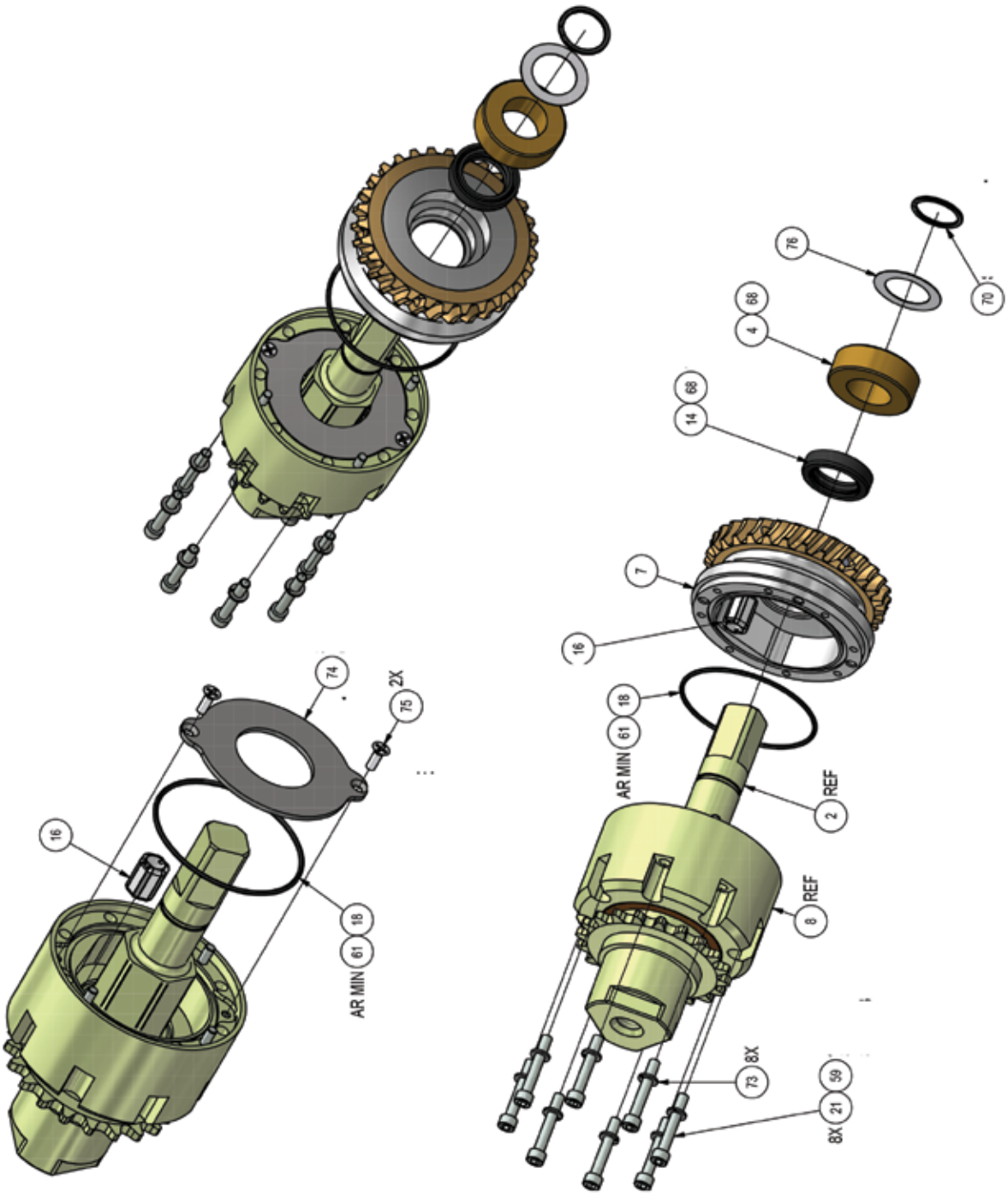
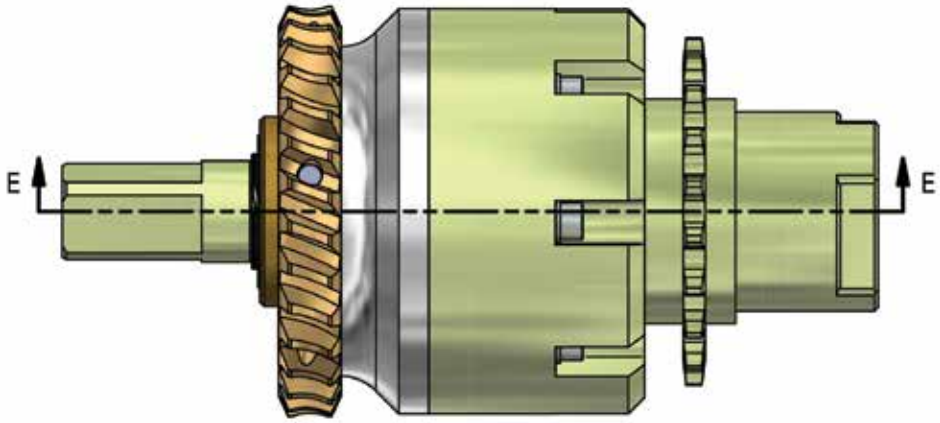


FIGURE 2F. TRANSPORTER ASSY,M/C,PR2, WT360



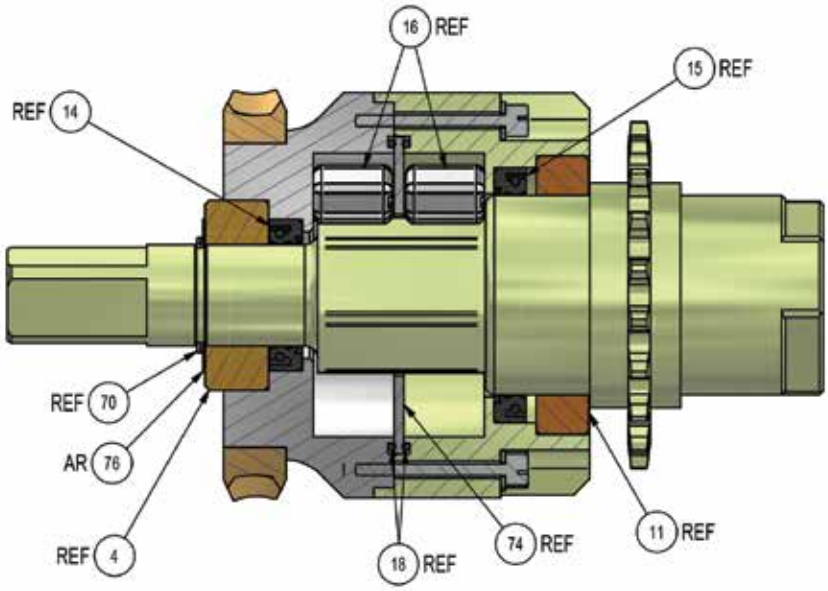


FIGURE 2G. TRANSPORTER ASSY,M/C,PR2, WT360

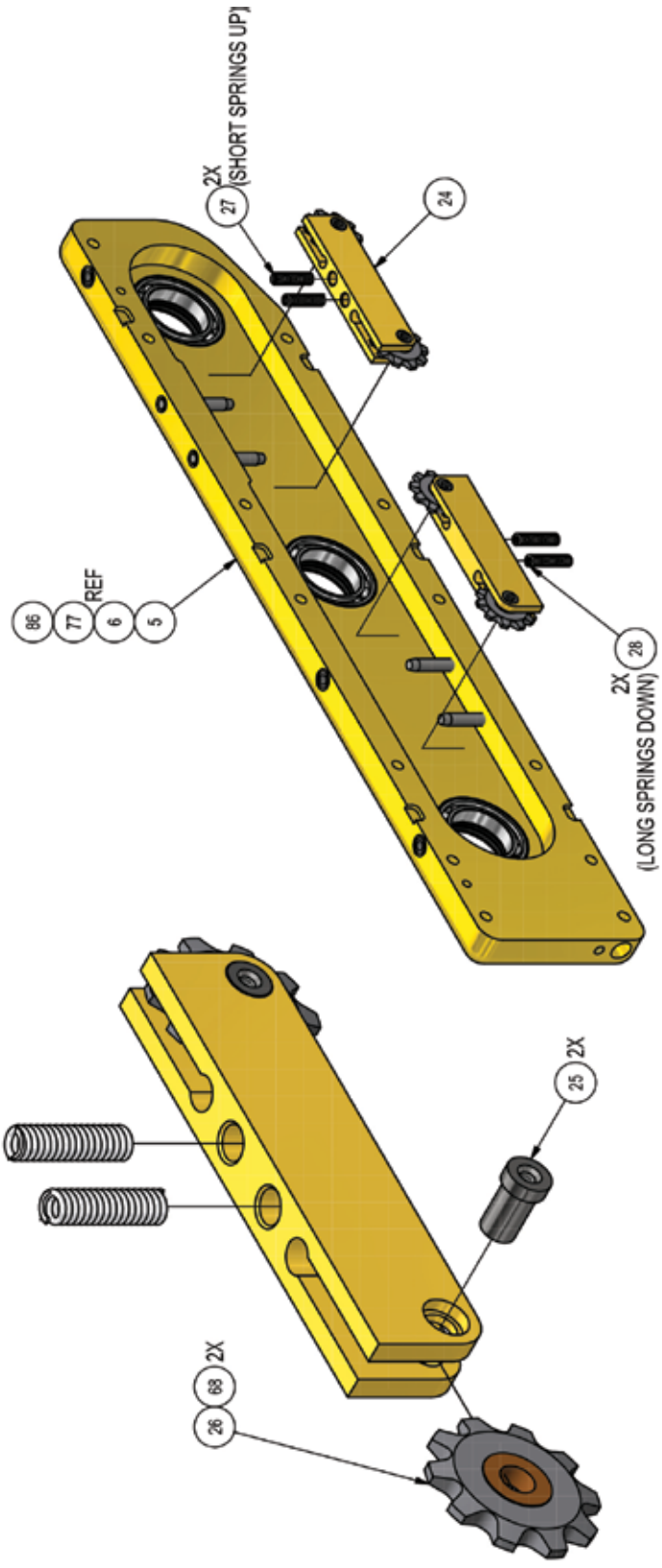


FIGURE 2H. TRANSPORTER ASSY,M/C,PR2, WT360

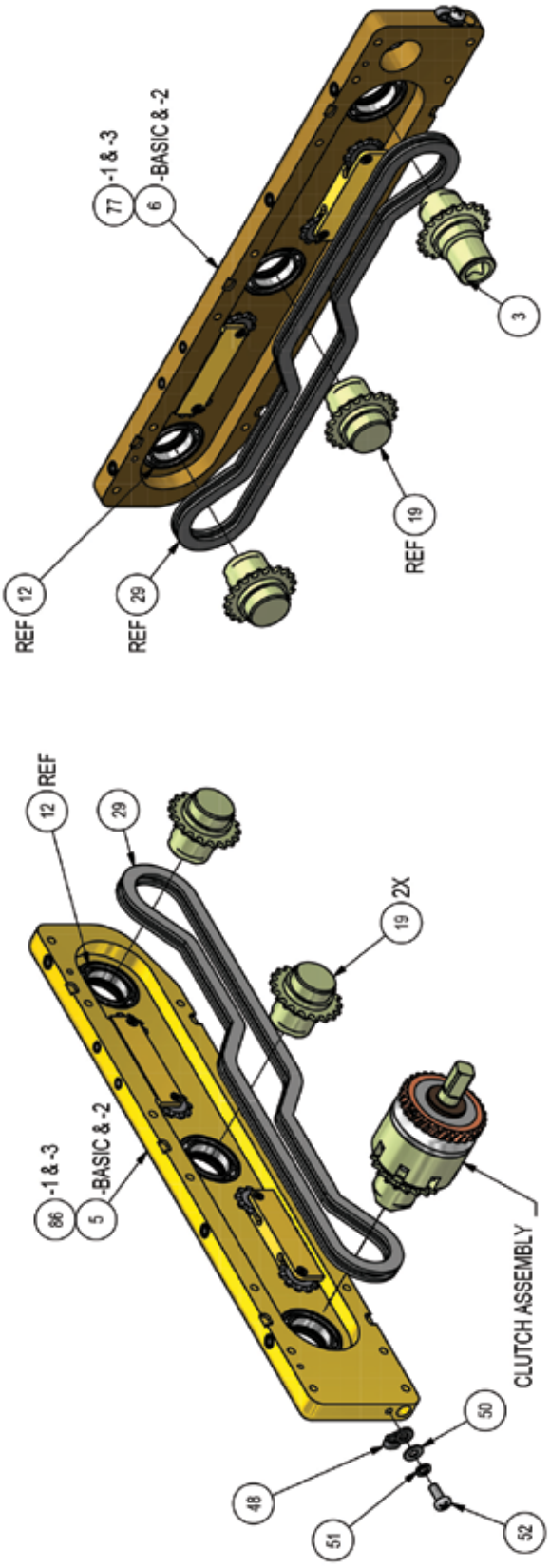


FIGURE 2I. TRANSPORTER ASSY,M/C,PR2, WT360

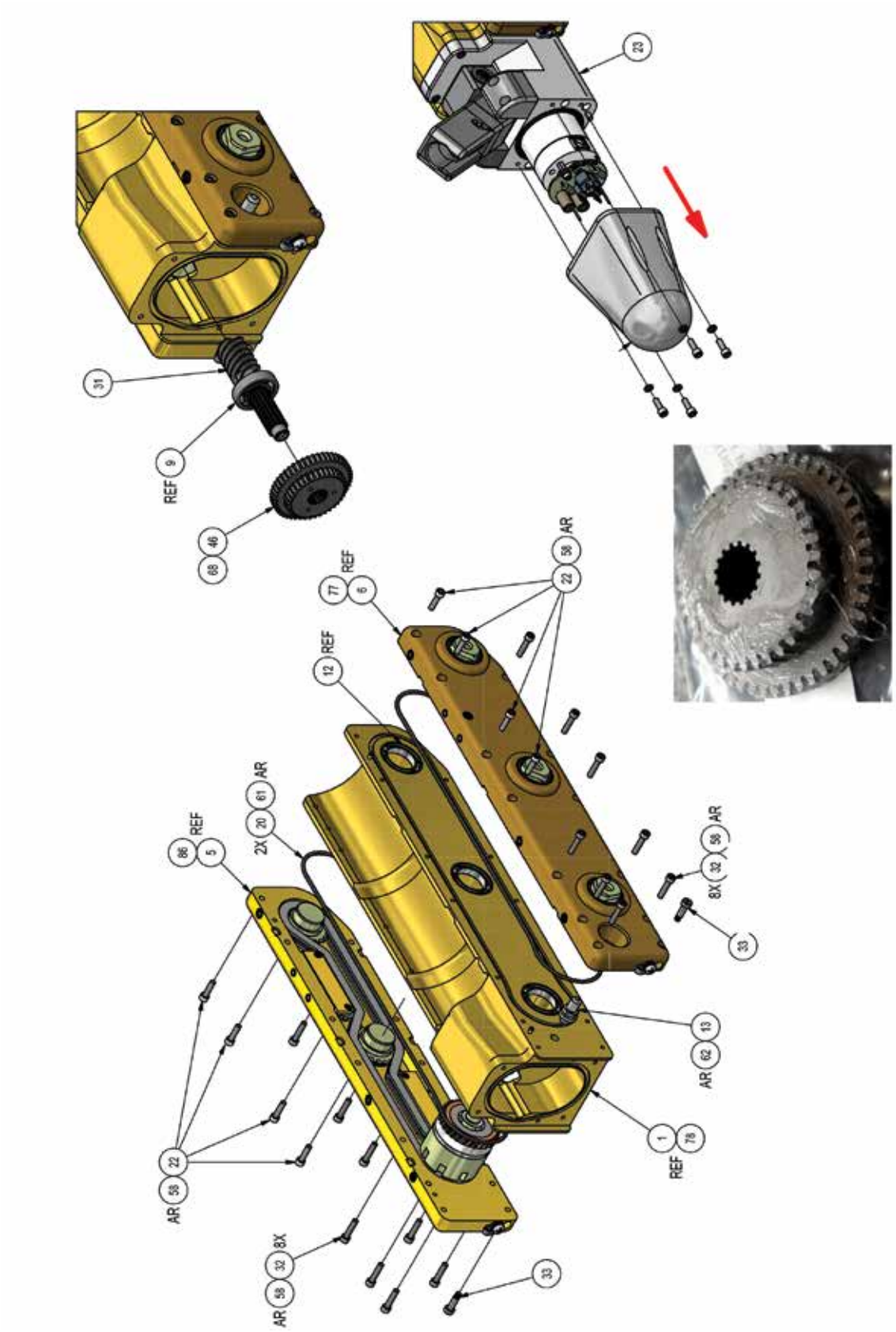


FIGURE 2J. TRANSPORTER ASSY,M/C,PR2, WT360

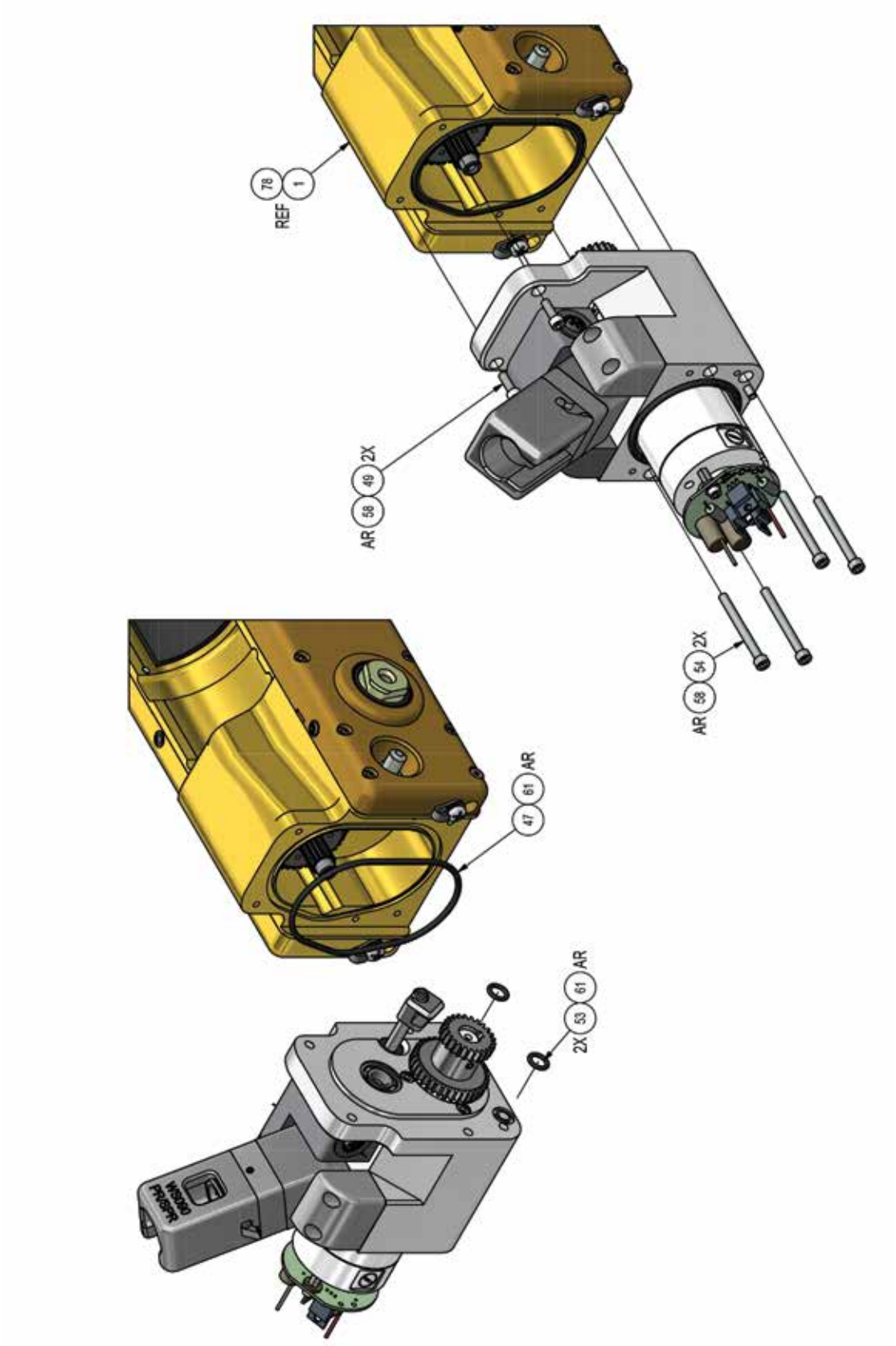


FIGURE 2K. TRANSPORTER ASSY,M/C,PR2, WT360

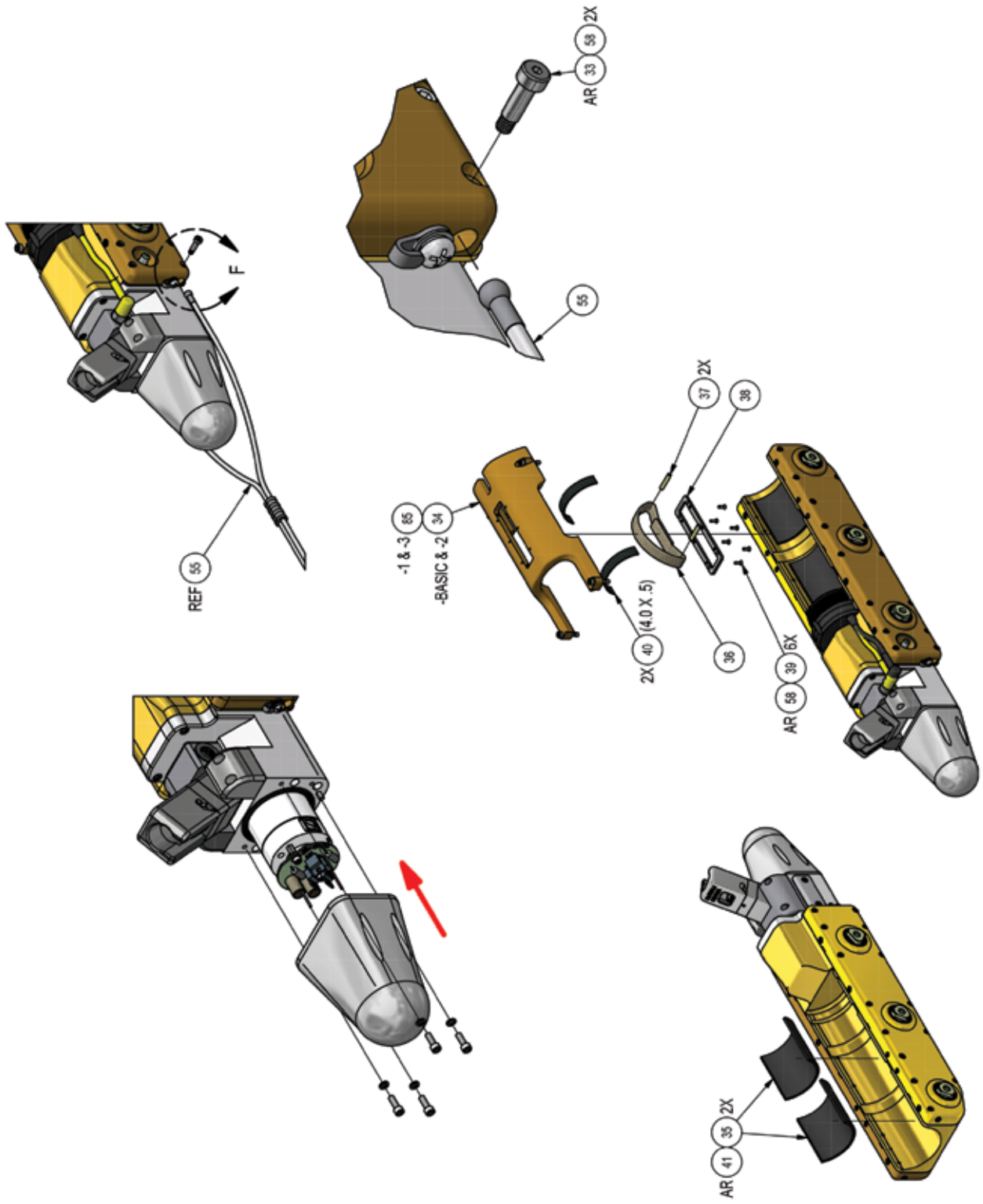


FIGURE 2L. TRANSPORTER ASSY,M/C,PR2, WT360

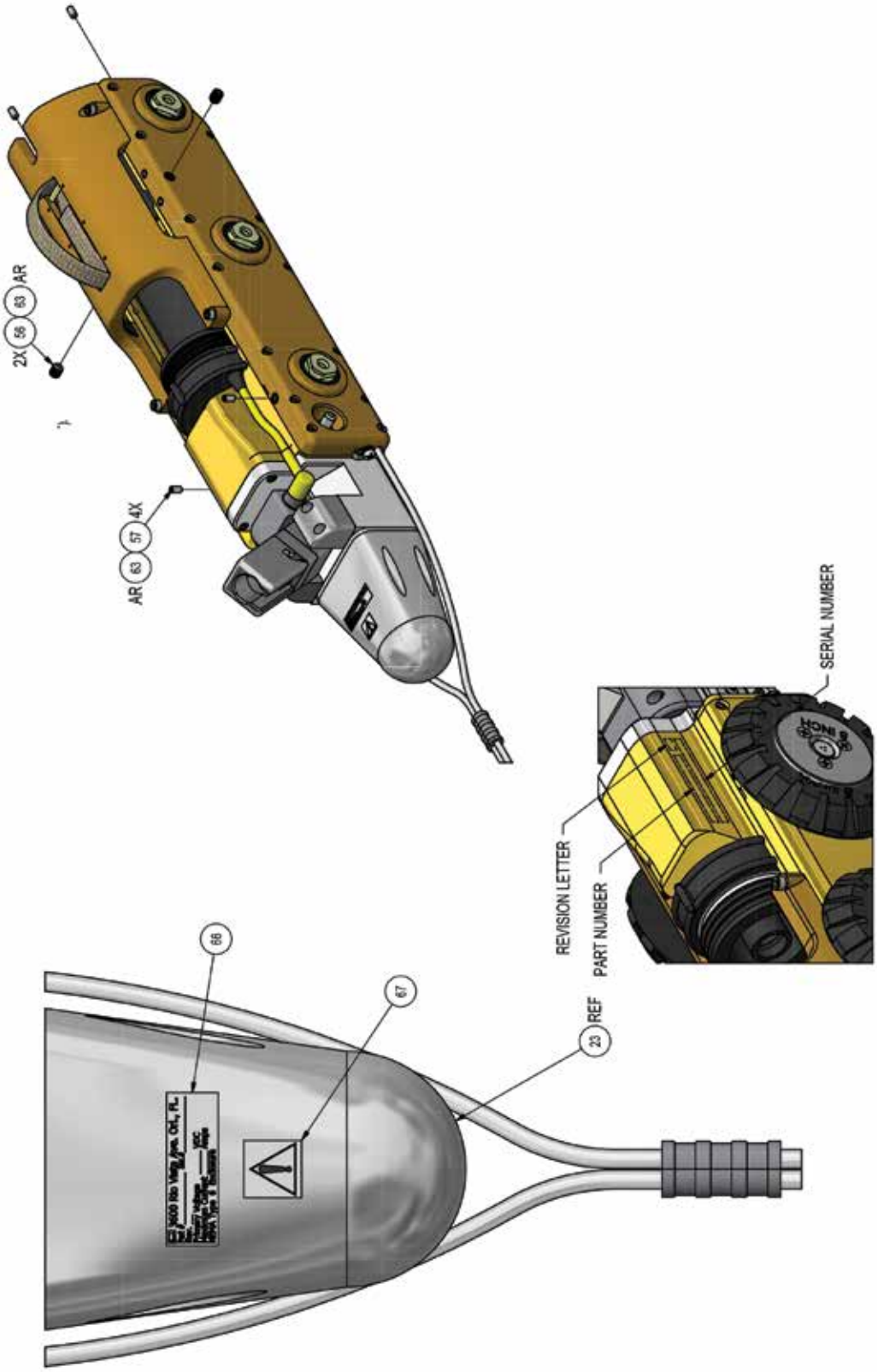
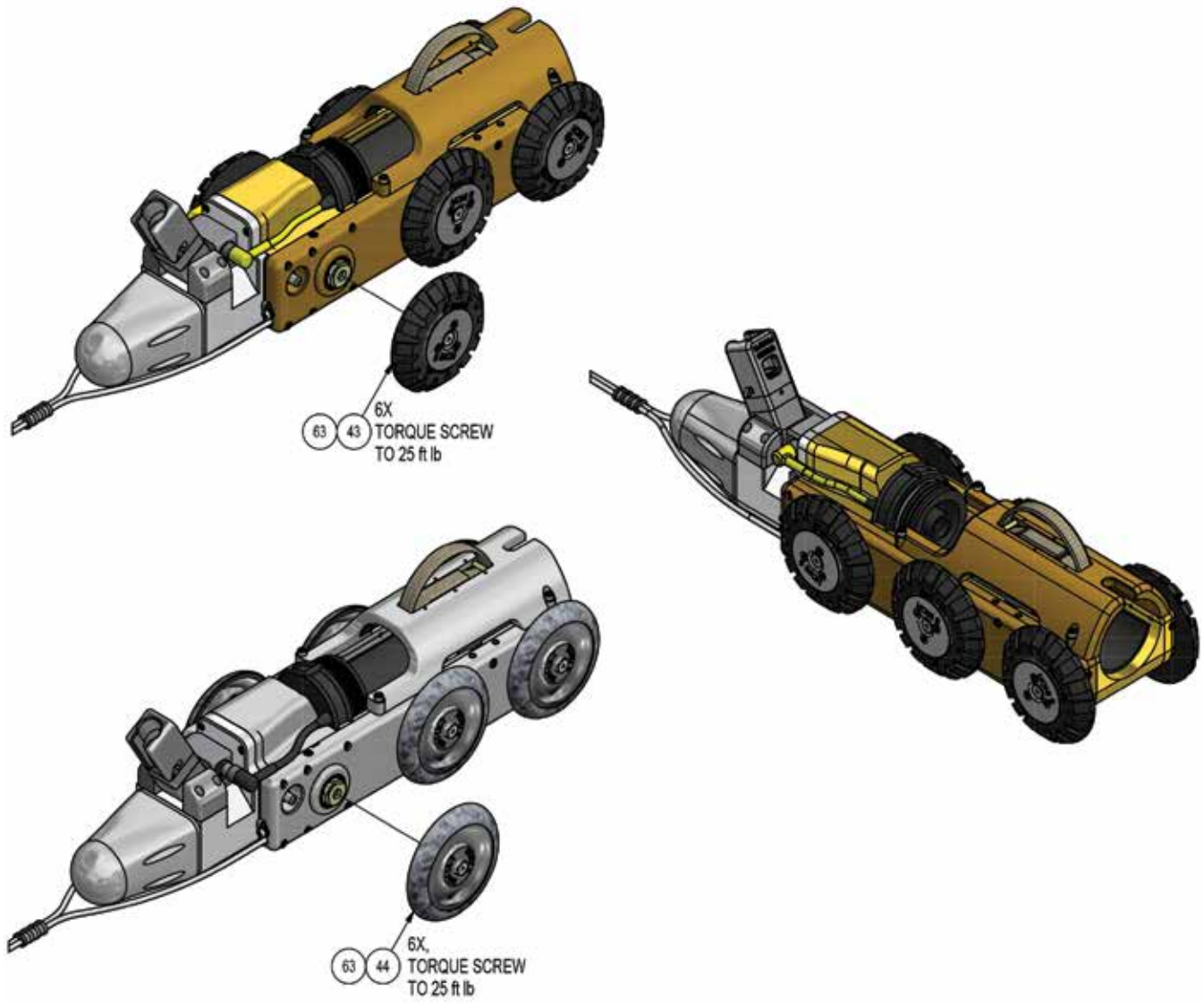


FIGURE 2M. TRANSPORTER ASSY,M/C,PR2, WT360



TRANSPORTER ASSY, M/C, PR2 (See Figure 2),Rev. F, WT360			
Item #	Description	P/N	Qty
0001	MAIN BODY,SINGLE PT MNT,BR,M/C,NSPR	WT150	1
0002	SHAFT,DRIVING,LEFT SQ COUPLING,NSPR	WT151	1
0003	SHAFT,DRIVING,RIGHT SQ COUPLNG,NSPR	WT152	1
0004	SPACER,BEARING,LEFT SHAFT,NSPR	WT153	1
0005	COVER,LEFT DRIVE TRAIN,BRASS,PR2	WT154	1
0006	COVER,RIGHT DRIVE TRAIN,BRASS,PR2	WT155	1
0007	ASSY,RACE,QUAD THD WORM GEAR,PR2	WT362	1
0008	COVER,CLUTCH,DBL WEDGE,PR2	WT165	1
0009	BEARING,50”ID X 1.125”OD	HW569	2
0010	BEARING,.190IDX.372ODX.120T	WS073	8
0011	BEARING,PLAIN,LFT DRV SHAFT,DBL WDG	WT162	1
0012	BEARING,BALL,37MMX25MMX7MM	HW1921	11
0013	VALVE,PURGE,P&T	CP063	1
0014	SEAL,1/2X.749X.165,DBL LIP	HW2788	1
0015	SEAL,25ID X 32OD X 4MM W,RUBBER	HW1563	7
0016	WEDGE, HEX, CLUTCH	WS103	2
0018	O-RING,37X1MM,BUNA-N 70	HW2799	2
0019	SHAFT, DRIVEN, SINGLE POINT	WS097	4
0020	O-RING,2-175,BUNA,F/ PR SIDE COVERS	WT046	2
0021	SCREW,SHCS,4-40X3/4,SST	HW885	8
0022	SCREW,CAP,SKT HD,8-32X5/8,SST	100141	8
0023	MOTOR ASSY,W/FILTER,STREAMLINED,PR2	WT361	1
0024	SPRING BLOCK,TENSIONER	WT014	4
0025	PIN,AXLE,SPOCKET,TENSIONER	WT028	8
0026	SPROCKET,IDLER TENSIONER	WT016	8
0027	SPRING,COMP,.18ODX.035D,.61 SL,SST	HW2789	4
0028	SPRING,.180”ODX.110”IDX,.68”LG,SST	HW1816	4
0029	CHAIN,112LINK,28.0 LG,RIVET,CONTIN	WS115	2
0030	BUSHING, SHAFT, WORM	WT145	1
0031	SHAFT,TRANSMISSION,WORM AND SPLINE	WT009	1
0032	SCREW,CAP,SKT HD,#8-32 X 3/4 SST	HW809	16
0033	SCREW,SHOULDER,8-32X1/2,SS	HW498	2
0034	CLAMSHELL,CAMERA HOLD,BRASS PR1/PR2	WS113	1
0035	PAD,CAMERA YOKE	1302001	2
0036	LOOP,LIFTING,WEBBING,U-SHTY,WTR,CPR	MC223	1
0037	PIN,DRIVE SST .187X1”	097551	2
0038	RETAINER,PIN,CLAMSHELL CAMERA HOLD	WS113-1	1
0039	SCREW,FLAT,4-40X 3/8 PHIL SST	100055	6
0040	PAD,CAMERA CLAMP,4.5 X .5	WS120	2

TRANSPORTER ASSY, M/C, PR2 (See Figure 2),Rev. F, WT360			
Item #	Description	P/N	Qty
0041	MRO-ADHESIVE,WEATHERSTRIP(TUBE)	440065	1
0043	ASSY,WHEEL,RUBBER,8",SINGLE,SPR2	WS322	6
0045	RING,RETAINING EXTERNAL 1/2"	097501	1
0046	GEAR ASSY,DRIVEN,WHEELED TRANS.	WT308	1
0047	O-RING,2-151,BUNA	WT043	1
0048	HOOK,SPRING,PAWL,LIFT	WT088	2
0049	SCREW,CAP,SKT HD,8-32X1/2,SST	101025	2
0050	WASHER,FLAT,#10 SST	100140	2
0051	WASHER,SPLIT LOCK,#10 SST	101739	2
0052	SCREW,PAN,10-32X1/2 SST	101860	2
0053	O-RING,CLAMP PIVOT,2-011,EP	8805	2
0054	SCREW,CAP,SKT HEAD,8-32X1.75,SST	HW149	4
0055	CABLE,TOW,PR,SPR+CPR 39.5 JND PAIR	WS062	1
0056	SCREW,SET 5/16-18 X 3/8LG,18-8 SS	HW1560	2
0057	SCREW,SET,10-32X3/8 SKT SST	101602	4
0058	MRO-REMOVABLE LCK,ND 121200-2,BLUE	CS036	1
0059	MRO-PERMANENT LOCK,ND 140500-50,RED	440060	1
0060	MRO-RET.COMP,.015GP,ND541200-50,GRN	CS092	1
0061	LUBE,ORING, SUPER O LUBE, 2 OZ TUBE	439986	1
0062	MRO-GASKET MAKER,FASTGASKET,BLK	445067	1
0063	ANTI-SEIZE,BRSH,NICKL GRAF,2 OZ	CS488	1
0064	MRO-TAG,WARNING FOR PR & SPR	WT095	1
0066	LABEL,THERMAL XFR,1.500"W X .500"H	CS221	1
0067	LABEL,LASERTAB MARKER, .560 X .560	CS222	1
0068	MRO-GREASE,SUPERLUBE 41150 -14.1-OZ	CS476	1
0069	Y ELIMINATOR,M/C,4.4", W/O TAP,PR	WT049	1
0070	RING,RETAIN.,SPIRAL,.500ID,.035 THK	HW605	1
0071	MANUAL,USER,OPERATION,SPR2	WS930	1
0072	QUICK CARD, WHEEL SCREW GUIDE	WM961	1
0073	WASHER,SPLIT #4 SST	100170	8
0074	SEPARATOR,CLUTCH,DOUBLE WEDGE,PR2	WT166	1
0075	SCREW,FLAT,2-56X1/4 PHIL SST	100103	2
0076	SHIM,.50 ID X.75 OD X.010THK,316SST	HW1128	1
0081	TOOL,TORQUE WRENCH,3/8"DR.MICROMETR	CS472	1
0082	TOOL,3/8DR,1/2"X6POINT SOCKET	CS486	1
0083	TOOL,3/8" SQUARE DRIVE,6" EXTENSION	CS593	1

CUES® equipment is designed to be easy to use during day to day operation. However, it is powered electrically and thus must be operated with care and safety. PLEASE READ THE INFORMATION ON SAFETY AND MAINTENANCE EVEN IF THE SYSTEM IS SET UP BY SOMEONE ELSE.

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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	Date	Change Description
Pipe Ranger/Steerable Pipe Ranger II	071614	Initial preliminary release.
	100114	Added new wheel matrix and various other updates required.
	121114	Updated Configuration Matrix.
	040615	Page 11: P/N WS103 was incorrectly called out; corrected to be P/N WS104.
	080120	Updated manual to current branding guidelines, drawings, BOM's, and procedures, as required.
	020125	Updated the manual per ECN 13698; updated all CONTACT US information to current.
	10.2026	Added a note to refer to Addendum P/N CMA00013-MAN for rear-view camera instructions.



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