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

MAKO

HEAVY DUTY SLICKLINE MEASUREMENT DEVICE

WITH COMBINED DEPTH AND TENSION

For wirelines from .092 to .160 and e-lines / braided lines from 3/16" to 5/16"

AMSLA512
AMSLA513
AMSLA514

CONTENTS

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

1.0 GENERAL

The "MAKO" 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. 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 20.xx”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 12-24vdc 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 needed to convert from a 1:5 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 rig up 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.

TEMPERATURE STABILITY
<= .015% full scale / deg F on zero
<= .02% full scale / deg F on output
ACCURACY 1% full scale nominal
MAXIMUM LINE PULL: 15,000 lbs (6800 kg)

PASSIVE BRIDGE
POWER REQUIREMENTS: 12 vdc excitation
INTERFACE: None – passive bridge only
STRAIN GAUGE OUTPUT
SHUNT = 12000 lbs line pull
15000 lbs = 2.0mV / V (1/2 line pull)

MAXIMUM LINE PULL: 15,000 lbs (6800 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)
1.2 vdc = 12000 lbs (5445 kg) - shunt cal
1.5 vdc = 15000 lbs (6804 kg)

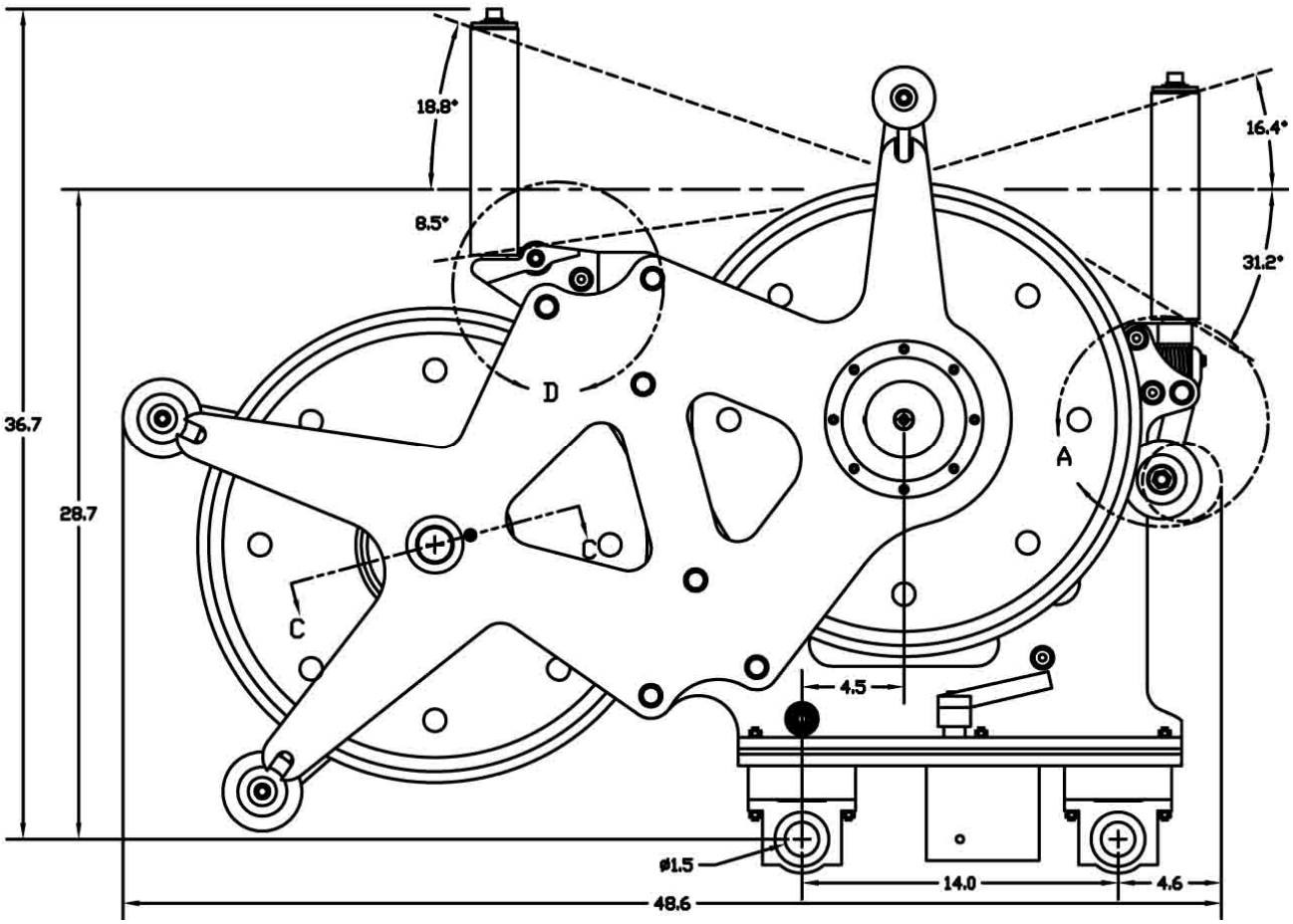
4-20MA CURRENT LOOP
POWER REQUIREMENTS: +24vdc input power
INTERFACE: Proprietary circuit board which amplifies the load pin signals and provides a 4-20ma current loop output.

4 ma = 0 lbs (0 kg)
16.8 ma = 12000 lbs (5445 kg) - shunt cal
20ma = 15000 lbs (2268 kg)

2.4 GENERAL SPECIFICATIONS:

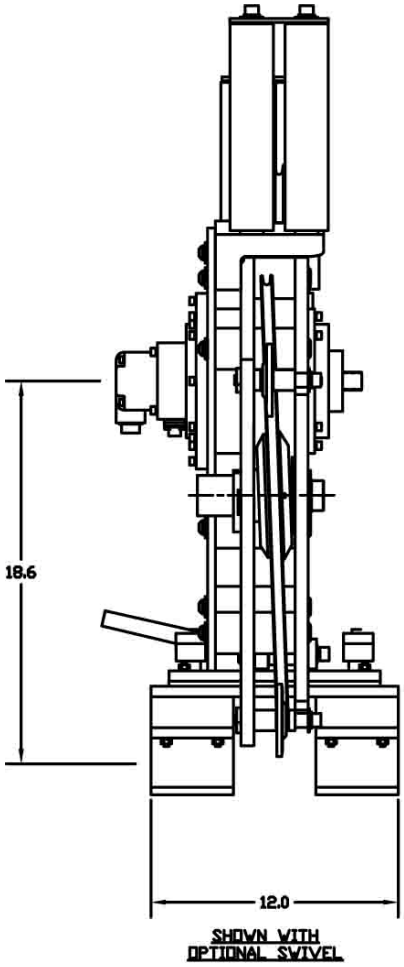
Height:	36.7"	.932 m
Length	48.6"	1.234 m
Width (base):	12"	.305 m
Width (overall):	12.8”	.325 m
Weight:	132 lbs	60 kg
Maximum Tension:	15,000 lbs	6800 kg
Line Sizes:	.092" – 5/16”	2.3 mm – 7.94 mm
Encoder:	600 or 1200 PPR	
Backup Counter:	4 PPR Quadrature	
Load Pin:	Passive Bridge, 1.5v Differential, 4-20ma Current Loop	

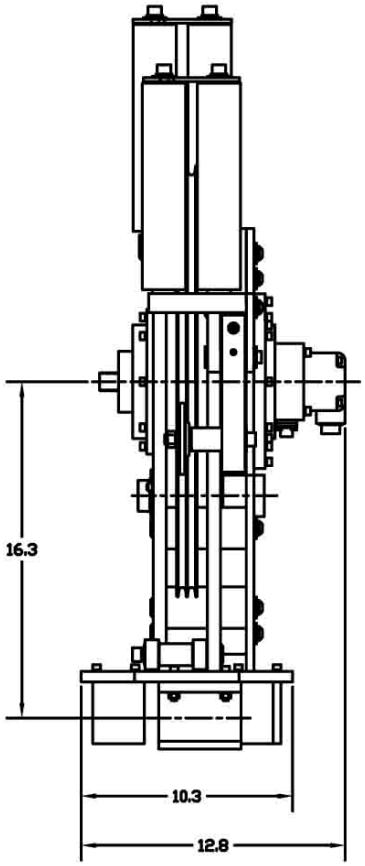
SIDE VIEW DIMENSIONS



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

END VIEW DIMENSIONS





3.0 SYSTEM OPERATION

3.1 Determine wireline size to be used – .092" to 5/16”

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 Thread wire into measuring head from the front (no cable head installed) using the following procedure:

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 mount 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 11/16” open end wrench into the pressure roller pivot 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 Install wire into measuring head from the side with cable head installed using the following procedure:

1. Loosen the guide wheels and slide them up.

2. Loosen the spacer plates above the spooling rollers and turn them 90 degrees.

3. Install wireline over the wheels from the side of the frame

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 11/16” open end wrench into the pressure roller pivot 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.

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

3.5 Press the T Cal button and verify that the tension reads close to 5000 lbs. (2270 kg).

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

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

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

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.

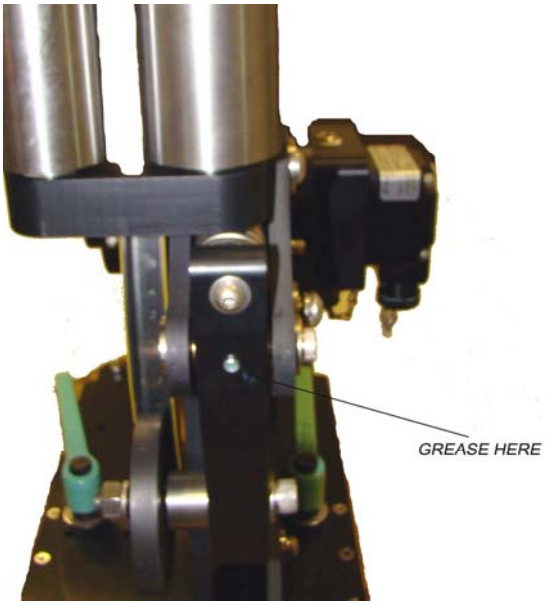
Visually inspect the interiors of the electrical connectors for the encoders and electronic load axle for dirt and evidence of insulation breakdown. Clean or replace as necessary. Install dust caps on the connectors if the cables are removed.

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.

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

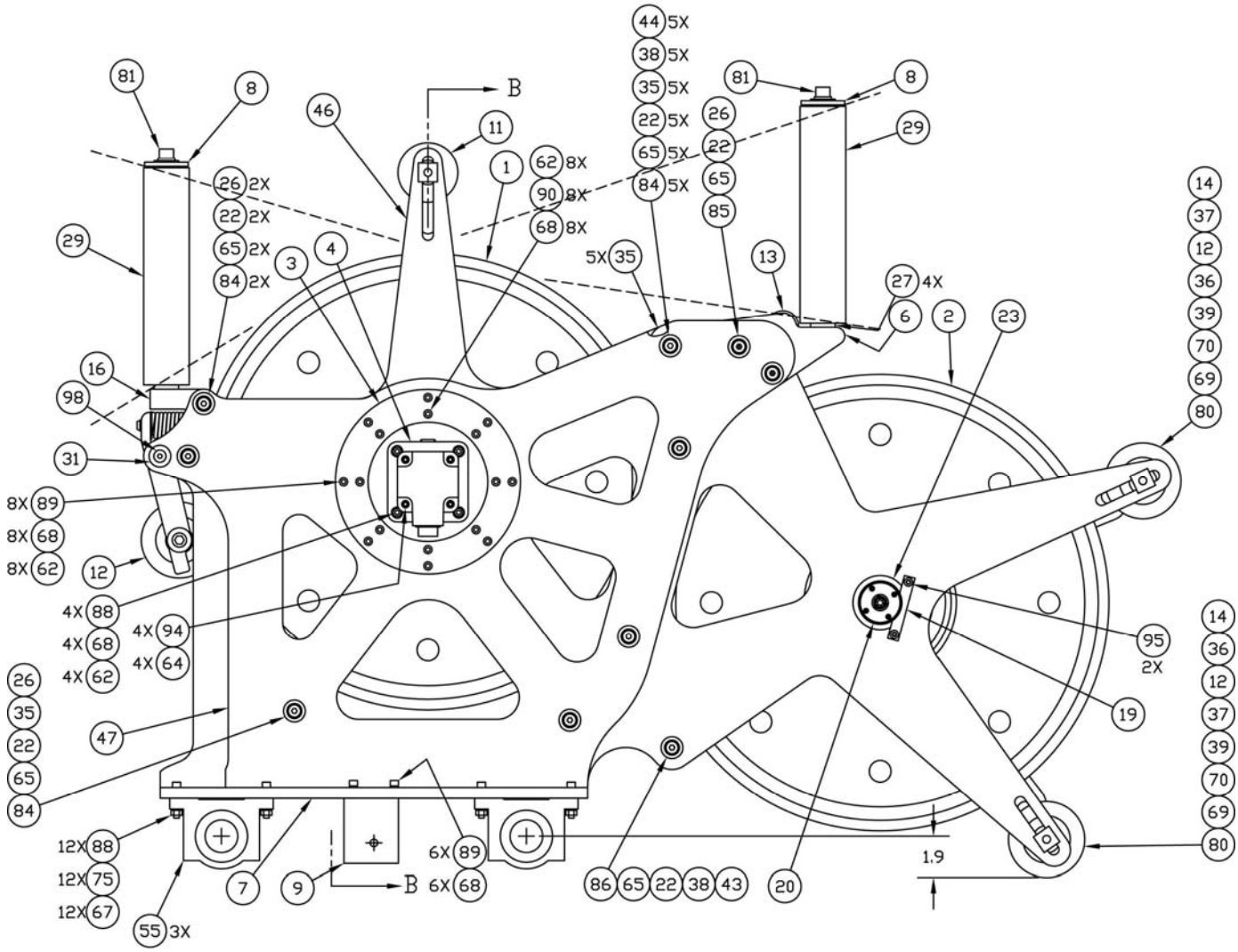
Following is a list of recommend spare parts. Parts designated REMOTE are recommended only for areas that have a very difficult time getting parts shipped to. For all other areas, it should not be necessary to stock the REMOTE parts locally.

ITEM	P/N	DECSRIPTION	QTY
1	AMSLM559	WHEEL MEASURING 20" 5/16 MAKO	1
2	AMSLA560	WHEEL ASSY TENS 20" 5/16 MAKO	1
12	AMSLA162	WHEEL ASSY PRESS RLR 1/4 TENSN	2
13	AMSLA163	WHEEL ASSY PRESS ROLLER MEASR W/BEARING	1
	AMSLM153	SHAFT LOAD PIN REPL 1.5OD 2 WH	1
33	AMSLM033	ROLLER KEEPER UNIVERSAL	1
50	AMSLP061	ENCODER HD2.5D-0-SS-37F-1200	1
51	C276M055	COUPLING ENCODER H25 TO RELIANCE ADTPR	1
52	AMSLP213	BEARING SPHERE-ROL 65MM ID	1
53	AMSLP031	BEARING BALL 50MM 2-ROW	1
54	AM3KP204	BEARING BALL 20MM SST ABEC-1	4
99	AM5KP130	NOZZLE GREASE FITTNG FLUSH	1

6.0 DRAWINGS AND PARTS LISTS

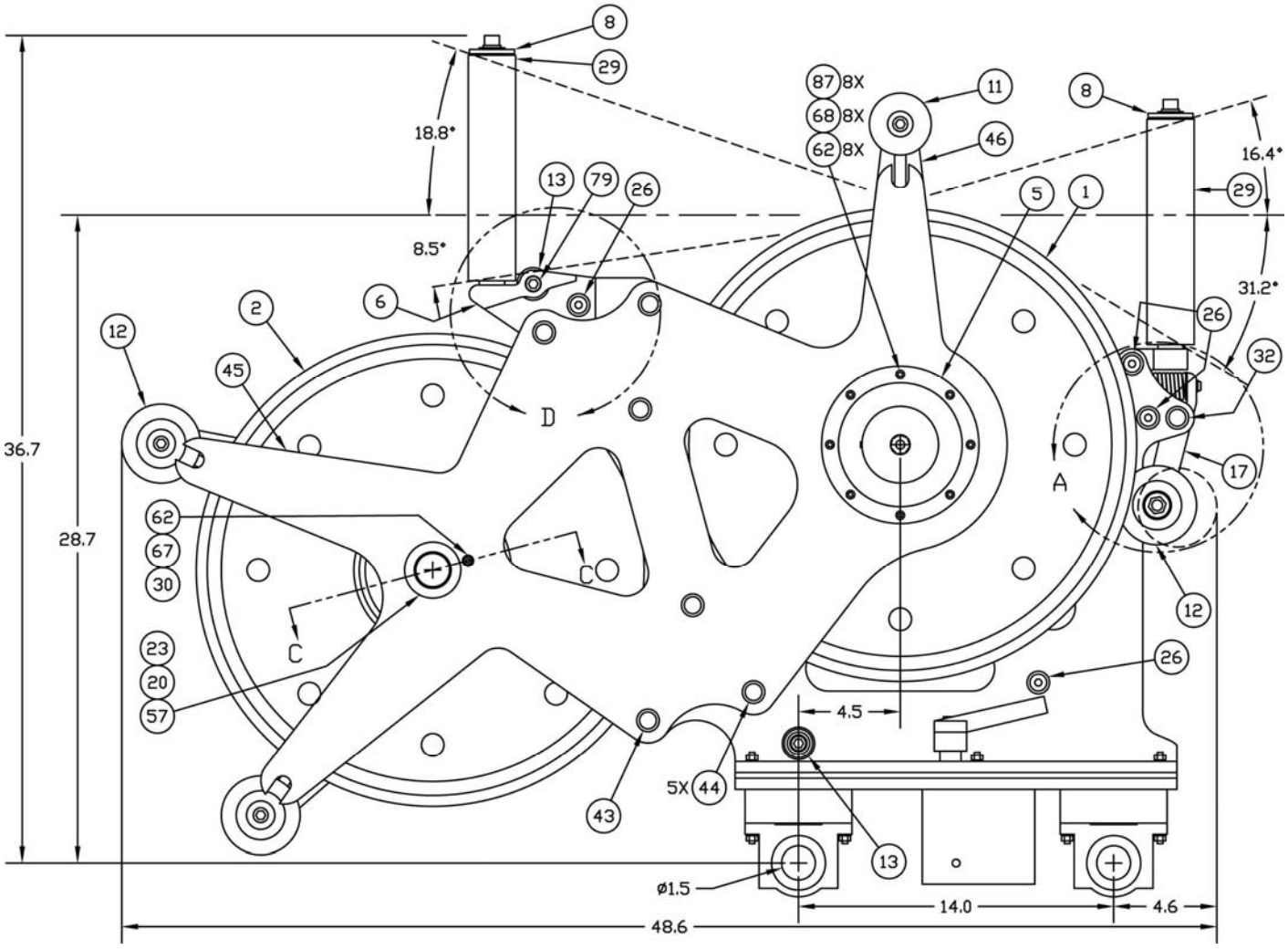
6.1 MEASURE HEAD ASSEMBLY

ENCODER SIDE VIEW

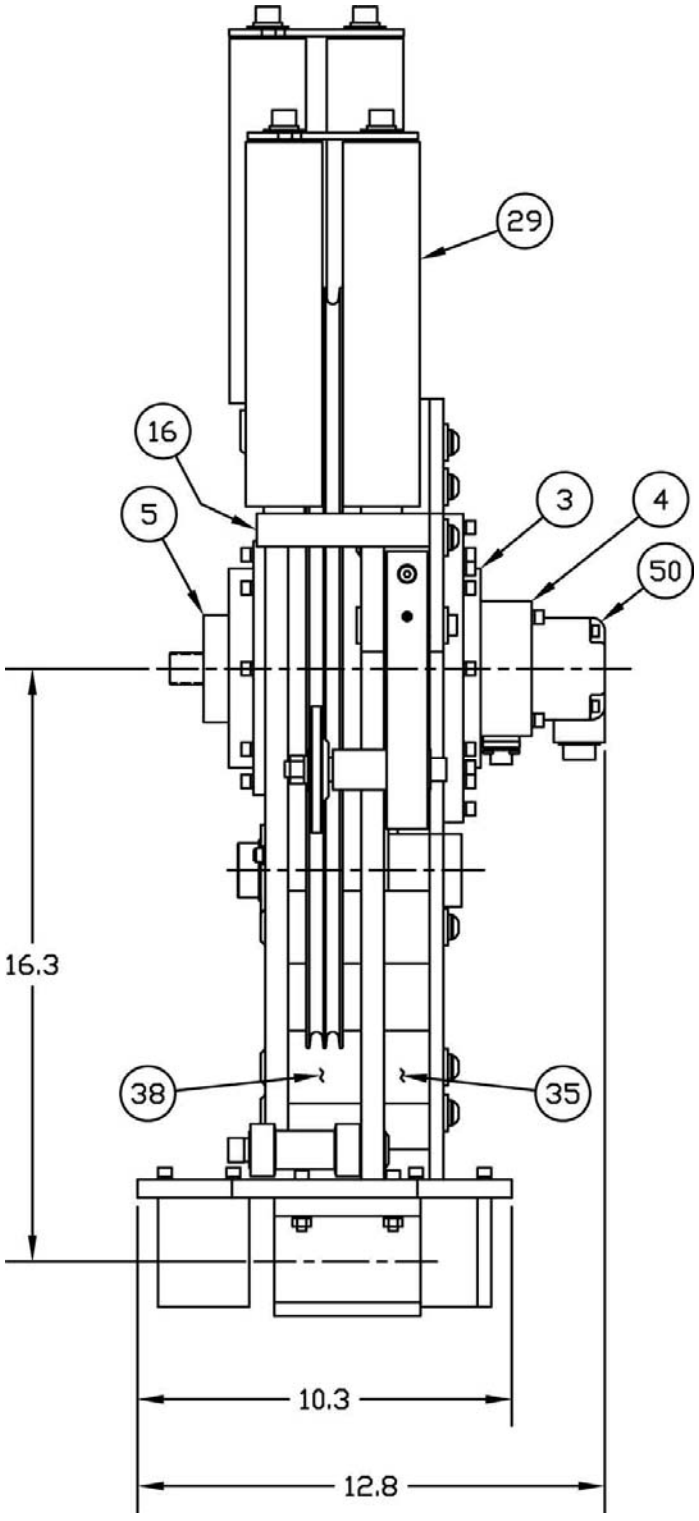


BenchMark Wireline Products
36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.342.6415
Fax: 281.342.4848
benchmarkwireline.com

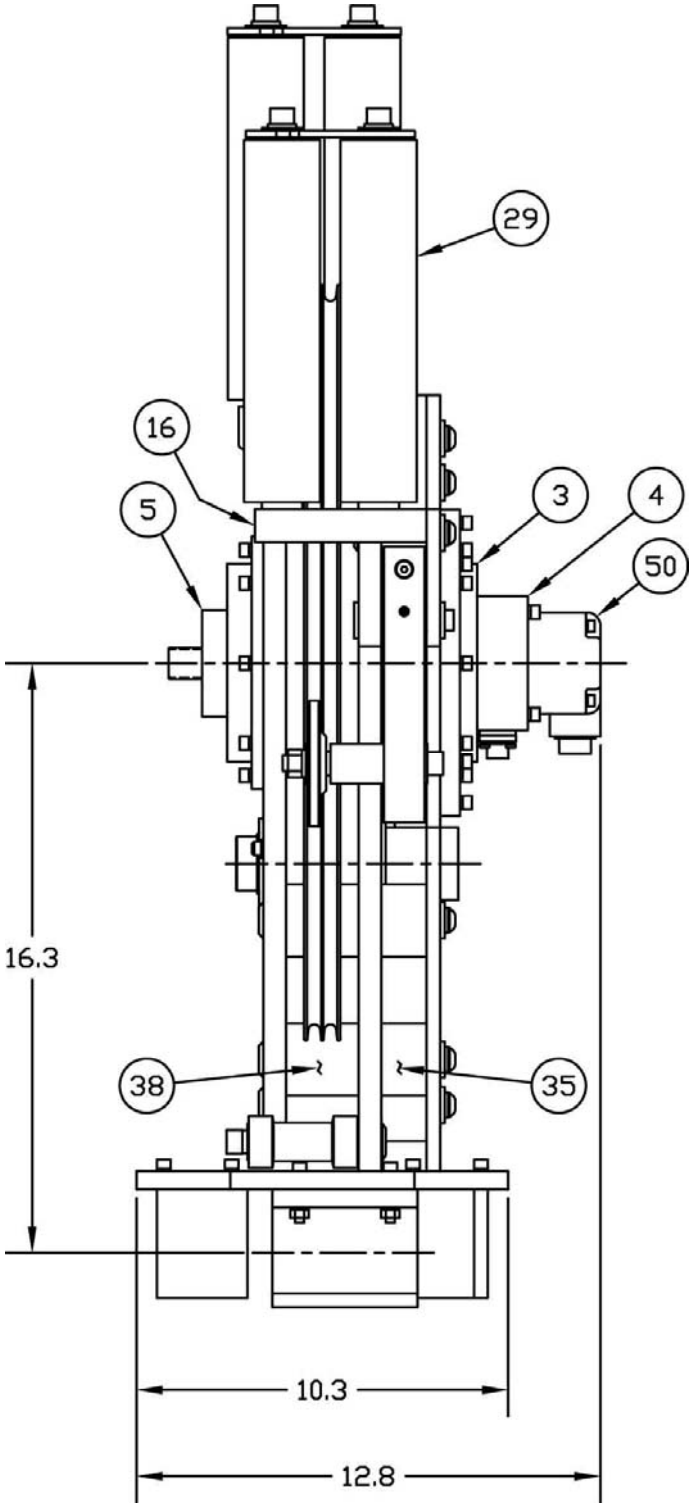
OPPOSITE SIDE VIEW



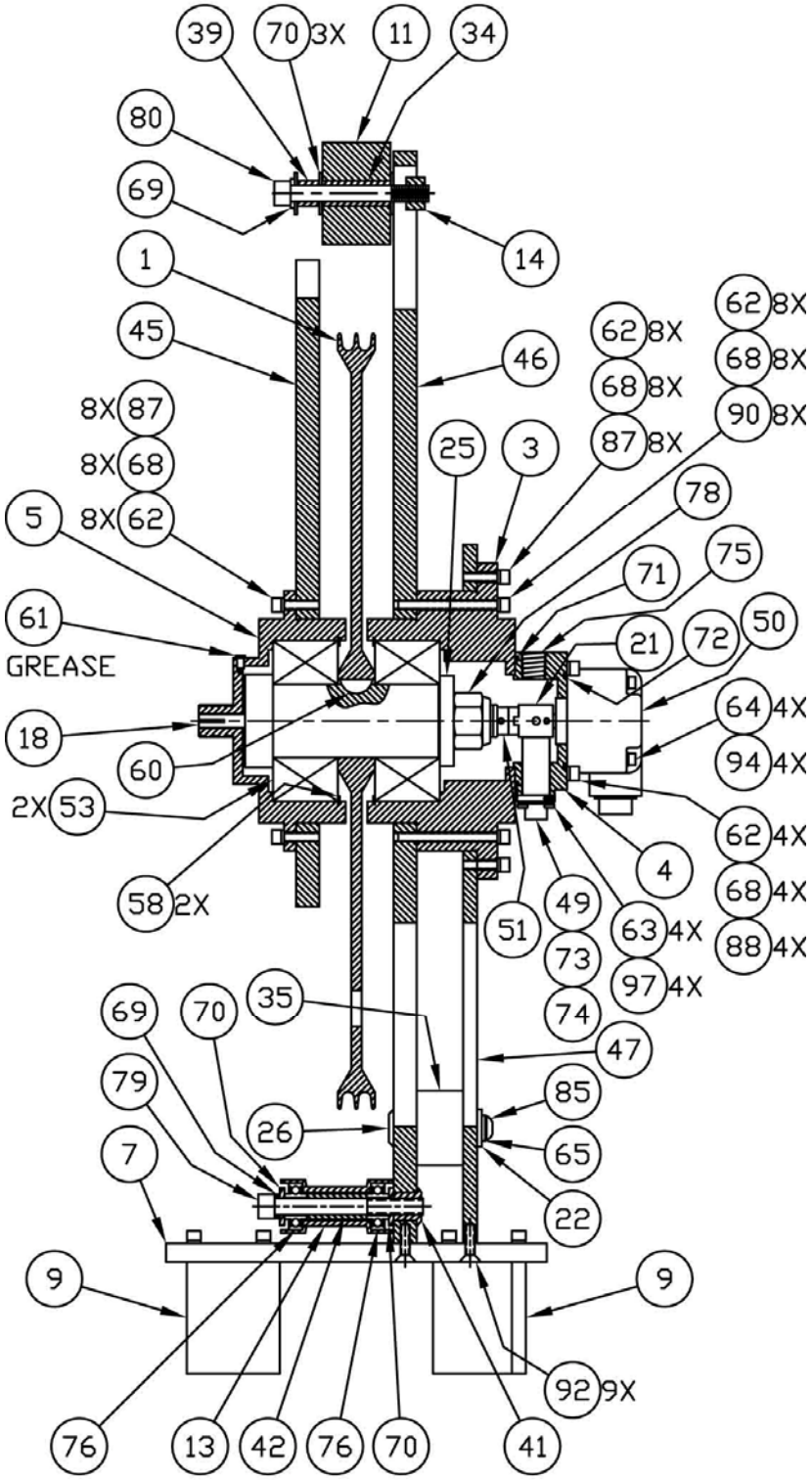
WELLSIDE END VIEW



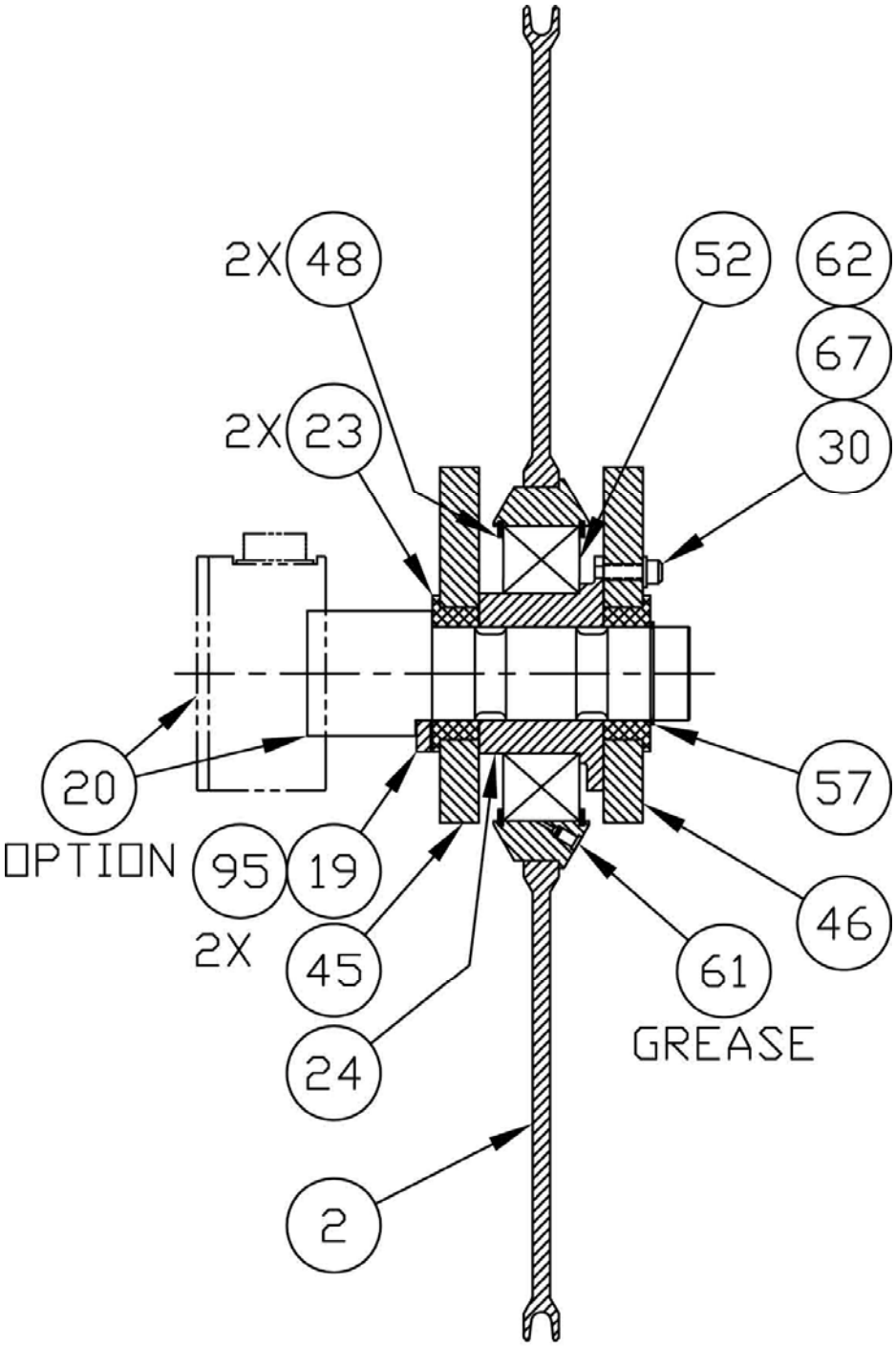
DRUM END VIEW



MEASURE WHEEL CUTAWAY VIEW

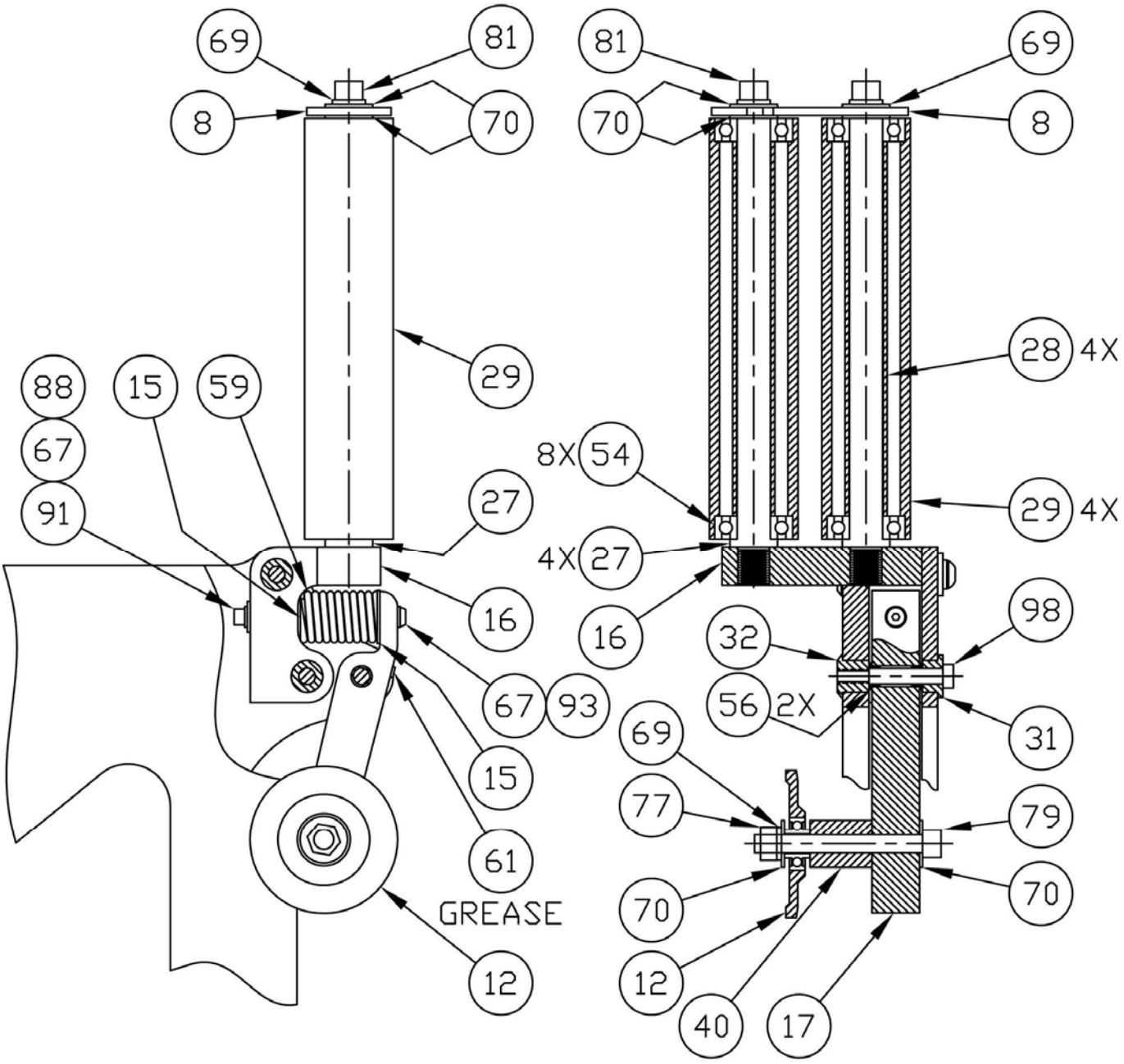


TENSION WHEEL CUTAWAY VIEW

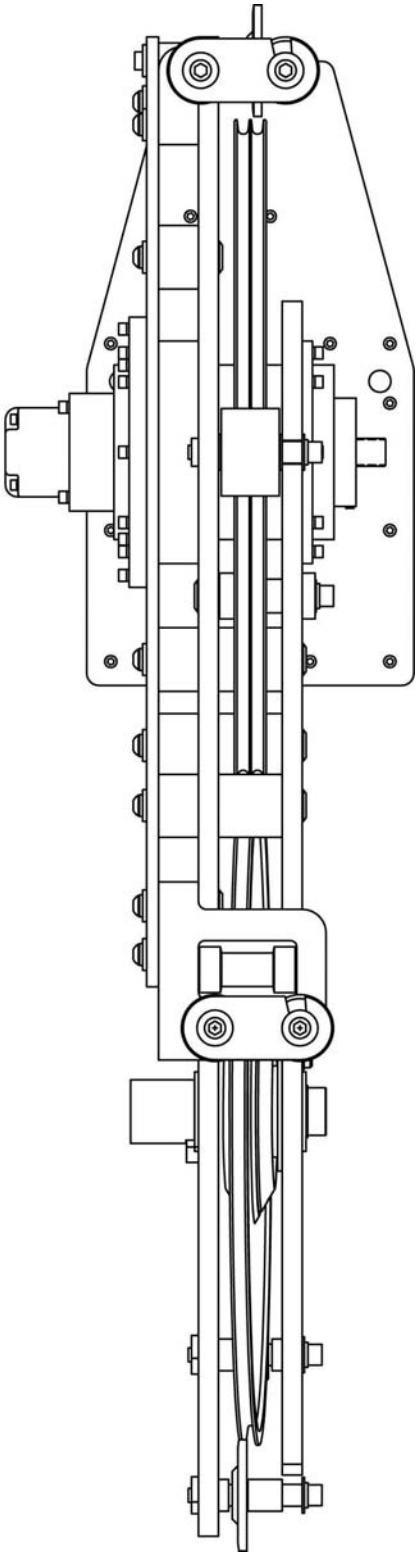


BenchMark Wireline Products
36220 FM 1093
P. O. BOX 850
Simonton, Texas 77476
Phone: 281.342.6415
Fax: 281.342.4848
benchmarkwireline.com

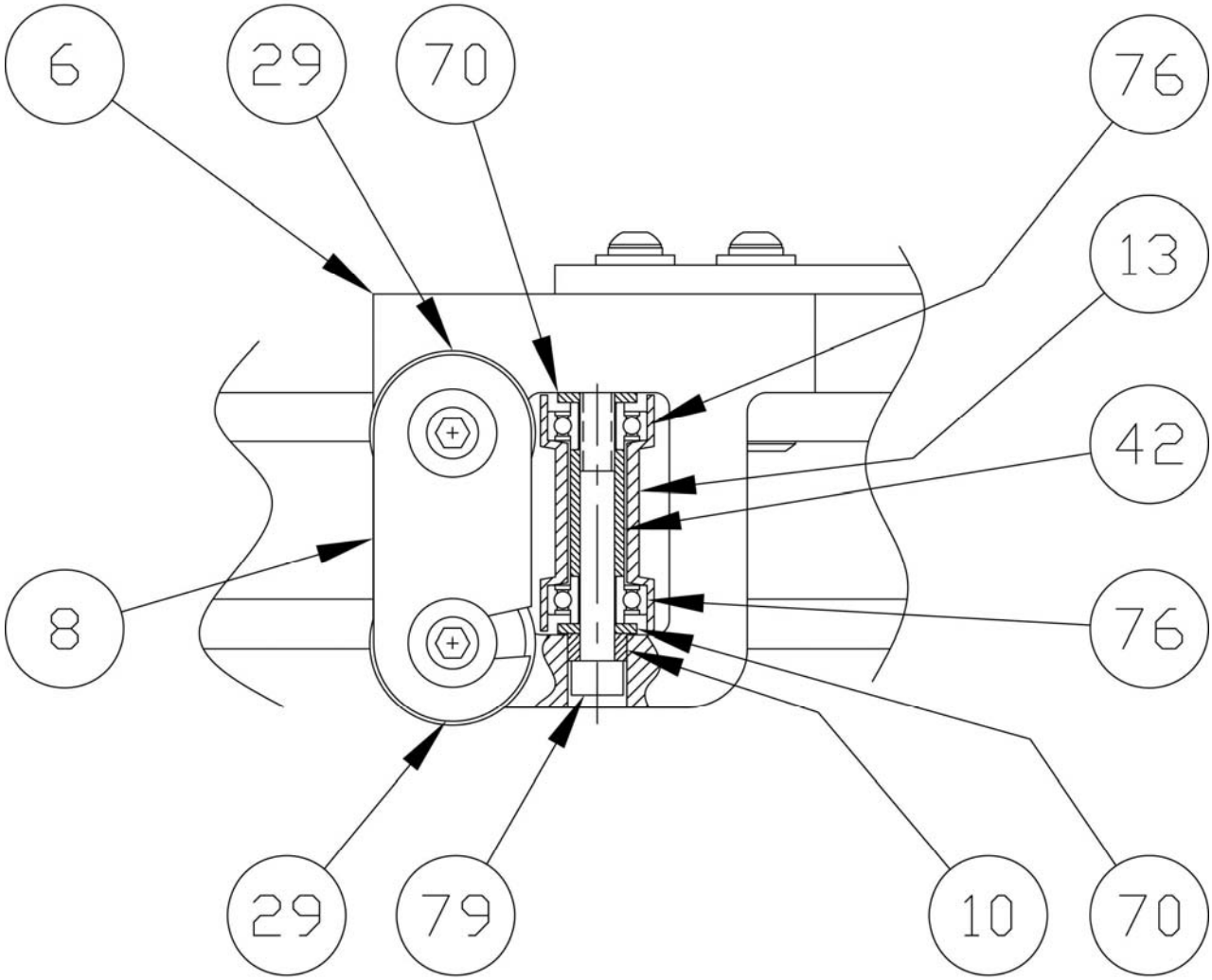
GUIDE ROLLERS CUTAWAY VIEW



TOP VIEW



FRAME ROLLER VIEW



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

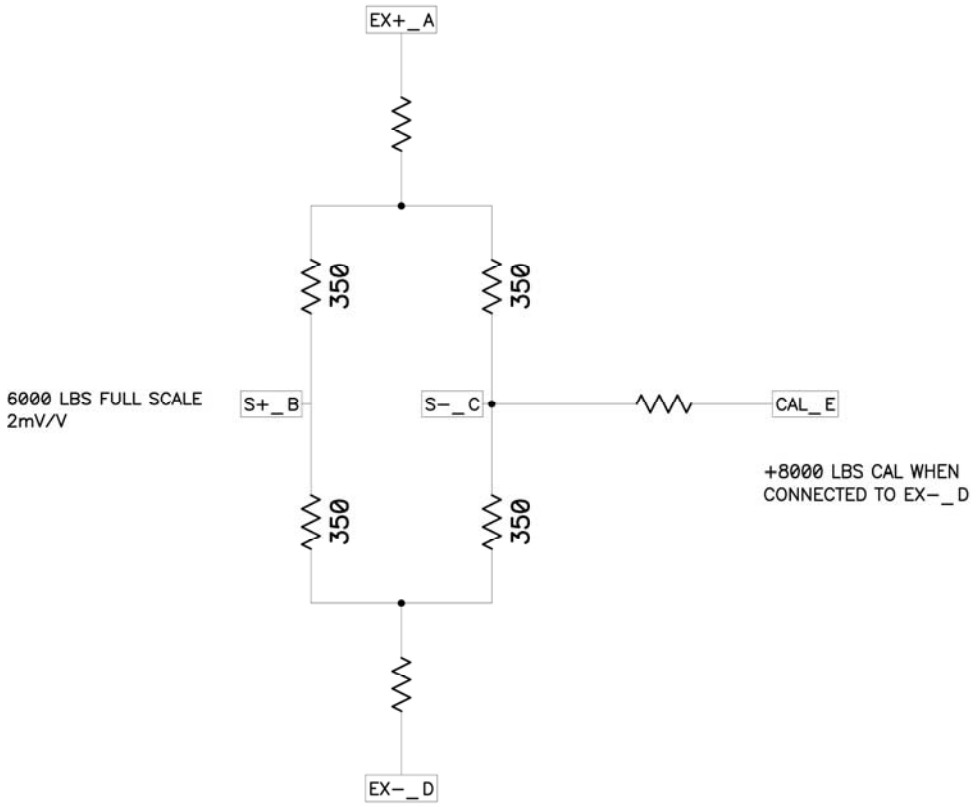
MEASURE HEAD ASSEMBLY PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY	REFERENCE
1	AMSLM559	WHEEL MEASURING 20" 5/16 MAKO	1	
2	AMSLA560	WHEEL ASSY TENS 20" 5/16 MAKO	1	
3	AMSLM516	ADAPTER MEAS WHL SHAFT 50MM	1	
4	AM3KM040	ADAPTER ENCODER H25D/H20 MAG	1	OPTION
5	AMSLM522	ADAPTER COUNTER HD RT ANGL DRV	1	
6	AMSLM568	MOUNT GUIDE ROLR FRONT MAKO	1	
7	AMSLM539	PLATE BASE OPEN MAKO	1	
8	AMSLM521	PLATE SPACER GUIDE ROLLER VERT	2	
9	AMSLA529	SWIVEL ASSY TURNTABLE W/LINEAR	0	OPTION
9	AMSLA555	ASSY TROLLEY 1-1/2 HD ROLLER	0	OPTION
9	AMSLM044	BRACKET LEVELWIND CHAIN	2	
10	AMSLM283	SPACER KEEPER ROLLER 0.34 THK	1	
11	AMSLM533	ROLLER KEEPER TOP MAKO	1	
12	AMSLA162	WHEEL ASSY PRESS RLR 1/4 TENSN	3	
13	AMSLM569	ROLLER SLACK HORIZ LEVELWIND	2	
14	AMSLM228	NUT 7/16-14 TEE SLOT SST	3	
15	AMSLM449	GUIDE SPRING PRESS WHL 2WC	2	
16	AMSLM550	MOUNT GUIDE ROLR REAR MAKO	1	
17	AMSLM251	MOUNT PIVOT PRESS WHEEL 2WC	1	
18	AMSLM515	SHAFT MEAS WHL 50MM ENCDR/RT	1	
19	AMSLM585	PLATE ORIENTATION L PIN MAKO	1	
	AMSLM153	SHAFT LOAD PIN REPL 1.5OD 2 WH	0	OPTION
20	AMSLP153	PIN LOAD 30K# 1-1/2OD 2.0mV/V	0	USED ON AMSLA514
20	AMSLA215	ASSY LOAD AXLE 4-20mA 1.50 DIA	0	USED ON AMSLA513
20	AMSLA550B	ASSY LOAD AXLE 0-1.5V 1-1/2DIA	0	USED ON AMSLA512
21	AM3KM050	COUPLING ENCDR W/BKUP MAGNETS	1	OPTION
22	AMSLM030	BUSHING FRAME 2 WHEEL COUNTER	10	
23	AMSLM531	BUSHING TENS WHL 1-1/2 LP MAKO	2	
24	AMSLM565	BUSHING L/P 1-1/2 W/ANTI-ROT	1	
25	AMSLM514	WASHER MEAS WHL SHAFT MAKO	1	
26	AMSLM230	BUSHING FRAME 3/8-16 SHARK	4	
27	AMSLM217	SHAFT GUIDE ROLLER VERT LVLWND	4	
28	AMSLM218	TBG SPACER GUIDE ROLLER LVLWND	4	
29	AMSLM219	ROLLER GUIDE VERT LEVELWIND	4	
30	AMSLM584	SCREW ANTI-ROTN TENS WHL MAKO	1	
31	AMSLM053	BUSHING FLANGE PRESS WHEL 3/8	1	
32	AMSLM555	BUSHING FLANGE PRESS WHEL 5/16	1	

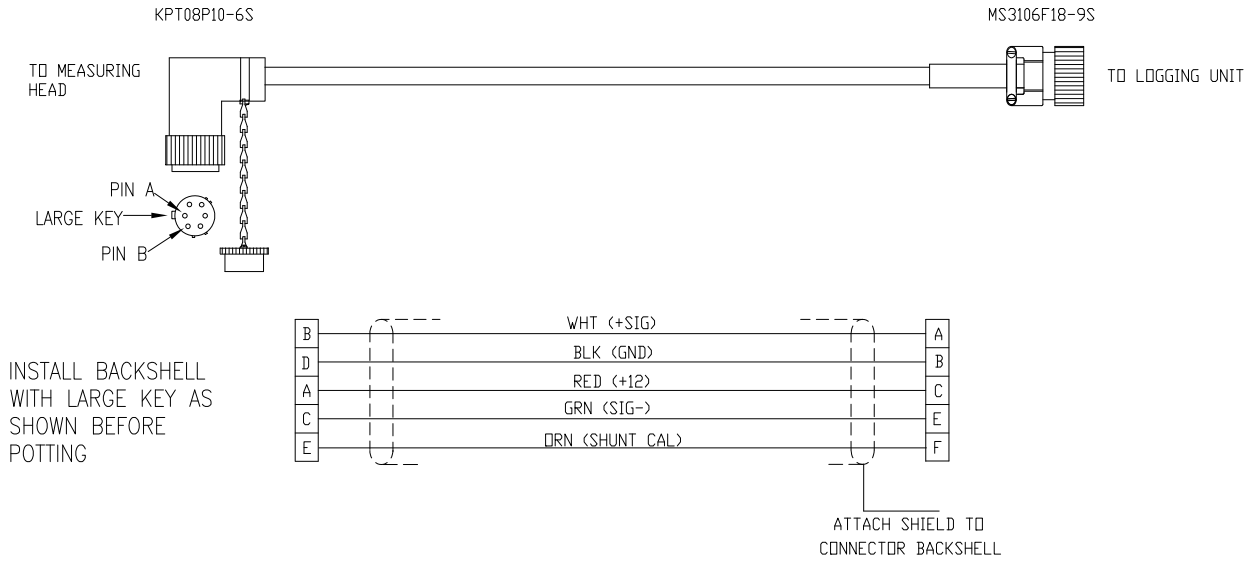
33	AM3KM034	BLOCK WEAR 0.75 X 2.50 TOOLSTL	1	
34	AMSLM534	SPACER KEEPER ROLLER MAKO	1	
35	AMSLM040	SPACER FRAME 2 WHEEL COUNTER	5	
36	AMSLM580	SPACER PRESSURE WHEEL 1.07 THK	2	
37	AMSLM080	SPACER PRESSURE WHEEL 0.32 THK	2	
38	AMSLM540	SPACER FRAME 2" MAKO	6	
39	AMSLM583	SPACER KEEPER ROLLER 0.61 THK	3	
40	AMSLM582	SPACER PRESSURE WHEEL 1.47 THK	1	
41	AMSLM570	BUSHING FRAME 7/16-14 MAKO	1	
42	AMSLM518	TBG SPACER SLACK ROLLER LVLWND	2	
43	AMSLM229	BUSHING FRAME TUBE	1	
44	AMSLM530	BUSHING FRAME 3/8-16 MAKO	6	
45	AMSLM545	PLATE FRAME 5/8 OPEN SIDE MAKO	1	
46	AMSLM546	PLATE FRAME 5/8 MIDDLE MAKO	1	
47	AMSLM547	PLATE FRAME 3/8 OUTER MAKO	1	
48	AMSLP522	RING RETNG INT 4.750 LT DUTY	2	TENSION WHEEL
49	AM5KA055	ASSY ENCODER BACKUP MAGNETIC	0	OPTION
50	AMSLP061	ENCODER S25HA-37F-1200-ABZC-69	0	OPTION
50	AMS7P131	ENCODER S25-HA-37F-600-	0	OPTION
51	AM5KM073	COUPLING MOD ENCDR 0.250/0.375	0	OPTION
51	AMS1P090	COUPLING OLDHAM ENCODER	0	OPTION
52	AMSLP213	BEARING SPHERE-ROL 65MM ID	1	
53	AMSLP031	BEARING BALL 50MM 2-ROW	2	
54	AM3KP204	BEARING BALL 20MM SST ABEC-1	8	
55	AMSLP005	BEARING PILLOW BLOCK 1-1/2	3	
56	AMSLP009	BEARING BRZ FLANGED 3/8" ID	2	
57	AMSLP105	RING RETNG EXT 1.500 SHAFT SST	1	
58	AMSLP568	RING RETNG INT 4.375 LT DUTY	2	
59	AMSLP278	SPRING COMP 2.00 OAL 1.218 OD	1	
60	AMSLP015	KEY 1/4 X 7/8 WOODRUFF SST	1	
61	AM5KP129	FITTING GREASE FLUSH STRAIGHT	3	
62	C276P014	INSERT 1/4-20 HELI-COIL #R1185	29	
63	C276P046	WASHER #6 LOCK SS	4	
64	C276P035	WASHER #10 LOCK SS	4	
65	AMS1P058	WASHER 3/8 LOCK SS	10	
67	C276P036	WASHER 1/4 LOCK SS	15	
68	AM5KP144	WASHER 1/4 LOCK SS HIGH COLLAR	34	
69	AMSLP047	WASHER 7/16 LOCK SST	9	
70	AMSLP247	WASHER 7/16 HEAVY FLAT SST	15	
71	AMS1P014	O-RING 2-152 BUNA N ENC ADPTR	1	ENCODER ADAPTER
72	AM5KP071	O-RING 2-141 BUNA N H25 ENCDR	1	ENCODER

73	C276P042	O-RING 2-016 BUNA N	1	BACKUP CONNECTOR
74	C276P041	O-RING 2-017 BUNA N	1	BACKUP HOUSING
75	AMS1P072	PLUG 3/8 NPT SS	1	
75	C276P016	NUT 1/4-20 HEX SST	12	
76	AMSLP112	BEARING BALL 12MM SST	4	
77	AMSLP059	NUT 7/16-14 SST	1	
78	C276P021	NUT 7/8-14 ELASTIC STOP SST	1	
79	AMSLP244	SCREW 7/16-14 X 4 SOC HD	3	
80	AMSLP243	SCREW 7/16-14 X 3-3/4 SOC HD	3	
81	AMSLP058	SCREW 7/16-14 X 1 SOC HD	4	
84	AMSLP071	SCREW 3/8-16 X 2-1/2 BUT HD SS	8	
85	AMSLP072	SCREW 3/8-16 X 2 BUT HD SS	1	
86	AMSLP069	SCREW 3/8-16 X 1-3/4 BUT HD SS	1	
87	AMS1P048	SCREW 1/4-20 X 3/4 SOC HD SST	8	
88	AM3KP027	SCREW 1/4-20 X 1-1/2 SOC HD SS	17	
89	AMSLP025	SCREW 1/4-20 X 1 SOC HD SST	14	
90	AM3KP026	SCREW 1/4-20 X 2 SOC HD CAP SS	8	
91	AM3KP029	SCREW 1/4-20 X 1-3/4 SOC HD SS	1	
92	C276P030	SCREW 1/4-20 X 1 FH SOC SST	9	
93	AM5KP117	SCREW 1/4-20 X 5/8 BTN HD SST	1	
94	AMS1P052	SCREW 10-24 X 5/8 SOC HD SST	4	
94	AMS1P053	SCREW 10-24 X 2 SHCS SST	4	
95	AM5KP045	SCREW 10-24 X 1/2 FH SOC SST	4	
97	C276P331	SCREW 6-32 X 1/2 PHIL PAN SST	4	
98	AMSLP023	BOLT SHOULDER 3/8 X 1-3/4 SST	1	
99	AM5KP130	NOZZLE GREASE FITTNG FLUSH	1	

6.2 LOAD PIN – AMSLP153 PASSIVE BRIDGE

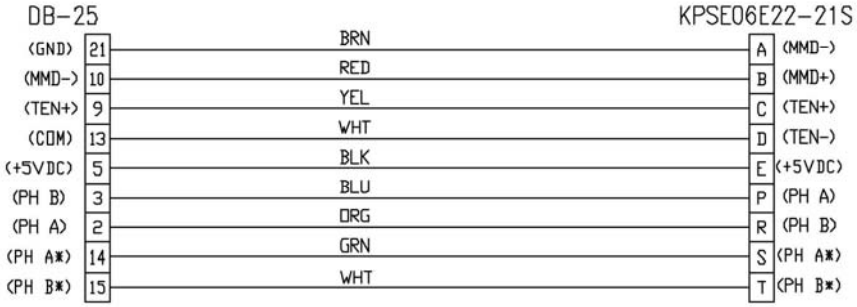


6.3 AMS4A353 CABLE ASSY – PASSIVE LOAD PIN

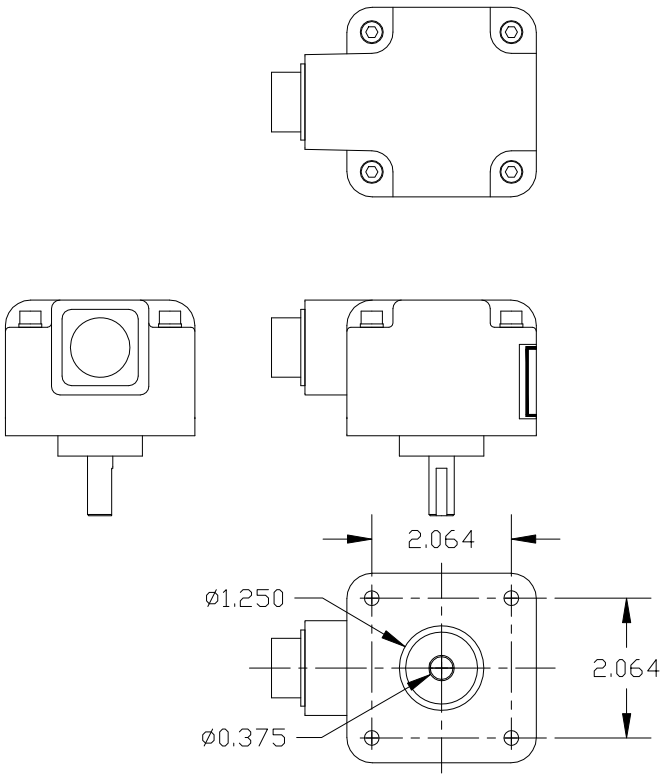


AM5KP058	CONN KPT08P10-6S RT ANGLE PLUG	1	EA	LOAD PIN END
AMS7P014	CONN MS3106E-18-9S	1	EA	
AM5KP059	DUST CAP KPT8010C CANNON	1	EA	
AMS4P221	CABLE 20/8C ALPHA -20 DEG	20	FT	

6.4 AMS4A134 CABLE ASSEMBLY – SIGNAL OUT TO COMPUTER



6.5 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

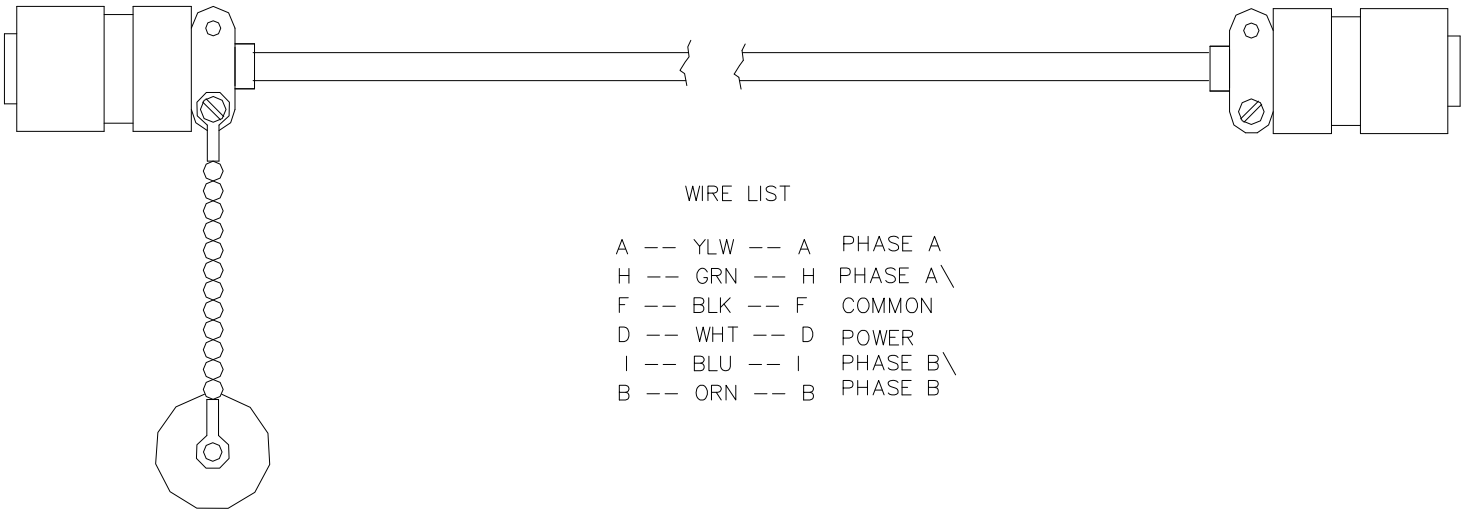
5 – 15 vdc power

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\

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

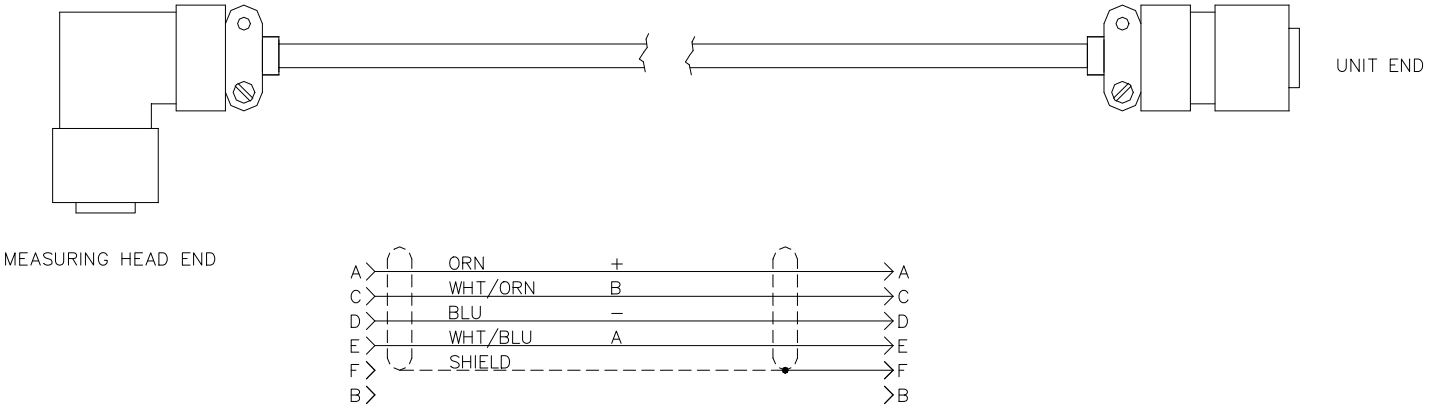
6.6 AMS4A125 CABLE ASSEMBLY – ENCODER IN



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

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

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

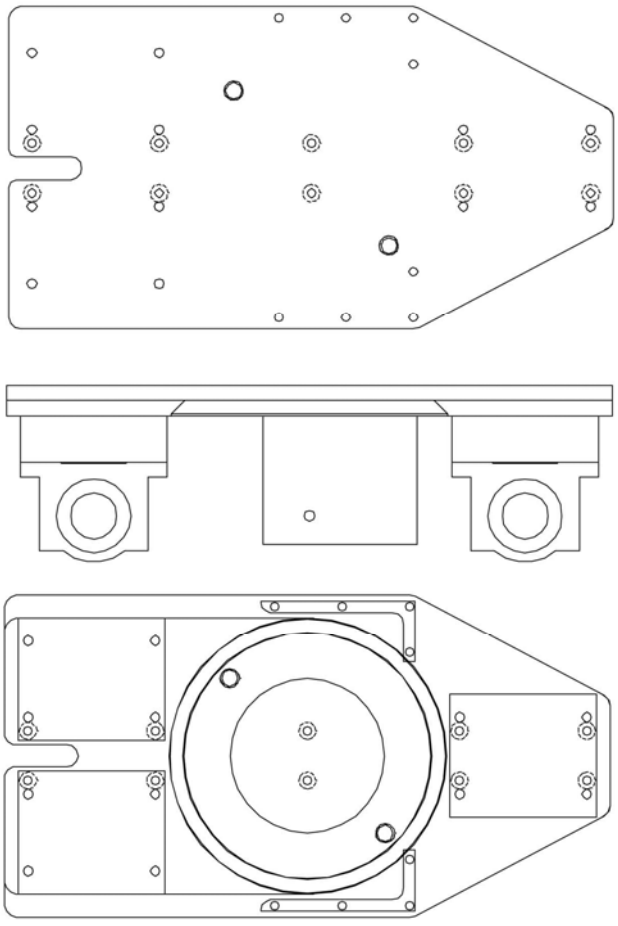
7.0 OPTIONAL ACCESSORIES

7.1 PIVOT PLATE

P/N AMSLA529

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 AMSLM513

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.