ROBINSON MANUFACTURING COMPANY INC.

Recommended
Installation and Operating Instructions

Robinson Centrifuge Models 820A/B & 821A/B

For the best results it is recommended that the centrifuge be installed in an enclosure to protect it from ambient conditions, especially wind, and mounted on a piece of 3/4 inch plywood approximately 20"x 24" that has been securely fastened to the floor of the car trunk, pick-up bed or truck carrier. The plywood will give the centrifuge a flat surface to sit on, prevent any undo strain on the centrifuge and helps to insulate the centrifuge from the cold steel deck of the vehicle, especially during extremely cold weather. It will also act in part to absorb some of the shock during rough driving.

The models 820A/B and 821A/B are electrically heated centrifuges that operate on 12 volts DC. They are equipped with a rheostat control with a "off" position that gives the operator speed control of the centrifuge head from start to maximum operating speed, all in one knob. It is also equipped with two separate heater switches. An "on-off" bowl heater switch and a "high-off-low" pre-heater switch. The bowl heaters are thermostatically controlled and the pre-heaters are manually controlled.

The time required for the centrifuge and/or the sample to reach centrifuging temperature will depend on the ambient temperature of the location and the temperature of the sample. The pre-heater section heaters will heat the sample to 140°F in a few minutes. The bowl heaters will not allow the temperature of the sample to drop below 125°F during centrifuging.

INSTALLATION

1. Locate the centrifuge in the desired location.

2. The power source to the centrifuge must be direct from the battery. **Do not take the power from any existing vehicle wiring** (see drawing 100-A-227).

3. Check to make sure that your vehicle's alternator is rated at 75 amperes or higher. **DO NOT OPERATE THIS UNIT ON ANY LOWER RATED ALTERNATOR.**

4. The grounding strap in your vehicle alternator should be heavy duty. Normally the vehicle frame is grounded to the engine block. Check to ascertain that the strap is heavy duty and the bolts holding the strap are tight. We strongly recommend that a star washer be used where the ground strap is bolted.

5. Run a 8 gauge wire (supplied with the centrifuge) from the vehicle battery location to the centrifuge location. **Do not connect the wire to the battery at this time.**

6. Determine where the best location is for the circuit breaker, (furnished with the centrifuge). It should be located close to the battery. Secure the circuit breaker in place with two screws. Cut off a short section of the 8 gauge wire, at the battery end to go from the battery to the circuit breaker. The length will be determined by the location of the circuit breaker.

7. Install the #8 x 3/8 inch ring tongue terminal on the battery end of the cut off section of the wire. Peel off approximately 3/8 inch of the wire insulation and install the ring tongue

terminal with a crimping tool. Install a #8 x 3/16 inch ring tongue terminal on the circuit breaker end of the wire.

8. Secure the 3/16 inch ring tongue terminal to the circuit breaker. **DO NOT CONNECT THE WIRE TO THE BATTERY AT THIS TIME.**

9. Determine a good location for a contactor (not furnished with the centrifuge) and properly secure it to the vehicle.

10. Cut off a section of the 8 gauge wire to go between the circuit breaker and the contactor.

11. Install a #8 x 3/16 inch ring tongue terminal to the circuit breaker end of the 8 gauge wire and secure it to the circuit breaker.

12. Install a #8 x 5/16 inch ring tongue terminal to the contactor end of the wire and secure it to the contactor.

13. Install a #8 x 5/16 inch ring tongue terminal to the contactor end of the long wire going to the centrifuge. Secure the wire to the contactor.

14. Check the heater switches. They should be in the "off" position. The rheostat should also be in the "off" position, full counter clock-wise.

15. The centrifuge has two 8 gauge wires running out of it. One is the ground wire (black) and has a ring tongue terminal installed on the end, the other is the positive lead (red). It is important that the ground wire is kept short as possible. Therefore locate a place on the vehicle close to the centrifuge to secure the ground wire. Clean the spot down to bare metal. Drill or punch a small hole for a screw. Care should be taken so not to punch any adjoining objects Install the ground wire to the vehicle's body. Secure tightly. **This is very important.**

16. Cut the wire going from the contactor solenoid to the centrifuge to the proper length. Peel off approximately 3/4 inch of wire insulation and insert into a butt terminal of the centrifuge positive lead and crimp.

17. Run a 16 gauge wire from one terminal of the contactor solenoid to the vehicle ignition. Ground the other solenoid terminal to the vehicle.

18. At this time make sure that everything is in place and is correctly secured. Be sure that he ignition switch is turned off, the keys are not in the vehicle and all three centrifuge switches are in the off position.

19. The battery end of the 8 gauge wire goes to the positive post of the battery. Remove the screw or nut that is holding the cable to the battery. Slip the ring tongue terminal over the battery post and secure both cables to the battery.

20. The centrifuge is now ready for use.

OPERATION PROCEDURES

1. Start the vehicle. The centrifuge should never be operated without the vehicle running. When the heating elements are on they will draw approximately 32 amperes and this will run the vehicle's battery down in a few minutes.

2. The centrifuge is equipped with two separate heater switches. The bowl heaters are operated by a "on-off" switch and are thermo-statically controlled. The pre-heaters are operated by a "high-off-low" switch and are manually controlled.

3. If the samples require heating, flip the bowl heater switches to the "on" position. This should be done sufficiently ahead of time to allow the centrifuge to get warm. Depending on the ambient conditions, the time required is between 30 to 60 minutes.

4. Fill two centrifuge glass tubes with solvent/crude oil mixture and place them in the two heated pre-heater pockets (The two pockets to the right of the pre-heater switch). Turn the switch to the "high" position. Leave them there until the temperature of the samples rise to the required (**in most cases 140° degrees F**) temperature.

   Because hot fluid rises to the top, any time the temperature is taken, it should be taken at the mid-point of the sample or to secure an accurate reading the sample should be shaken or stirred with a thermometer's stem and then the temperature should be taken.

5. Place the heated samples into the centrifuge aluminum shields. Always be sure to place the samples on opposite sides of the centrifuge head to establish a balanced condition.

6. Close the centrifuge lid.

7. Turn the centrifuge control knob clock-wise, slowly, to the full open position.

8. Allow to centrifuge to specifications.

9. Turn the control knob counter clock-wise to the "off" position.

10. Allow the centrifuge to come to a complete stop before opening the lid.

11. Remove the centrifuged samples.

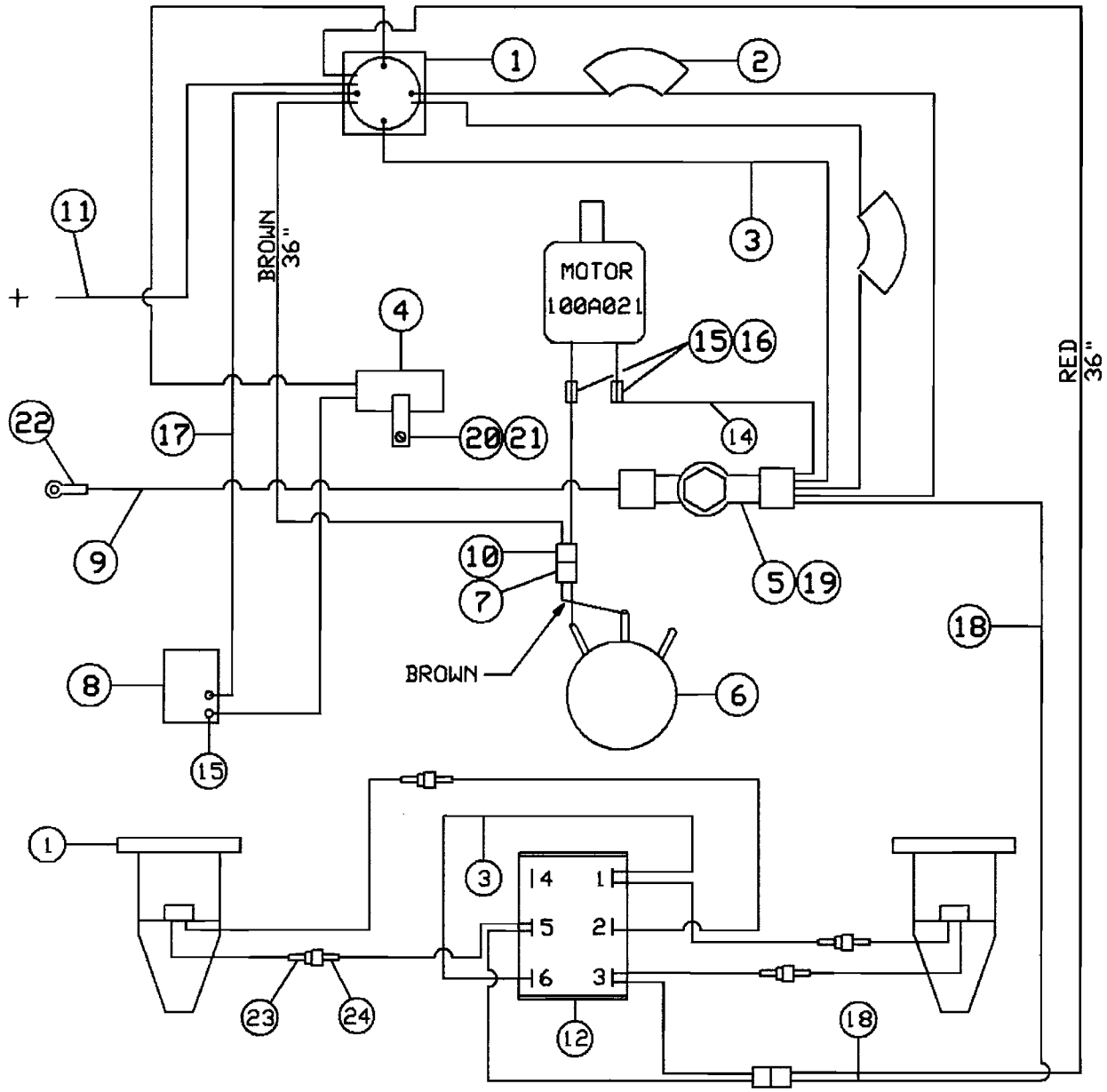
12. Keep the centrifuge lid closed at all times whether in operation or not.

13. **Pre-heater section:** The "high-off-low" manually controlled pre-heater section offers great flexibility. Two glasses containing solvent/diluent can be carried in the pre-heater section with the switch on low between loads. This keeps the solvent warm, but does not over heat it, eliminating the possibility of boiling the water out of the solvent. At the time the operator retrieves his/her equipment to gather a sample they can flip the switch to high. During the time it takes to gather the sample the temperature of the solvent will rise considerably, in the range of 170° F degrees. The crude oil sample is then cut with this hot solvent and placed back in the pre-heater pockets. The time to elevate the temperature of the sample is reduced.

14. **Bowl Heaters:** The bowl heaters are thermostatically controlled. Therefore at the start of the day the bowl heaters can be turned on and left on.

15. When the centrifuge is not being used or when heating the samples is not required, turn the heater off. This will extend the life of the heaters.

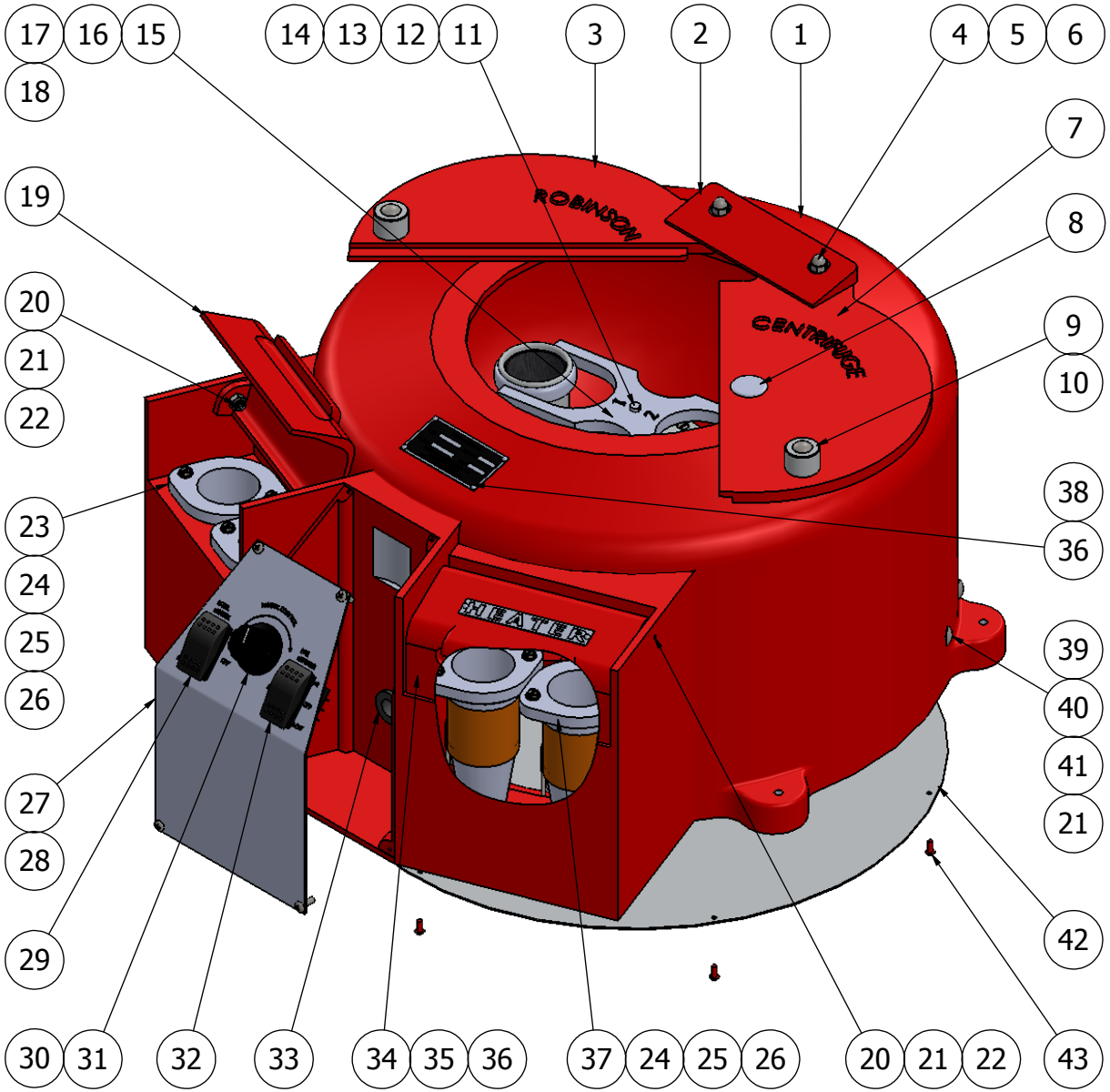
CAUTION: Because the temperature of the centrifuge housing reaches approximately 160°F when at full operating heated conditions, care should be taken when working with the centrifuge.



BILL OF MATERIALS

IT.	QT.	PART NO.	DESCRIPTION
1	1	100A123	CONTACTOR
2	2	100A139	HEATER, TRAP 14V
3	12"	100A051	WIRE, BLACK, 18 GA.
4	1	100A197	THERMOSTAT 175° F
5	1	100A175	RTT
6	1	100A011	RHEOSTAT
7	1	100A718	QUICK CONNECT, 4"
8	1	100A724	SWITCH, ON-OFF SPST
9	30"	100A243	WIRE-BLACK, 8 GA.
10	1	100A719	QUICK CONNECT, 24"/36"
11	30"	100A194	WIRE-RED, 8 GA.
12	1	100B042	SWITCH ASSEMBLY
13	2	100B037	HEATER ASSEMBLY, 12 V.
14	18"	100A169	WIRE, BLACK, 14 GA.
15	4	100A313	TERMINAL F, 16-14
16	2	100A315	TERMINAL M, 16-14
17	36"	100A242	WIRE, RED, 14 GA. 36"
18	1	100A717	QUICK CONNECT, 24"/36"
19	1	100A614	SCREW, 10-24x1/2"
20	1	100A427	CLAMP
21	1	100A604	SCREW, 10-24x3/8"
22	1	100A116	RTT
23	4	100A720	PUSH-ON TERMINAL F
24	4	100A721	PUSH-OH TERMINAL M

ROBINSON MFG. CO., INC.	MODELS	820A	821A	SCALE	DRAWN BY MACK
		820B	821B	NONE	REVISED 7-30-12
	WIRING DIAGRAM			DATE 12-14-94	DRAWING NUMBER 100A723



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	100A649	CASTING
2	1	100A735	BRACKET/STOP, SERIES 800-B
3	1	100A734	LID, SERIES 800-B, LEFT
4	2	100A031	STUD, DOUBLE END
5	4	100A590	FLAT WASHER
6	2	100A726	NUT, ACORN
7	1	100A734	LID, SERIES 800-B, RIGHT
8	1	100A073	SNAP-IN HOLE PLUG
9	2	100A667	CENTRIFUGE KNOB 820B
10	2	100A371	BOLT, CARRIAGE
11	1	100A021	MOTOR
12	2	100A145	LOCK NUT, 10-32
13	1	100B016	MOTOR MOUNT PLATE
14	3	100A307	SCREW
15	1	100B018	HEAD ASSEMBLY, 2 PLACE
16	2	100A115	SHIELD, 100ML SHORT CONE
17	2	100A592	100 ML SHIELD, FELT
18	2	100A376	CUSHION 100ML SHORT CONE
19	1	100A731	COVER, PRE-HEATER
20	4	100A616	HINGE SCREW
21	6	100A122	NUT, 1/4"-20
22	4	100A730	WASHER, STAINLESS STEEL
23	2	100A585	PRE-HEATER TUBE CASTING
24	4	100A588	PRE-HEATER SC GASKET
25	4	100A589	HEATER CUSHION
26	8	100A151	SCREW
27	1	100A387	COVER, CONTROL PANEL
28	4	100A177	SCREW
29	1	100A724	SWITCH, SPST
30	1	100B050	RHEOSTAT ASSEMBLY
31	1	100A010	KNOB, RHEOSTAT
32	1	100B042	SWITCH ASSEMBLY
33	1	100A591	RUBBER GROMMET
34	1	100A947	COVER, PRE-HEATER
35	1	100A941	HEATER PLATE
36	6	100A016	DRIVE SCREW
37	2	100B037	PRE-HEATER ASSEMBLY
38	1	100A009	NAME PLATE
39	1	100A123	CONTACTOR
40	2	100A121	CARRIAGE BOLT
41	2	100A045	WASHER, SPLIT 1/4"
42	1	100A118	BOTTOM PLATE, 820 & 870
43	6	100A093	RIVET
44	1	100A623	POWER CHORD

ROBINSON MANUFACTURING COMPANY INCORPORATED

CENTRIFUGE 821B	SCALE NONE	DRAWN BY MES	
		REVISED 11-15-13	
ASSEMBLY DRAWING	DATE 1/30/2012	DRAWING NUMBER 821B	