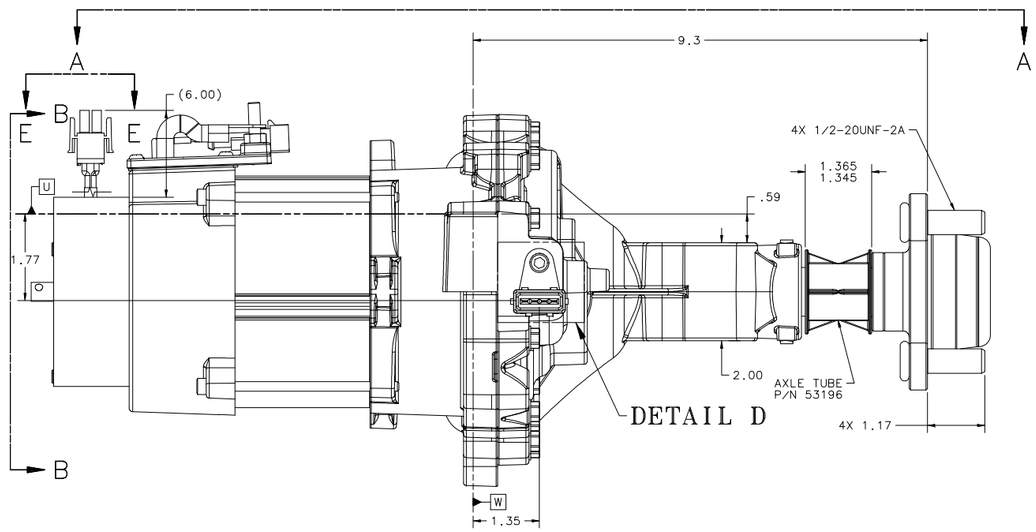
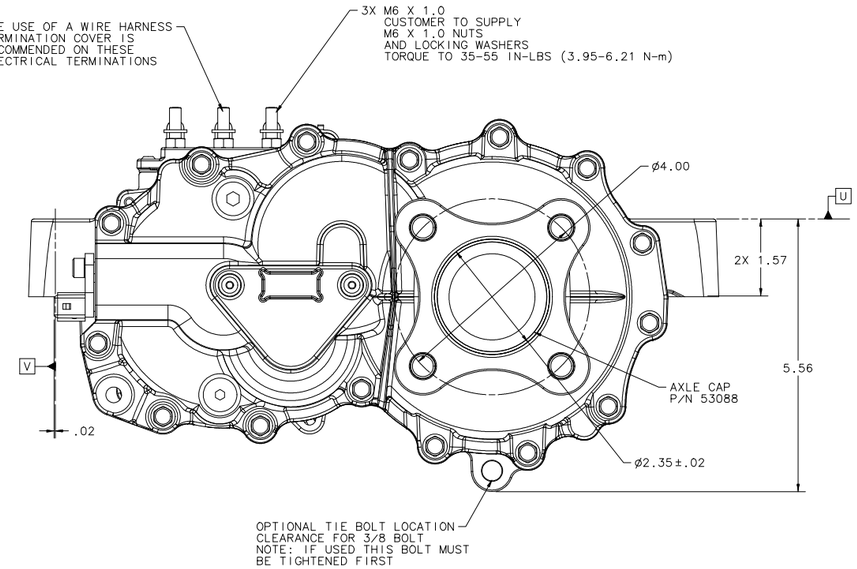
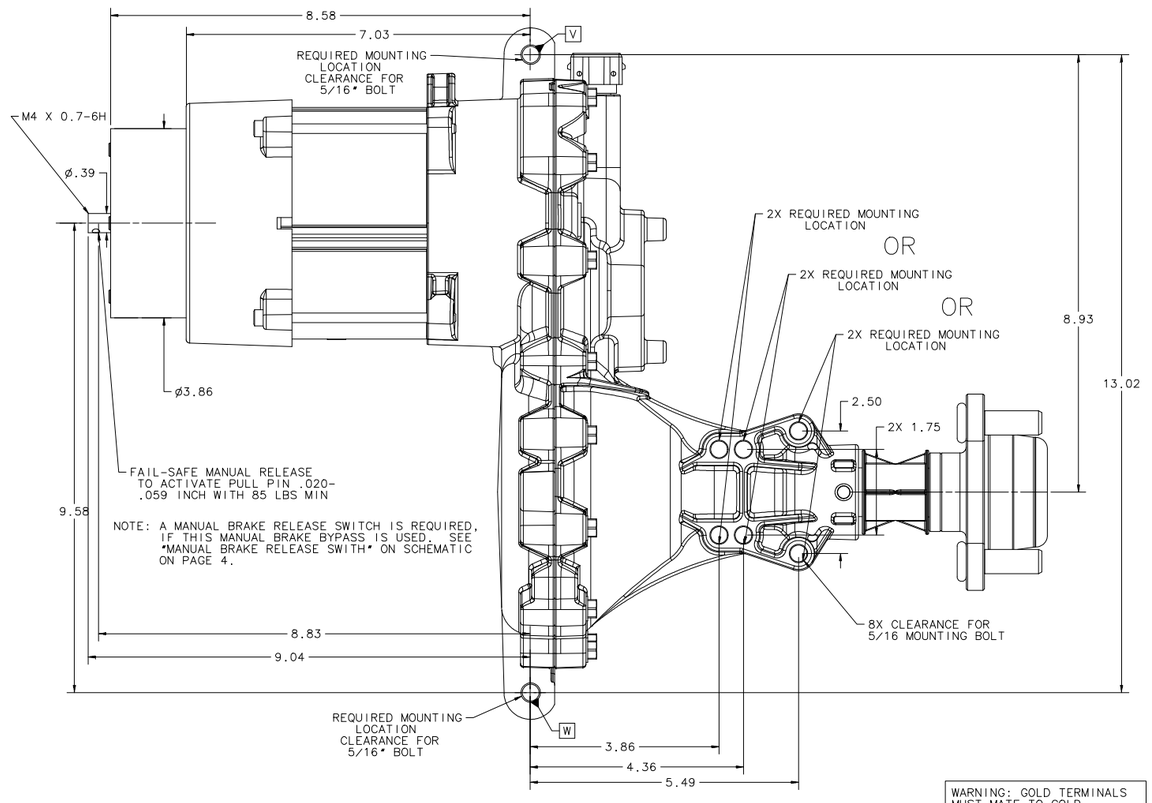
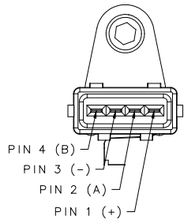






SPEED SENSOR

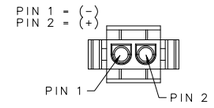
MATING CONNECTOR: AMP C-282192
MATING PINS: AMP 929940-1
WIRE SEAL: AMP 828904-1
WIRE: USE 20 AWG



DETAIL D
SCALE 2:1

BRAKE CONNECTOR
MATING CONNECTOR:

HOUSING (FEMALE): AMP 350778-1
SOCKET (FEMALE): AMP 926895-1
WIRE SEAL: AMP 794270-1
WIRE: USE 20 AWG



VIEW E-E
SCALE 2:1

TECHNICAL DATA:

MAX. VEHICLE WEIGHT INCLUDING 200LB OPERATOR AND 50% FULL BAGGER: ≤ 1000LBS	
MAX WEIGHT ON DRIVE TIRES	680 LBS
TIRE SIZE	18 INCH MAX.
CONTINUOUS OPERATING TORQUE	80 FT-LBS
PEAK TORQUE	322 FT-LBS
TRANSAXLE IP RATING	64
ELECTRIC MOTOR IP RATING	54

WARNING: GOLD TERMINALS MUST MATE TO GOLD TERMINALS AND TIN TO TIN. PLEASE VERIFY THIS IN ALL HARNESSES.

NOTES:

1. REFERENCE MATERIAL:
   - MODEL NUMBER CONFIGURATION GUIDE: 72024
   - BOM CONFIGURATION GUIDE: 71969
   - PRODUCTION PARTS SCHEMATIC: 71799
   - ELECTRICAL WIRING LAYOUT: 71953

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. MACLEAN ST., SELLS, IL 61951
PHONE: (217) 728-2581

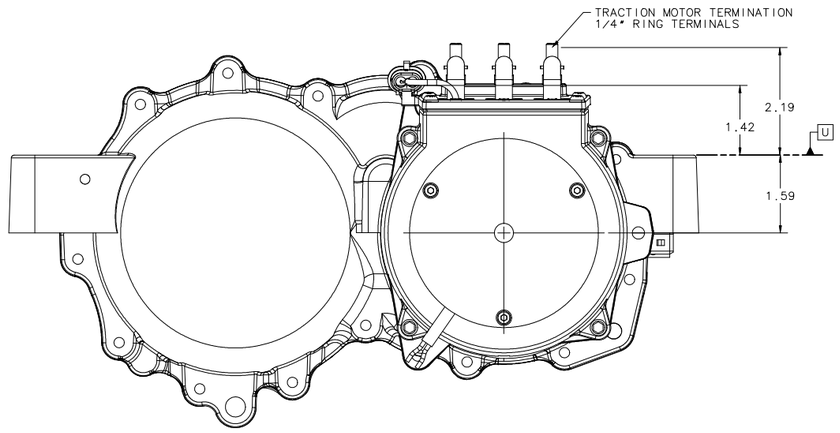
FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
REV	P(12)

THERMAL SENSOR CONNECTION
1 = PIN 1 WHITE (-)
2 = PIN 2 RED (+)

MATING CONNECTOR: AMP 282080-1
MATING PIN: AMP 282403-1
WIRE SEAL: AMP 281934-2
WIRE: USE 20 AWG

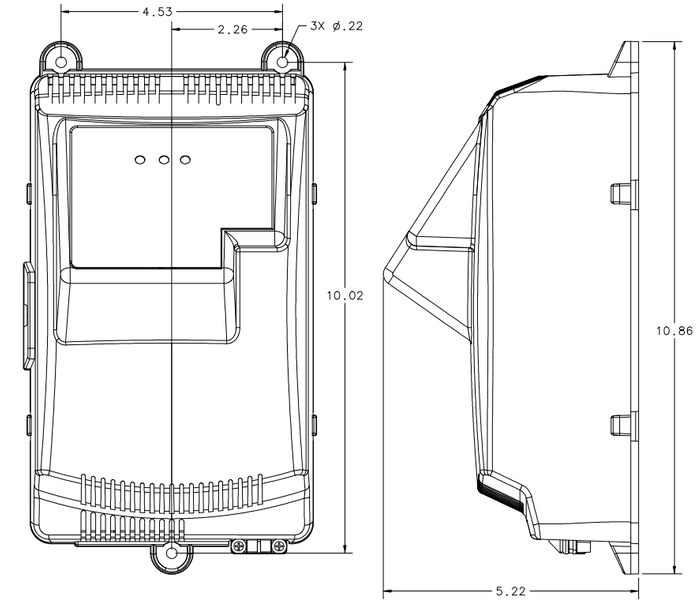
VIEW C-C
SCALE 2:1

VIEW A-A
SCALE 1:1

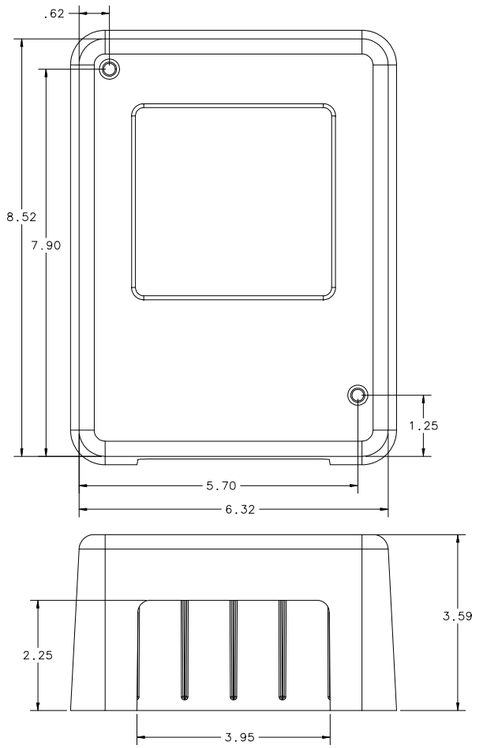


VIEW B-B
SCALE 1:1

WARNING: GOLD TERMINALS MUST MATE TO GOLD TERMINALS AND TIN TO TIN. PLEASE VERIFY THIS IN ALL HARNESSES.



100-240 VAC CHARGER
P/N 53693 FOR LEAD ACID BATTERIES
53694 FOR AGM BATTERIES



TRACTION CONTROLLER COVER
P/N 52953

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL 61951
PHONE (217) 728-2581

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
PART NUMBER	71804
SHT	P12

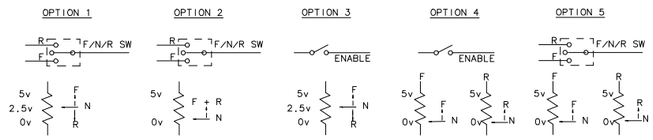
NAME ELECTRIC ZT SALES DRAWING

SHEET 2 OF 11

TRACTION CONTROLLER P/N 53318

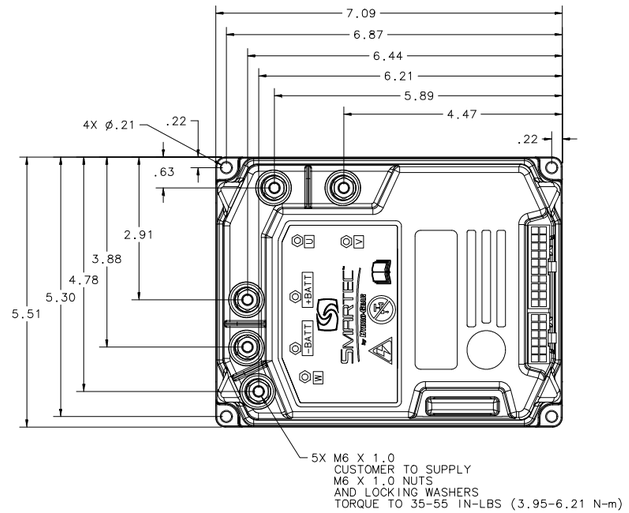
TECHNICAL DATA

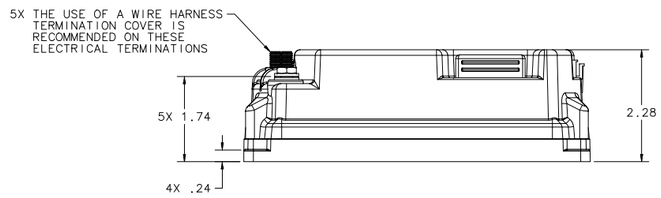
1. APPLICATION: CONSUMER ZT RIDERS AND WALK BEHINDS
2. MOUNTING REQUIREMENTS
   a. THE CONNECTOR SIDE OF THE TRACTION CONTROLLER MUST BE PROTECTED FROM BEING SPRAYED WITH DIRECT WATER PRESSURE. SMARTEC TRACTION CONTROLLER COVER P/N 52953 IS AVAILABLE TO HELP PROTECT THE CONTROLLER.
   b. IT IS RECOMMENDED THAT THE TRACTION CONTROLLER BE MOUNTED IN A VERTICAL OR STANDING POSITION WITH THE A AND B CONNECTORS AT THE BOTTOM. OR HORIZONTALLY WITH THE HEAT SINK FACING UP AND ALL CONNECTORS FACING EARTH.
   c. THE MINIMUM HEAT SINK DESIGN IS TO USE AN UNPAINTED ALUMINUM PLATE THAT IS APPROXIMATELY (5.7" X 7.9" X 0.5"). APPLYING THERMAL GREASE OR A THERMAL TRANSFER PAD BETWEEN THE TRACTION CONTROLLER MOUNTING PLATE AND THE HEAT SINK IS REQUIRED TO FACILITATE ACCEPTABLE HEAT TRANSFER RATES.
   d. THE MINIMUM HEAT SINK SPECIFIED IS FOR A MACHINE WEIGHT OF APPROXIMATELY 660lbs (300kg) RUNNING A DRIVE CYCLE OF MOWING, LEVEL 66.67%, TURNING 6.67%, TRANSPORTING 8.33%, 10° CLIMB 5%, 17° CLIMB 1.11%, TOWING SWEEPER 5.56% AND TOWING A CART 6.67% ON A 100°F AMBIENT TEMPERATURE DAY. THE GOAL IS TO ACHIEVE TEMPERATURE STABILIZATION WITHOUT EXCEEDING 78°C (172.4°F) INTERNAL TEMPERATURE OF THE TRACTION CONTROLLER.
3. SPECIFICATIONS:
   a. CONTROLS A SINGLE SMARTEC ELECTRIC ZT TRANSAXLE; TWO CONTROLLERS REQUIRED PER VEHICLE.
   b. INTERNAL HOUR METER CAN BE DISPLAYED ON THE SMARTEC VEHICLE DISPLAY P/N 53143
   c. WEIGHT: 3.2LBS EACH
   d. VOLTAGE: 48VDC
   e. OPERATING/SWITCHING FREQUENCY: 8kHz
   f. AMBIENT TEMPERATURE RANGE: -20°F to 110°F
   g. MAXIMUM CONTROLLER TEMPERATURE: 212°F
   h. THROTTLE
      i. THROTTLE OPTIONS

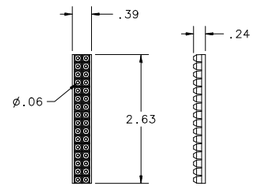


      ii. POTENTIOMETER
         1. SMARTEC OFFERS A COMPLETE SOLUTION FOR OPTION 3 (SMARTEC P/N 53419).
         2. THE THROTTLE UNIT CAN CONSIST OF A POTENTIOMETER OR A HALL EFFECT DEVICE. THE SENSOR SHOULD BE A 3-WIRE CONFIGURATION. POTENTIOMETER VALUE SHOULD BE IN THE 0.5 - 10 kΩ RANGE; GENERALLY, THE LOAD SHOULD BE IN THE 1.5mA TO 30mA RANGE. FAULTS CAN OCCUR IF IT IS OUTSIDE THIS RANGE.
         3. THE PROCEDURE FOR CALIBRATING THE CONTROLLER WITH THE MINIMUM AND MAXIMUM USEFUL THROTTLE RANGE IS CARRIED OUT USING THE HYDRO-GEAR CALIBRATION TOOL P/N 53096. THIS PROCEDURE WILL BE REQUIRED ON EVERY VEHICLE MANUFACTURED, PRIOR TO INITIAL OPERATION.
      iii. MICROSWITCHES
         1. THE THROTTLE MICROSWITCHES MUST HAVE A CONTACT RESISTANCE LOWER THAN 0.1Ω AND A LEAKAGE CURRENT LOWER THAN 100uA.
         2. WITH FULL LOAD CONNECTED, THE VOLTAGE BETWEEN THE SWITCH CONTACTS MUST BE LOWER THAN 0.1V.
         3. THE MICROSWITCHES SEND A VOLTAGE SIGNAL TO THE TRACTION CONTROLLER WHEN A DRIVE REQUEST IS MADE.
4. VEHICLE PERFORMANCE PARAMETERS
   a. A TRACTION CONTROLLER VEHICLE MODEL NUMBER WILL BE ASSIGNED TO EACH UNIQUE SET OF VEHICLE PERFORMANCE PARAMETERS.
      i. TRACTION CONTROLLER VEHICLE MODEL NUMBERS WILL BE ASSIGNED BY SMARTEC AS REQUIRED. THE MODEL NUMBERS WILL BE A 5 DIGIT NUMBER CONSISTING OF A SEQUENCE OF DIGITS RANGING FROM 1 TO 4.
      ii. THIS MODEL NUMBER WILL BE REQUIRED TO BE ENTERED INTO EACH VEHICLE'S TRACTION CONTROLLER, UPON INITIAL POWER UP, USING THE SMARTEC CALIBRATION TOOL P/N 53096.
5. WIRE HARNESS REQUIREMENTS
   a. IT IS NECESSARY TO USE A MAIN CONTACTOR IN-LINE TO BOTH CONTROLLER'S +48 VOLT POWER INPUTS TO PROTECT THE CONTROLLERS AGAINST REVERSE BATTERY POLARITY AND FOR SAFETY REASONS.
   b. CONNECTOR "A" MATING CONNECTOR IS MOLEX P/N 0039012120 WITH MOLEX TERMINAL P/N 5556 GOLD PLATED.
   c. CONNECTOR "B" MATING CONNECTOR IS MOLEX P/N 0039012200 WITH MOLEX TERMINAL P/N 5556 GOLD PLATED.
   d. CONNECTOR "A" AND "B" REQUIRE WIRE SEAL SMARTEC P/N 53135 (ONE 32 HOLE WIRE SEAL WILL BE CUT TO CREATE BOTH CONNECTOR SEALS).
   e. ALL EMPTY CONNECTOR CAVITIES MUST BE PLUGGED USING SMARTEC CONNECTOR CAVITY PLUG P/N 53159
   f. ALL CONTROLLER BOLT CONNECTIONS REQUIRE 1/4" (6mm) RING TERMINALS.
   g. ALL WIRES CONNECTED TO CONNECTORS "A" AND "B" MUST BE 20 AWG MINIMUM.
   h. ALL WIRES CONNECTED TO -B, +B, U, V, W, AND ALL WIRES CONNECTED BETWEEN THE BATTERIES MUST BE 5 AWG (.025in2 [16mm2] CROSS SECTIONAL AREA) MINIMUM.
   i. FOR OPTIMUM CONTROLLER PERFORMANCE, THE CABLES TO THE BATTERY SHOULD BE RAN SIDE BY SIDE AND AS SHORT AS POSSIBLE.
   j. CAN-BUS WIRING MUST BE SHIELDED, WITH SHIELD TIED TO VEHICLE CHASSIS OR BATTERY GROUND. CAN-BUS WIRING MUST "NOT" BE ROUTED ALONG POWER WIRES. CAN-BUS WIRES MAY CROSS POWER WIRES PERPENDICULARLY, BUT MAY NOT RUN IN PARALLEL.
6. PROTECTION FEATURES
   a. PROTECTION AGAINST ACCIDENTAL START
   b. IF THE CONTROLLER TEMPERATURE EXCEEDS 173°F, THE MAXIMUM CURRENT IS REDUCED IN PROPORTION TO THE THERMAL INCREASE. THE CONTROL WILL SHUTDOWN COMPLETELY IF THE TEMPERATURE REACHES 212°F
   c. IF MOVEMENT IS COMMANDED WITH NO RESPONSE, THE VEHICLE WILL SHUTDOWN.
   d. LOW BATTERY SHUTDOWN - 80% DISCHARGE

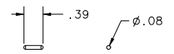
7. EMI TESTING:
   a. IT IS RECOMMENDED THAT COMPLETE EMC AND EMI TESTING OF ALL VEHICLES BE PERFORMED BEFORE PRODUCTION RELEASE.





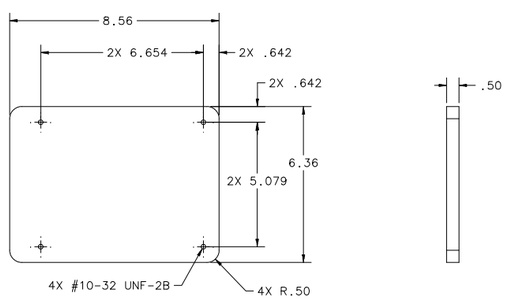


WIRE SEAL P/N 53135



CAVITY PLUG P/N 53159

WARNING: GOLD TERMINALS MUST MATE TO GOLD TERMINALS AND TIN TO TIN. PLEASE VERIFY THIS IN ALL HARNESSES.

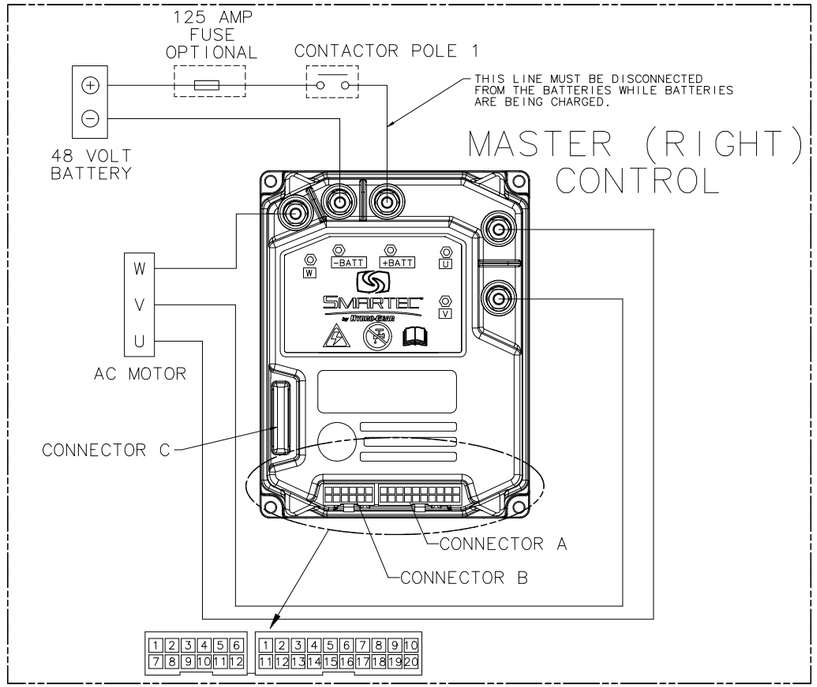


HEAT SINK P/N 54103

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL 61951
PHONE (217) 728-2581

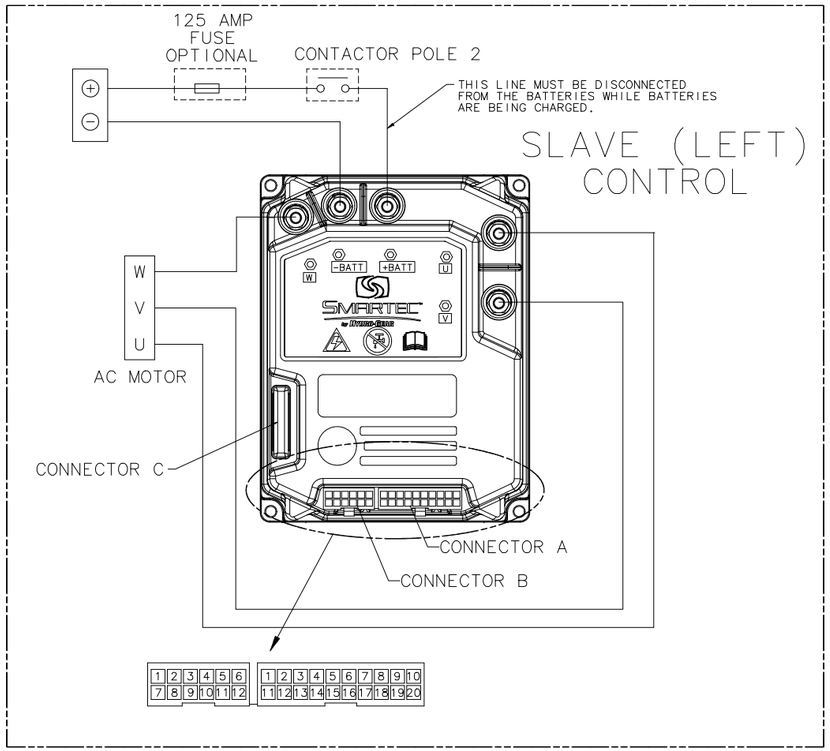
FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
PART NUMBER	71804
SHT	P12

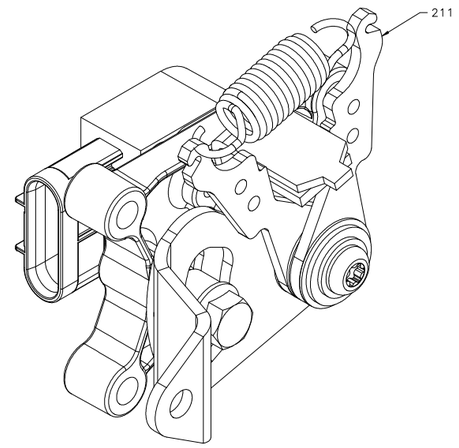
NAME ELECTRIC ZT SALES DRAWING



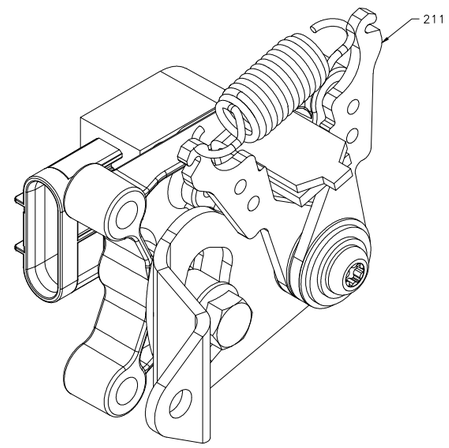
CONNECTOR	MATING CONNECTOR	WIRE SEAL
A	MOLEX P/N 0039012120 WITH MOLEX TERMINAL P/N 5556 GOLD PLATED	SMARTEC P/N 53135
B	MOLEX P/N 0039012200 WITH MOLEX TERMINAL P/N 5556 GOLD PLATED	
C	SMARTEC HAND-HELD CONSOLE	N/A

NOTE: ALL EMPTY CONNECTOR CAVITIES MUST BE PLUGGED USING SMARTEC CONNECTOR CAVITY PLUG P/N 53159.



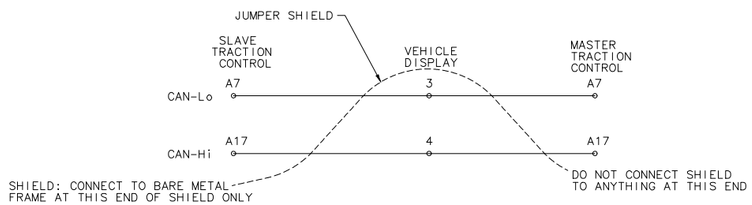


ITEM	COMPONENT	DESCRIPTION	QTY
211	72258	KIT, BRACKET RTN LH	1



ITEM	COMPONENT	DESCRIPTION	QTY
211	72257	KIT, BRACKET RTN RH	1

CAN BUS WIRING REQUIREMENT:SLAVE CONTROL AND MASTER CONTROL MUST BE AT OPPOSITE ENDS OF DAISY CHAIN WIRING, EXACTLY AS SHOWN



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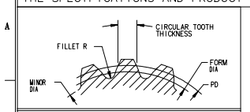
HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST., DES MOINES, IL 61901
PHONE: (217) 726-2501

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
DWG	(R12)

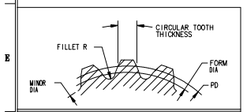


SPLINE 1

DATA FOR EXTERNAL INVOLUTE SPLINE

ANSI B92.1-1970	TOLERANCE CLASS 6	
TYPE OF FIT	FILLET ROOT SIDE	
NUMBER OF TEETH	21	
SPLINE PITCH	48/96	
PRESSURE ANGLE	45°	
BASE DIAMETER	.3093592	REF
PITCH DIAMETER	.4375000	REF
MAJOR DIAMETER	.455/.458	
FORM DIAMETER	.424	
MINOR DIAMETER	.409	MIN
CIRC TOOTH THK		
MAX EFFECTIVE	.0369	
MIN ACTUAL	.0333	
FILLET RADIUS	N/A	MIN
MIN MOP (Mm)	.5000	REF
PIN DIAMETER	.0400	
MATING PART No.	XXXX	

SPLN1X.DWG REV 02-12-99



SPLINE 2

DATA FOR EXTERNAL INVOLUTE SPLINE

ANSI B92.1-1970	TOLERANCE CLASS 6	
TYPE OF FIT	FILLET ROOT SIDE	
NUMBER OF TEETH	15	
SPLINE PITCH	32/64	
PRESSURE ANGLE	30°	
BASE DIAMETER	.4059494	REF
PITCH DIAMETER	.4687500	REF
MAJOR DIAMETER	.495/.489	
FORM DIAMETER	.433	
MINOR DIAMETER	.395	MIN
CIRC TOOTH THK		
MAX EFFECTIVE	.0491	
MIN ACTUAL	.0456	
FILLET RADIUS	.009	MIN
MIN MOP (Mm)	.5529	REF
PIN DIAMETER	.0600	
MATING PART No.		

SPLN2X.DWG REV 02-12-99

TEST DATA:

RESISTANCE TEST (Ohms) AT 25°C	
MIN	MAX2
0.0135Ω	0.0175Ω

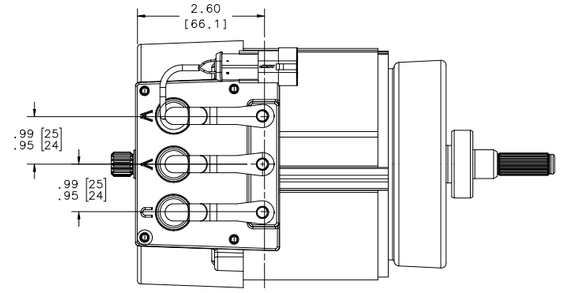
HIPOT TEST (1000V,2mA AT 50 HZ FOR 2 SECONDS)		
	MIN	MAX
LEAKAGE (mA)	0	2
VOLTAGE (VAC)	1000	

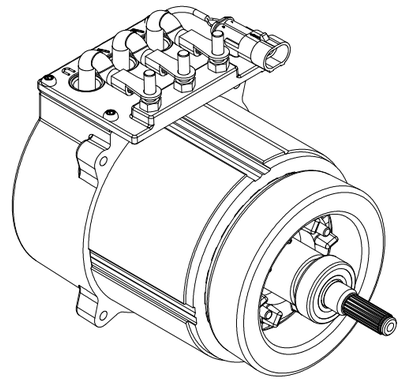
MEGGER TEST (500V MEGOHM METER)	
MOHMS (MIN)	VOLTAGE
100	500

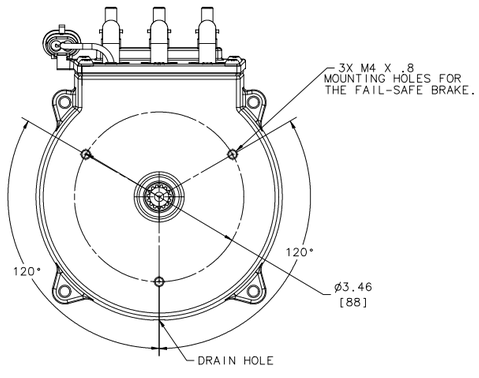
INDUCTANCE TEST		
(L-L)	MIN	MAX
R_{AB}	90 mH	112 mH
R_{BC}	90 mH	112 mH
R_{CA}	90 mH	112 mH

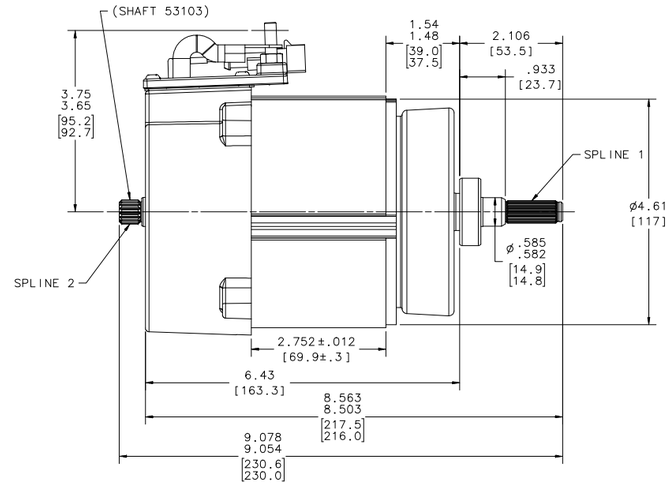
NOTES:

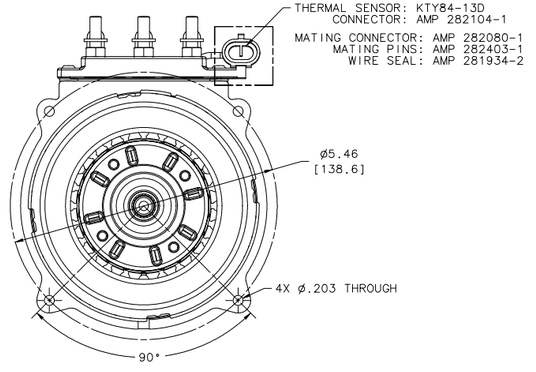
1. MOTOR TYPE: 3 PHASE AC INDUCTION
2. SYSTEM VOLTAGE: 48 VDC
3. MOTOR VOLTAGE: 33 VRMS
4. SPEED RANGE: 0 TO 6000 RPM
5. CONTINUOUS MAXIMUM TORQUE IS 3.4 FT-LBS (1.7kW OR 2.2 HP)
6. TYPICAL DUTY CYCLE: 3685 RPM 1.84 LB-FT
7. INPUT FREQUENCY RANGE: 0 TO 200 HZ
8. EFFICIENCY: ≥85%
9. OVER TEMP PROTECTION REQUIRED BY USING KTY84-130 TEMP SENSOR
10. MOTOR ENCLOSURE RATING: IP- 54
11. REQUIRED MOTOR LIFE EXPECTANCY: ≥500 HOURS
12. 1/4" RING TERMINALS ARE TO BE USED TO CONNECT TO THE MOTOR.











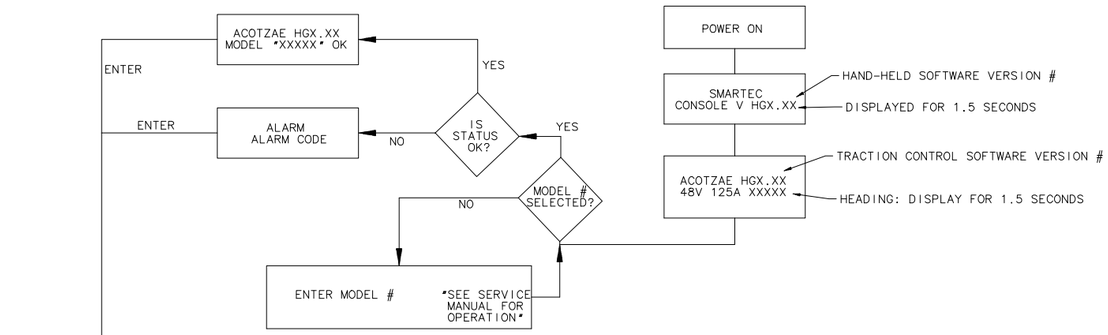
1.7 KW AC INDUCTION MOTOR

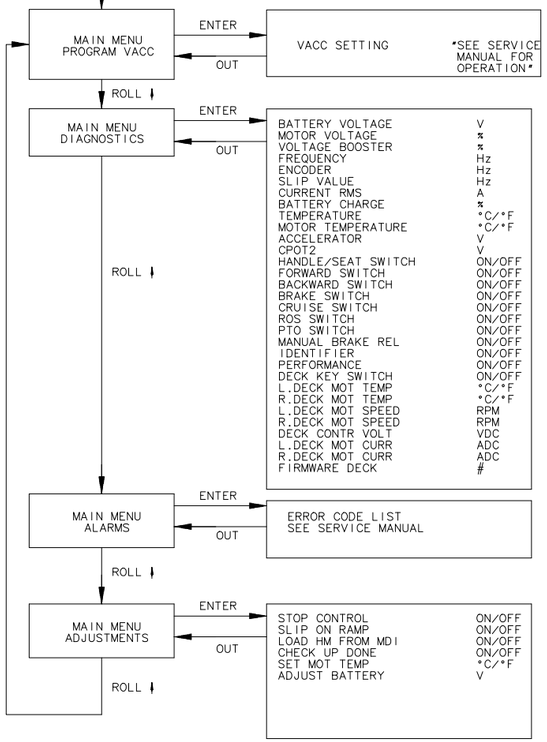
HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL 61951
PHONE (217) 728-2581

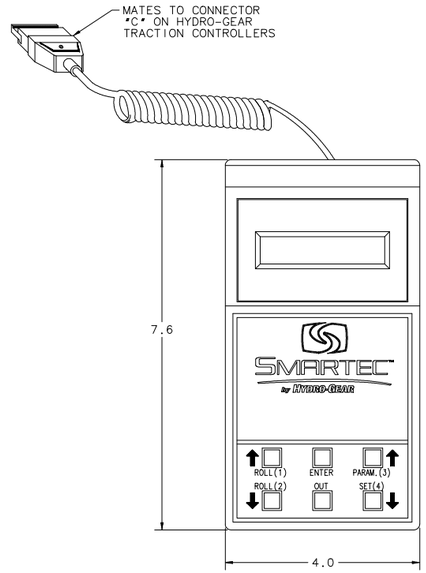
FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
DRG	P17

TECHNICAL DATA

APPLICATIONS: ELECTRIC DRIVE OEM
VEHICLE CALIBRATION TOOL.
ELECTRIC DRIVE SERVICE
DEALER DIAGNOSTICS TOOL.

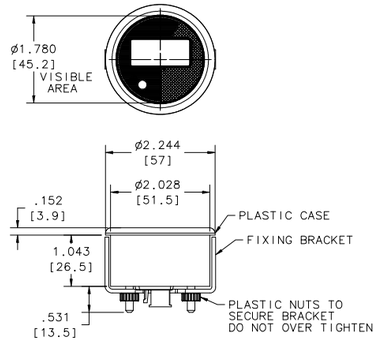






HAND-HELD CONSOLE P/N 53096

WARNING: GOLD TERMINALS MUST MATE TO GOLD TERMINALS AND TIN TO TIN. PLEASE VERIFY THIS IN ALL HARNESSES.



APPLICATION: THE SMARTEC VEHICLE DISPLAY IS A MULTIFUNCTIONAL DASH MOUNTED UNIT WHICH COMMUNICATES VIA CAN-BUS LINK WITH THE SMARTEC TRACTION CONTROLLER TO DISPLAY BATTERY STATE OF CHARGE, MAINTENANCE DUE REMINDERS, OPERATION HOURS, AND VEHICLE ALARMS.
BATTERY STATE - SMARTEC'S TRACTION CONTROLLER MONITORS BATTERY STATE OF CHARGE AND DISPLAYS THIS VALUE ON THE SMARTEC DISPLAY.
HOUR METER - SMARTEC'S TRACTION CONTROLLER COUNTS EITHER KEY-ON HOURS OR WORKING HOURS AND STORES THIS VALUE IN PERMANENT MEMORY.
MAINTENANCE - MAINTENANCE INTERVAL REMINDERS ARE DISPLAYED ON THE SMARTEC DISPLAY.
ALARM DISPLAY - TRACTION CONTROLLER ALARMS ARE DISPLAYED ON THE SMARTEC DISPLAY
ENVIRONMENT - THE SMARTEC DISPLAY IS SEALED TO IP-64.
INTERFACE - THE SMARTEC DISPLAY USES A 6 PIN MOLEX MINI-FIT, JR. CONNECTOR MOLDED INTO THE CASE. VEHICLE WIRE HARNESS WILL NEED MOLEX MINI FIT CONNECT 6 PIN RECEPT. (5557), WITH FEMALE CRIMP TERMINALS (5556 GOLD PLATED). USE 20 AWG WIRE.

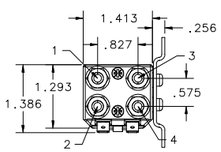
CONNECTOR PIN OUT:
PIN 1 = +12V (A16)
PIN 2 = CONTROLLER - BATT
PIN 3 = CANL (A7)
PIN 4 = CANH (A17)

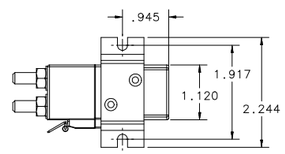
MUST USE A SHIELDED TWISTED PAIR CABLE FOR THE WIRES USED ON PIN 3 & PIN 4. SHIELDING TO BE ATTACHED TO VEHICLE FRAME AT ONE END ONLY. SEE CAN-BUS WIRING REQUIREMENT SCHEMATIC ON SHEET 4.

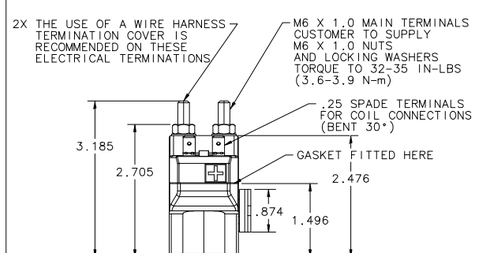
MULTIFUNCTION DIGITAL INTERFACE
P/N 53143

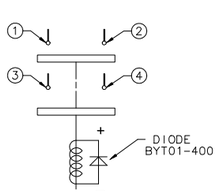
NOTES:

1. CONTACTOR ENCLOSURE RATING: IP65.
2. PERFORMANCE DATA:
   MAXIMUM RECOMMENDED COIL VOLTAGE: ≤ 28 V, 300mA
   MECHANICAL LIFE: > 5000 CYCLES
   DROP-OUT TIME (N/O CONTACTS TO OPEN): ≤ 50ms
   BOTH CONTACTS NORMALLY OPEN
3. PART TO BE USED IN CONJUNCTION WITH SMARTEC ELECTRIC DRIVE TRACTION CONTROLLER P/N 53318









ELECTRICAL SCHEMATIC

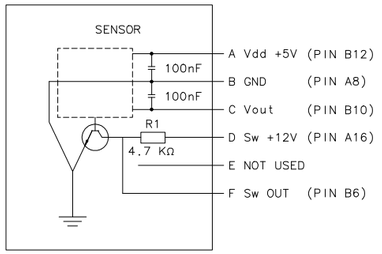
DOUBLE POLE CONTACTOR
P/N 53110

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SOLLNA, IL 61951
PHONE: (217) 728-2581

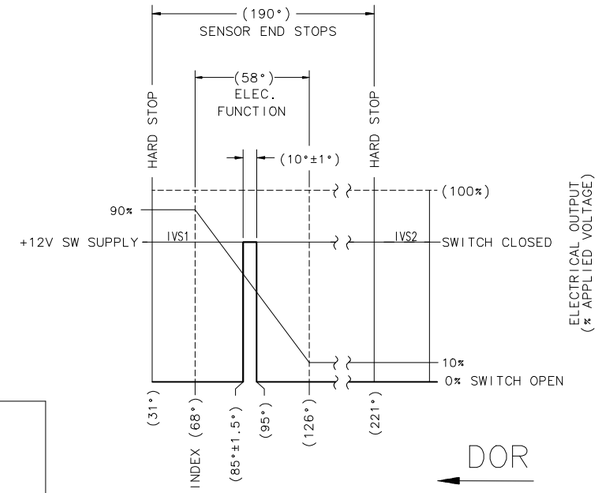
FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
SHT	P17

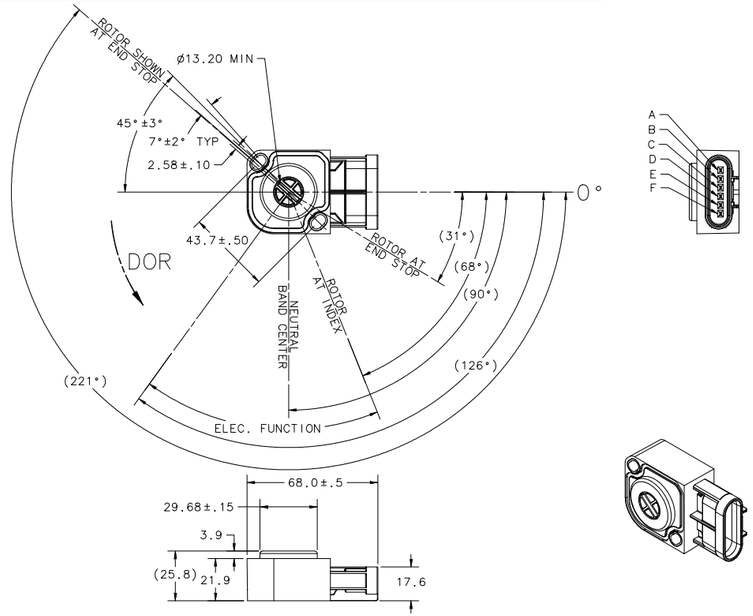
NOTICE - THIS DRAWING CONTAINS HYDRO-GEAR PROPRIETARY INFORMATION. NEITHER RECEIPT NOR POSSESSION THEREOF CONFERS ANY RIGHT TO REPRODUCE, USE, OR DISCLOSE, IN WHOLE OR PART, ANY SUCH INFORMATION WITHOUT WRITTEN AUTHORIZATION FROM HYDRO-GEAR.
THE SPECIFICATIONS AND PRODUCT PROFILE DEPICTED HEREIN ARE APPROXIMATE REPRESENTATIONS SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION. CONSULT YOUR HYDRO-GEAR REPRESENTATIVE TO OBTAIN THE ENGINEERING INFORMATION APPROPRIATE TO YOUR APPLICATION.

ELECTRICAL SCHEMATIC

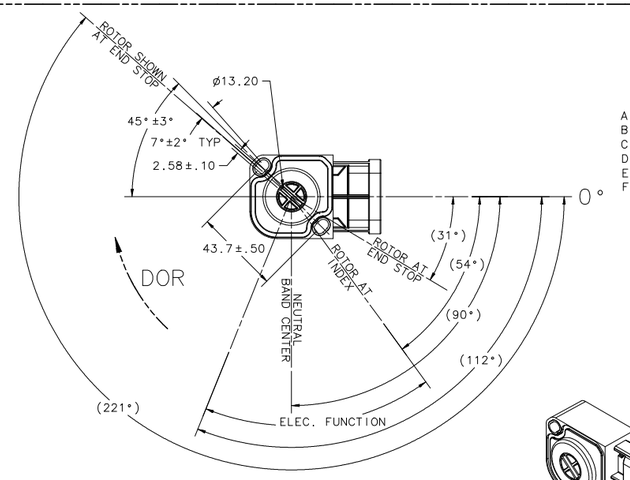


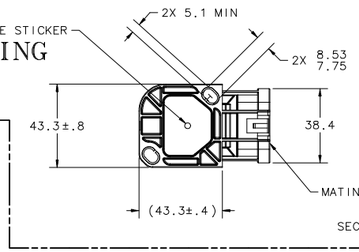
ELECTRO-MECHANICAL GRAPH FOR SENSOR WITH SWITCHING

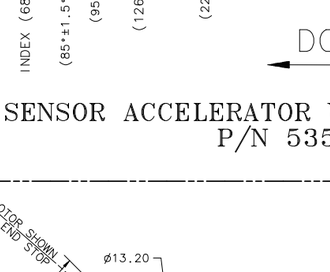


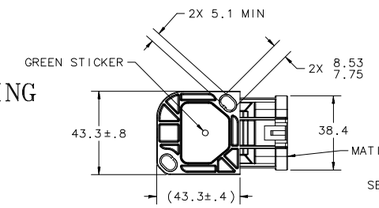


LEFT SENSOR ACCELERATOR W/INTERNAL SWITCHING P/N 53517

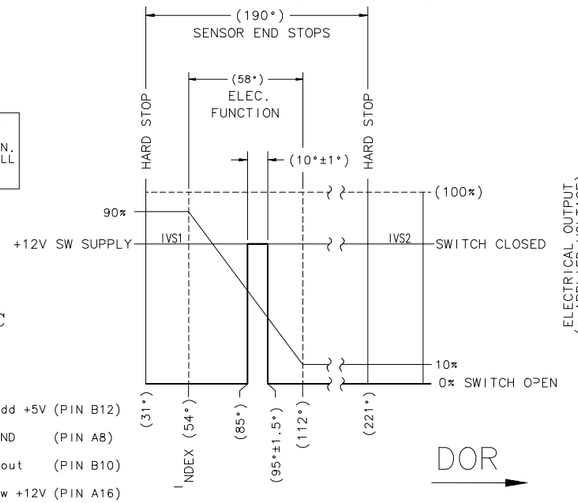




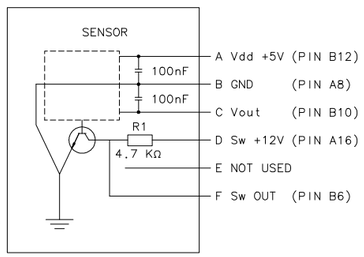


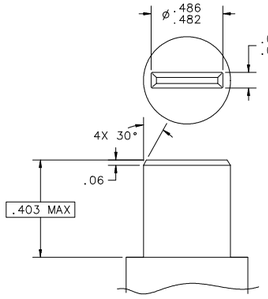


ELECTRO-MECHANICAL GRAPH FOR SENSOR WITH SWITCHING



ELECTRICAL SCHEMATIC





SHAFT, ACTUATING

SENSOR MOUNT POSITION VERSUS WIRING:

PER THE ELECTRICAL OUTPUT GRAPHS THE VOLTAGE OUTPUT VARIES HIGH TO LOW AS THE SENSOR SLOT IS ROTATED CLOCKWISE WHEN LOOKING INTO THE DRIVE SLOT. IN THIS CONFIGURATION THE FORWARD DIRECTION IS COUNTERCLOCKWISE AND REVERSE IS CLOCKWISE RELATIVE TO THE NEUTRAL ALIGNMENT POSITION. THE ELECTRICAL WIRING SCHEMATICS APPLY WHEN THE SENSORS ARE MOUNTED IN A MANNER THAT PRODUCES THE ROTATION AS DEFINED.

NOTE THAT SENSORS CAN BE MOUNTED IN AN OPPOSING ORIENTATION THAT RESULTS IN A REVERSE OF THE VOLTAGE OUTPUT AS SHOWN IN THE SCHEMATICS. WHEN SENSORS ARE MOUNTED IN THIS MANNER IT WILL BE NECESSARY TO CORRECT THIS BY MODIFYING THE CONTROLLER DEFAULT HARDWARE SETTING.

WARNING: GOLD TERMINALS MUST MATE TO GOLD TERMINALS AND TIN TO TIN. PLEASE VERIFY THIS IN ALL HARNESSES.

RIGHT SENSOR ACCELERATOR W/INTERNAL SWITCHING P/N 53518

SHEET 7 OF 11

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL 61951
PHONE (217) 728-2581

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
SHT	#12

SLAVE (LEFT) CONTROL

B1 KEY SW
B2 CM (+ BATTERY OUT)
B3
B4
B5
B6 ENABLE — LEFT ACCELERATOR (PIN F)
B7
B8 PTO
B9 SLAVE CONTROL IDENTIFIER
B10 CPOT — LEFT ACCELERATOR (PIN C)
B11
B12 PPOT (+5 VOLTS OUT) — LEFT ACCELERATOR (PIN A)

10K OHM

A1
A2
A3 NEB — LEFT F/S BRAKE (PIN 1)
A4
A5
A6
A7 CAN-L
A8 NPOTTR1 — LEFT ACCELERATOR (PIN B)
A9 ENC + — TRANSAXLE ENCODER+ (PIN 1)
A10 ENC - — TRANSAXLE ENCODER- (PIN 3)
A11 PMC — CONTACTOR COIL "+"
A12 -BATTERY — MOTOR TEMP (PIN 1)
A13 MOTOR THERMAL — MOTOR TEMP (PIN 2)
A14 BRAKE SWITCH — LEFT — RIGHT
A15
A16 +12V OUT — LEFT ACCELERATOR (PIN D)
A17 CAN-H
A18 CPOTTR2
A19 ENC A — TRANSAXLE ENCODER A (PIN 2)
A20 ENC B — TRANSAXLE ENCODER B (PIN 4)

C1
C2
C3
C4
C5
C6

SMARTEC HAND-HELD CONSOLE COMMUNICATION PORT

POSITION SENSOR: A-B12, B-A8, C-B10, D-A16, X, E, F-B6

DECK CONTROLLER PIN 6

PIN 4, PIN 5, PIN 6, PIN 1, PIN 2, PIN 3, A17, A16 M, A7, [-]

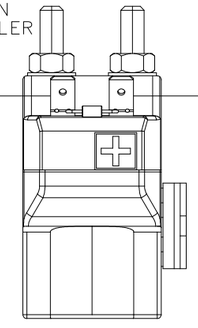
EMERGENCY STOP SWITCH

VEHICLE DISPLAY (PIN 4)

RIGHT F/S BRAKE (PIN 2)
LEFT F/S BRAKE (PIN 2)

CONNECT THIS POST TO THE TRACTION CONTROLLER

CONNECT TO THE BATTERY POST ON THIS SIDE



WARNING: IF THE "BRAKE RELEASED" SWITCH TIED TO B3 AND B4 IS NOT ACTIVATED WHEN THE FAIL-SAFE BRAKE IS MANUALLY ACTUATED, THE VEHICLE WILL STILL BE ENABLED BUT NOT SAFETY PROTECTED. THIS SWITCH IS REQUIRED.

MASTER (RIGHT) CONTROL

B1 KEY SW — 12 AMP FUSE — 48 VOLT BATTERY
B2 CM (+ BATTERY OUT)
B3
B4 BRAKE RELEASED SW
B5
B6 ENABLE — RIGHT ACCELERATOR (PIN F)
B7
B8 SEAT SWITCH
B9
B10 CPOT — RIGHT ACCELERATOR (PIN C)
B11
B12 PPOT (+5 VOLTS OUT) — RIGHT ACCELERATOR (PIN A)

10K OHM

A1 NMC — CONTACTOR COIL "-"
A2
A3 NEB — RIGHT F/S BRAKE (PIN 1)
A4 BLDC CONTROLLER — DECK CONTROLLER (PIN 5)
A5 PPC/PEV (+ BATTERY OUT)
A6 NLED — 3300 OHM 1W
A7
A8 NPOTTR1 — RIGHT ACCELERATOR (PIN B)
A9 ENC + — TRANSAXLE ENCODER + (PIN 1)
A10 ENC - — TRANSAXLE ENCODER - (PIN 3)
A11 PEB
A12 -BATTERY — MOTOR TEMPERATURE (PIN 1)
A13 MOTOR THERMAL — MOTOR TEMPERATURE (PIN 2)
A14
A15
A16 +12V OUT — RIGHT ACCELERATOR (PIN D) / VEHICLE DISPLAY (PIN 1)
A17
A18 CPOTTR2
A19 ENC B — TRANSAXLE ENCODER B (PIN 4)
A20 ENC A — TRANSAXLE ENCODER A (PIN 2)

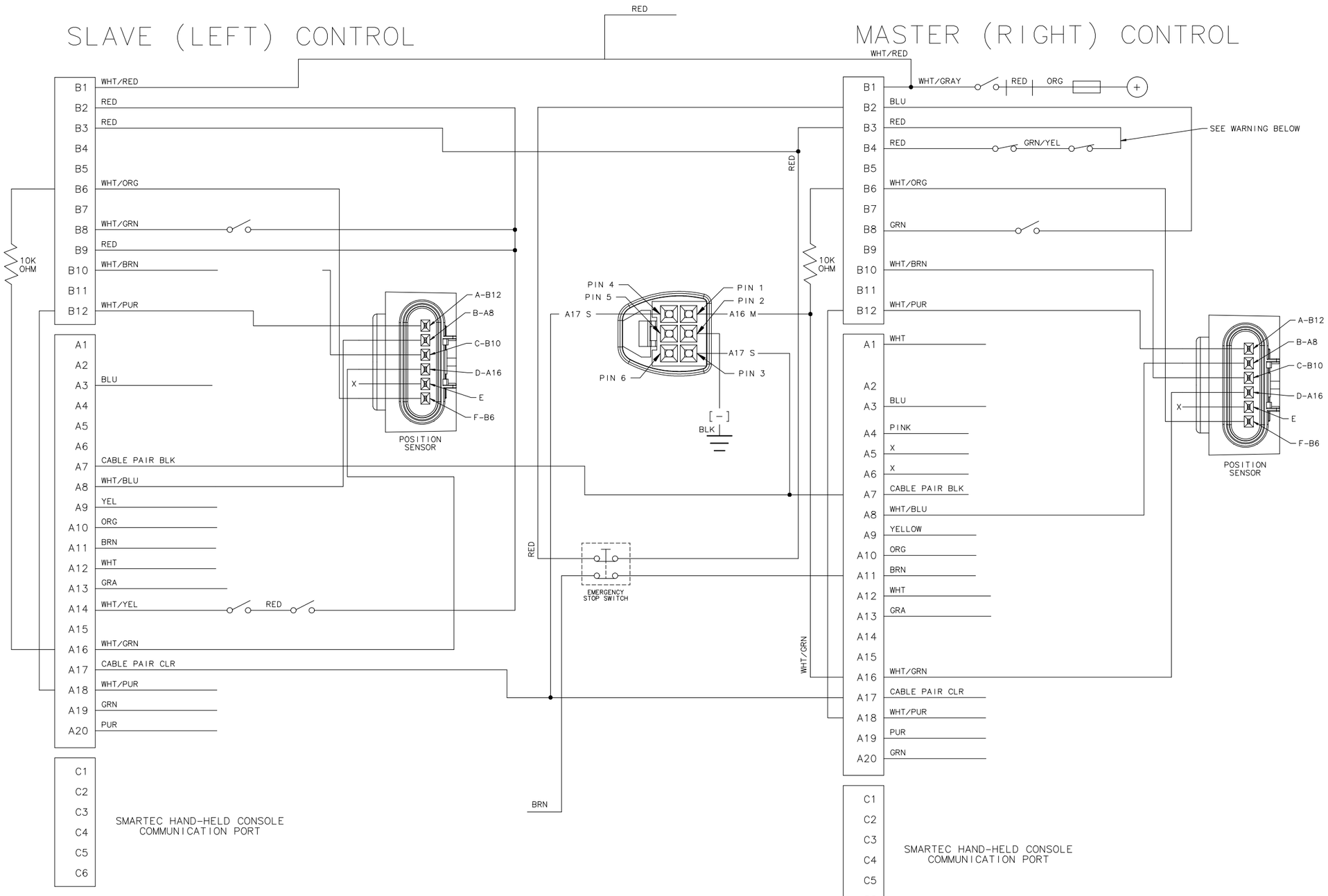
C1
C2
C3
C4
C5
C6

SMARTEC HAND-HELD CONSOLE COMMUNICATION PORT

POSITION SENSOR: A-B12, B-A8, C-B10, D-A16, X, E, F-B6

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL 61951
PHONE (217) 728-2581

FRAME E | I-DEAS
DATE DRAWN 01/11/08
DRAWN BY JLP
SCALE FULL
REVISION DATE 05/03/12
NAME ELECTRIC ZT SALES DRAWING
PART NUMBER 71804
SHT (#12)

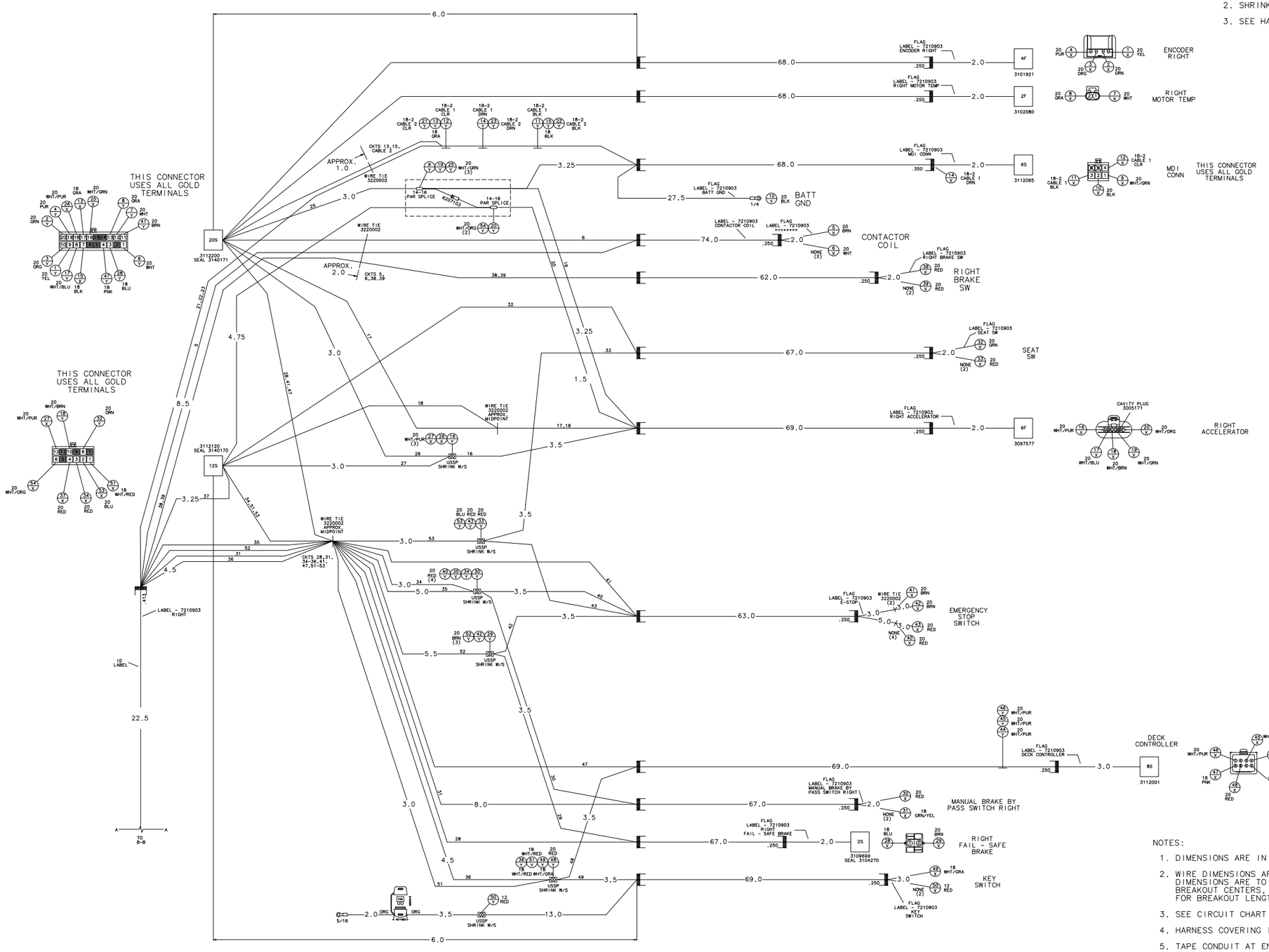


SMARTEC ZT WIRING HARNESS COLOR CHART

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SULLIVAN, IL. 61951
PHONE (217) 728-2581

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
DRG	R12

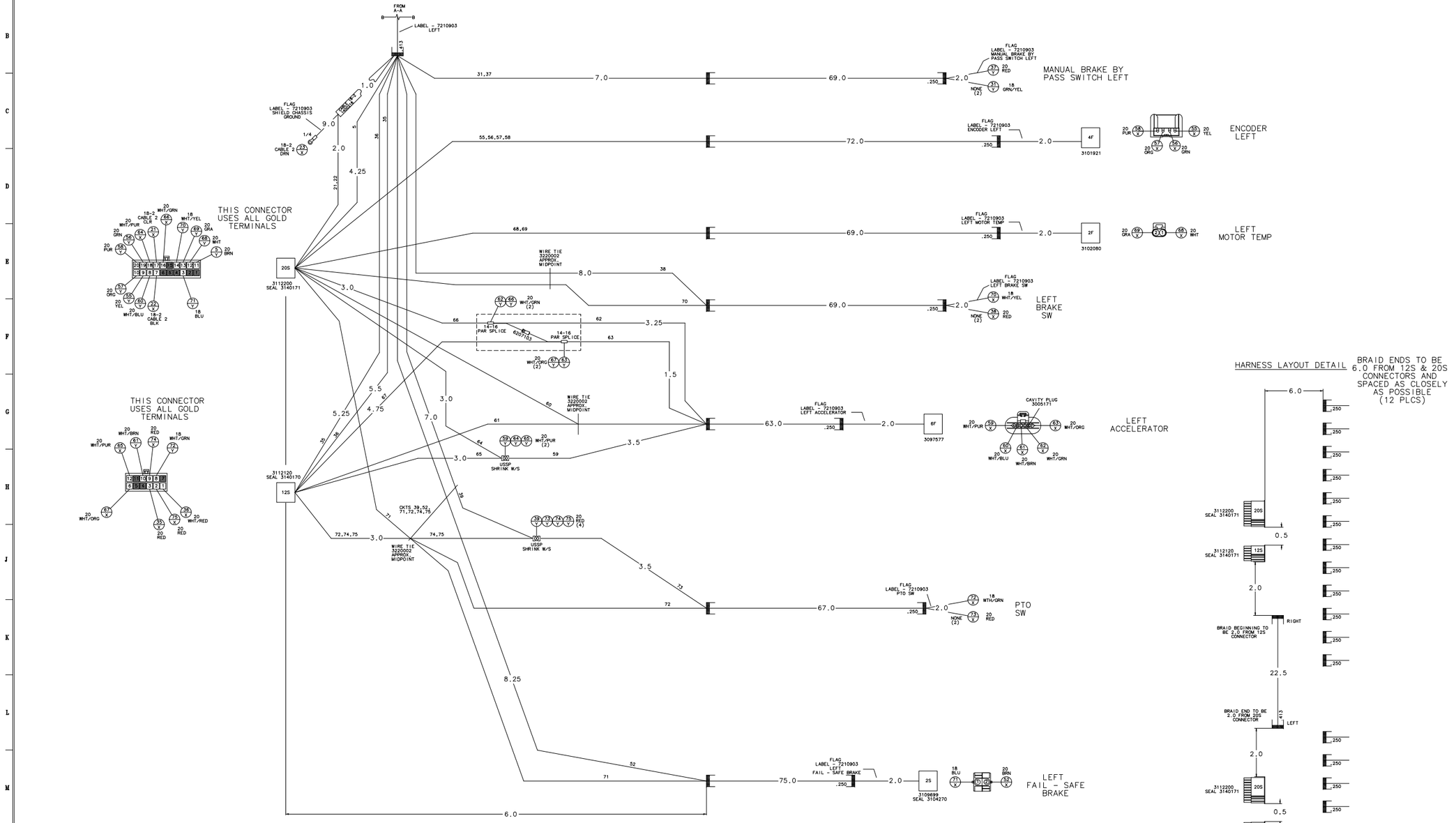
NOTES:
1. HRNS IS BRAIDED.
2. SHRINK W/S ON ALL SPLICES.
3. SEE HARNESS LAYOUT DETAIL SHEET 2.



NOTES:
1. DIMENSIONS ARE IN INCHES.
2. WIRE DIMENSIONS ARE TO WIRE ENDS. HARNESS DIMENSIONS ARE TO END OF COVERING, BETWEEN BREAKOUT CENTERS, AND TO SIDE OF COVERING FOR BREAKOUT LENGTHS.
3. SEE CIRCUIT CHART FOR CIRCUIT DETAILS.
4. HARNESS COVERING IS CONVOLUTED CONDUIT.
5. TAPE CONDUIT AT ENDS AND BREAKOUTS.
6. CONNECTOR DETAILS SHOWN FROM WIRE ENTRY END.
7. ALL NOTES ARE FOR STANDARD HRNS ASS'Y UNLESS OTHERWISE SPECIFIED.

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SOLLVAN, IL 61951
PHONE (217) 728-2581

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
REV	P10



NOTES:

1. DIMENSIONS ARE IN INCHES.
2. WIRE DIMENSIONS ARE TO WIRE ENDS. HARNESS DIMENSIONS ARE TO END OF COVERING, BETWEEN BREAKOUT CENTERS, AND TO SIDE OF COVERING FOR BREAKOUT LENGTHS.
3. SEE CIRCUIT CHART FOR CIRCUIT DETAILS.
4. HARNESS COVERING IS CONVOLUTED CONDUIT.
5. TAPE CONDUIT AT ENDS AND BREAKOUTS.
6. CONNECTOR DETAILS SHOWN FROM WIRE ENTRY END.
7. ALL NOTES ARE FOR STANDARD HRNS ASS'Y UNLESS OTHERWISE SPECIFIED.

HYDRO-GEAR
FORWARD MOTION THROUGH FORWARD THINKING
1411 S. HAMILTON ST. SAUK VIEW, IL 61951
PHONE: (217) 728-7283

FRAME E	I-DEAS
DATE DRAWN	01/11/08
DRAWN BY	JLP
SCALE	FULL
REVISION DATE	05/03/12
NAME	ELECTRIC ZT SALES DRAWING
PART NUMBER	71804
REV	046