

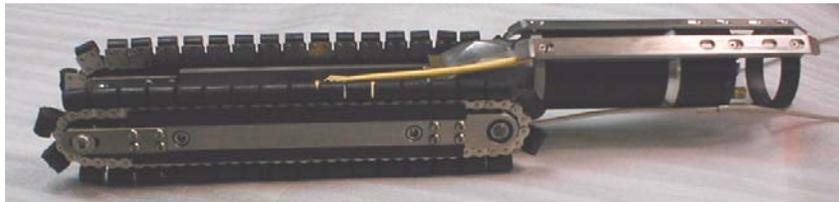


Design and Manufacture of Video Pipeline Inspection Systems
A full Service Company

8" Crawler Transport Vehicle

Model 32-05002

INSTALATION MANUAL



Made in the USA

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Technical Specifications

8" CRAWLER

Minimum pipe size: 8 "

Maximum pipe size: 15" (30" with optional extension kit)

Maximum distance: 1500 feet. (Depending on cable and line conditions)

Speeds: 3 forward, up to 70' / minute max.

1 reverse. (Low speed only)

Stop/hold.

Free wheel rapid retrieval.

Power: 70 to 120VDC from camera cable.

Internal auto limiting @ 2 AMPS.

Motor type: 1/3 horsepower high torque motor.

Drive type: 18.5:1 gear head to #40 chain drive,
(Utilizing dual riveted, contoured pads)

Length: 29" w/o camera.

Width: 6 3/8" min. (8" setup)

Height: 5 1/4" min. (8" setup)

Weight: 35 lbs. Min. (8" setup, w/o camera)

Operator and Equipment Safety

It is important to be formalized with operations, maintenance and to know the safety Issues when working with RST equipment.



Read the entire manual before operating the equipment.

To prevent personal injury or damage to equipment, **turn off power**, disconnect all power to the control station and the transport/camera/lights when making electrical connections, width adjustments or performing maintenance.

Inspect all transport, camera, lighting cables and bridles before and after each use. Replace any broken, worn or frayed bridles or cables.

Verify all system power is **off** before connecting or disconnecting cables.

Always use care when near or at an open manhole. Always use care when climbing in or out of a TV truck. Always use proper lifting ropes, cranes and winches for lifting equipment in/out of pipes.

The use of downhole equipment will extend the life of your sincon cable and give you more footage on a run.

Set ups for 8" R.S.T. Crawler

Before you can begin to televise the line, setup for proper pipeline size. It may be necessary to set up the crawler one pipeline size smaller. The most common size change will be made by spreading out the tracks.

Another method is to raise the camera on the base. For larger line size, a combination of both methods will be used. Note that there is no left or right side on the tread drives assembly. The 8-inch crawler is configured for 8" pipeline and is shipped out in the 8" pipeline configuration. The following instructions are on changing to a new pipe size. (Actual sizes may vary).

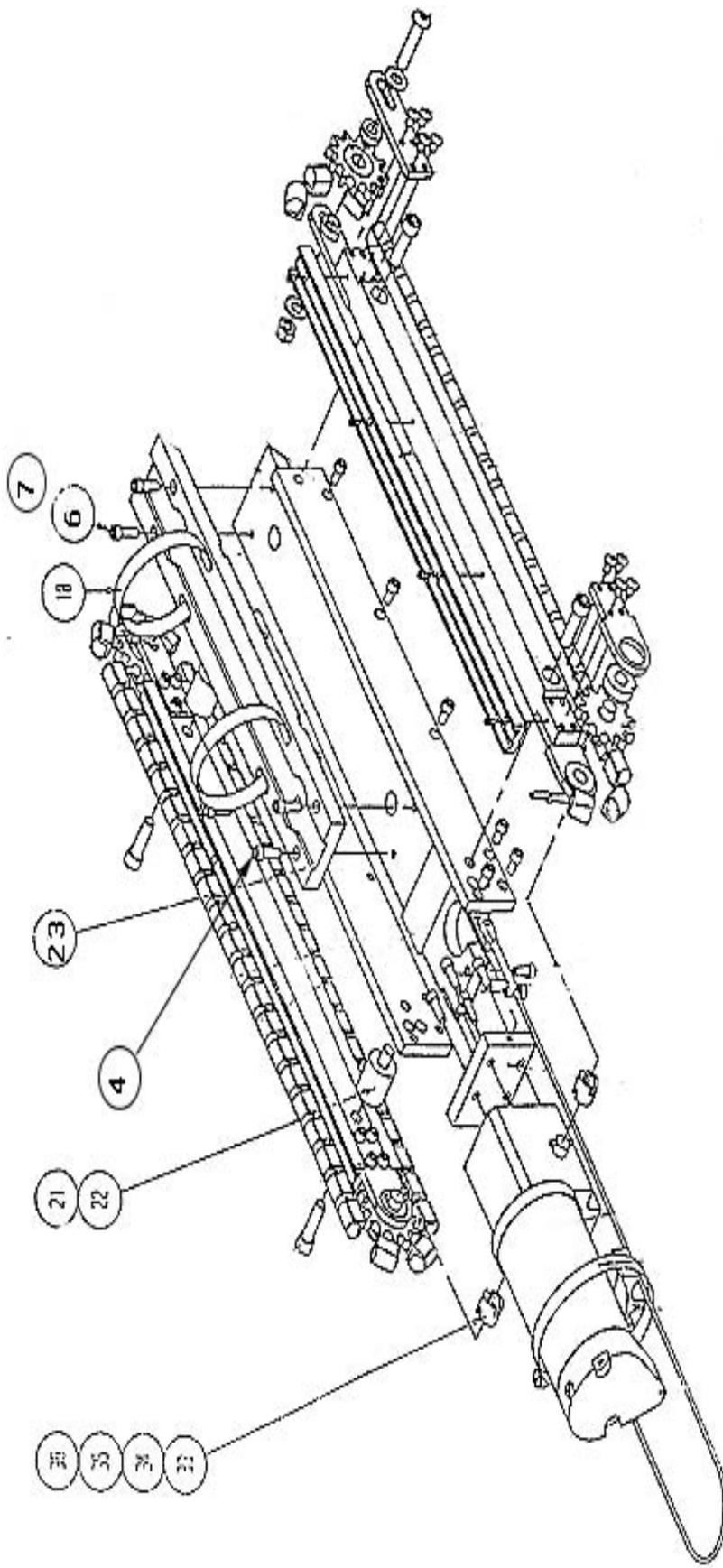


The RST crawler generally comes with the standard extension & camera mounting kit for 8" to 15" applications. Part number **840-24049**.

840-24049 KIT, ACCESSORIES, 8" CRAWLER

1	701-30994	BOX, TOOL, PLASTIC, W/TRAY	1.00	EA.
2	970-31673	INSTRUCTIONS, INSTALLATION, OE3 CAMERA TO 8-15" CRAWLER	1.00	EA.
4	301-30717	MSCR, FLT, HXS, 1/4-20 X 1.50 SS (rear OE3 mounting screws)	3.00	EA.
6	301-11005	MSCR, SHCS, 1/4-20 X .62 SS (front OE3 mounting screws)	4.00	EA.
7	301-11123	MSCR, FLT, HXS, 1/4-20X.87 SS	2.00	EA.
18	449-12895	CLAMP, HOSE, #60 SS 3-1/16 TO 8-15" CRAWLER	2.00	EA.
21	867-24119	ASSY, SPACER, 2.375" LONG, 10-15" EXT. SET CRLR (143-024)	4.00	EA.
22	867-24118	ASSY, SPACER, 1.25" LONG, 10-15" EXT. SET, CRLR (143-016)	4.00	EA.
23	867-31668	ASSY, PLATE. MTG., OE3 CAMERA, CRAWLER, 8-15", SHORT	1.00	EA.
34	408-24115	COUPLER, DRIVE, 10" PIPE, 8" CRAWLER (142-992)	2.00	EA.
35	408-24116	COUPLER, DRIVE, 12" PIPE, 8" CRAWLER (142-984)	2.00	EA.
36	408-24117	COUPLER, DRIVE, 15" PIPE, 8" CRAWLER (142-984)	4.00	EA.
37	634-10642	WRENCH, ALLEN, 3/16, LONG ARM	1.00	EA.
38	634-11114	WRENCH, ALLEN, 5/32, LONG ARM	1.00	EA.
39	634-17242	WRENCH, ALLEN, 5/16, LONG ARM	1.00	EA.

Additional accessories and options on page 20.



KIT, ACCESSORIES, 8-15" CRAWLER 840-24049

8" LINE SETUP

Tread drive assembly 8" setup



Tracks are attached directly to the main body without any spacers.

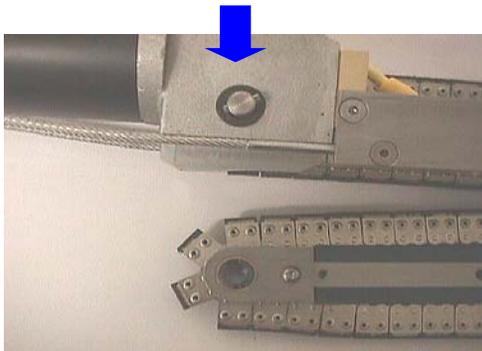
With tracks removed:

Set unit on its side.

Match drive end of tread drive assembly to motor axle. Line up the pin on motor axle with the slot in drive sprocket. (Photo #1.)

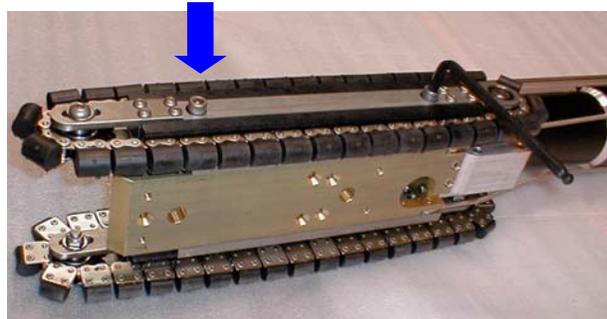
Line up mounting holes and attach assembly with 2 screws (item #1 page 16 & 17) 3/8-16X1", Then tighten with 5/16" Allen wrench (item #39 page5)(Torque to 150 inch pounds, photo #2)

Repeat for other side.

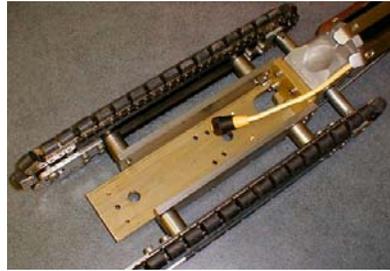


To
install camera refer page 11 and 20.

Item #1



10" LINE SETUP From 8" configuration



With tracks removed:

Set unit on its side.

Remove the 8" coupler (item #33) from gearbox shaft.

Install 10" configuration coupler (item #34). Match drive end of tread drive coupler to motor axle. Line up pin on motor axle with slot in drive sprocket.

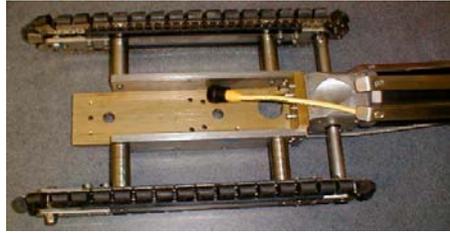
Install two 1-1/4" rail spacers (item #22) onto left plate (item #2)

Line up mounting holes and attach assembly with 2 screws (item #1 page 16 & 17) 3/8-16 X1", Then tighten with 5/16" Allen wrench (item #39 page5)(Torque to150 inch pounds, photo #2)

Repeat for other side.

To install camera refer page 11 and 20.

12" LINE SETUP From 8" configuration



With tracks removed:

Set unit on its side.

Remove 8" coupler (item #33) from gearbox shaft.

Install two 2-3/8" rail spacers (item #21) onto left plate (item #2).

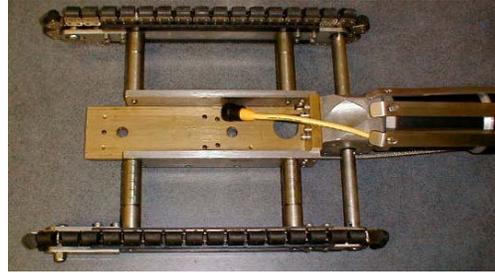
Install 12" configuration coupler (item #35). Match drive end of tread drive coupler to motor axle. Line up pin on the motor axle with slot in drive sprocket.

Line up mounting holes and attach assembly with 2 screws (item #1 page 16 & 17) 3/8-16 X1", Then tighten with 5/16" Allen wrench (item #39 page5)(Torque to 150 inch pounds)

Repeat for other side

To install camera refer page 11 and 20.

15" LINE SETUP From 8" configuration



With tracks removed:

Set unit on its side.

Remove the 8" coupler (item #33) from gearbox shaft.

Install 2 1- $\frac{1}{4}$ " rail spacers (item #22) into 2 2- $\frac{3}{8}$ " rail spacer (item #21) then into left plate (item #2).

Install the 15" configuration coupler (item #36). Match drive end of tread drive coupler to motor axle. Line up pin on motor axle with slot in drive sprocket.

Line up mounting holes and attach assembly with 2 screws (item #1 page 16 & 17) 3/8-16 X1", Then tighten with 5/16" Allen wrench (item #39 page5)(Torque to 150 inch pounds)

Repeat for other side.

To install camera refer page 11 and 20.

NOTE: Refer to the illustration in this manual for spacers required for pipe sizes 10" through 30" page 20.

Attaching Camera to Crawler



Always have power off before working with pigtails and camera power cables.

Make sure camera and crawler are clean before assembly.

Place crawler on flat surface.

Loosen the two stainless steel clamps (item #18).

Slide camera through the two clamps (item #18).

Locate indexing notch on camera power cable and align with indexing tab on bulkhead connector.

Align connectors and carefully tighten nut while gently rocking connector to seat for watertight connection.

Slide camera to rear of crawler.

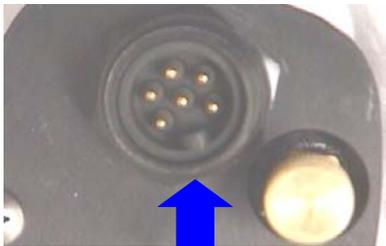
Start the two clamps (item #18) over camera by hand.

Tighten the two clamps evenly (item #18).

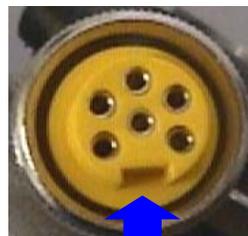
NOTE: DO NOT OVER TIGHTEN.

Locate the indexing notch on the camera power cable and align with the indexing tab on the bulkhead connector. (Reference photos #1 ,#2)

Insert the aligned connectors and carefully tighten the nut while gently rocking the connector to seat it for a watertight connection.



Indexing Tab
Photo 1



Indexing notch
Photo 2

With the pigtail installed, connect the swivel snap hook to the eyelet on the bridle. There should be no twist in the pigtail or the bridle.

To disconnect pigtail, turn off power, reverse steps.

INSTALLATION INSTRUCTION

OMNI III on 8-inch Crawler

for 8-inch lines



Place the camera upside down on a level flat surface.

Place the camera mounting plate (beveled brass plate)(RST P/N 867-31668) onto the camera with the standoffs inserted in the rear camera mounting recesses.

Install (2) $\frac{1}{4}$ -20 x 1" (RST P/N 301-10769) (A) socket head cap screws, in the front mounting holes. Prior to tightening the screws, verify that the camera is sitting squarely on the inserted standoffs. Tighten the screws. Leave assembly upside down.

Place the crawler assembly upside down on the camera assembly.

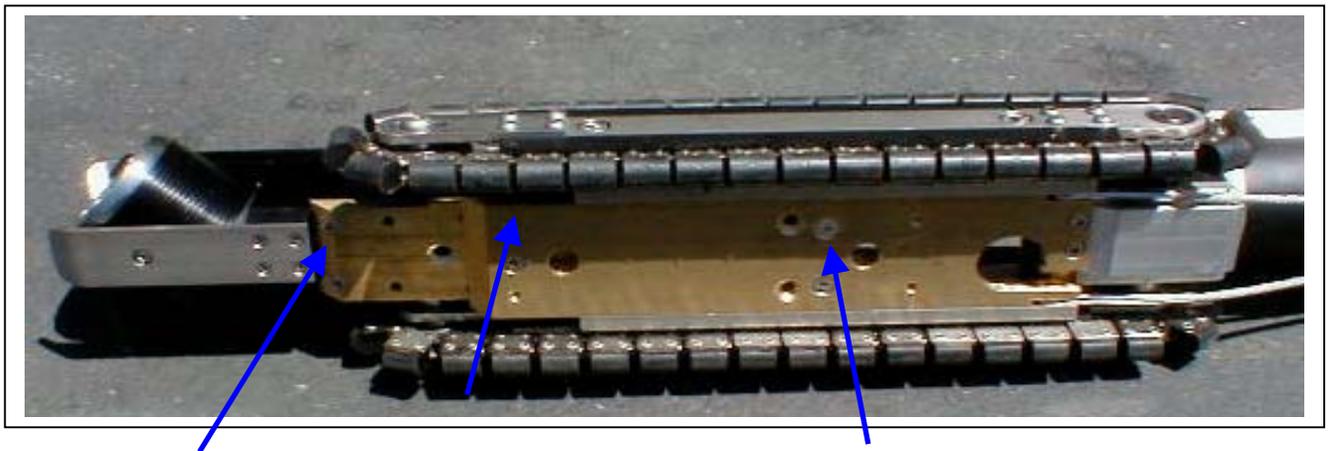
Align the three mounting holes in the crawler base plate with the threaded holes in the camera mounting plate. NOTE: It will sit Approx. 3 $\frac{1}{8}$ " back from the camera head.

Install the (1) $\frac{1}{4}$ -20 x .87" (RST P/N 301-11123) (B) Flat head mounting screws in the front center.

Install the (2) $\frac{1}{4}$ -20 x 1.5" (RST P/N 301-30717) (C) Flat head mounting screws in the rear. They will go up into the camera back. Tighten all screws evenly.

Screw the 6-pin connector leading from the crawler into the camera connector.

SIDE VIEW



$\frac{1}{4}$ -20 x 1" (2)(A)
(301-10769)

$\frac{1}{4}$ -20 x .87" (1)(B)
(301-11123)

$\frac{1}{4}$ -20 x 1.5"(2)(C)
(301-30717)

Cable Grip Adjustment

Check the cable grip for proper adjustment. If adjustment is needed:

Clean out the cap screws on the cable grip as well as the cable.

Loosen the four cap screws on the cable grip.

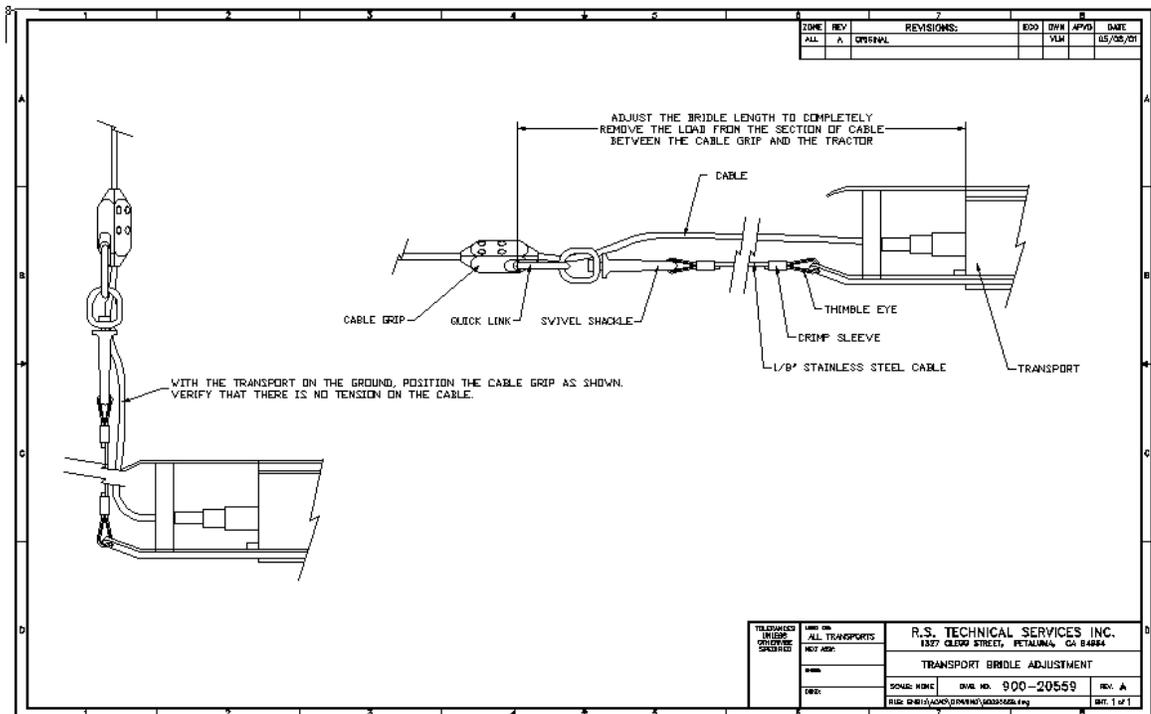
With the screws loose, it may be necessary to pop the cable grip on a hard surface to separate the halves from the cable.

Slide the cable grip to allow for proper slack. The cable grip should be adjusted to provide slack in the pigtail when the bridle is tight. There should be enough slack to allow the wire area to bend, but not enough to bend the boot area when the cable is raised at a 90-degree angle while loading and unloading the equipment.

Retighten the cap screws on the cable grip. The halves should be tightened evenly to prevent binding. Always use a cross pattern when tightening the cable grip.



WARNING! IMPROPER CABLE GRIP ADJUSTMENT IS ONE OF THE LEADING CAUSES OF PIGTAIL FAILURE!



Tread Drive Chain Adjustment

Loosen the idler sprocket nut and bolt with a 7/32" Allen wrench and a 9/16" combo wrench. Slide the chain adjuster assembly forward until chain has no slack. (Reference photo #1)

Lift on the chain and insert a 5/16" Allen wrench (item # 39) between the chain and the chain guide. This will set the proper amount of slack for the chain. (Reference photo #2 and #3)

Hold the assembly steady with the 7/32" Allen wrench, tighten the bolt with the 9/16" wrench.

Repeat for the other side. It is important that both sides are adjusted equally for the crawler to work properly.

Reinstall treads assemblies on base unit.



Photo 1



Photo 2



Photo 3

Lowering Equipment into Pipeline

Locate the back of the truck so that the cable reel lines up in the direction of the pipeline to be inspected. Allow room to work around the opening while carrying the equipment. Follow cable grip, bridle, and watertight connection instructions. Re-check the pipeline size and extension adjustments. Do not let cable “loop” at the location where it enters pipeline. Use guide poles with hook to keep the crawler stable as it enters pipeline.



Caution: Maintain control of equipment while lowering and lifting from manhole. Most equipment damage occurs when camera is lowered into hole.

Pull camera/crawler far enough into pipeline to clear the bridle or cable grip.

Set the cable guide. Use double roller and/or single rollers, for protecting the cable and allowing it to slide down the hole without drag on the line. Use enough poles to clear top of the manhole by 2 feet.



Caution: Watch out for people, power lines and traffic when handling the downhole pole

Put cable reel into “freewheel” and reel off enough cable so camera and crawler can be lowered into the bottom of the manhole. Place lowering rope ring under the top front runner or front of camera. Support weight of crawler and camera with the cable in one hand and rope in the other.

NOTE: RST skycrane can be used in place of the cable and rope method.

Slowly lower the front of camera into manhole to clear manhole ring. Lower crawler and camera to the bottom of manhole facing camera in the direction of the pipeline to be inspected. When crawler and camera are resting on bottom of manhole, release the rope ring and remove it from the manhole.

Check all camera and crawler functions again before proceeding. Move crawler forward so the rear of the crawler and the cable connections are fully inside the pipe. The use of guide poles with a hook will help to keep the crawler stable as it enters the pipeline.

Install the down hole pole, double roller, and top manhole roller. The use of double roller and/or single roller is for protecting the cable and allowing it to slide down the hole without drag on the line. Remove any slack from the cable and reset the footage counter. It is best to do this by hand or with cable reel set to low speed.

The crawler has an automatic “disengage” feature that allows for the freewheeling retrieval. To disengage the crawler, reverse its direction momentarily. This will disengage the drive mechanism and allow the crawler to be pulled out of the pipeline in “freewheel” by the cable reel.

Retrieval of the Equipment

Ending the Run

Use care when removing camera from line.

Turn down light power on camera

Back crawler out of pipe into manhole so that front of crawler is clear of pipe.

Remove rollers and poles to make room to lift crawler and camera from manhole.

Lower rope with ring and catch the end of camera at the same place used to lower crawler and camera.

Lift crawler and camera assembly from manhole using the rope and cable.

NOTE: RST skycrane can be used in place of the cable and rope retrieval method.

Keep the camera clear of any ladders or drop lines.

When crawler and camera are out of hole:

Turn off camera power

Wash unit over hole

Wipe down and store the cable, camera, and crawler.

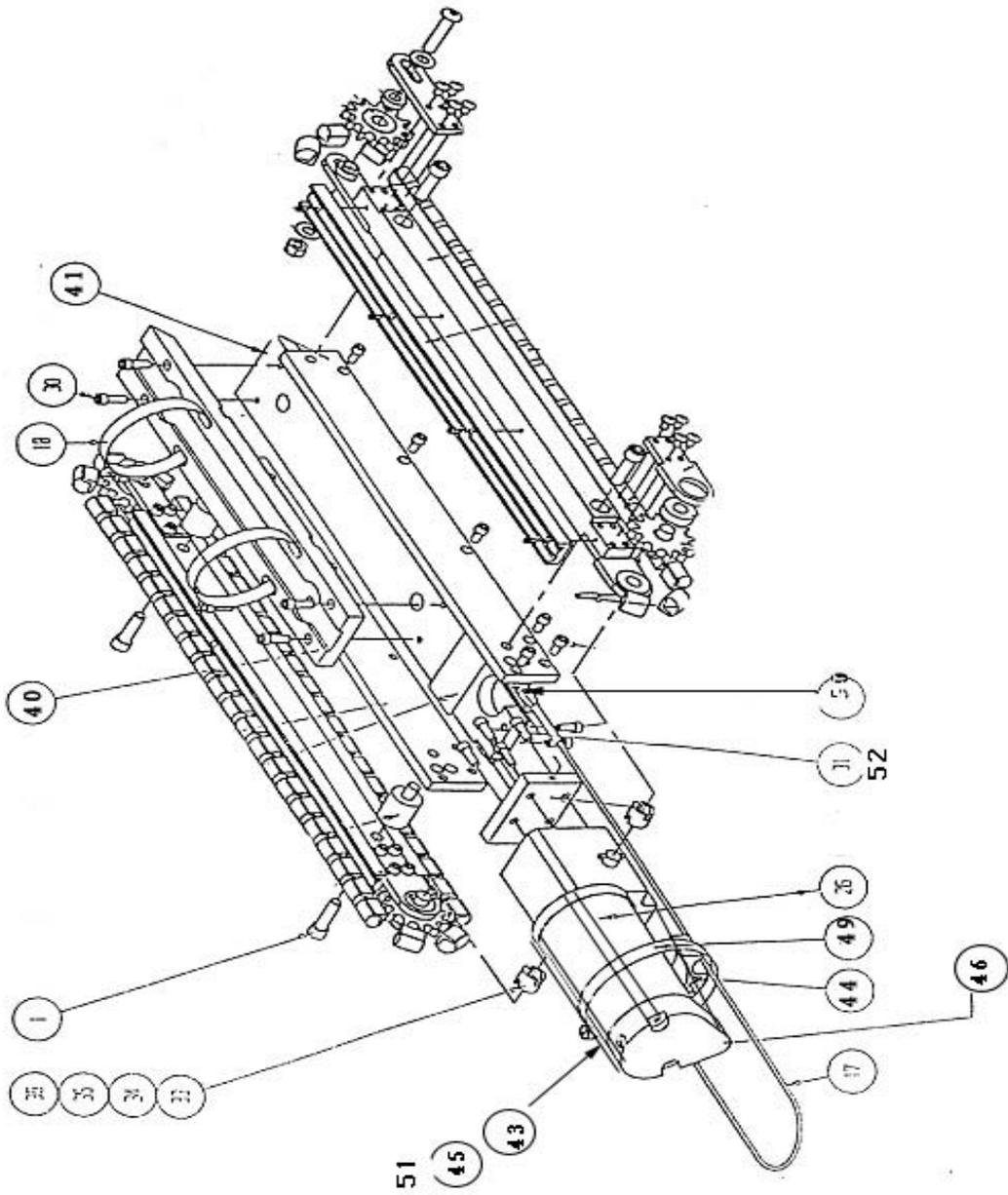


Caution: Watch out for people, power lines and traffic when handling the downhole pole



Caution: You must maintain control of the equipment at all times while loading and unloading.

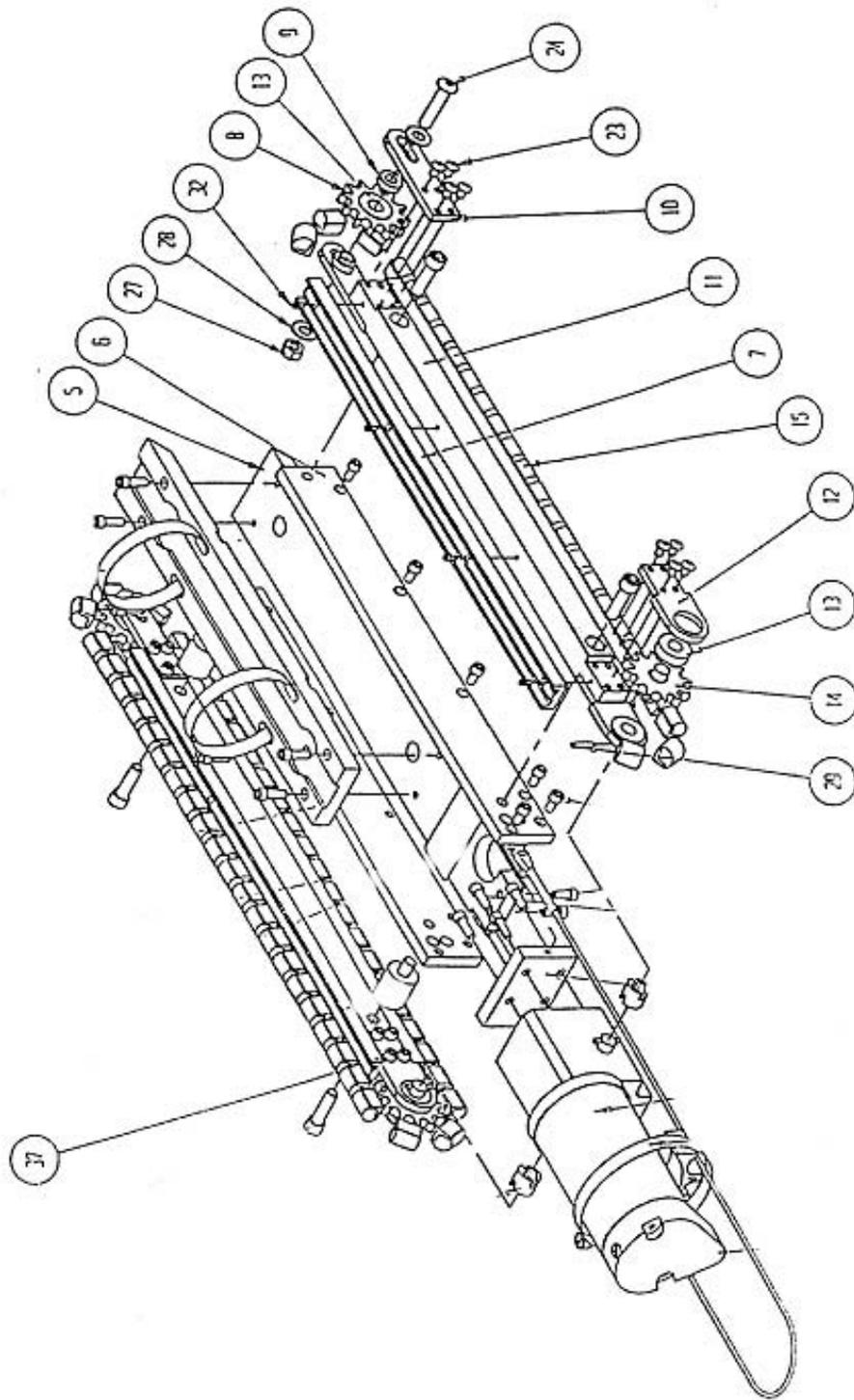
Most equipment damage occurs when camera is loaded into the hole.



ASSEMBLY, TRACTOR, CRAWLER, 8-15" 866-31669

866-31669 ASSEMBLY, TRACTOR, CRAWLER, 8-15"

1	301-24105	MSCR, SHCS,3/8-16 X1 SS	4.0 EA.
17	867-31408	ASSY, BRIDLE,TOW, 60"	1.0 EA.
26	805-31577	ASSY,MOTOR/GEARBOX,CRAWLER 6-PIN SINCON	1.0 EA.
31	301-15608	MSCR, SHCS,1/4-20X.87 SS	4.0 EA.
33	408-24010	COUPLER, DRIVE, 8", CRAWLER (142-984)	2.0 EA.
34	408-24115	COUPLER, DRIVE, 10", CRAWLER (142-992)	2.0 EA.
35	408-24116	COUPLER, DRIVE, 12", CRAWLER (143-000)	2.0 EA.
36	408-24117	COUPLER, DRIVE, 15", CRAWLER (143-008)	2.0 EA.
40	866-31667	ASSY. TREAD DRIVE, CRAWLER 8-15"	2.0 EA.
41	802-31666	ASSY. TRACTOR BODY, CRAWLER 8-15"	1.0 EA.
42	305-30661	CLAMP,LOOP, .125" CABLE,. 184" MOUNTING HOLES	2.0 EA.
43	451-30597	TOP COVER, RAIL, SC, CRAWLER	1.0 EA.
44	450-30580	SKID,BOTTOM,MOTOR,CRAWLER, SC	1.0 EA.
45	450-30507	SKID, TOP,MOTOR,CRAWLER, SC	3.0 EA.
46	410-19071-21	RING,PRTCTR,TNC & PIG TAIL, M/L TR,	1.0 EA.
47	403-13419	SPACER,SKID, TOP CENTER ONLY	1.0 EA.
48	806-30399	ASSY,CBL,OE3 CAMERA TO RST SC CRAWLER,22-1/2"	1.0 EA.
49	301-12591	MSCR, FLT,PHH,8-32 X .75 SS	3.0 EA.
50	301-12765	MSCR, PAN,PHH,8-32 X .37 SS	2.0 EA.
51	301-12707	MSCR, FLT,PHH,8-32 X .38 SS	7.0 EA.
52	301-11005	MSCR, SHCS,1/4-20X.87 SS	2.0 EA.



ASSEMBLY, TREAD DRIVE, CRAWLER 866-31667

866-31667 ASSEMBLY, TREAD DRIVE, 8" CRAWLER

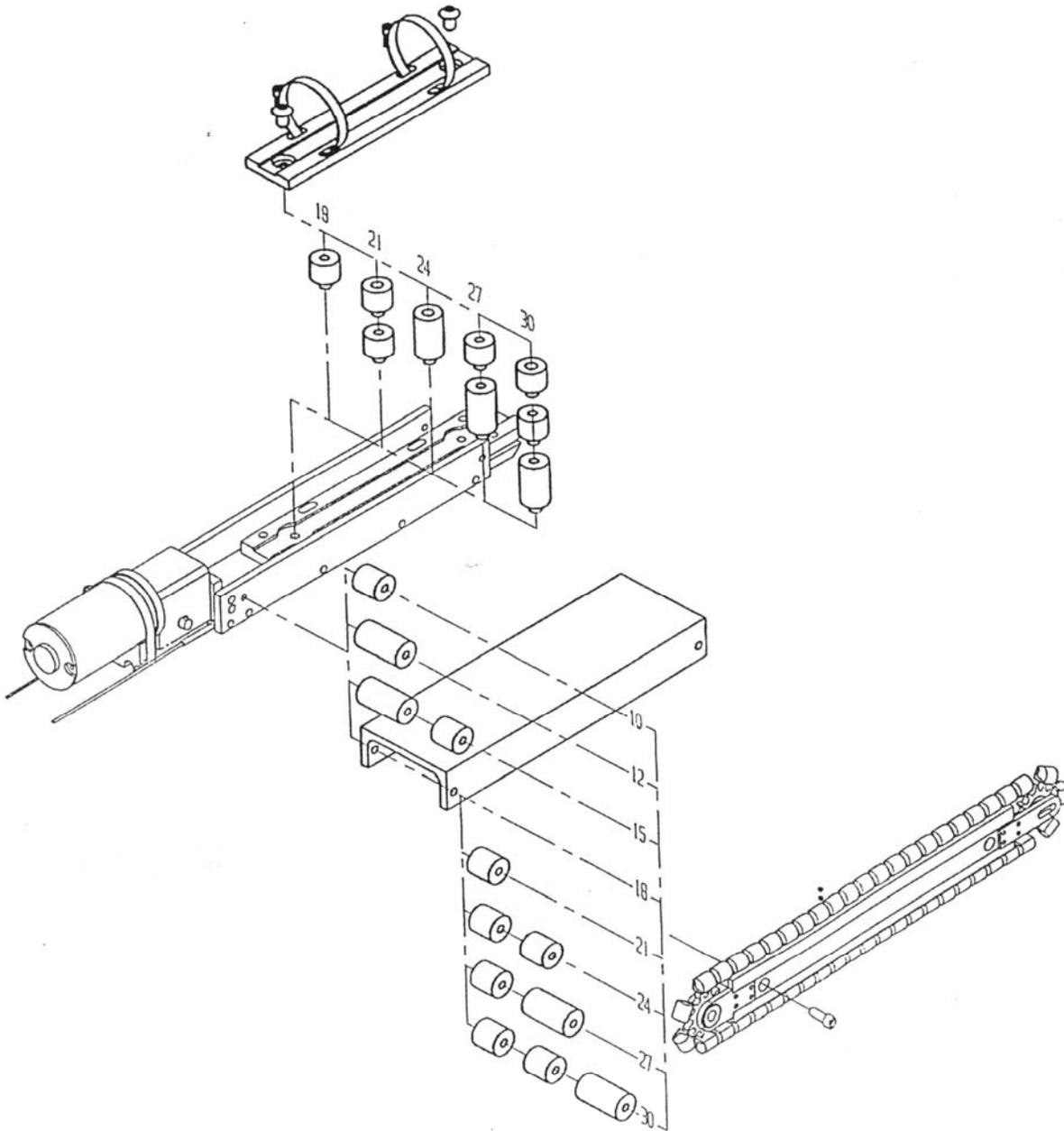
7	301-19935	MSCR, SHCS,6-32X.375 SS	8.0 EA.
8	805-31508	ASSY, SPKT, IDLER, TREAD DRIVE, 8" (148-425)	1.0 EA.
9	403-24110	SPACER, SPKT, IDLER, TREAD DRIVE, 8"	2.0 EA.
10	453-24111	PLATE, MTG, SPKT, IDLER, TREAD DRIVE, 8"	2.0 EA.
11	451-24038	TRACK RAIL, CRAWLER, 8"	1.0 EA.
12	453-24112	PLATE, MTG, BUSHING, DRIVE, TREAD DRIVE, 8"	2.0 EA.
13	404-13120	BEARING,BALL,1.125 OD,.500 BORE,.312 W, DOUBLED SEALED	2.0 EA.
14	805-24114-40	ASSY, SPKT, DRIVE,TREAD DRIVE,8" (142-976)	4.0 EA.
15	867-24026	ASSY, CHAIN. TREAD DRIVE, 36 PAD, #40 CHAIN	1.0 EA.
23	305-30661	MSCR, BUTTON, HXS, 1/4-20X.50 SS	8.0 EA.
24	305-24106	MSCR, BUTTON, HXS, 3/8-16X.1-3/4 SS	1.0 EA.
27	309-32694	NUT, HXS, 3/8-16,THIN,NYLOCK 18-8 SS	1.0 EA.
28	316-11658	WASHER,FLT, .37, SS	2.0 EA.
29	400-30384	PIM, SPRING, ROLL, 3/16 X .75 SS	2.0 EA.
32	449-24013	GUIDE, CHAIN, CRAWLER 8"	2.0 EA.
37	301-20607	MSCR, SHCS,1/4-20 X..375L SS	4.0 EA.

** REPLACEMENT PARTS FOR 8" CRAWLER

867-24026#40 CHAIN ASSEMBLY WITH LARGE PADS

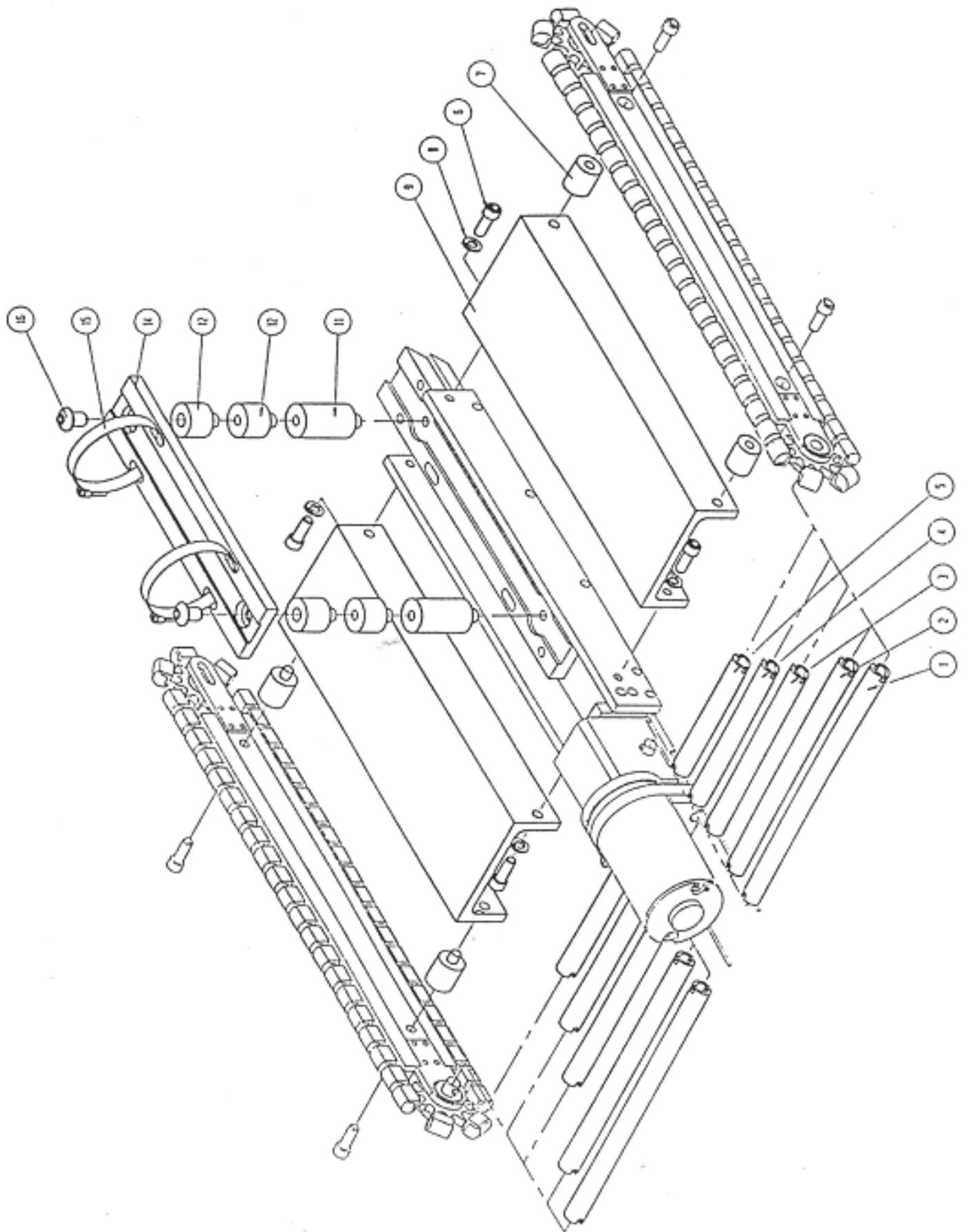
441-20988	4 FOOT # 40 CHAIN
401-12771	47 1/8 INCH RIVETS
451-30601	47 #40 TREAD BLOCK

Spacer configuration for
10-30" pipe sizes



**840-32049 ASSY, TREAD DRIVE,CRAWLER,18-30"
(OPTIONAL)**

<u>ITEM</u>	<u>PART NUMBER</u>		<u>QUANTITY</u>	<u>DESCRIPTION</u>
1	408-24135	143-728	2	30" COUPLER
2	408-24134	143-720	2	27" COUPLER
3	408-24133	143-712	2	24" COUPLER
4	408-24132	143-704	2	21" COUPLER
5	408-24131	143-696	2	18" COUPLER
6	301-15490	143-376	8	3/8-16X1.00 SHCS SS
7	867-24118		4	1.25" RAIL SPACER
8	301-14963		8	3/8" LOCK WASHER
9	143-680		2	18-30 EXTENSION
11	143-664		2	LONG CAM SPACER
12	143-672		4	SHORT CAM SPACER
14	867-31668		1	CAMERA MOUNT
15	449-15620		2	CAMERA CLAMP
16	305-30506	144-4087	2	1/2-13X.500 BHCS SS



18" TO 30" EXTENSION OPTION 840-32049

Maintenance

Each time the crawler is removed from the pipeline the entire assembly should be washed clean.

A light spray of chain oil should be used on each track assembly.

Inspect individual crawler feet for damage. Replace if necessary.

Inspect the power cable, bridle and connector to make sure they have not been damaged.

Inspect the camera clamps, skids and mounting hardware.