

MODEL Q-5

INSTALLATION INSTRUCTION SHEET

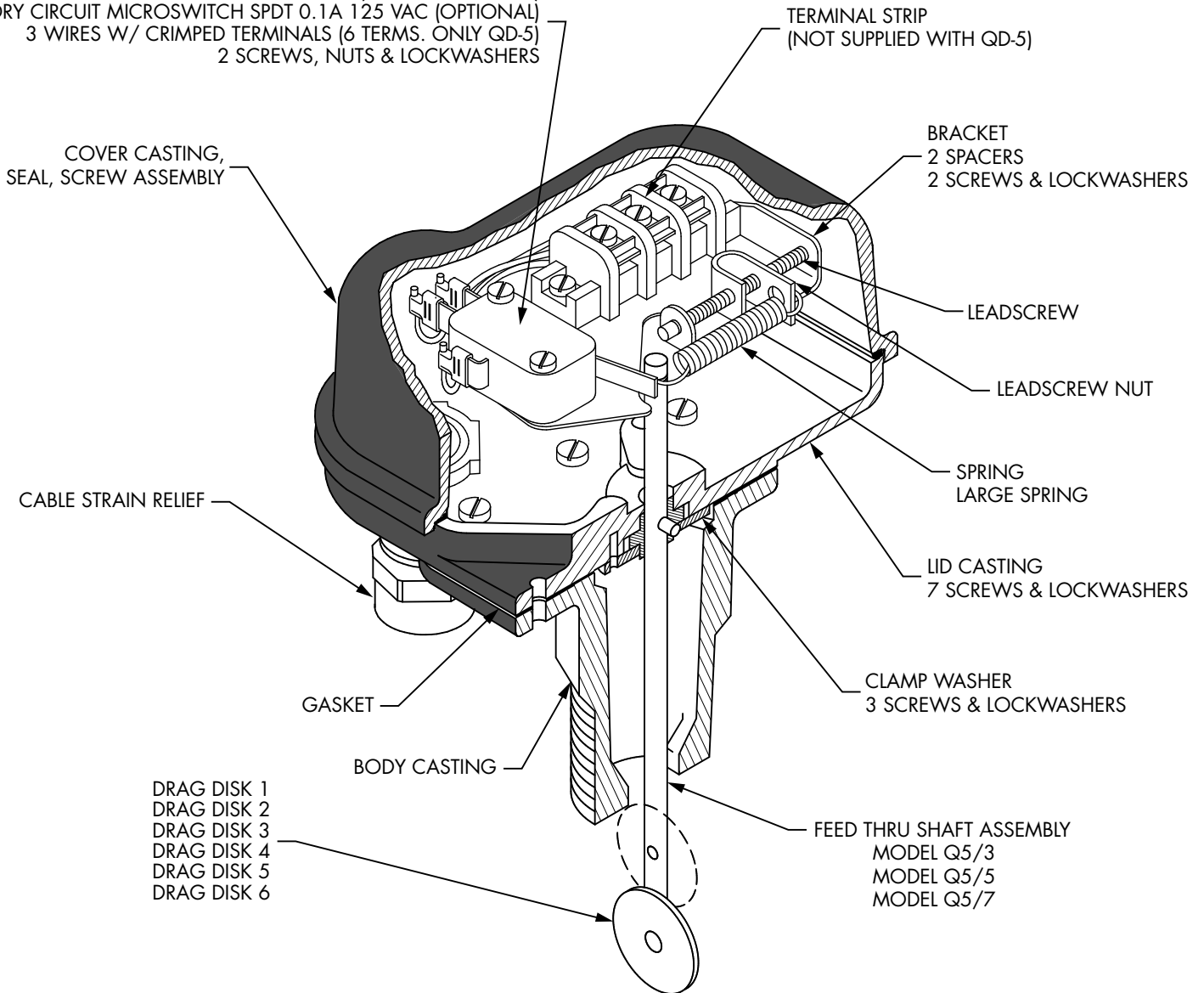
HARWIL CORPORATION

541 KINETIC DRIVE, OXNARD, CA 93030

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SPDT 15A MICROSWITCH 125/240 VAC (2 REQ'D FOR QD-5)
 DRY CIRCUIT MICROSWITCH SPDT 0.1A 125 VAC (OPTIONAL)
 3 WIRES W/ CRIMPED TERMINALS (6 TERMS. ONLY QD-5)
 2 SCREWS, NUTS & LOCKWASHERS



This parts list applies to all models of Q-5 and QD-5 fluid flow switches: Q-5/3, Q-5/7, QD-5/7.
 All letters and numbers added to model number after the above numbers apply to optional drag strips and electrical strain relief connectors.

PARTS LIST FLUID FLOW SWITCH

MODELS

Q-5

QD-5

INSTALLATION AND OPERATING INSTRUCTIONS

The gasket seal located between the main body casting and the lid casting is a cork-rubber composition, which is subject to a slight creep for a short period after application of the initial clamping load. All gaskets are properly clamped before shipment, however during shipping and storage, the gasket may compress, allowing the body-lid clamp bolts to become slightly loose. Tighten these bolts before assembling the flow switch in-system. No further creep of gasket will occur after second tightening. The Q-5 fluid flow switch is supplied with a male 1" NPT which is threaded into an appropriate pipe tee, large pipe with reducer bushing, or directly into a hole threaded 1" NPT in the wall of the pipe. Turn until tight and arrow on body casting is pointed in direction of flow.

ELECTRICAL WIRING

FIGURE 1: Wiring schematic for power applied to load when flow is GREATER than the set point (power to load interrupted when flow is LESS than set point).

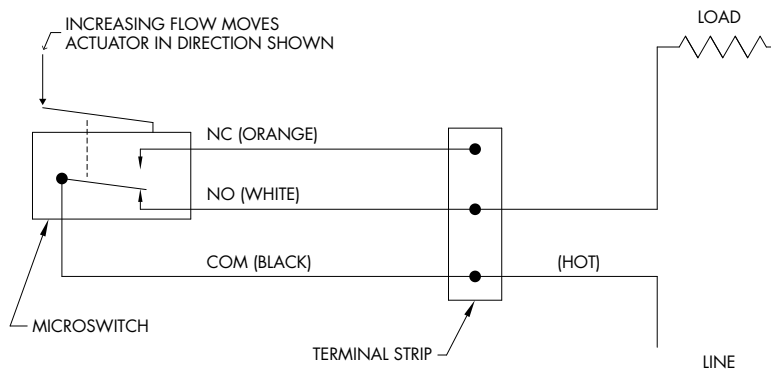
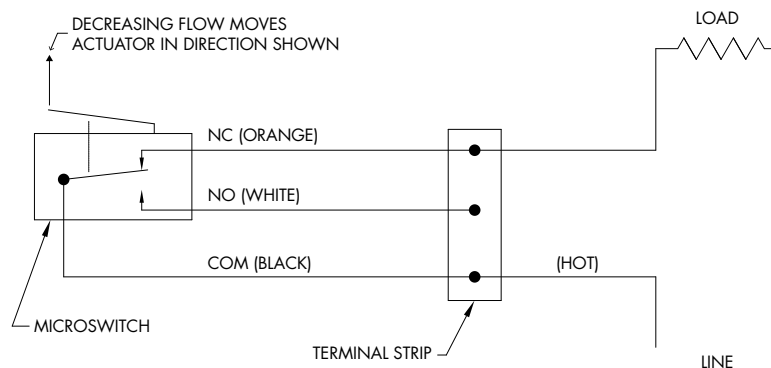
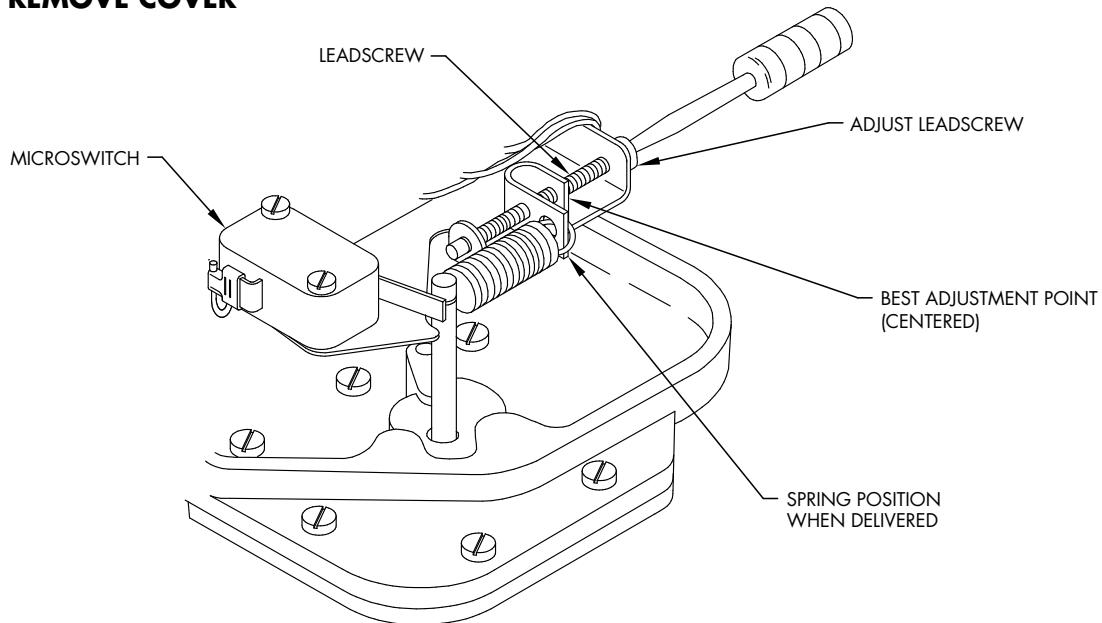


FIGURE 2: Wiring schematic for power applied to load when flow is LESS than the set point (power to load interrupted when flow is GREATER than set point).



Q-5 FLOW SWITCH OPERATIONAL ADJUSTMENT

REMOVE COVER



SWITCH POINT ADJUSTMENT

1. Remove cover.
2. Adjust fluid flow in system to desired rate **WITHOUT** regard to Q-5 switch point setting.
3. The switch point adjusting mechanism consists of an adjusting screw, a "U" shaped lead screw nut, and a helical spring.

CLOCKWISE rotation of the adjusting screw changes the microswitch actuation point toward **HIGHER** flow rates.

NOTES: All Q-5 units are factory set at the lower end of the flow range, e.g. the adjusting screw is set at the low flow counter-clockwise position.

The lead screw nut locks the adjusting screw in position, maintaining the flow switch set point under all environmental conditions.

4. Turn the adjusting screw in a clockwise direction until the microswitch is actuated, while maintaining the desired fluid flow rate in the system. Turn the adjusting screw **TWO (2)** additional turns in the clockwise direction and then slowly back off in a counter-clockwise direction, until the microswitch is again actuated. The Q-5 flow switch is now set for maximum sensitivity for detecting small flow changes.
5. When set for maximum sensitivity (100% point) as described above, flow turbulence may cause rapid on/off switching (dithering) of the microswitch contacts, resulting in reduced switch contact life

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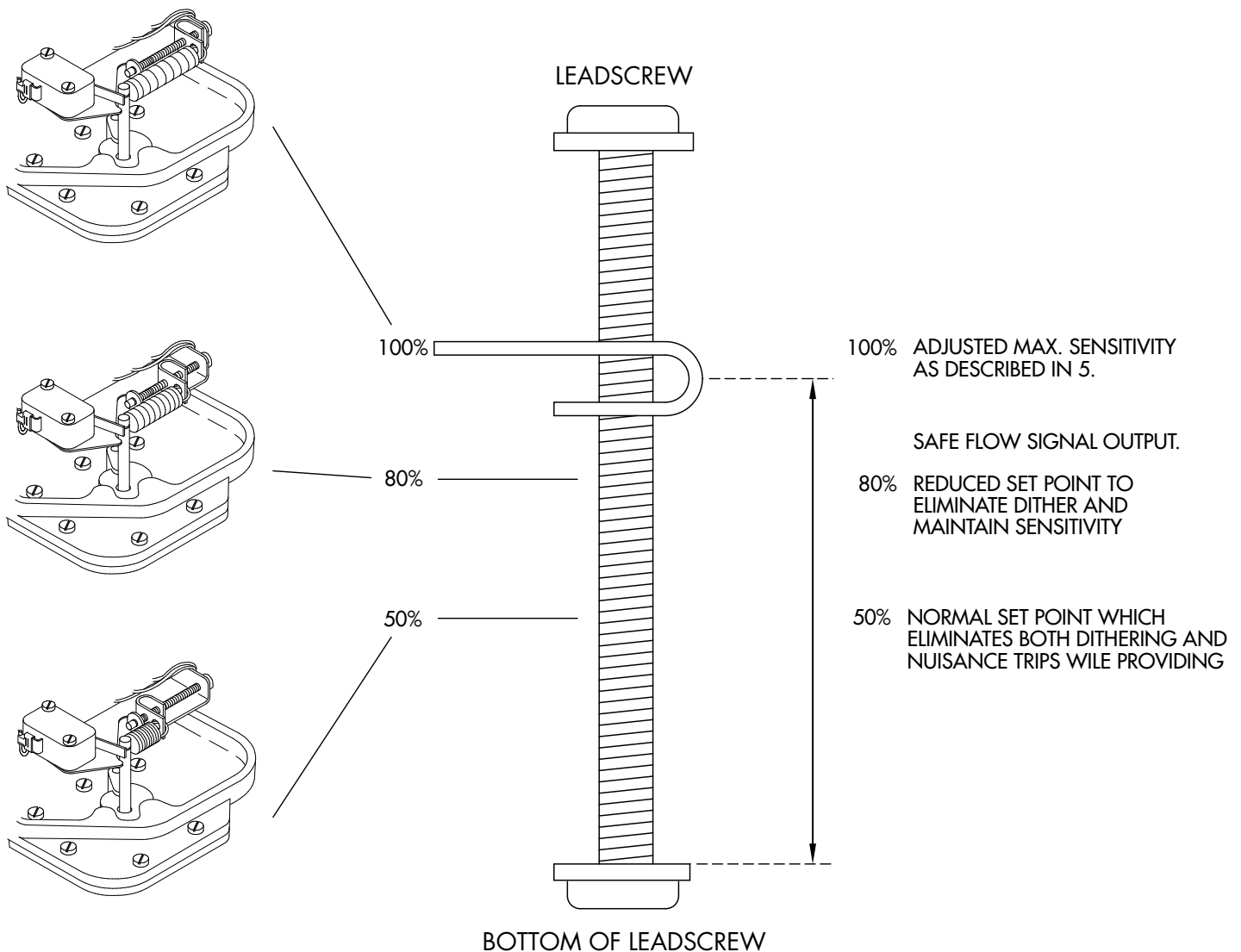
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and "noise" in the electrical circuit. This is eliminated by turning the adjusting screw in a counter-clockwise direction.

6. Microswitch actuation point may be monitored during the adjustment procedure detailed in steps 4 and 5 by an audible click or with an ohmmeter before connecting line power to the terminal strip, or by monitoring the voltage supplied to the load through the microswitch.
7. If the system flow rate is changed, the Q-5 can be adjusted to monitor the new flow rate by turning the adjusting screw in a counter-clockwise direction to the minimum flow position and then proceeding as in 4 and 5 above.
8. In the event that the system flow is at the desired rate and the adjustment mechanism runs out of



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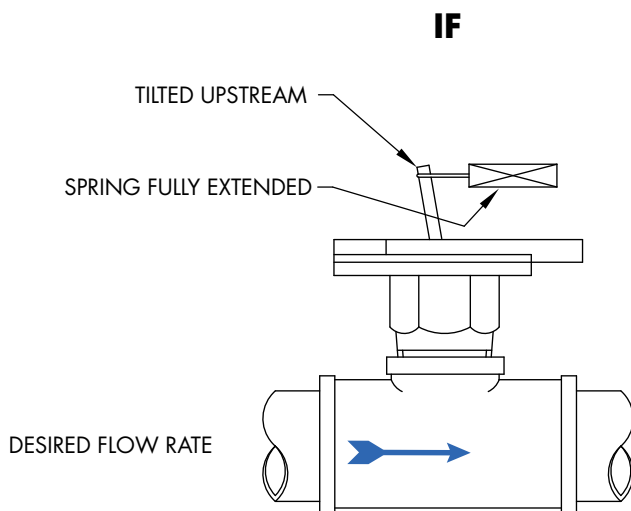
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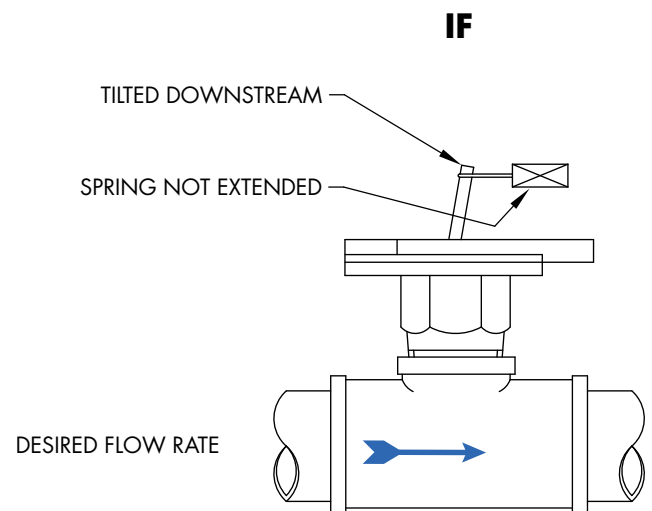
travel (e.g., the lead screw nut is at either end of the support bracket before the microswitch is actuated), then the drag disk must be changed to shift the flow switch flow range so that it straddles the system flow rate.

Example: If the Q-5 is fitted with a #2 drag disk and procedure 4 has been followed, the adjusting lead screw has been turned clockwise until the lead screw nut is at the extreme end of the support bracket and the microswitch has still not been actuated, then the flow is too low and different drag disk must be substituted and procedure 4 repeated.

GENERAL RULES FOR SELECTING A NEW DRAG DISK



THEN REPLACE DRAG DISK
WITH NEXT SMALLER SIZE



THEN REPLACE DRAG DISK
WITH NEXT LARGER SIZE

Drag Disk Change

1. Remove the flow switch from the pipe line.
2. Remove the small screws attaching the drag disk target to the feed thru shaft.
3. Replace the old target with a new one and tighten the screws.

Terminal Strip Wiring

1. Loosen the round gland nut located on the electrical cable fitting.
2. Insert the cable through the grommet in the electrical cable fitting and tighten the gland nut sufficiently to seal the cable in place.
3. Strip the conductor ends approximately $\frac{3}{16}$ "
4. Loosen the appropriate terminal strip screw and remove the empty terminal. Insert bare wire in terminal barrel and crimp. Place terminal strip in **SAME** orientation as received. This is **IMPORTANT**, since terminals and wires may interfere with the cover if the orientation is changed.

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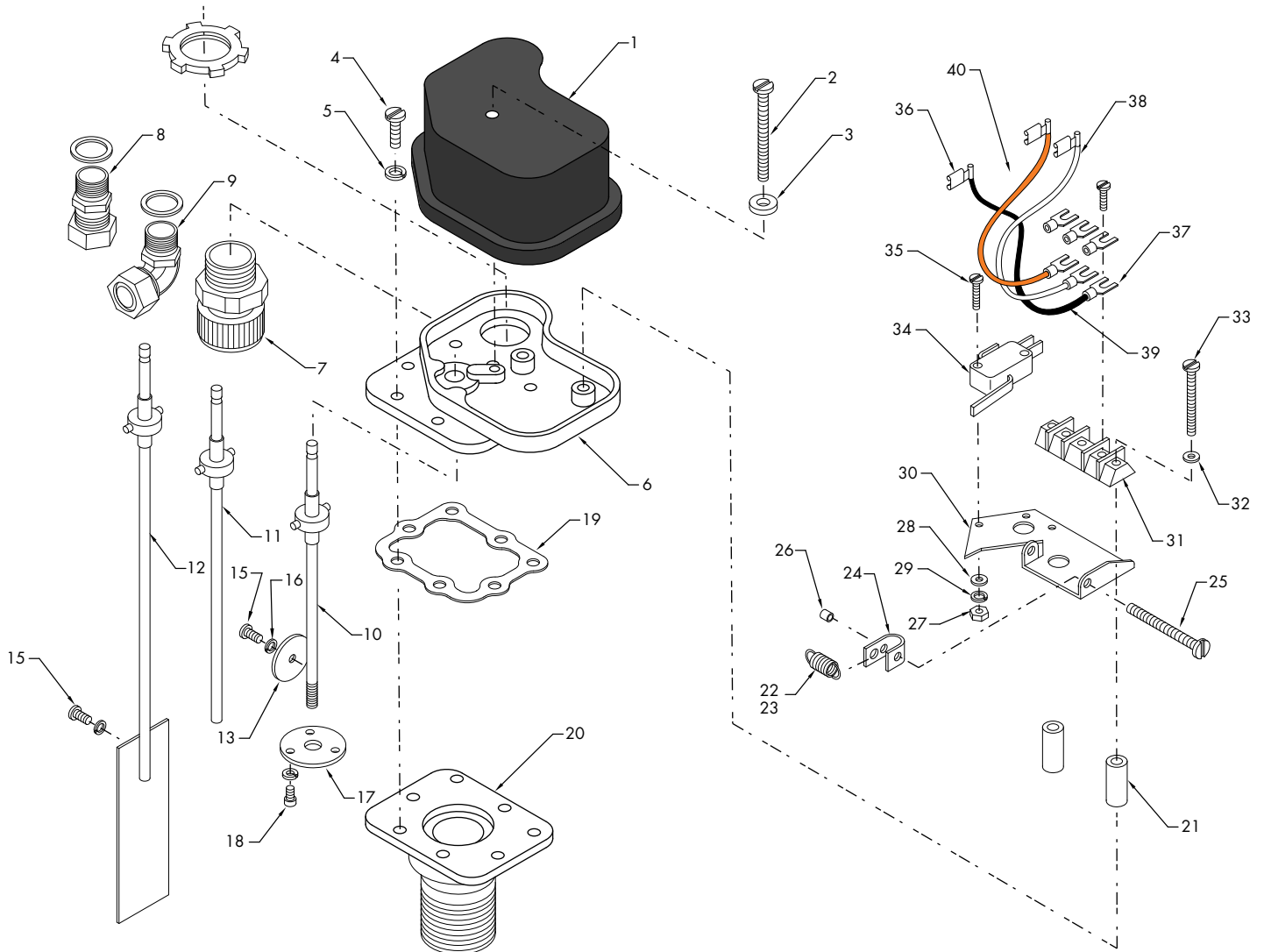
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Q-5 (SERIES 20200)							
#	PART NAME	QTY	PART #	#	PART NAME	QTY	PART #
1	COVER CASTING	(1)	20300	15	SCREW	(1)	152-S
2	SCREW	(1)	112-S	16	WASHER	(2)	311-W
3	LOCK WASHER	(1)	321-W	17	CLAMP WASHER	(1)	324-W
4	SCREW	(7)	107-S	18	SCREW	(3)	118-S
5	WASHER	(7)	319-W	19	GASKET	(1)	20307
6	LID CASTING	(1)	20301	20	BODY CASTING	(1)	20208
7	CONNECTOR CABLE (OPTIONAL)	(1)	60116	21	SPACER	(2)	20305
	BODY	(1)	10429	22	SPRING (Q-5/3 ONLY)	(1)	20316
	NUT	(1)	10430	23	SPRING (Q-5/5 AND Q-5/7)	(1)	20108
	GROMMET #A (OPTIONAL)	(1)	10440	24	LEAD SCREW NUT	(1)	20107
	GROMMET #AA (OPTIONAL)	(1)	10441	25	LEAD SCREW	(1)	132-S
	GROMMET #B (OPTIONAL)	(1)	10442	26	SHRINK WRAP	(1)	901-F
	GROMMET #C (OPTIONAL)	(1)	10443	27	NUT	(2)	201-N
	LOCK NUT	(1)	101-DC	28	WASHER	(1)	300-W
	O-RING	(1)	20117	29	WASHER	(2)	311-W
8	CONNECTOR CABLE (OPTIONAL)	(1)	20115	30	BRACKET	(1)	20314
9	CONNECTOR CABLE (OPTIONAL)	(1)	20116	31	TERMINAL STRIP	(1)	20102
10	FEED THRU SHAFT (ASSEMBLY ONLY) (OPTIONAL)	(1)	20201	32	WASHER	(2)	313-W
11	FEED THRU SHAFT (ASSEMBLY ONLY) (OPTIONAL)	(1)	20202	33	SCREW	(2)	117-S
12	FEED THRU SHAFT (ASSEMBLY ONLY) (OPTIONAL)	(1)	20203	34	MICROSWITCH	(1)	20103
	RUBBER MOLDED	(1)	20134	35	SCREW	(2)	116-S
	PIN	(1)	20135	36	TERMINALS	(3)	708-T
13	DRAG DISK #1 (OPTIONAL)	(1)	20303	37	TERMINALS	(3)	706-T
	DRAG DISK #2 (OPTIONAL)	(1)	20304	38	WIRE	(1)	20318
14	DRAG STRIP #3 (OPTIONAL)	(1)	20204	39	WIRE	(1)	20317
	DRAG STRIP #4 (OPTIONAL)	(1)	20205	40	WIRE	(1)	20319
	DRAG STRIP #5 (OPTIONAL)	(1)	20206	41	LABEL	(1)	20320
	DRAG STRIP #6 (OPTIONAL)	(1)	20207				



CERTIFICATE OF CONFORMANCE

All Harwil Corporation ("HARWIL") products are manufactured using new materials and components. Our products meet the applicable performance and materials specifications indicated in our current Specifications Sheets and Parts List. HARWIL endeavors to obtain its materials and components from American Companies.

DOMINANCE OF HARWIL LIMITED EXPRESS WARRANTY

Each user **MUST** make appropriate analysis and tests to determine the suitability of the HARWIL product for the intended use prior to purchase.

HARWIL warrants that all HARWIL products will be free from defects in material and workmanship for a period of one year from the date of original shipment. This Warranty shall be **LIMITED** to the replacement and reconditioning of our products and parts. HARWIL reserves the right and sole discretion to modify or change the composition, design and appearance of its products at anytime.

THIS WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OF MERCHANTABILITY AND OF ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE RELATING TO HARWIL PRODUCTS AND PARTS. BUYER'S SOLE REMEDY SHALL BE REPLACEMENT OR RECONDITIONING AS SET FORTH HEREIN.

HARWIL SHALL INCUR NO OBLIGATIONS HEREUNDER AND NO LIABILITY IN THE EVENT OF (1) BUYER NOT FULFILLING ITS RESPONSIBILITIES; INCLUDING AS SET FORTH HEREIN; (2) NEGLIGENCE, ALTERATION OR IMPROPER PRODUCT USE, INCLUDING USE WITH NON-COMPATIBLE DEVICES OR CHEMICALS; OR (3) REPAIR BY ANOTHER COMPANY OR PERSON THAN HARWIL.

ANY LAWSUIT RELATING TO THIS LIMITED EXPRESS WARRANTY MUST BE COMMENCED WITHIN ONE YEAR OF THE DATE THE LAWSUIT ACCRUES.

HARWIL provides **NO WARRANTY** and **ASSUMES NO RESPONSIBILITY** for corrosive attack on any material, component or design features associated with any of its products.

Corrosion resistance information listed in HARWIL specification sheets, information sheets and product brochures is solely for general background information. This information table has been compiled from literature published by various material suppliers and by equipment manufacturers who use these materials in their products. Inasmuch as these data are based on tests by entities over which HARWIL has no control, HARWIL **DOES NOT GUARANTEE AND DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE ACCURACY OF SUCH THIRD PARTY TESTING.** When using the table, please remember that in any given case several factors such as concentration, temperature, degrees of agitation and presence of impurities influence the rate of corrosion. The information table is intended, in a general way, to rate materials for resistance to chemicals which contain their usual impurities and for types of equipment in common use. Ratings should be used only as a general tool to first approximation of your material requirements rather than as the final answer.

WHEN IN DOUBT, TEST MATERIALS BEFORE INSTALLATION.

AFTER INSTALLATION, FOLLOW UP WITH SCHEDULED PREVENTATIVE MAINTENANCE AND PERIODIC INSPECTION.