



FORCE America Inc.

# ULTRAKOOL Operator's Manual

FORCE America UK4-20-12VDC-AL Operator's Manual



# ULTRA KOOL



The High Performance, Compact Cooling System

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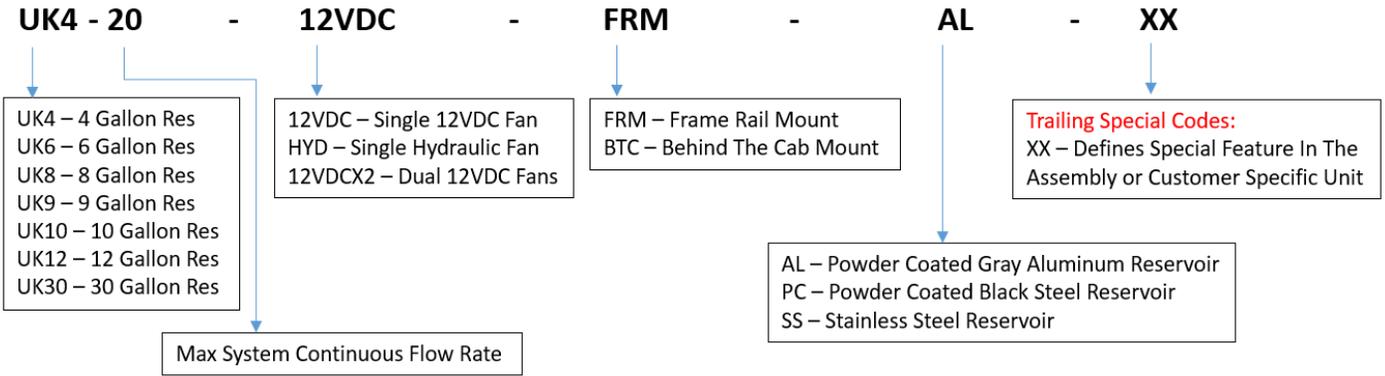
## Warranty Disclaimer

Seller warrants that any goods sold by Seller to Buyer shall be free from defects in material and workmanship for a period of one (1) year from the date of delivery. THIS WARRANTY SHALL BE THE SOLE AND EXCLUSIVE WARRANTY MADE BY SELLER TO BUYER. SELLER HEREBY DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

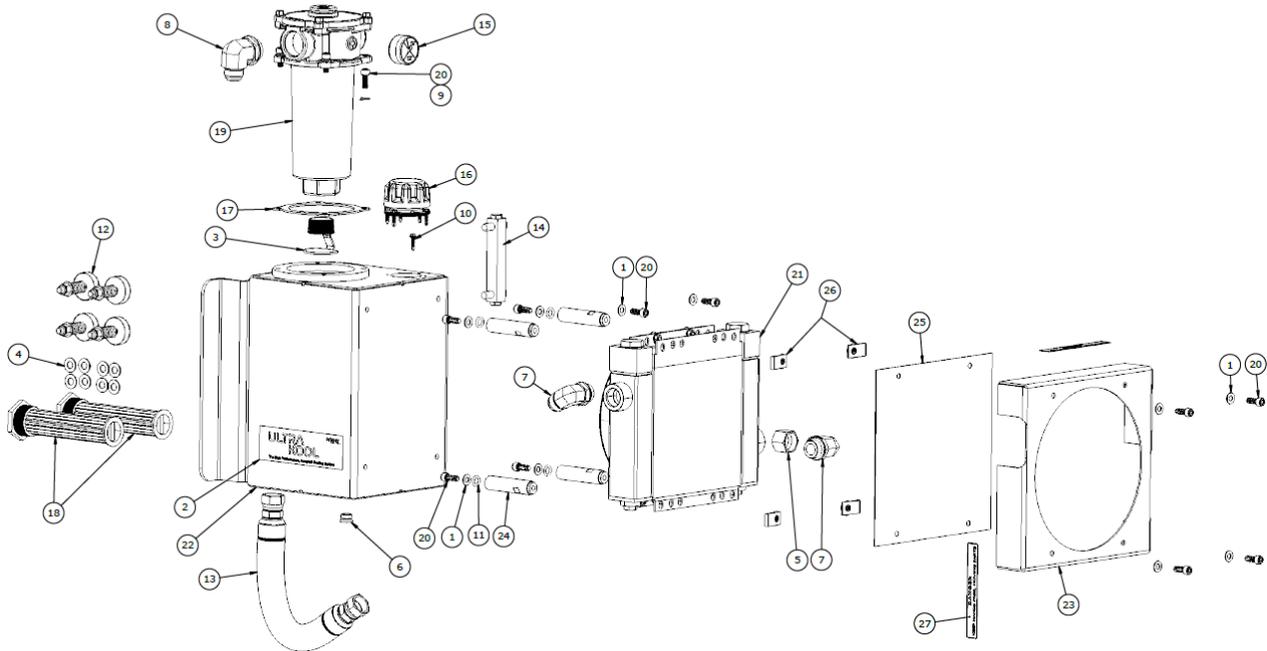
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## UK4-20-12VDC-AL – Model Code Breakdown



## UK4-20-12VDC-AL – Exploded Parts View



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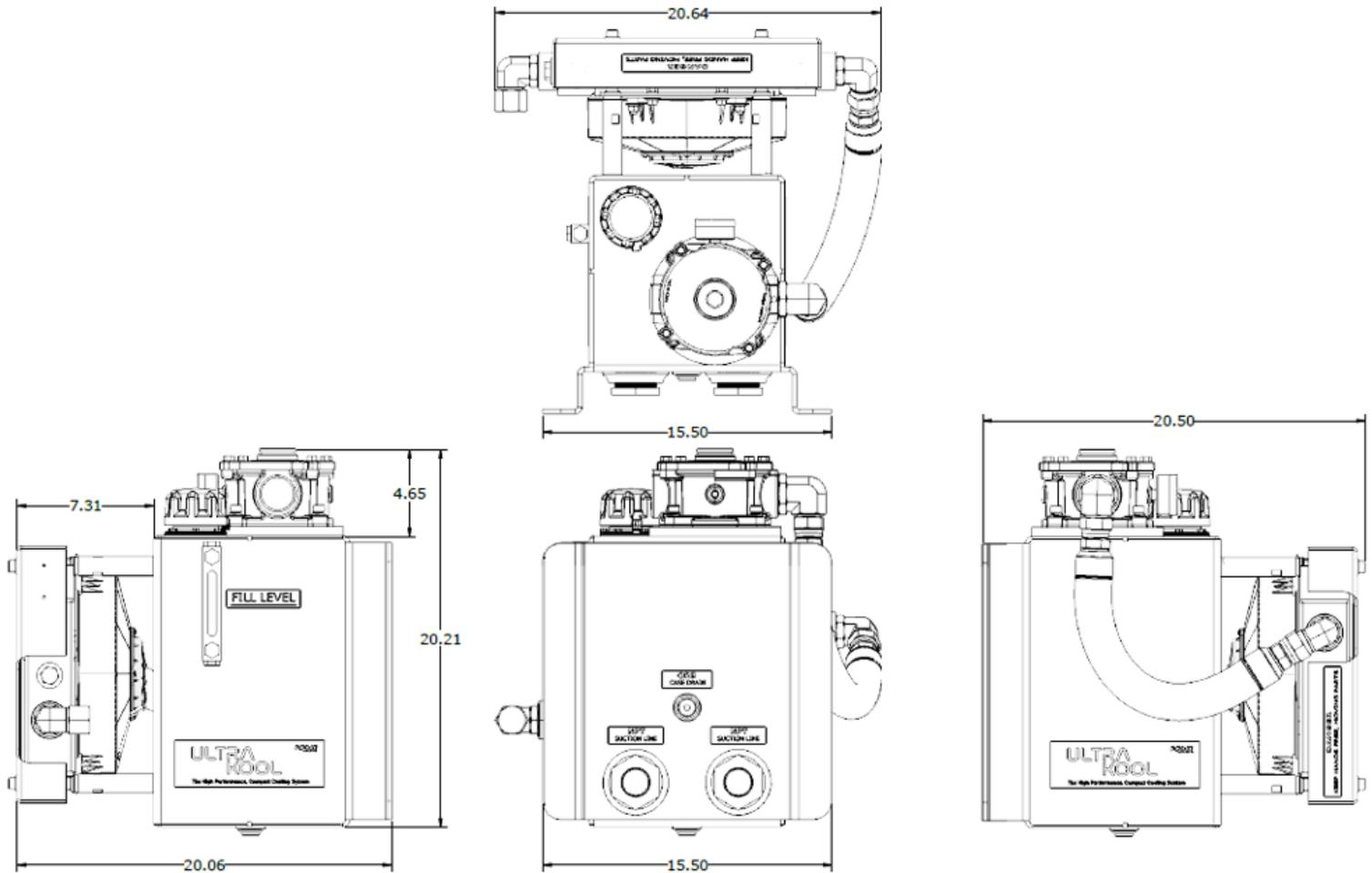
## UK4-20-12VDC-AL – Bill of Materials

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	1010799	3/8" STAINLESS STEEL WASHER	12
2	1011613	ULTRAKOOL LOGO DECAL	2
3	1011760	WELDMENT, DIFFUSER, 1-1/2 NPT THREAD	1
4	1011765	1/2" SCREW SIZE FLAT WASHER, STEEL	8
5	1013504	ADAPTER CAP NUT 1-5/16 X 12 JIC FOR TUBE OD 1"	1
6	1014114	PLUG, SAE -08 HOLLOW HEX	2
7	1014330	ELBOW 1-5/16 X 12 MALE JIC X 1-5/16 X 12 MALE ORB STEEL	2
8	1014331	ELBOW 1-5/16 X 12 MALE JIC X 1-5/8 X 12 MALE ORB STEEL	1
9	1015103	3/8" SCREW SIZE SPLIT LOCK WASHER, 0.68" OD, 18-8 STAINLESS	4
10	1015115	#12-14 X 1" SELF DRILLING SCREW, UNSLOTTED HEX WASHER HEAD, ZINC	6
11	1023935	ORING / OLD # 11 70 DURO 2-113-N70	4
12	1031121	MOUNTING KIT FOR 50 GALLON UR50S UPRIGHT RESERVOIR	1
13	1056189	H036316-16Z-616-616-17.5" CUT HK420 HK840 HYDRA-KOOL HOSE	1
14	1068254	SIGHT GAUGE/TEMP 5" METRIC THREAD BLACK ANODIZED	1
15	1087964	GAUGE, FILTER INDICATOR, 0-60 PSI	1
16	1090203	FB-10-00-0 03-0-0	1
17	1090319	RG11, GASKET, TR/TS FILTER, REPLACES O-RING (ZINGA)	1
18	1090428	2"MX1-1/4"F NPT-23GPM-100MESH-3PSI-STEEL BUSH SUC STRAINER	2
19	1090448	SUCTION / RETURN LINE TANK TOP FILTER (ZINGA)	1
20	1096203	18-8 STAINLESS STEEL SOCKET HEAD SCREW 3/8 X 16	16
21	1200178	MA-12 COOLER, DEUTSCH CONNECTOR, 12VDC FAN, NO BYPASS, AND NO TEMP SENSOR PORT	1
22	1205984	WLDMT, HK4 RESERVOIR, PC	1
23	1205987	WLDMT, UK FAN COVER, ALUM, PC	1
24	1205988	FFP, UK 12VDC STANDOFF, AL	4
25	1206079	PERFORATED SHEET, .06" THICK, HOLE SIZE .25" SPACING .313", PC BLUE	1
26	1206918	NO-SLIP CLIP-ON BARREL NUT 3/8 X 16	4
27	1207215	UK DECAL SHEET - DANGER DECAL	2
28	1207215	UK DECAL SHEET - CASE DRAIN DECAL	1
29	1207215	UK DECAL SHEET - NPT SUCTION DECAL	2
30	1207215	UK DECAL SHEET - FILL LEVEL DECAL	1

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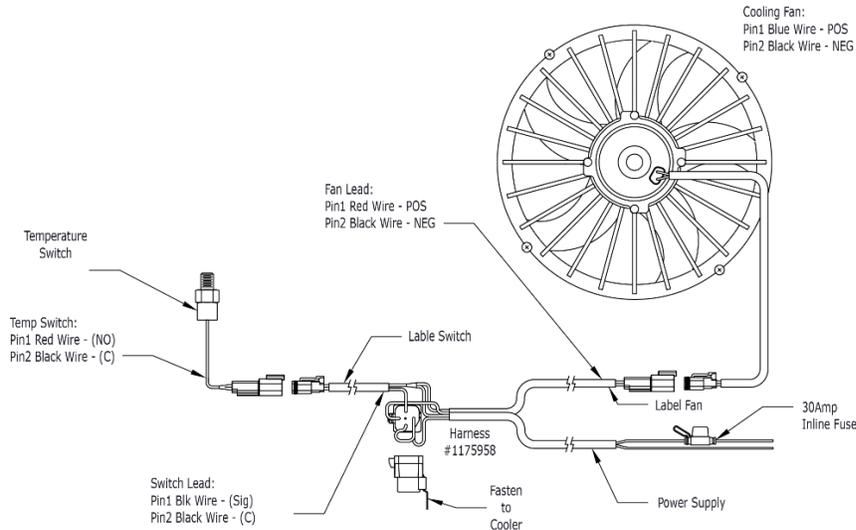
## UK4-20-12VDC-AL – Dimensions



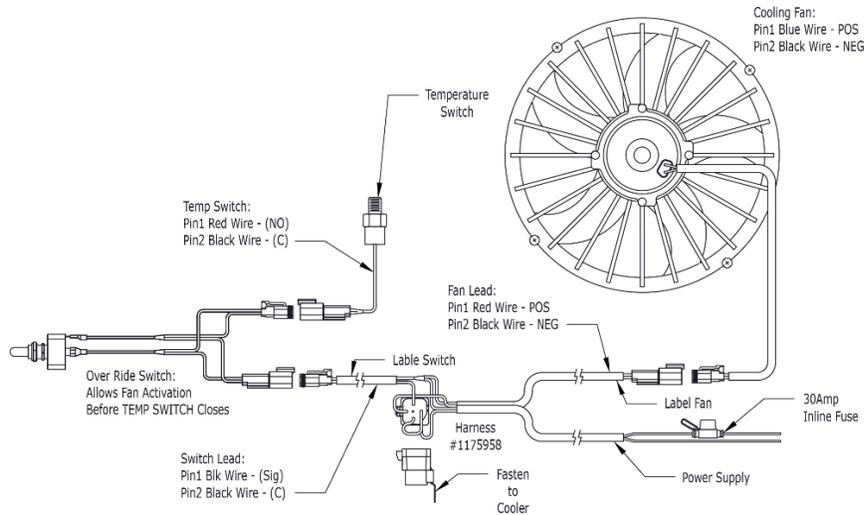
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## UK4-20-12VDC-AL – Electrical Start Options



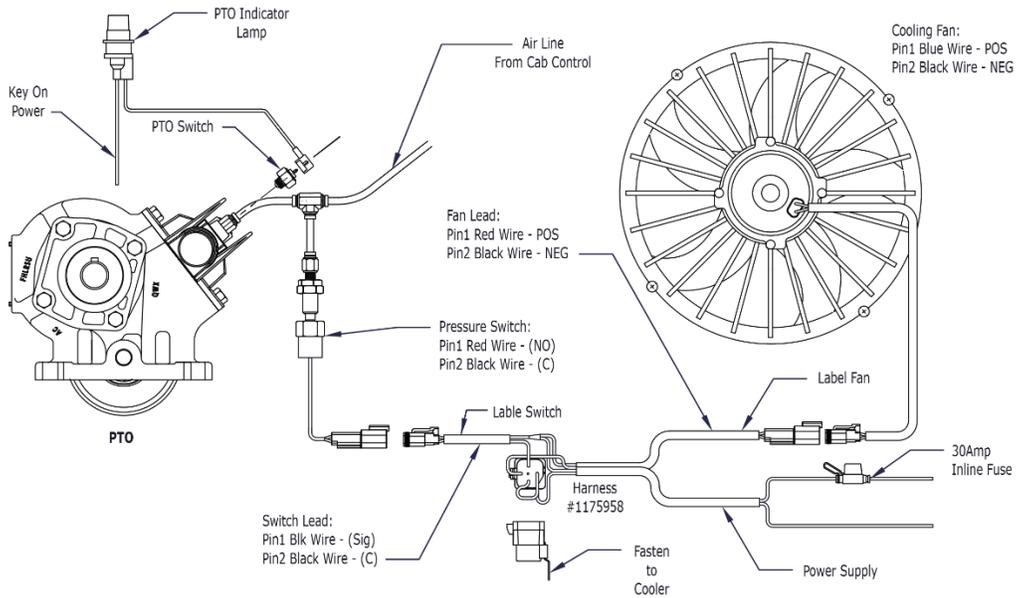
Temperature Switch Fan Activation



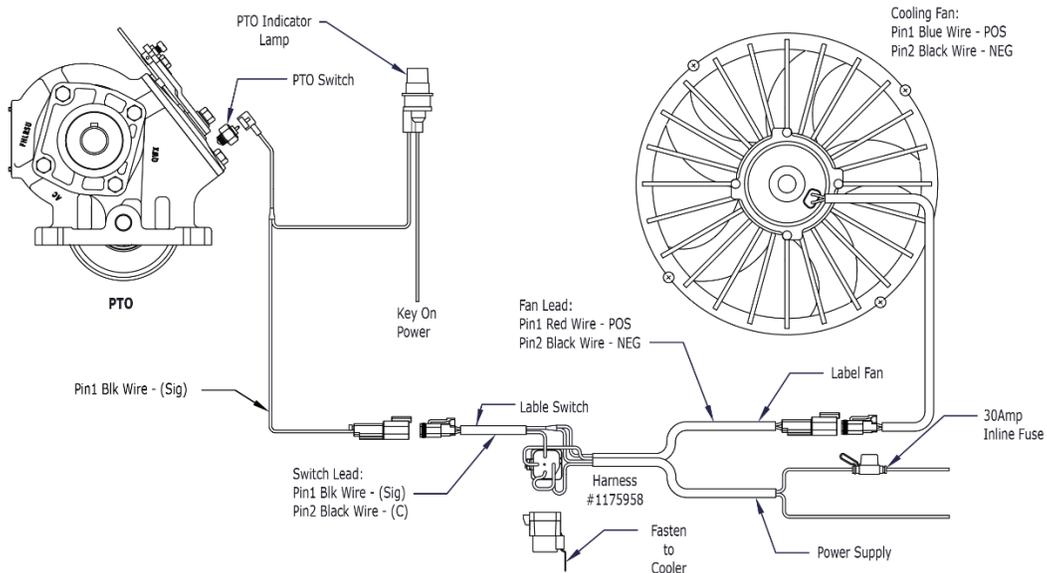
Temperature Switch Fan Activation W/Override

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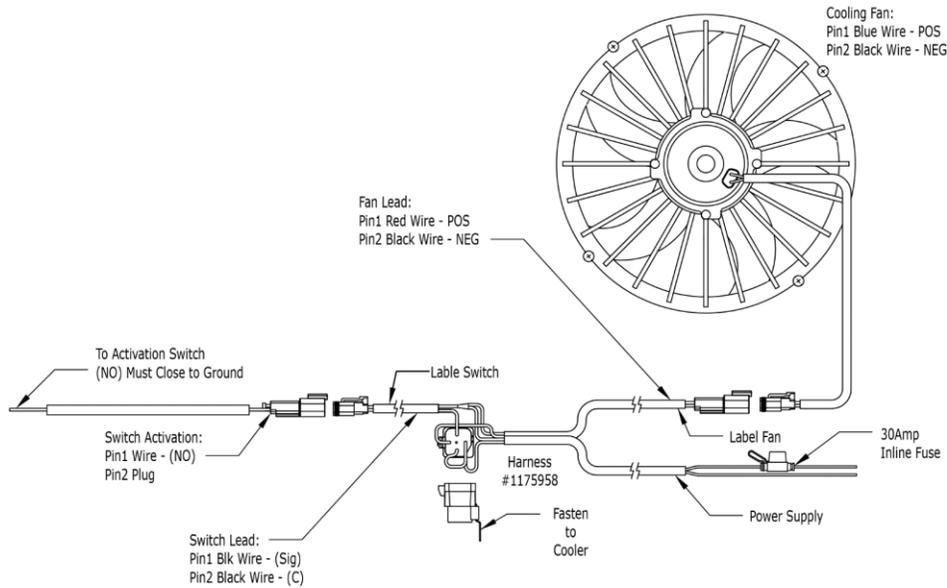
### Air Shift PTO Fan Activation



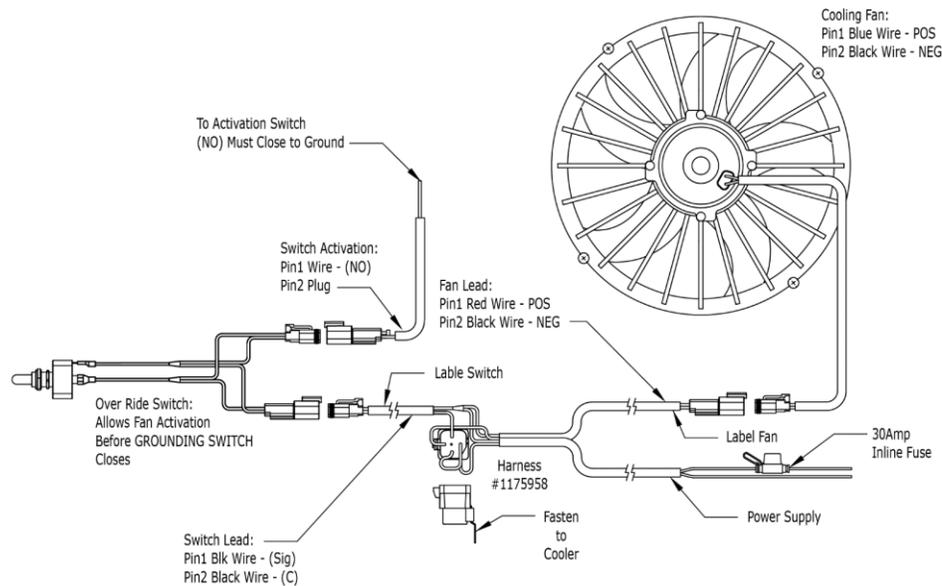
### Cable Shift PTO Fan Activation

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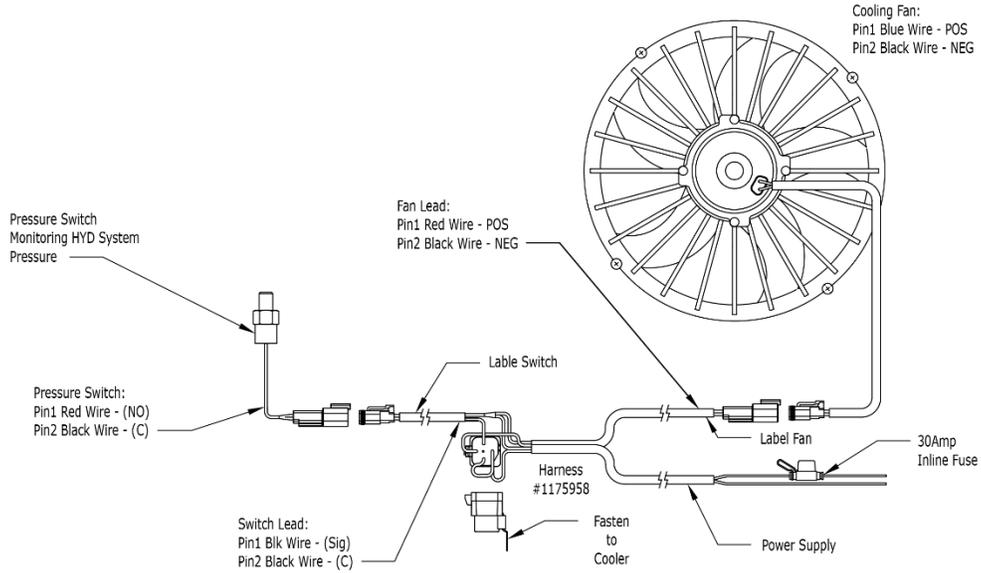
### Grounding Switch Fan Activation



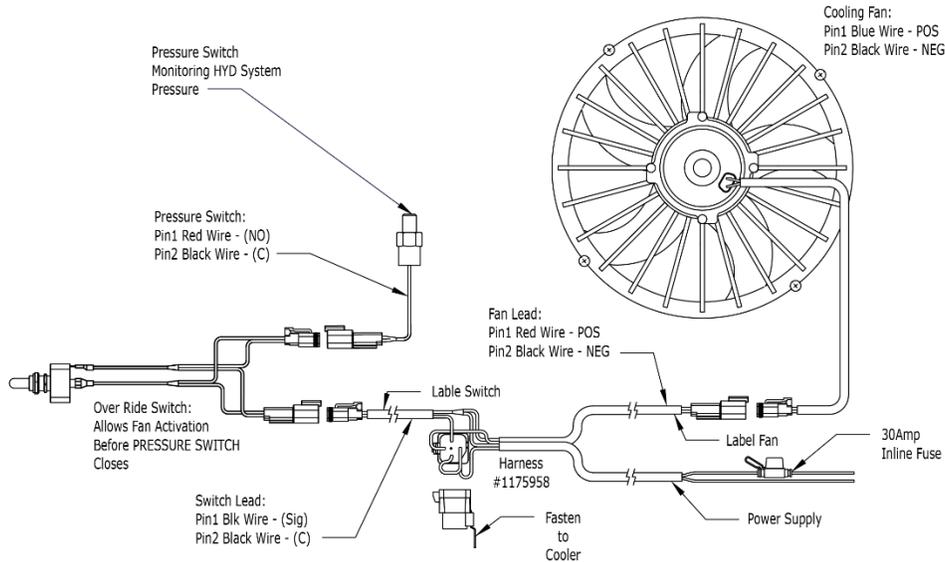
### Grounding Switch Fan Activation W/Override

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### Pressure Switch Fan Activation



### Pressure Switch Fan Activation W/Override

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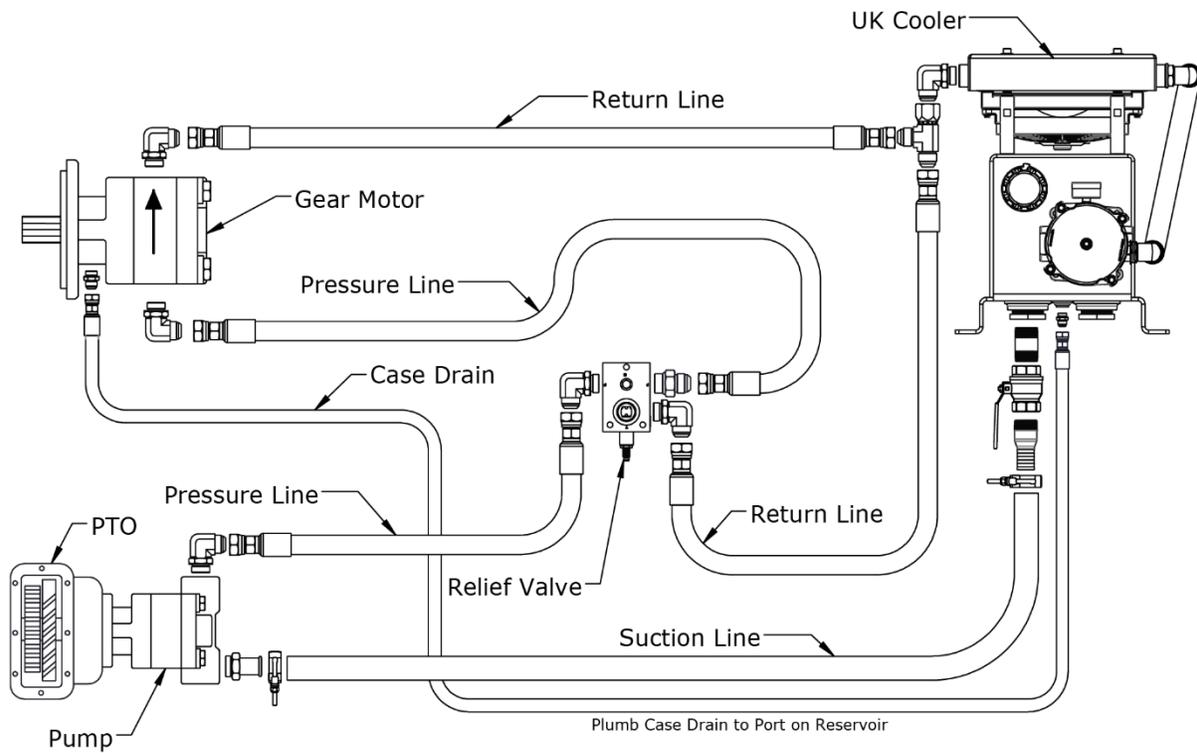
## ELECTRICAL KIT COMPONENTS

ITEM	DESCRIPTION	QTY
<b>MAIN HARNESS</b>		
1175958	Harness, Main, Cooler, Deutsch, w/ Relay, 144" (Used with MAR-12-225715)	1.00
<b>PRESSURE SWITCH</b>		
1069985	Pressure Switch, Set 25 PSI, Female Deutsch DT04-2P Connection	1.00
<b>TEMPERATURE SWITCH</b>		
1128418	-8 ORB 120°F Temp Switch, 5/8" Long Probe, N.O., 18" Flying Lead	1.00
<b>PLUG CONNECTOR KIT (DT06-2S)</b>		
1017929	Connector, DT, Plug, 2 Way, Size 16, DT06-2S	1.00
1040708	Deutsch Wedgelock for DT06-2S	1.00
1100400	Deutsch Female Socket, 1062-16-0122	2.00
<b>RECEPTICAL CONNECTOR KIT (DT04-2P)</b>		
1017930	Connector, DT, Receptacle, 2 Way, Size 16, DT04-2P	1.00
1017933	Wedgelock, Receptacle, DT, 2 Way, Size 16, W2P	1.00
1018110	Deutsch male pin, 1060-16-0122	2.00
<b>SAMPLE KIT FOR TEMPURATURE ACTIVATION</b>		
1175958	Harness, Main, Cooler, Deutsch, w/ Relay, 144" (Used with MAR-12-225715)	1.00
1128418	-8 ORB 120°F Temp Switch, 5/8" Long Probe, N.O., 18" Flying Lead	1.00
1017930	Connector, DT, Receptacle, 2 Way, Size 16, DT04-2P	1.00
1017933	Wedgelock, Receptacle, DT, 2 Way, Size 16, W2P	1.00
1018110	Deutsch male pin, 1060-16-0122	2.00

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## UK4-20-12VDC-AL – Typical Plumbing Layout



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## UK4-20-12VDC-AL – Startup Procedure Steps

1. Mount unit to truck chassis.
2. Plumb all hydraulic lines per plumbing diagram and application diagrams.
3. Fill the Reservoir to the high end of the sight gauge.
4. Engage PTO at low RPM levels.
5. Continually add oil to make sure oil level stays visible within the sight gauge.
6. After the oil level stays steady check for leaks and repair before continuing.
7. Verify fan operation for either hydraulic or electric fans.
8. Slowly increase PTO speed to get desired pump RPMs.
9. Run system until oil gets to temp (electric) and verify oil is being cooled (both fan types). It should take roughly 5-10 minutes to verify.
10. Operate all functions of the system to verify the system is properly bled of air.
11. Disengage PTO.
12. The system is functional and ready for full operation.

## UK4-20-12VDC-AL – Maintenance Recommendations

**General** — Look over your Ultra-Kool system before each use to make sure there are no leaks, and all components are good working order.

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**Oil** — Replace every 12 months or sooner depending on operational conditions. Only oil based hydraulic fluids should be used in this system. Please contact FORCE America if you have any questions related to the fluid you'd like to use in your system.

**Filters** — Replace as indicated by the gauge on the return filter housing. Replacement filter part number can be obtained from the parts breakdown diagram.

**Hoses** — Replace hoses due to any leaks or a visual inspection revealing abrasions or cracking.

**Cooler** — Rinse every 3-6 months with low pressure water (under 200 PSI). When used in dirty environments, it is recommended to rinse the cooler more frequently for optimal performance.

## UK4-20-12VDC-AL – Troubleshooting

**Cooling** – If system is not cooling properly check the following items.

- Clean or rinse the cooler to remove debris
- Check to make sure the fan is engaging and functioning properly
- Check for additional heat coming from relief valves not functioning properly
- Check to make sure you don't have pump cavitation in your system

**Noise** – If the system is making excessive noise check the following items.

- Fan is engaging and functioning correctly
- Check oil level is in the center of your sight gauge
- Make sure all bolts are securely fastened on the unit

## UK4-20-12VDC-AL – Product Information

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## Technical Specifications:

Dry weight ..... 65 lbs.  
Height ..... 20.21 inches  
Depth ..... 20.5 inches  
Width ..... 20.64 inches  
Oil capacity ..... 4 gallons  
Fan speed ..... 3600 rpm  
Drain port.....1 – 8 ORB  
Suction port.....2 – 2” NPT  
Case drain.....1 – 8 ORB

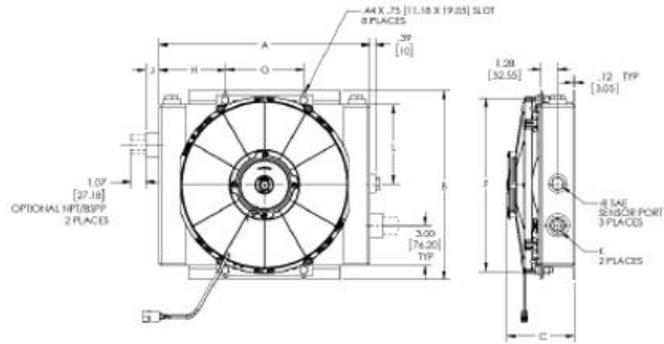


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## MA-12 – Hydraulic Cooler Specifications

MA-12, MA-18, MA-32

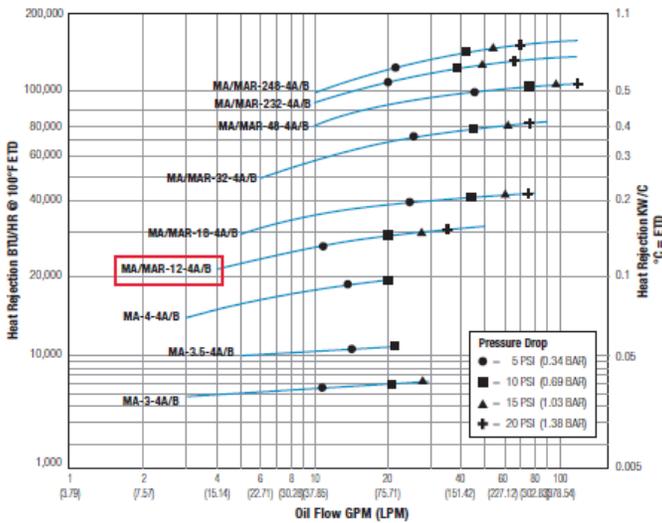


Brushless fan option has different dimensions. Consult factory.

Model	A	B	C		F		G	H	J	K		
			Standard	Brushless	Without Bypass Valve	With Bypass Valve				SAE	NPT & BSPP	L
MA-12	13.82 (351)	11.97 (304)	6.36 (162)	6.06 (154)	10.98 (279)	11.86 (301)	5.71 (145)	4.06 (103)	1.00 (25)	#16 SAE	3/4"	4.88 (124)
MA-18	15.84 (402)	14.14 (359)	5.12 (130)	6.2 (157)	12.96 (329)	13.4 (341)	5.87 (149)	4.99 (127)	1.00 (25)	#12 SAE	3/4"	5.91 (150)
MA-32	19.69 (500)	18.46 (469)	6.15 (156)	6.28 (160)	17.30 (439)	17.9 (454)	12.00 (305)	3.84 (98)	1.10 (28)	#16 SAE	1"	8.07 (206)

Note: We reserve the right to make reasonable design changes without notice. All dimensions are in inches (millimeters) unless noted otherwise.

### MA Models - DC Fan Assemblies



Model	DC Amp Draw		Approx. Shipping Weight
	12V	24V	LBS (KG)
MA-3	5.7	3.6	6 (2.72)
MA-3.5	12.5	6.3	9 (4.08)
MA-4	12.5	6.3	16 (7.26)
MA-12	12.5	6.3	19 (8.62)
MA-18	10.6	5.3	23 (10.43)
MA-32	22.2	11.1	28 (12.70)
MA-48	22.2	11.1	45 (20.40)
MA-232	19.3*	9.7*	65 (29.48)
MA-248	19.3*	9.7*	90 (40.80)

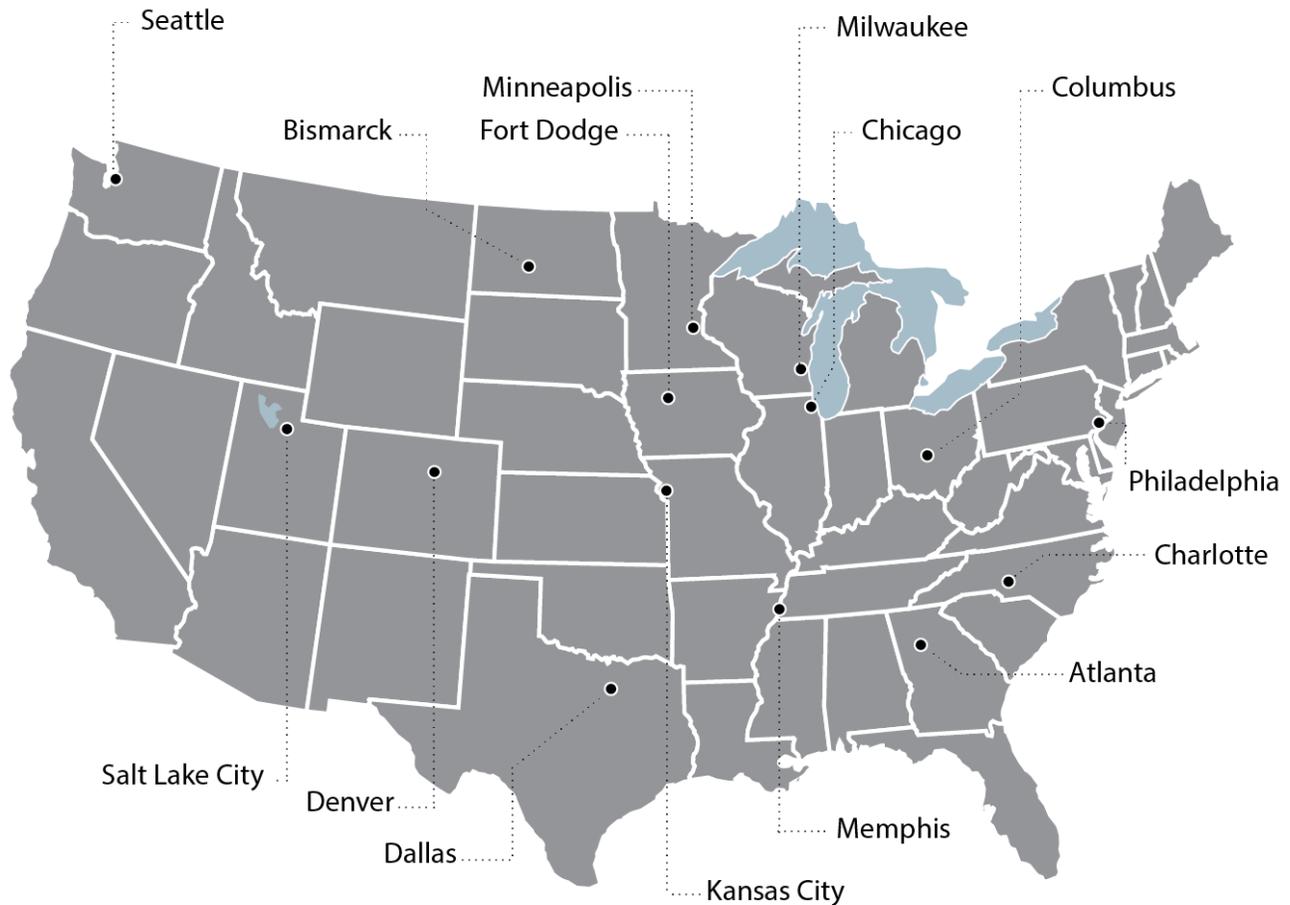
\*AMP draw listed as per FAN.

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## Contact Us



Atlanta, Georgia	888-293-2325
Bismarck, North Dakota	800-624-7568
Charlotte, North Carolina	800-788-8598
Chicago, Illinois	800-433-5765
Columbus, Ohio	888-449-0356
Dallas, Texas	800-893-7225
Denver, Colorado	888-833-7711
Fort Dodge, Iowa	800-362-2994

Kansas City, Missouri	800-383-4724
Memphis, Tennessee	888-845-5876
Milwaukee, Wisconsin	800-722-5844
Minneapolis, Minnesota	800-328-2732
Philadelphia, Pennsylvania	800-492-6621
Salt Lake City, Utah	877-230-0505
Seattle, Washington	800-354-9028