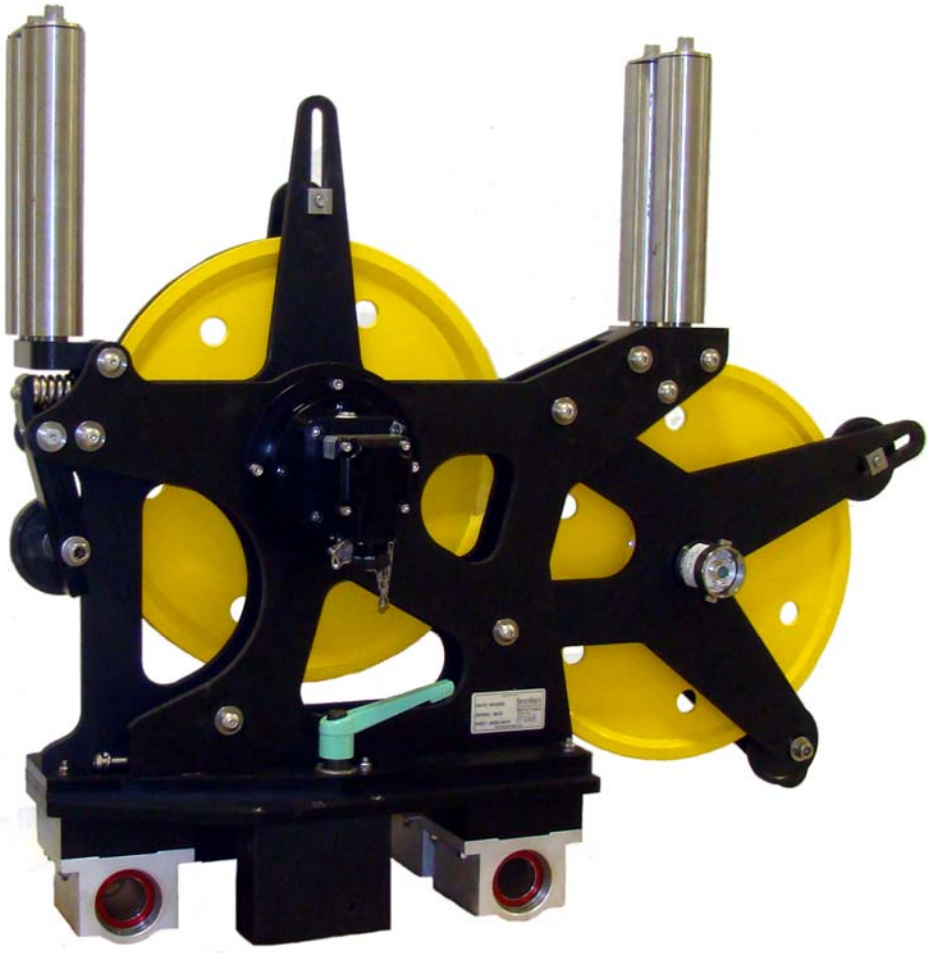
BenchMark Wireline Products
36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.342.6415
Fax: 281.342.4848
benchmarkwireline.com

MEGA MOUTH

HEAVY DUTY SLICKLINE MEASUREMENT DEVICE

WITH COMBINED DEPTH AND TENSION

AMSLA412 – 0-1.5vdc Differential Load Pin
AMSLA413 – 4-20MA Load Pin
AMSLA414 – Passive Load Pin
AMSLA426 – Zone 2



CONTENTS

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1.0 GENERAL

The "MEGA MOUTH" Slickline Measuring Device is a heavy duty two wheeled device which accurately measures both wireline depth and tension. It minimizes wire abrasion and fatigue by using a non reverse bend configuration.

The device is designed to be mounted in front of the wireline drum on a spooling mechanism. Linear bearings in the mount allow it to slide back and forth in front of the drum so the wire can be spooled evenly. The head can be hung from an overhead bar or can sit on bars located at the base of the drum. Spooling rollers and pressure wheels are provided to keep the wire in the wheels at low or no tension. An optional "turn table" is available which allows the head to be pivoted 90 degrees for shipping protection.

This measuring head is unique from previous versions in that the wireline can be removed from the measuring head without cutting off the re-head. The wireline can be removed from the side. The guide rollers are slotted so they can be slid out of the way to remove the wireline.

Tension is measured from a load pin which also serves as the axle for the tension wheel. Since the two wheels are opposite each other, the wire completely wraps around both wheels. This creates a relatively high signal at the load pin which provides a very accurate tension measurement.

With the BenchMark Winchman's Panel, depth can be accurately measured on different sized lines without changing wheels. This is done electronically by the panel using the depth information provided by an encoder. Changes in wire size are accounted for by the panel software. Wire stretch can also be automatically calculated by the panel. An adapter is provided to drive a standard mechanical counter.

2.0 TECHNICAL DESCRIPTION AND SPECIFICATIONS

2.1 WIRE PATH:

The wire runs from the well around the measure wheel (wheel nearest drum) then around the tension wheel and back across the top of the measuring wheel onto the drum. Even though the wire runs side by side across the top of the measure wheel, the system is designed to prevent wire to wire rub. The tension wheel is tilted slightly with respect to the measuring wheel so that the wire enters the wheel on one side of the groove and exits the wheel on the opposite side of the groove. Guide rollers are aligned to assist in keeping the wire on the proper side of the groove.

The wire runs through a non reversed bend configuration (i.e. the wire is always bent in the same direction). This minimizes wire fatigue due to bending the wire in opposite directions each time it passes through the measuring head. The large wheel radius minimizes the effects of fatigue and promotes longer wire life, especially with larger diameter wirelines.

Guide rollers are installed on the tension wheel to keep the wire in the groove. A spring mounted guide roller is used on the measure wheel to ensure the wire is always pressed tightly against the measure wheel to prevent wire slippage at low tension to minimize measurement error. The spring tightly presses the wire against the wheel regardless of wire size. The spring force keeps the wire turning the wheel even with sudden changes of direction during jarring action. A composite guide roller is mounted above the measure wheel to keep the wire in the groove when wireline tension is relaxed such as during transport and rigup.

2.2 DEPTH MEASUREMENT:

Depth measurement is made by wrapping the wire around the measuring wheel which has a precision machined groove. The wheel groove has a circumference of 4 feet with .125 wire installed. The wheel is hardened to greater than Rockwell 58 by using a special heat treat process. This minimizes wheel wear to maximize wheel life.

This measuring head is capable of providing three completely independent depth measurements, a mechanical counter, an optical encoder, and a magnetic pickup.

The optical encoder provides a high resolution measurement to the BenchMark Wireline Products hoistman's panel. With this panel depth and line speed can be accurately measured on different sized lines without changing wheels. This is done electronically by the panel. Changes in wire size are accounted for by the panel software. Wire stretch can also be automatically calculated by the panel.

The panel operates on 12v and supplies the necessary power to the encoder and load pin.

A backup depth system is available to provide another independent depth measurement. Depth is measured by a frictionless magnetic pickup mounted in the measuring head. The pickup consists of magnets imbedded in the measure wheel coupling and two hall affect devices mounted next to the shaft. This provides a quadarature type measurement. A small display panel is mounted inside a wireline unit. The panel is designed to be connected to an external AC or DC supply or operate off internal batteries for up to 15 hours between charges. In the event of an external power interruption, the unit automatically switches to battery power. The system is designed to operate without intervention from the user. When external power fails, the depth display is maintained by the batteries. A switch on the front of the panel allows different sizes of wire to be measured accurately without changing the measuring wheels.

The mechanical measurement is made by connecting a “speedometer” cable to the hub of the measuring wheel. A “Veedor Root” type counter can be used. Step down adapters are available to convert from a 1:4 to a 1:1 measurement (adapters on the wheel and in the counter). The mechanical system cannot be adjusted for different wire sizes so a wheel with a different sized groove must be installed to make the mechanical measurement correct.

2.3 TENSION SPECIFICATIONS:

The wheel nearest the well rotates on an axle pin that is instrumented with strain gauges. These strain gauges produce an electrical signal proportional to the magnitude of line tension. The wire always makes a complete 180 degree wrap around the tension wheel so rigup angle does not affect the tension measurement.

The tension wheel is mounted on a self aligning bearing which allows the wheel to properly align itself. This reduces any side forces that may be present which increases the tension measurement accuracy.

PASSIVE BRIDGE VOLTAGE:

POWER REQUIREMENT 12 vdc excitation

TEMPERATURE STABILITY

<= .015% full scale / deg F on zero
<= .02% full scale / deg F on output

ACCURACY 1% full scale nominal

MAXIMUM RATED LOAD: 9000 lbs (4082 kg)

DIFFERENTENTIAL VOLTAGE:

Power Requirements: +/– 15 vdc input power

Interface: Proprietary circuit board which amplifies the load pin signals and provides a 1.5v differential output.

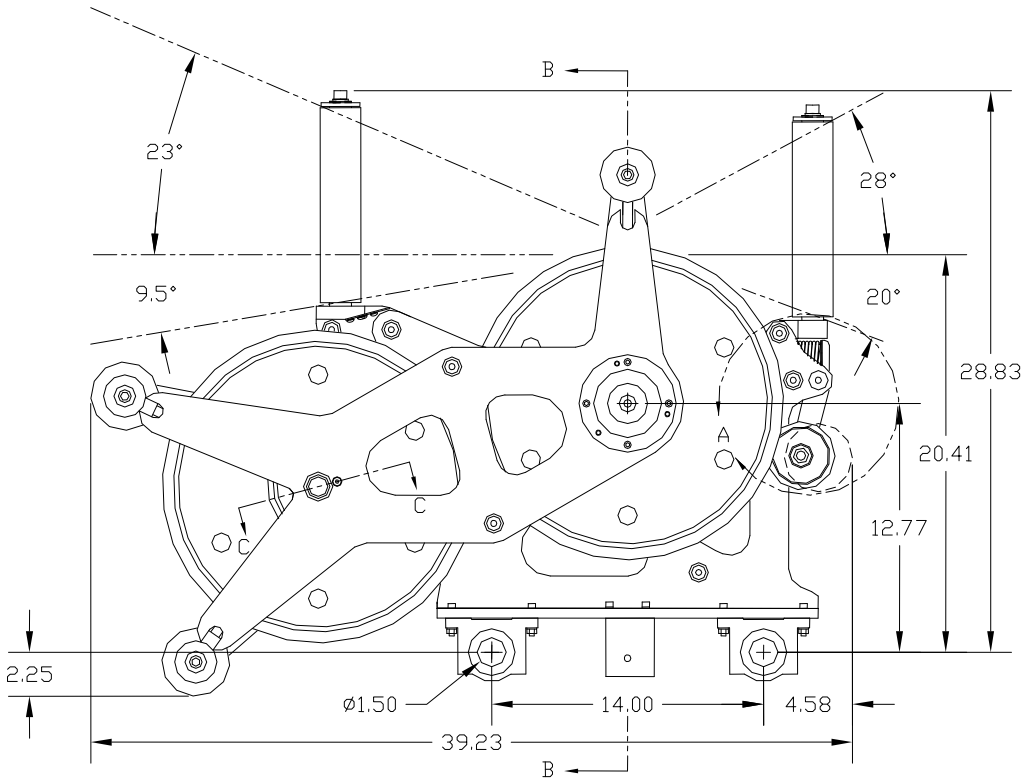
0 vdc = 0 lbs (0 kg)
.75 vdc = 5000 lbs (2268) - shunt cal
1.5 vdc = 10000 lbs (4536 kg)

4-20MA CURRENT LOOP

Power Requirements:	+24vdc input power
Interface:	Proprietary circuit board which amplifies the load pin signals and provides a 4-20ma current loop output.
	4 ma = 0 lbs (0 kg) 12 ma = 5000 lbs (2268) - shunt cal 20ma = 10000 lbs (4536 kg)
TEMPERATURE STABILITY	
<=	.015% full scale / deg F on zero
<=	.02% full scale / deg F on output
ACCURACY	1% full scale nominal
MAXIMUM LOAD RATING:	9000 lbs (4082 kg)

2.4 GENERAL SPECIFICATIONS:

Height:	29.5"	.75 m
Length	39.25"	.997 m
Width:	11.5"	.292 m
Weight:	110 lbs	54.4 kg
Maximum Tension:	10,000 lbs	4536 kg
Line Sizes:	.092" – 1/4"	2.3 mm – 6.35 mm
Encoder:	1200 PPR	
Backup Counter:	4 PPR Quadrature	
Load Pin:	Passive Bridge	



3.0 SYSTEM OPERATION

3.1 Determine wireline size to be used – .092" to 1/4”

Since the wireline wraps around the depth wheel, the circumference of the depth wheel will change with a change in wire size. The wheel size needs to be corrected for wireline size in order to accurately measure depth.

These corrections are automatically made in the BenchMark hoistman's panel by selecting the proper cable size using the menu. If a different panel is used, the wheel size will need to be entered at this time.

3.2 Install wire in measuring head using the following procedure:
(refer to figure on following page).

1. Run the wireline from the drum, through the drum side spooling rollers, onto the left side (facing the drum) of the depth wheel.

2. Pull the wireline across the depth wheel, under the spooling roller plate around the tension wheel.

3. Make sure the guide rollers are loose so the wireline can be installed on the tension wheel.

4. Pull the wireline from the bottom of the tension wheel around the bottom of depth wheel, under the spring mounted tension roller (mounted on the rear of the depth wheel), around the top of the depth wheel (right side), and through the rig side spooling rollers.

5. To open the spring mounted pressure roller, press on the back near the spring or insert a hex wrench into the pressure roller bolt and pull back.

6. After the wireline is installed, tighten the guide rollers. They should be barely touching the wireline in the tension wheel. If they are pressed too tightly against the wireline, the tension measurement will be affected.

3.3 Make sure line is lying slack and head is free to move. Press the T Zero button and tension value should read 0.

3.4 Press the T Cal button and verify that the tension reads close to 4000 lbs. (3629 kg).

3.5 Press the Zero Depth button to set the depth to zero when the tool is hanging at the zero point.

3.6 Simultaneously press the enable and zero button on the backup display panel at this time to zero it.

3.7 At this point, the system is ready to log.

3.8 Operators must remain alert for visual indications of mechanical failures such as excessive vibration, wheel and roller slippage or lockups that signify bearing or shaft failures. If damaged or worn parts are detected or suspected, the unit should be immediately repaired.

4.0 MAINTENANCE AND REPAIR

4.1 PRE AND POST JOB CHECKS

Between jobs, check the measuring and guide wheels for looseness, play, out-of-roundness, worn or rough sounding bearings, or other mechanical conditions that could affect measurement accuracy.

Visually inspect the interiors of the electrical connectors for the encoders and electronic load axle for dirt and evidence of insulation breakdown. Clean or replace as necessary. Install dust caps on the connectors if the cables are removed.

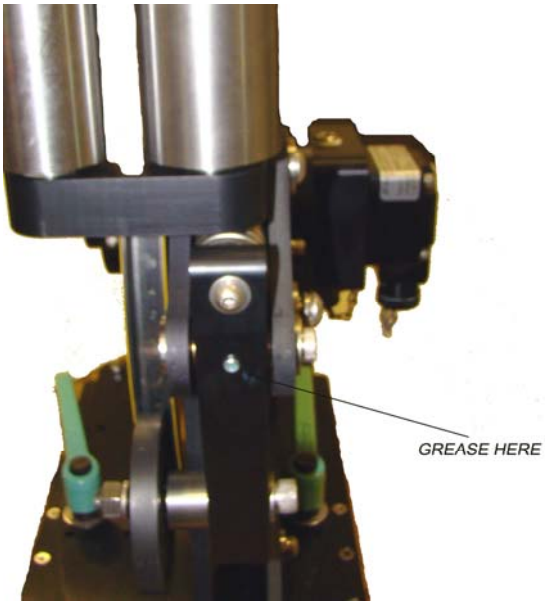
Manually rotate each wheel by hand to verify its condition. Inspect the depth measuring wheel for signs of abnormal wear diameter changes, or shaft play that can affect measurement accuracy. The wheel should be replaced if it is grooved more than .005".

Inspect the tension wheels for signs of abnormal wear, diameter changes, or shaft and bearing play that could affect measurement accuracy. It should also be replaced if it is grooved more than .005".

Do not pressure wash bearings or electrical parts

4.2 MONTHLY MAINTENANCE

Grease the wheels and bearings that are fitted with a grease fitting. Use a marine grade grease. An inverted grease nozzle is supplied with each head. This nozzle (p/n AM5KP130) will fit any standard grease gun.



4.3 ASSEMBLY / DISASSEMBLY PROCEDURES

4.3.1 ELECTRONIC LOAD PIN REMOVAL

The electronic load pin is held in place by one retaining ring on the outer end of its shaft. Remove the retaining ring. The load pin can then be removed from the mounting frame.

4.3.2 BACKUP DEPTH MAGNETIC PICKUP REMOVAL AND INSTALLATION

The backup depth magnetic pickup is mounted to the encoder adapter. It is held in place by four screws. Remove the screws and the pickup can then be removed. The pickup must be properly oriented to work correctly. The slot should be oriented to the top. The top side is the encoder side. Ensure that an o-ring is inserted between the plastic housing and the mount. An additional o-ring is used between the connector and the housing to keep moisture out.

If the backup display is counting backward (i.e. counting negative when going down hole), simply rotate the pickup 180 degrees to change the direction.

4.3.3 ENCODER COUPLING INSTALLATION

To install the encoder coupling, first remove the plug in the encoder adapter.

Next, install the encoder on the outer encoder adapter.

Using a hex head wrench, tighten the set screws on the coupling then replace the plug.

5.0 RECOMMENDED SPARE PARTS

Following is a list of recommend spare parts. Parts designated REMOTE are recommended only for areas that have a very difficult time getting parts shipped to. For all other areas, it should not be necessary to stock the REMOTE parts locally.

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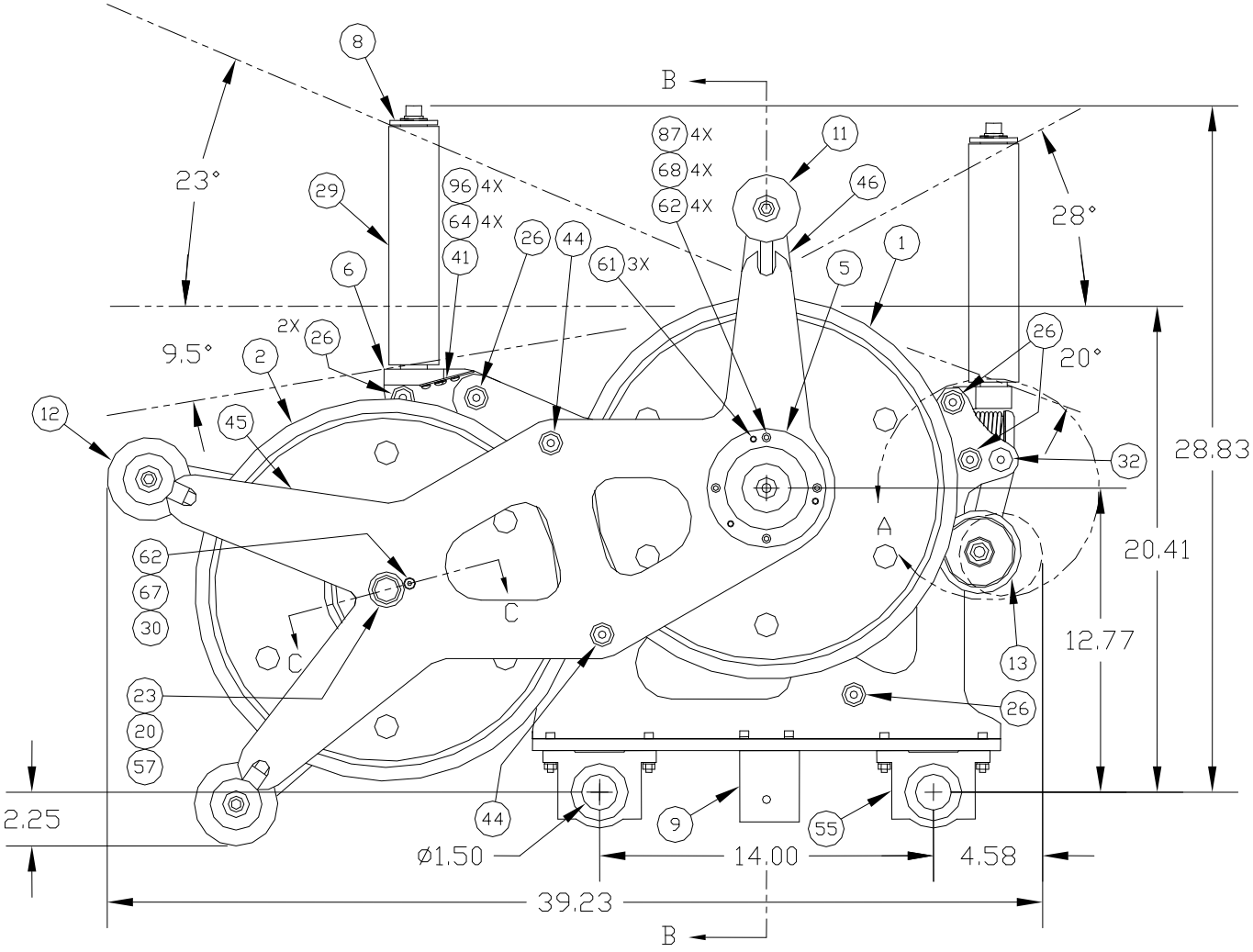
ITEM	P/N	DECSRIPTION	QTY	UM	REF
10	AMSLM059	WHEEL MEASURING 4FT UNIV 2 WHL 0.092 -1/4	1	EA	REMOTE
11	AMSLA160	WHEEL ASSY TENSION 4FT ¼	1	EA	REMOTE
12	AMSLA162	WHEEL ASSY PRESS ROLLER TENSN W/BEARING	1	EA	
13	AMSLA163	WHEEL ASSY PRESS ROLLER MEASR W/BEARING	1	EA	
13A	AMSLP112	BEARING BALL 12MM SST (FOR ABOVE PRESSURE ROLLER	1	EA	
20	AMSLA110	LOAD PIN 0-1.5V DIFFERENTIAL	1	EA	AMSLA412
20	AMSLA180	LOAD PIN 4-20MA	1	EA	AMSLA413
20	AMSLP103	LOAD PIN PASSIVE	1	EA	AMSLA414
21	AM3KM050	COUPLING ENCDR W/BKUP MAGNETS	1	EA	
29	AMSLM219	ROLLER GUIDE VERT LEVELWIND	2	EA	
33	AMSLM033	ROLLER KEEPER UNIVERSAL	1	EA	
49	AM5KA055	ASSY ENCODER BACKUP MAGNETIC	1	EA	REMOTE
50	AMSLP061	ENCODER HD2.5D-0-SS-37F-1200	1	EA	
51	AMS1P090	COUPLING OLDHAM ENCODER	1	EA	
52	AMSLP040	BEARING SPHERE-ROL 50MM ID – TENSION WHEEL	1	EA	
53	AMSLP041	BEARING BALL 30MM MRC5306- MZZ - MSR WHEEL	1	EA	
54	AM3KP021	BEARING BALL 10MM FAFNIR 200PP – GUIDE ROLLERS	4	EA	
99	AM5KP130	NOZZLE GREASE FITTNG FLUSH	1	EA	

6.0 DRAWINGS AND PARTS LISTS

6.1 MEASURE HEAD ASSEMBLY

SIDE VIEW



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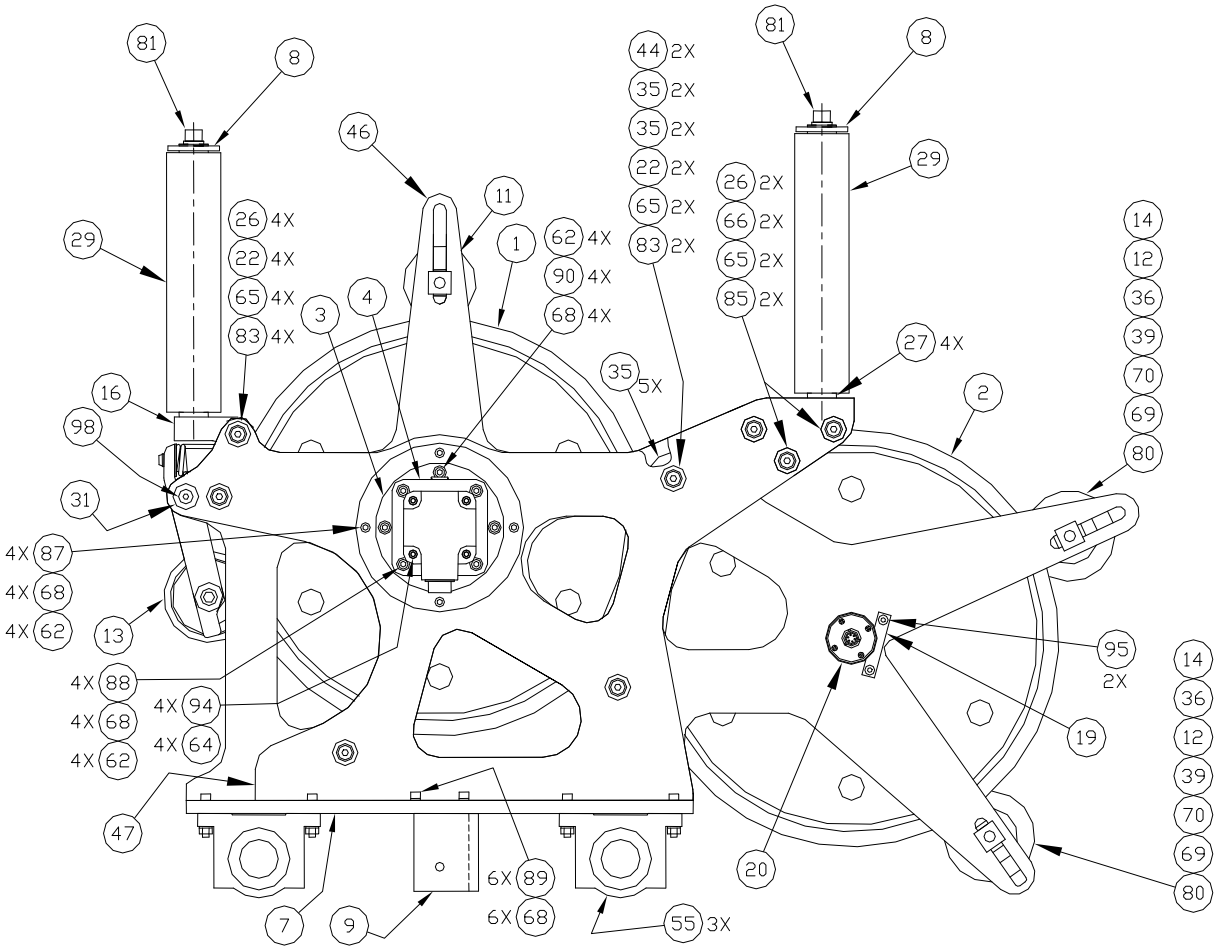
OPPOSITE SIDE VIEW



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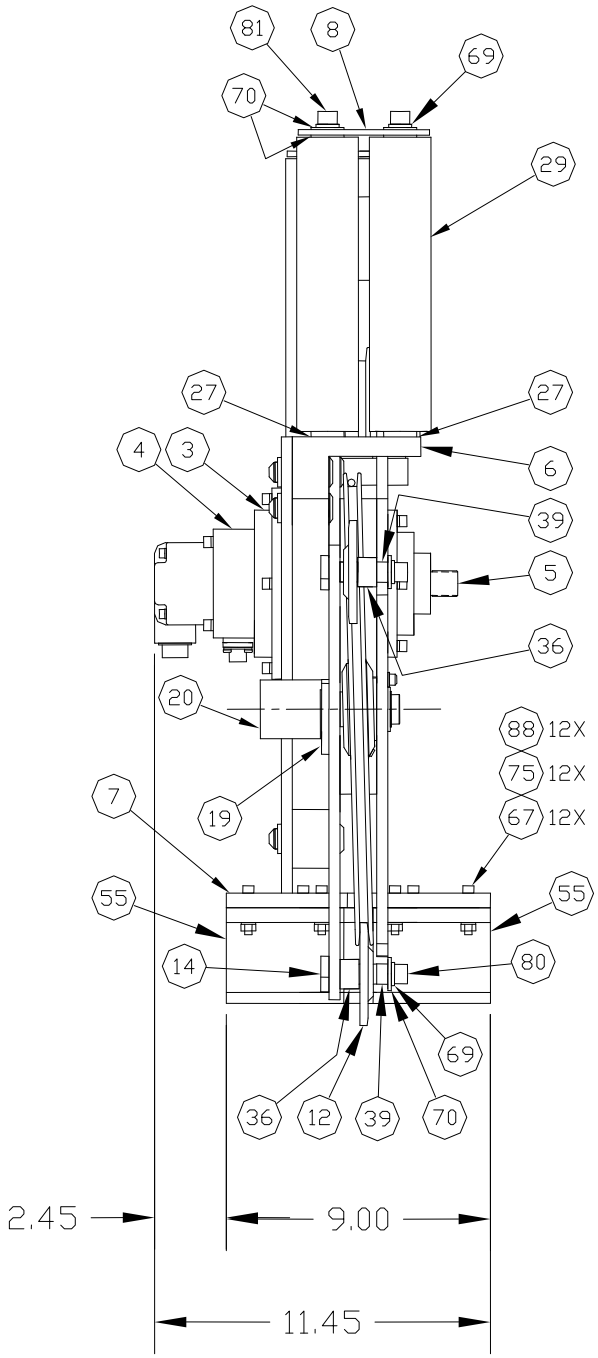
END VIEW



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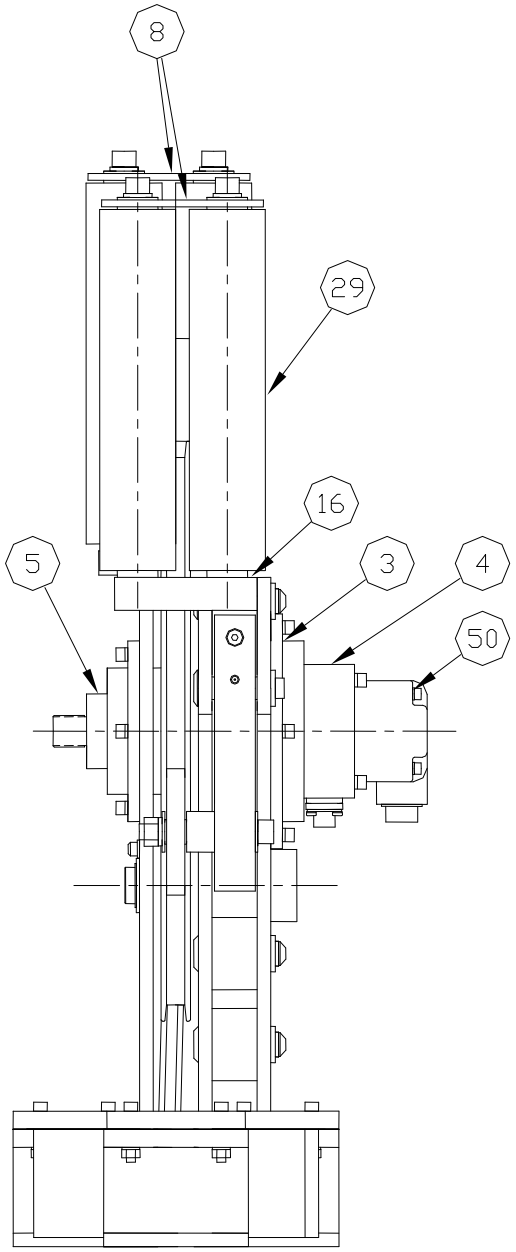
OPPOSITE END VIEW



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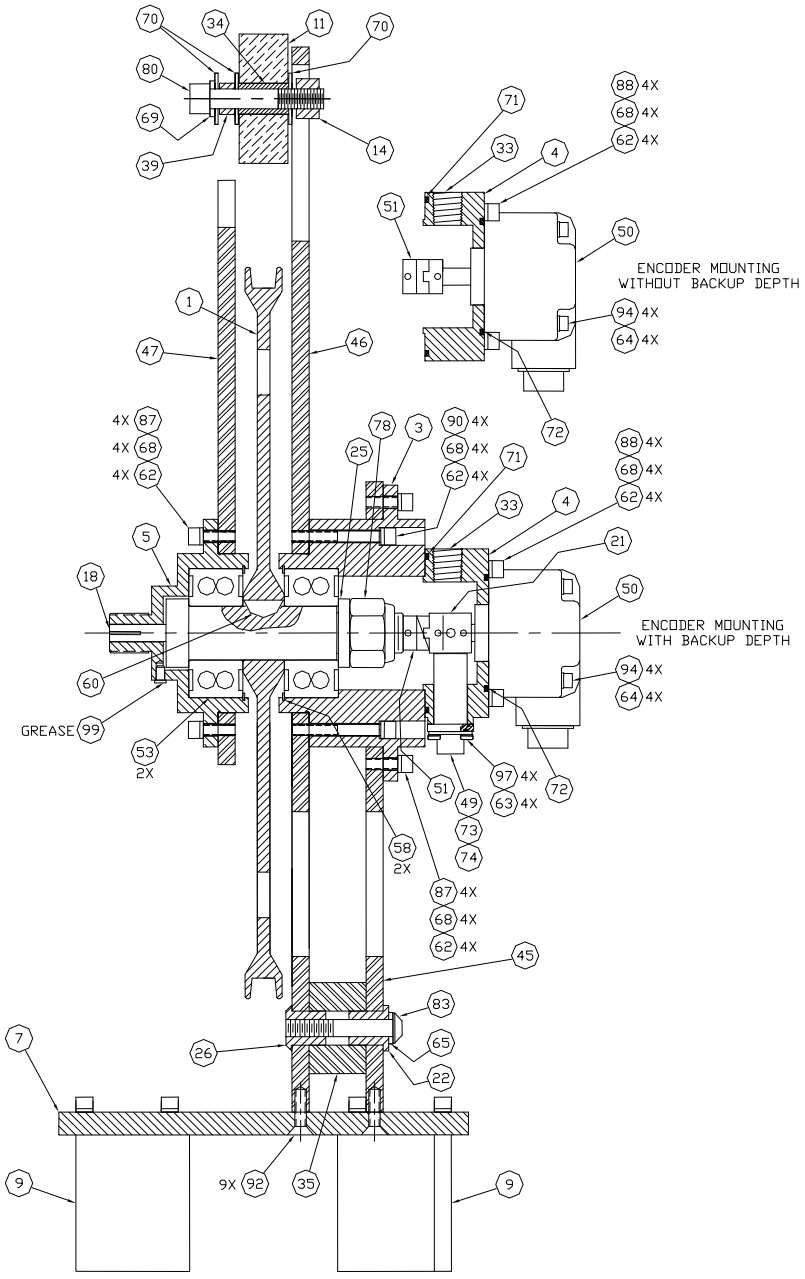
MEASURE WHEEL CUTAWAY VIEW



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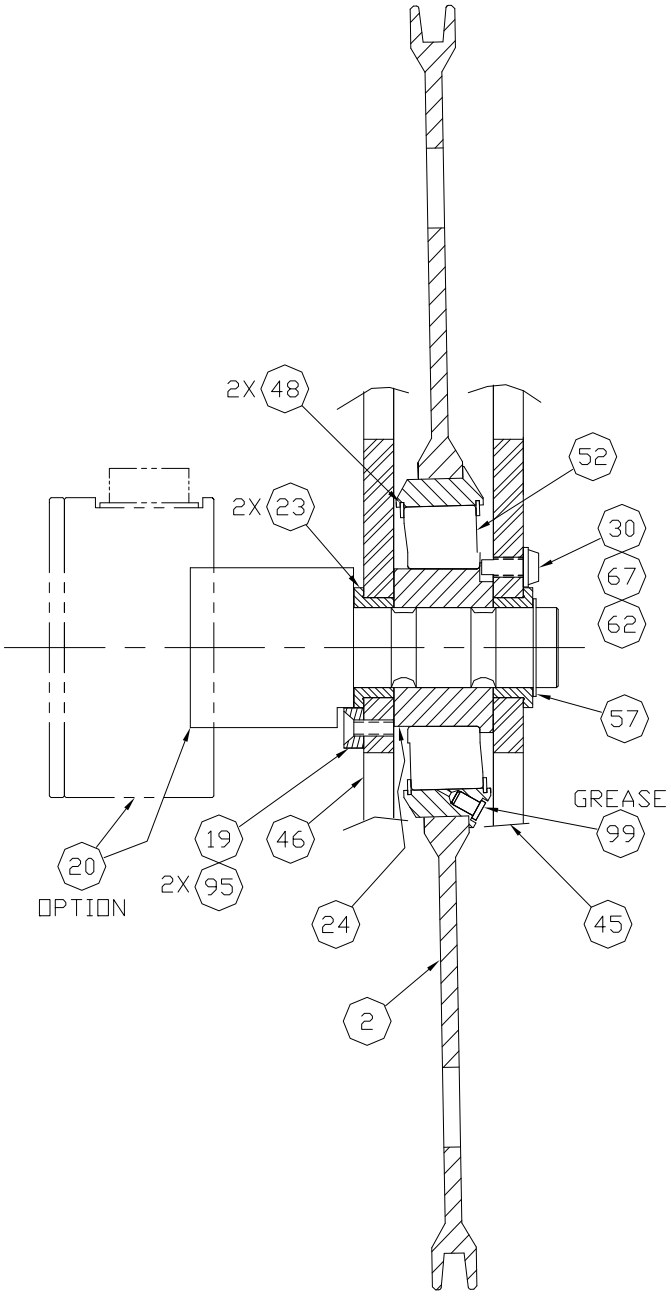
TENSION WHEEL CUTAWAY VIEW



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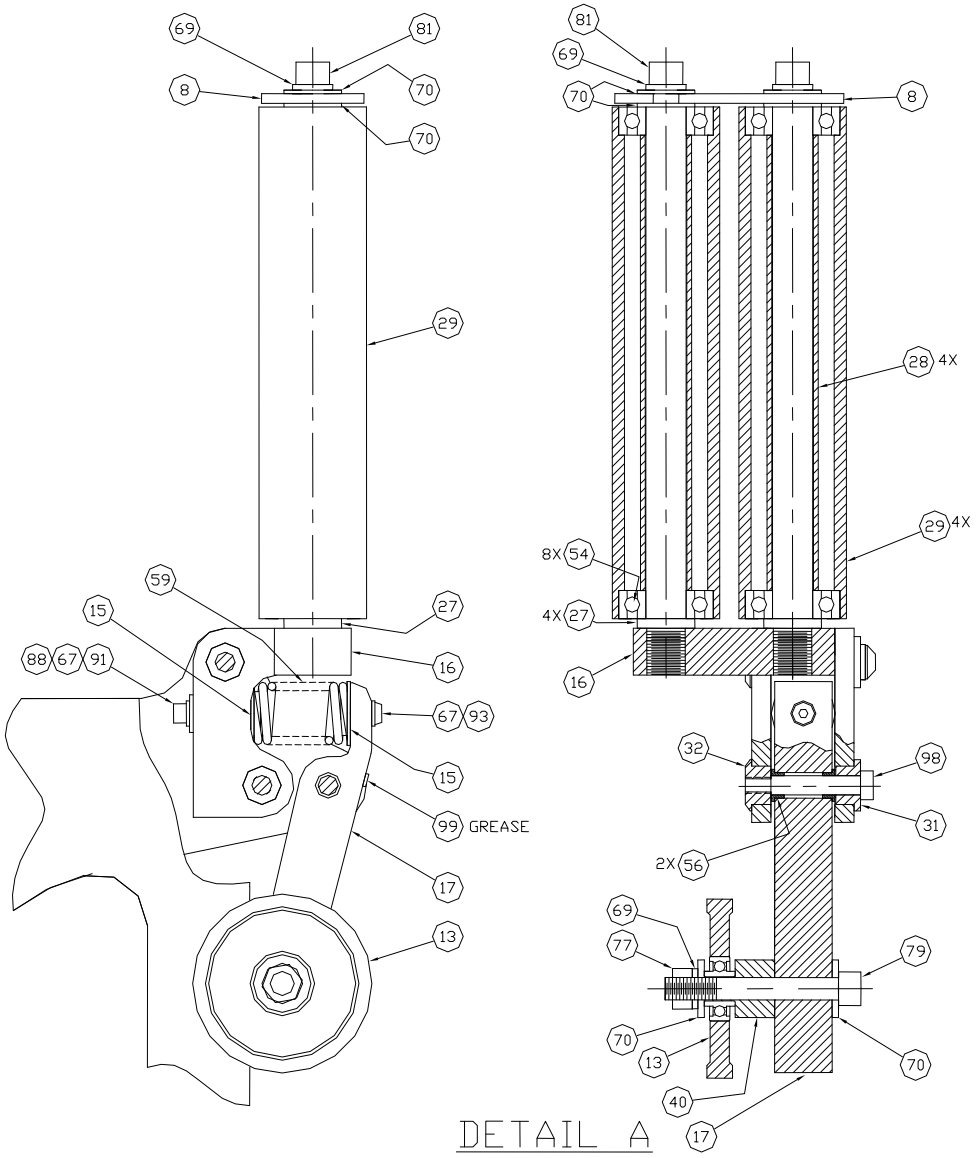
GUIDE ROLLERS CUTAWAY VIEW



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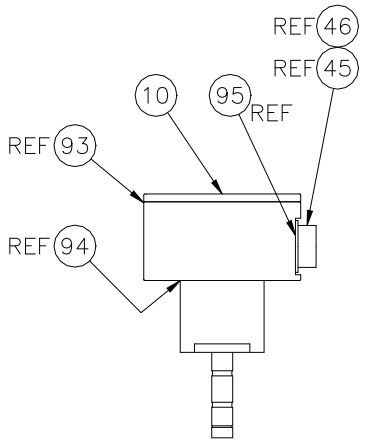
MEASURE HEAD ASSEMBLY PARTS LIST

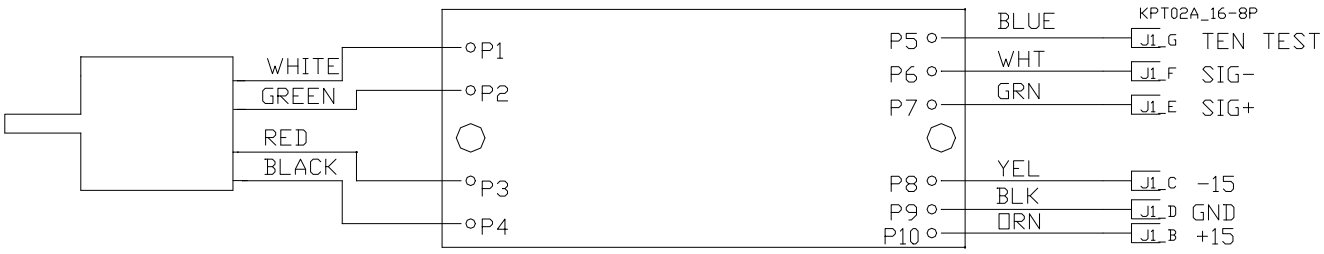
P/N	DESCRIPTION	QTY	UM	ITEM
AMSLA160	WHEEL ASSY TENS 4FT 1/4 BR LIN	1	EA	1
AMSLP112	BEARING BALL 12MM SST	1	EA	2
AMSLM216	ADAPTER MEASURING WHL SHAFT	1	EA	3
AM3KM040	ADAPTER ENCODER H25D/H20 MAG	1	EA	4
AMSLM122	ADAPTER COUNTER HD RT ANGL DRV	1	EA	5
AMSLM148	MOUNT GUIDE ROLR FRONT MMOUTH	1	EA	6
AMSLM239	PLATE BASE OPEN 2-WHL	1	EA	7
AMSLM221	PLATE SPACER GUIDE ROLLER VERT	2	EA	8
AMSLM044	BRACKET LEVELWIND CHAIN	2	EA	9
AM5KP041	SCREW 10-24 X 1-1/4 PHIL PAN	4	EA	10
AMSLM433	ROLLER KEEPER MEGAMOUTH	1	EA	11
AMSLA162	WHEEL ASSY PRESS RLR 1/4 TENSN	2	EA	12
AMSLA163	WHEEL ASSY PRESS RLR 1/4 MEASR	1	EA	13
AMSLP112	BEARING BALL 12MM SST (FOR ABOVE PRESSURE ROLLER	1	EA	13A
AMSLM228	NUT 7/16-14 TEE SLOT SST	3	EA	14
AMSLM449	GUIDE SPRING PRESS WHL 2WC	2	EA	15
AMSLM150	MOUNT GUIDE ROLR REAR MMOUTH	1	EA	16
AMSLM251	MOUNT PIVOT PRESS WHEEL 2WC	1	EA	17
AMSLM115	SHAFT MEAS WHL 30MM ENCDR/RT	1	EA	18
AMSLM085	PLATE ORIENTATION LOAD PIN	1	EA	19
AMSLA110	LOAD PIN 0-1.5V DIFFERENTIAL	1	EA	20
AMSLA180	LOAD PIN 4-20MA	1	EA	20
AMSLP103	PIN LOAD 12,500# 1"OD 2.0mV/V	1	EA	20
AM3KM050	COUPLING ENCDR W/BKUP MAGNETS	1	EA	21
AMSLM030	BUSHING FRAME 2 WHEEL COUNTER	6	EA	22
AMSLM131	BUSHING TENSION WHEEL 1 IN L/P	2	EA	23
AMSLM065	BUSHING L/P 1IN W/ANTI-ROTATN	1	EA	24
AMSLM114	SPACER .90ID X 1.50D X .250W	1	EA	25
AMSLM230	BUSHING FRAME 3/8-16 SHARK	6	EA	26
AMSLM217	SHAFT GUIDE ROLLER VERT LVLWND	4	EA	27
AMSLM218	TBG SPACER GUIDE ROLLER LVLWND	4	EA	28
AMSLM219	ROLLER GUIDE VERT LEVELWIND	4	EA	29
AMSLM084	SCREW ANTI-ROTATION TENS WHEEL	1	EA	30
AMSLM053	BUSHING FLANGE PRESS WHEL 3/8	1	EA	31
AMSLM055	BUSHING FLANGE PRESS WHEL 5/16	1	EA	32
AMS1P072	PLUG 3/8 NPT SS	1	EA	33
AMSLM434	SPACER KEEPER ROLLER UNIVERSAL	1	EA	34
AMSLM040	SPACER FRAME 2 WHEEL COUNTER	5	EA	35
AMSLM081	SPACER PRESSURE WHEEL 0.64 THK	2	EA	36
AMSLM283	SPACER KEEPER ROLLER 0.34 THK	3	EA	39
AMSLM282	SPACER PRESSURE WHEEL 0.76 THK	1	EA	40
AMSLM134	PLATE WEAR MEGAMOUTH	1	EA	41
AMSLM229	BUSHING FRAME TUBE	2	EA	44

AMSLM145	PLATE FRAME OPEN SIDE MMOUTH	1	EA	45
AMSLM146	PLATE FRAME MIDDLE MMOUTH	1	EA	46
AMSLM147	PLATE FRAME OUTER MMOUTH	1	EA	47
AMSLP022	RING RETNG INT 3.562 LT DUTY	2	EA	48
AM5KA055	ASSY ENCODER BACKUP MAGNETIC	1	EA	49
AMSLP061	ENCODER S25HA-37F-1200-ABZC-69	1	EA	50
AMS1P090	COUPLING OLDHAM ENCODER	1	EA	51
AMSLP040	BEARING SPHERE-ROL 50MM ID	1	EA	52
AMSLP030	BEARING BALL 30MM 2-ROW SST	2	EA	53
AMSLM054-1	BRACKET LEVELWIND CHAIN W/PIVT	1	EA	54
AMSLM054-2	BRACKET LEVELWIND CHAIN W/PIVT	1	EA	55
AMSLP009	BEARING BRZ FLANGED 3/8" ID	2	EA	56
AMSLP100	RING RETNG EXT 1.000 SHAFT SST	1	EA	57
AM5KP168	RING RETNG INT 2.875 LT DUTY	2	EA	58
AMSLP278	SPRING COMP 2.00 OAL 1.218 OD	1	EA	59
AMSLP015	KEY 1/4 X 7/8 WOODRUFF SST	1	EA	60
AM5KP250	INSERT 1/4-20 HELI-COIL #R1185	3	EA	61
C276P014	INSERT 1/4-20 HELI-COIL #R1185	7	EA	62
AMS1P058	WASHER 3/8 LOCK SS	8	EA	65
C276P513	WASHER 3/8 FLAT SST	2	EA	66
AM5KP144	WASHER 1/4 LOCK SS HIGH COLLAR	2	EA	68
AMSLP047	WASHER 7/16 LOCK SST	8	EA	69
AMSLP247	WASHER 7/16 HEAVY FLAT SST	5	EA	70
AMS1P014	O-RING 2-152 BUNA N ENC ADPTR	1	EA	71
AM5KP071	O-RING 2-141 BUNA N H25 ENCDR	1	EA	72
AMSLP059	NUT 7/16-14 SST	1	EA	77
C276P021	NUT 7/8-14 ELASTIC STOP SST	1	EA	78
AMSLP242	SCREW 7/16-14 X 3-1/4 SOC HD	1	EA	79
AMSLP097	SCREW 7/16-14 X 2-1/4 SOC HD	3	EA	80
AMSLP058	SCREW 7/16-14 X 1 SOC HD	4	EA	81
AMSLP067	SCREW 3/8-16 X 2-1/4 BUT HD SS	6	EA	83
AMSLP069	SCREW 3/8-16 X 1-3/4 BUT HD SS	2	EA	85
AMS1P048	SCREW 1/4-20 X 3/4 SOC HD SST	4	EA	87
AM3KP027	SCREW 1/4-20 X 1-1/2 SOC HD SS	1	EA	88
AMSLP025	SCREW 1/4-20 X 1 SOC HD SST	6	EA	89
AM3KP026	SCREW 1/4-20 X 2 SOC HD CAP SS	4	EA	90
ACMU2P31	WASHER 1/4 FLAT 5/8OD SST	1	EA	91
C276P030	SCREW 1/4-20 X 1 FH SOC SST	9	EA	92
AMS4P870	SCREW 1/4-20 X 3/4 BTN HD SST	1	EA	93
AMS1P053	SCREW 10-24 X 2 SHCS SST	4	EA	94
AM5KP045	SCREW 10-24 X 1/2 FH SOC SST	2	EA	95
ALS3P025	SCREW 10-24 X 1/2 BTN HD SST	4	EA	96
AMSLP023	BOLT SHOULDER 3/8 X 1-3/4 SST	1	EA	98
AM5KP129	FITTING GREASE FLUSH STRAIGHT	3	EA	99
AM5KP130	NOZZLE GREASE FITTNG FLUSH	1	EA	111

6.3 AMSLA110 DIFFERENTIAL LOAD PIN



45	AMS8P055	CONN KPT 02A16-8P	1	EA
46	AMS8P056	DUST CAP KPT81-16C	1	EA
93	C276P040	O-RING 2-235 BUNA N L/P LID 3-1/8 X 3-3/8 X 1/8	1	EA
94	AMS8P066	O-RING 2-136 BUNA N L/P HSG 1.98ID X 2.19OD X 0.103W	1	EA
95	AM5KP118	O-RING 2-023 BUNA N L/P CONN 1-1/16 X 1-3/16 X 1/16	1	EA



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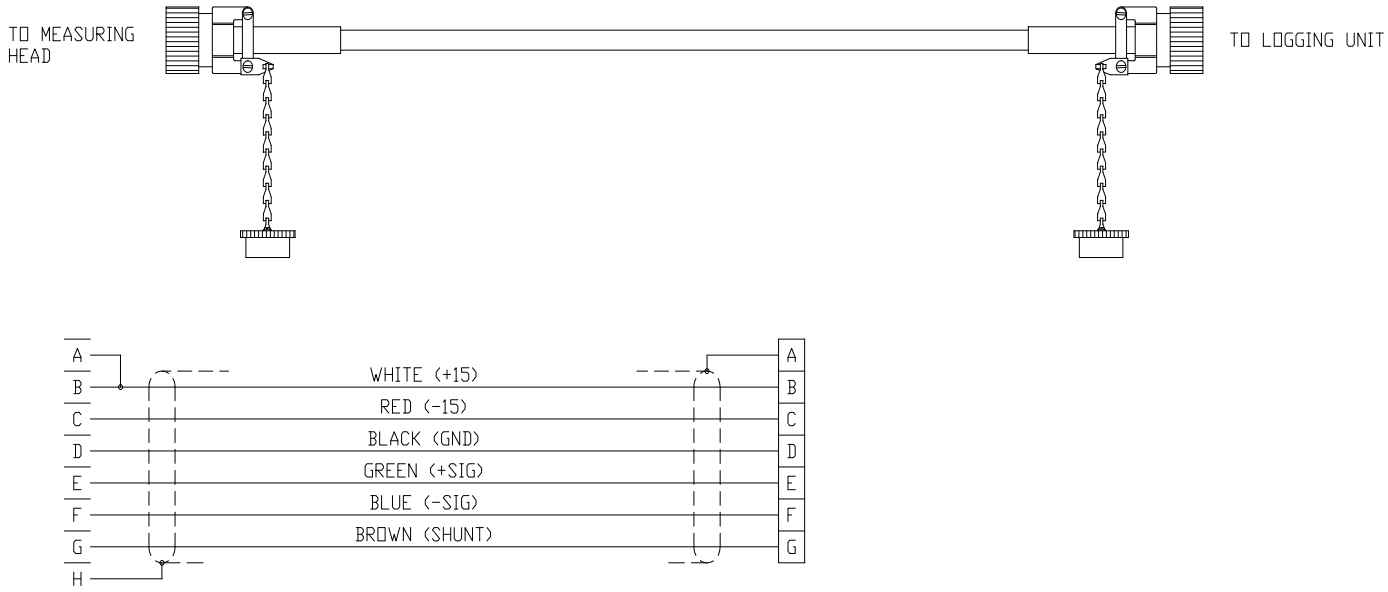
6.3 DIFFERENTIAL LOAD PIN (continued)

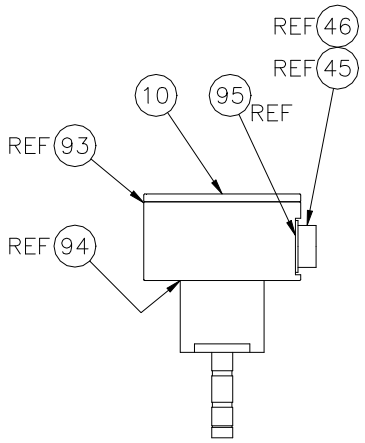
AMS8A024 CABLE ASSEMBLY

DIFFERENTAL TENSION FROM MEASURING HEAD TO PANEL

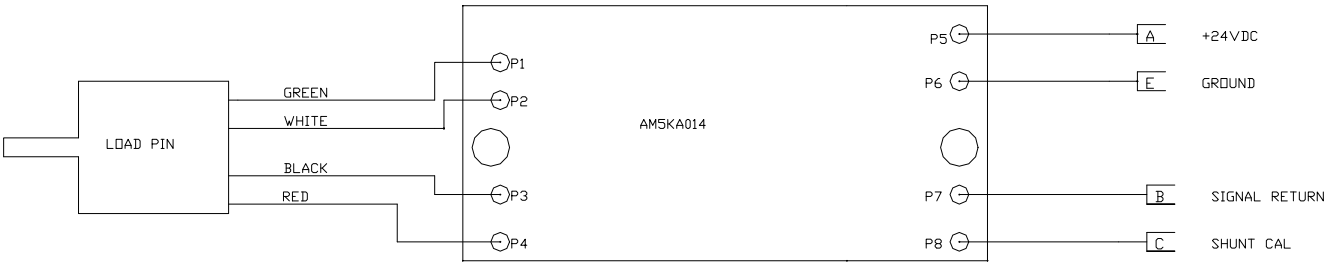


P/N	Description	Qty		
AMS8P057	CONN KPT06A16-8S STR PLUG	1	EA	LOAD PIN END
AMS7P014	CONN MS3106E-18-9S	1	EA	PANEL END
AMS4P221	CABLE 20/8C ALPHA -20 DEG	20	FT	
AMS7P060	DUST CAP SHELL SIZE 16	1	EA	LOAD PIN END

6.4 AMSLA180 4-20MA CURRENT LOOP LOAD PIN



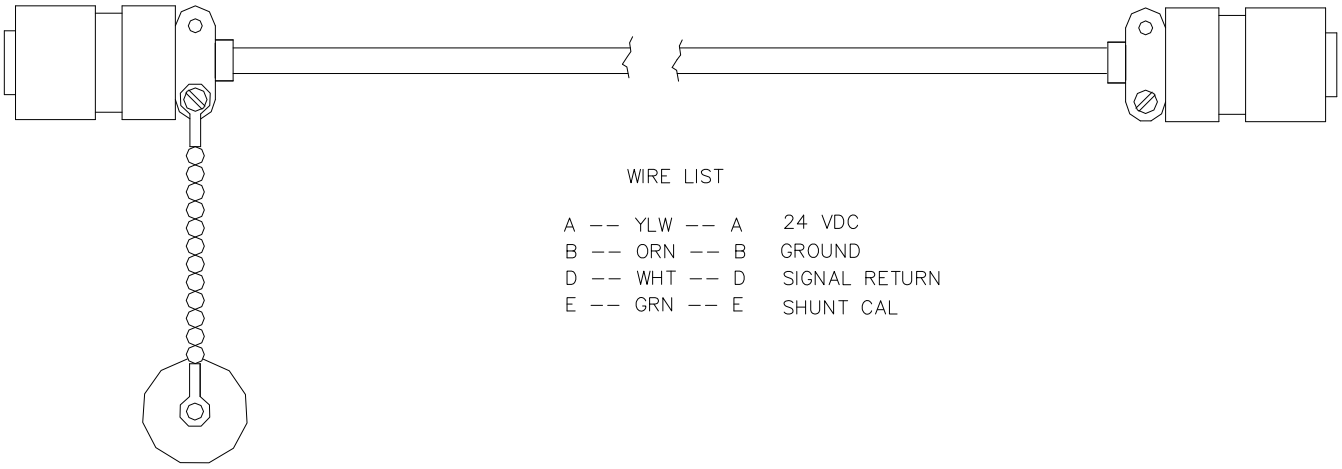
45	AMS7P013	CONN MS3102E-18-9P	1	EA
46	AMS1P029	DUST CAP MS25042-18DA	1	EA
93	C276P040	O-RING 2-235 BUNA N L/P LID 3-1/8 X 3-3/8 X 1/8	1	EA
94	AMS8P066	O-RING 2-136 BUNA N L/P HSG 1.98ID X 2.19OD X 0.103W	1	EA
95	AM5KP118	O-RING 2-023 BUNA N L/P CONN 1-1/16 X 1-3/16 X 1/16	1	EA



6.4 4-20MA CURRENT LOOP LOAD PIN (continued)

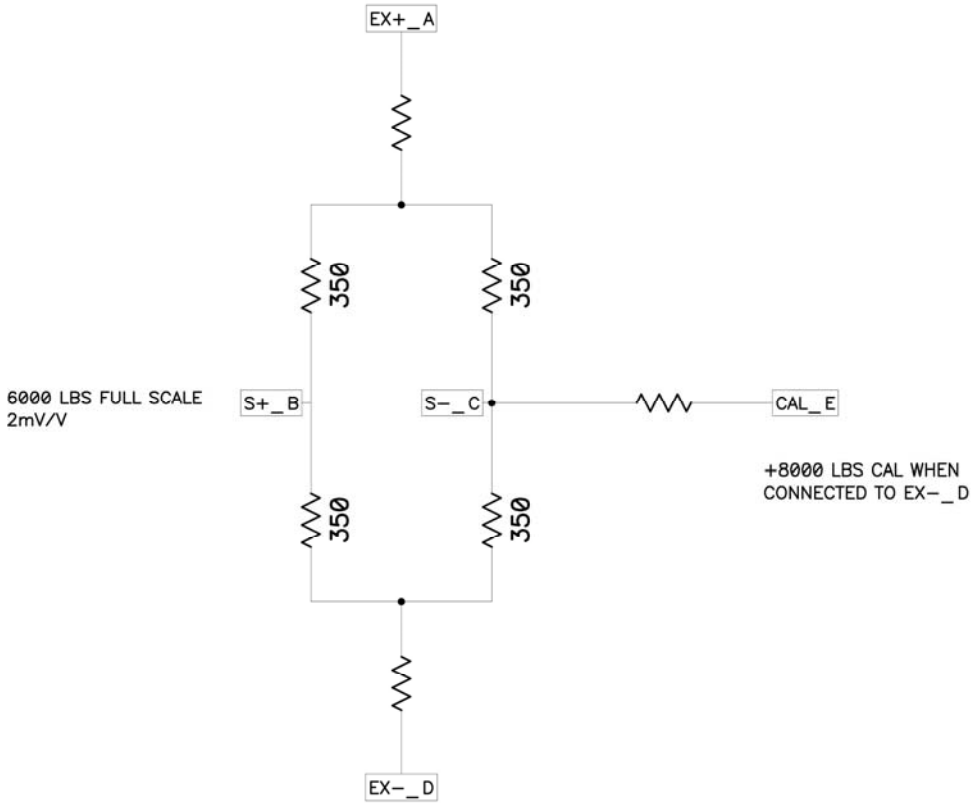
AMS7A031 CABLE ASSEMBLY

4-20MA CURRENT LOOP TENSION CABLE FROM MEASURING HEAD TO PANEL



P/N	Description	Qty		
AMS1P029	CONN MS25042-18 DA DUST CAP	1	EA	LOAD PIN END
AMS7P014	CONN MS3106E-18-9S	2	EA	
AMS4P221	CABLE 20/8C ALPHA -20 DEG	20	FT	

6.5 AMSLP103 PASSIVE LOAD PIN



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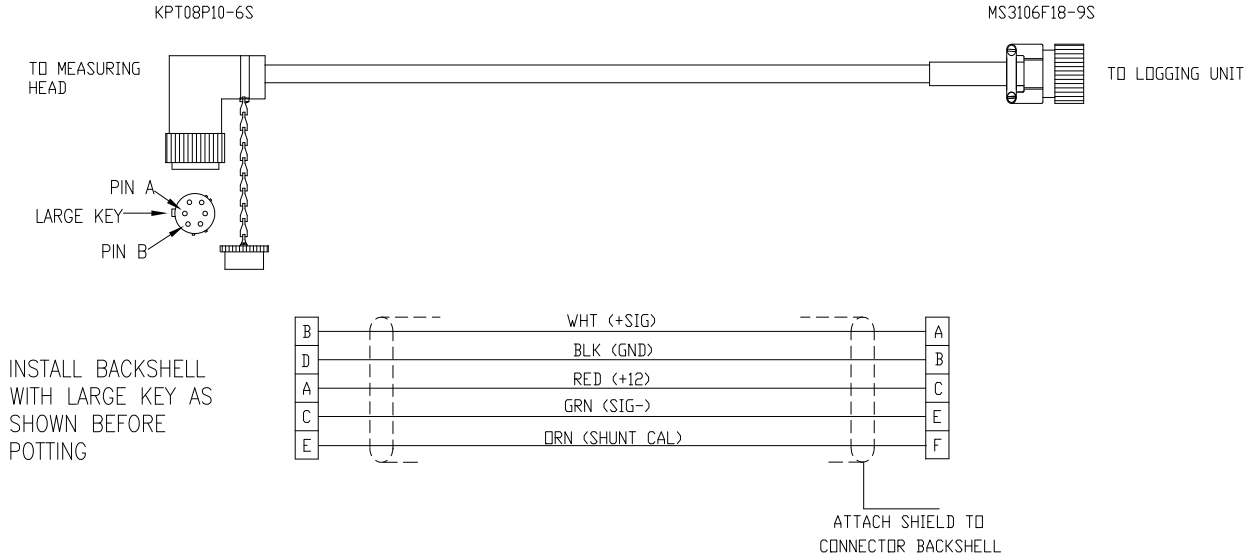
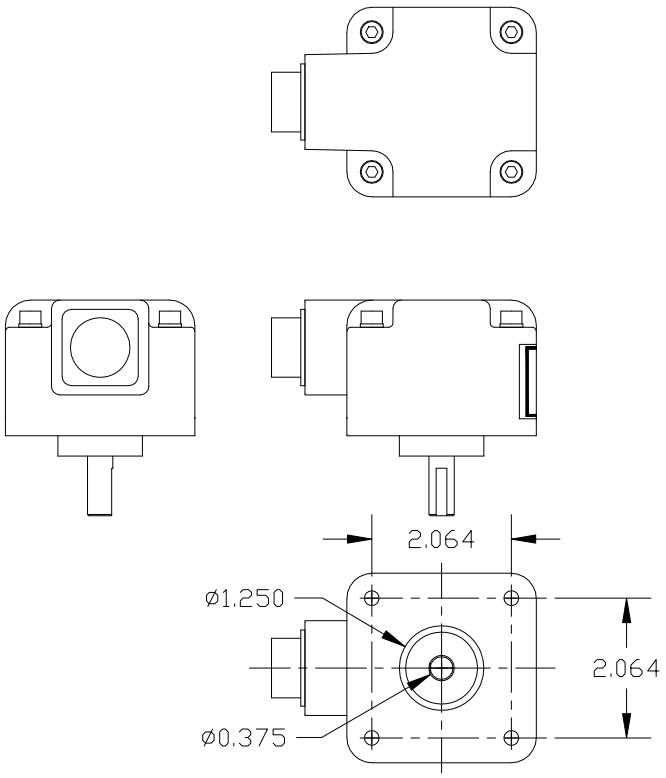
AMS4A353 CABLE ASSY – PASSIVE LOAD PIN



AM5KP058	CONN KPT08P10-6S RT ANGLE PLUG	1	EA	LOAD PIN END
AMS7P014	CONN MS3106E-18-9S	1	EA	
AM5KP059	DUST CAP KPT8010C CANNON	1	EA	
AMS4P221	CABLE 20/8C ALPHA -20 DEG	20	FT	

6.6 HI RESOLUTION ENCODER – AMSLA061



13	AMSLA061	ENCODER H25D-SS-1200-ABZC-69-S18-15	1	EA
36	AM5KM073	COUPLING MOD ENCDR 0.250/0.375 BORE	1	EA
44	AMS1P071	DUST CAP MS25043-16DA	1	EA

Specifications

1200 Pulses per revolution

5 – 15 vdc power

Differential Quadrature output (A – A not, B – B not)

A	-	A
B	-	B
C	-	Z
D	-	+ 5v
F	-	Gnd
G	-	Case
H	-	A\
I	-	B\
J	-	Z\

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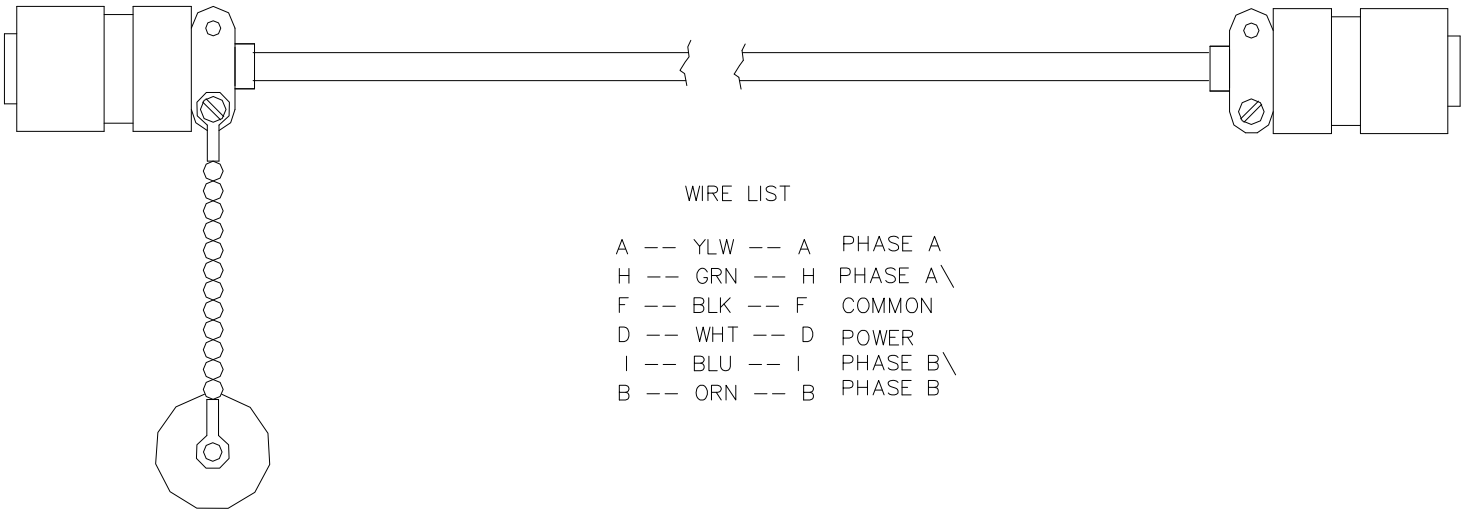
AMS4A125 CABLE ASSEMBLY – ENCODER IN



AMS1P028	CONN MS3106E-18-1S	2	EA	
AMS4P221	CABLE 20/8C ALPHA -20 DEG	20	FT	
AMS1P029	DUST CAP MS25042-18DA	1	EA	

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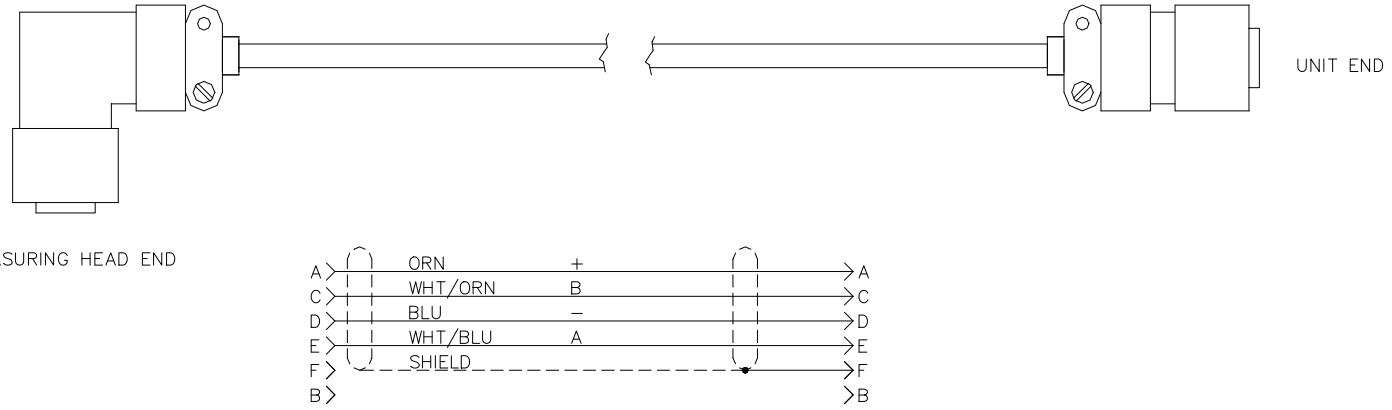
6.7 BACKUP ODOMETER CABLE – AM5KA024-020



P/N	Description	Qty Required	UM
AMS4P222	CABLE 20/4C ALPHA 25154 BLACK	20	FT
AM5KP057	CONN KPT06F10-6P STR PLUG	1	EA
AM5KP058	CONN KPT08P10-6S RT ANGLE PLUG	1	EA
AM5KP059	DUST CAP KPT8010C CANNON	2	EA
AM5KA034	BUSHING #9779-513-4 AMPHENOL	2	EA
AMS4P210	TUBING SHRINK 0.50 ADH LINED	1	EA

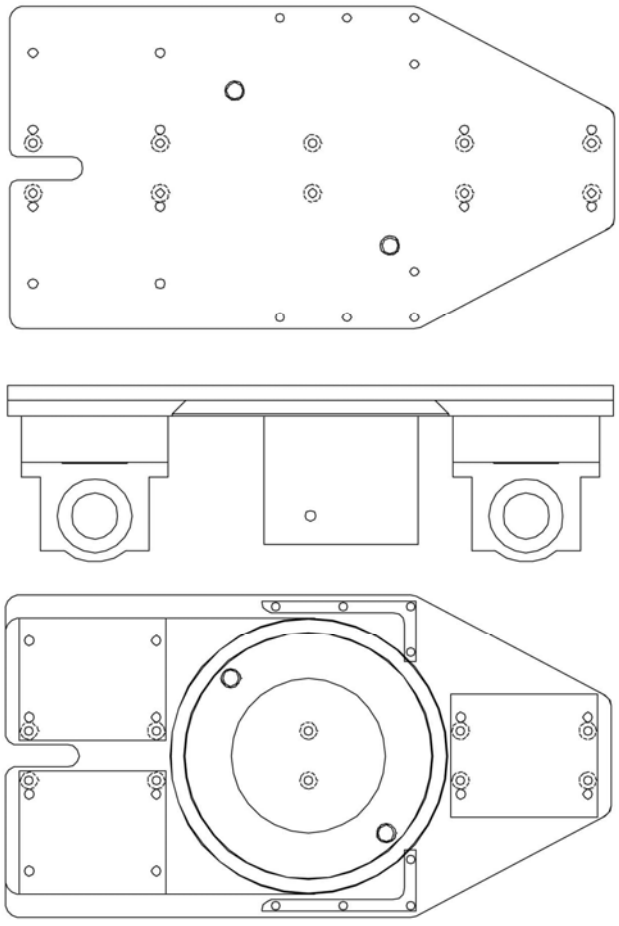
7.0 OPTIONAL ACCESSORIES

7.1 PIVOT PLATE

P/N AMSLA429

The pivot plate is designed to allow the measuring head to be pivoted 90 degrees when not in use. This allows it to fit inside a smaller compartment during transport.

It is a two piece assembly that sits between the measuring head and the horizontal spooling bars. The bearings are removed from the bottom of the measuring head and bolted to the bottom of the pivot plate.



7.2 LOAD PIN REPLACEMENT PIN

P/N AMSLM113

In the event the load pin needs to be removed for calibration or repair, a pin can be inserted in its place to support the tension wheel.

At this time a hydraulic load cell can be used to provide tension. The depth portion of the measuring head will still function properly and accurately.

A 1” diameter shoulder bolt can be used as a substitute. The bolt needs to have at least a 2-1/2” shoulder. It should be of at least grade 8 to support the potential load.

7.3 DRIP LINE OILER – FSU1A013

Component	Description	Qty	UM
FSU1P051	RESERVOIR DROP FEED 1/2 NPT	1	EA
AMSLM005	MOUNT LINE OILER DRIP TANK	1	EA
FSU1P050	ADPTR 1/4COMP X 1/2MPT 90 BRS	1	EA
FSU1P011	COPPER TBG 1/4 OD	2	FT