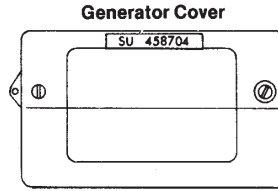
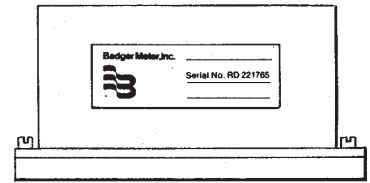


IDENTIFICATION

GENERATORS. Badger Read-o-Matic generators are designed for use with all major brands of hardcase gas meters manufactured in the U.S.A. Although the basic design of the generators is the same, slight variations are required to adapt the generator to different gas meter configurations. A serial number code, that corresponds to the different makes and models of gas meters, is used to identify each generator relative to the gas meter with which it is to be used. (Refer to the identification tables listed above.)



Residential Gas Read-o-Matic



Commercial Gas Read-o-Matic

SERIAL NUMBER IDENTIFICATION TABLES FOR READ-O-MATIC GAS METERS

ROOTS GAS METER				
Industrial and Residential Applications				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Gen. No.	
1.5M 125/175	10*	1.5M LM	34778-007	
3M 125/175	10*	3M LM	34778-007	
5M 125/175	10*	5M LM	34778-007	
7M 125/175	10*	7M LM	34778-007	
11M 125/175	10*	11M LM	34778-007	
2M 900	10*	2M LM	34778-007	
3M 1440	10*	3M LM	34778-007	
3.6M 600	10*	3.6M LM	34778-007	
4.6M 900	10*	4.6M LM	34778-007	
7M 1440	10*	7M LM	34778-007	
16M 125/175 Alum.	10*	16M LM	34778-007	
8M 400	100**	8M FM	34778-007	
11.5M 400	100**	11.5M FM	34778-007	
16M 125/175 C.I.	100**	16M FM	34778-007	
19M 400	100**	19M FM	34778-007	
23M 125	100**	23M FM	34778-007	
38M 125	100**	38M FM	34778-007	
56M 125	100**	56M FM	34778-007	
102M 125	100**	102M FM	34778-007	
102M 300	100**	102M FM	34778-007	

*Registration = 100 Cu. Ft.
**Registration = 1000 Cu. Ft.

ROMET GAS METER				
Industrial and Residential Applications				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Gen. No.	
RM 2000	10*	2M	34778-007	
RM 3000	10*	3M	34778-007	
RM 5000	10*	5M	34778-007	
RM 7000	10*	7M	34778-007	
RM 11000	10*	11M	34778-007	

*Registration = 100 Cu. Ft.

SPRAGUE GAS METER					
Residential Applications					
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Generator Numbers		
Straight Face	175, 210, 240, 250, 1A	2	SP	32983-000	58572-001
	305	2	SPA	32983-001	58572-002
Slope Face	175, 210, 240, 250, 400	2	SSA	32983-003	
		2	SPB	33793-000	58572-003
		2	SSB	33793-001	
		2	SPA	32983-001	

NATIONAL GAS METER				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Generator Numbers	
175,250	2	N	—	58290-001

AMERICAN GAS METER				
Residential Applications				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Generator Numbers	
AL75, 175, AC175, AT210, 225, 250, AT250	2	A5	32655-000	58570-001
AL425	1	A10	32655-001	58570-002
	2	A5A	32655-006	58570-003
W-175 Forked Coupling	2	A5B	32655-015	58570-007
W-210 Recessed Drive Pawl	2	A5C	32655-016	58570-008
Direct Read Index	2	A5D	32655-017	—
	1	A10D	32655-018	—

*1,000 Cu. Ft. per Pulse

ROCKWELL GAS METER				
Residential Applications				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Generator Numbers	
R175, R200, R250, R275, R310, R315, RT200, RT230, RT275	2	R	32655-003	58571-001
175S	2	RA	32655-004	58571-002
RT360, 415	2	RB	32655-005	58571-003
RA-90	1	RC	32655-007	58571-004
S190, RT100	2	RG	32655-028	58571-010

*1,000 Cu. Ft. per Pulse

SUPERIOR GAS METER				
Residential Applications				
MODEL NUMBER (Hardcase)	Index T.C. Cu. Ft.	Ser. No. Ident.	Generator Numbers	
175, 250, 340	2	SU	32655-002	58569-001

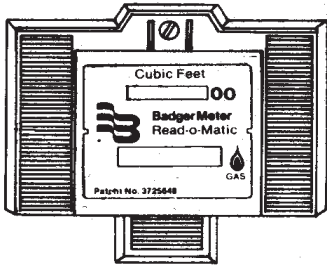
SELECTING LOCATION FOR OUTSIDE REGISTER

The location of the outside register should be your preference. Remember, Read-o-Matic was developed to help utilities operate more efficiently. Customer convenience is a secondary feature of the product and should be treated as such.

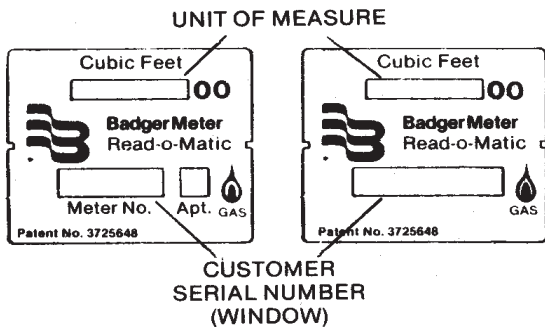
The register should be mounted at eye level for easy reading in a spot accessible to your personnel in any weather. If the unit is set behind bushes or hidden out of sight in some inaccessible area, you lose the

intended purpose of the unit - quick and efficient reading. The register should not be mounted close to the ground. Snow and ground dampness can cause corrosion to the terminals which may make the unit inoperative. Location of the register should not be determined by the amount of wire required. At the minimal cost of the wire, you can afford to locate the register for convenient reading which is the purpose for installing, Read-o-Matic.

REGISTERS. Badger Read-o-Matic outdoor registers are available in two dial configurations, each of which can be used with any gas meter generator. The standard direct-reading register employs a four-digit odometer indicator with a single window for meter serial number. Also available is a register with two window openings, one for meter serial number and one for an apartment number.



DIRECT-READING MODEL 570 REGISTER



NOTE: The face plate (dial) on the register has a window for utilities to include their serial number identification. With numbers provided by the utility, blocks of serial numbers can be stamped or printed on self-adhesive strips and attached to registers by Badger Meter. If customers desire, they can order "blank" strips to type or write in their serial numbers and affix to the face of registers. Besides these options, blocks of strips with customer serial numbers printed in sequence can be ordered from Badger for utilities to attach to their registers.

SUGGESTED INSTALLATION TOOLS AND MATERIAL

- Screw driver
- Pliers (wire-cutting, long-nose and utility)
- Electric drill and extension cord
- Carbide-tip masonry drills 31161 Wood bit 3/161
- Stapler and 91161 noncorrosive staples
- Caulking compound
- Two-conductor, 19-gauge vinyl covered wire
- Register mounting hardware, self-tapping screws
- Masonry cleats
- No. 8 masonry fasteners
- No. 8 noncorrosive round head screws
- Wire strippers
- Portable register testing unit (PIN 57537-00100)
- Ohm meter

REGISTER INSTALLATION

1. Locate mounting holes on outside wall of building with mounting template supplied in accessory kit. Register should be located at eye level in an easily accessible location. Maximum distance is 625 feet with 19-gauge wire. For longer distances, see wire gauge chart, ROM-T-50.
2. Check to make sure the number wheel stack assembly is held firmly in place by tension from the spring, and not the screw (see illustration). This will allow the number wheel stack assembly to float independent from the register base when the remote register is mounted on an uneven surface. If the number wheel stack assembly can be rotated off its mounting pads by compressing the spring, the screw setting is too loose.

NOTE: This screw is set at the factory, and it should not require any adjustment.

3. Remove register cover to secure register base to wall with appropriate attaching hardware.

NOTE: The register must be securely mounted to a rigid surface. Avoid mounting register on loose siding of any type since this will only lead to wire breakage or other potential problems. (Register mounting hardware is supplied by the customer.)

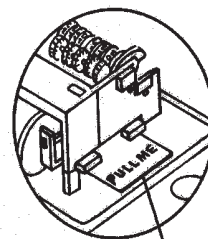
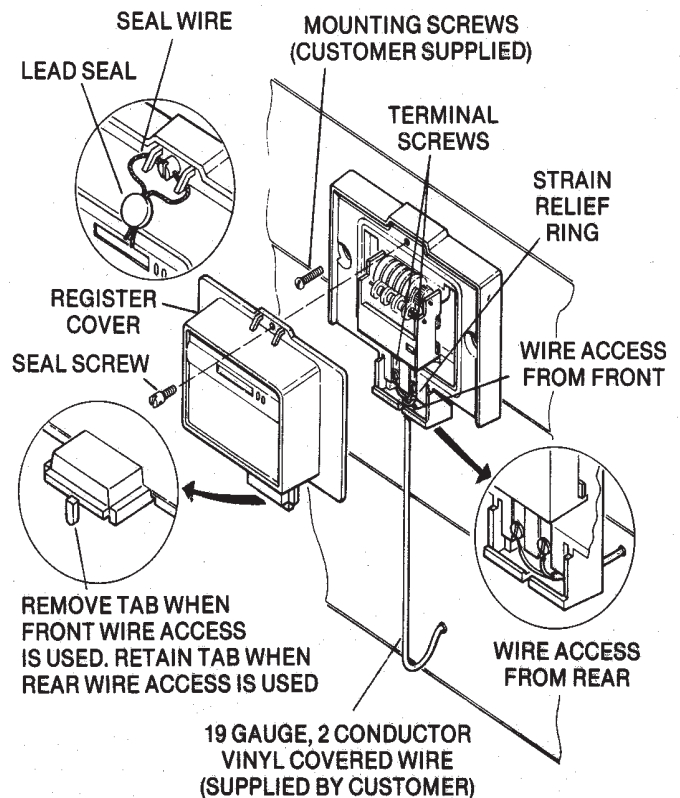
4. Drill 3/16" wire entry hole at a suitable location in the building wall.

NOTE: Wire access to the Read-o-Matic register may be through either a bottom or rear access port. When utilizing rear access, allow approximately 8' of extra wire behind register base to facilitate easy wiring and moving of remote register should it become necessary. (See illustration)

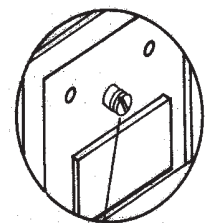
5. Feed two-conductor wire through hole in wall to route to gas meter. For front access, be sure to allow sufficient wire to form a small U-shaped loop where the wire enters the building. This loop eliminates the possibility of rain water running down the wire into the building.

6. Cut wire to proper length at register.

NOTE: Allow sufficient wire for connection to register. Any excess wire should be trimmed off at this time to insure a neat installation.



REMOVE "PULL ME" TAB TO OPERATE REGISTER



MOUNTING SCREW, NUMBER WHEEL STACK ASSEMBLY

7. Place strain relief ring around wire and secure. (See illustration)

NOTE: Position strain relief ring to eliminate the possibility of breaking the wire connection at the terminals if the wire is accidentally pulled.

8. Strip insulation from both wires and connect to register terminal screws. It is not necessary to observe polarity.

NOTE: To enhance the electrical junction, the bare wire should be tightly wrapped around the terminal screw in a clockwise direction. The terminal screw should be tightened to firmly grip the wire between the screw head and terminal. Excess bare wire ends should be removed.

9. Remove "Pull Me" tab which is inserted between the ratchet armature and U-shaped pole piece assembly. This tab prohibits the number wheel assembly from advancing during shipment. Until it is removed, the register will not operate. (See illustration)

10. Check gasket to insure it is properly positioned before installing register cover.

11. Attach register cover to register base with seal screw. Remember to remove tab on bottom of register cover when front wire access is used. (See illustration) Tighten seal screw and secure in place with seal wire and lead seal.

NOTE: Examine register cover and base to insure that these two parts have been mated properly. If there are any obvious gaps or spaces, remove the cover and examine the gasket, terminals, and wire for any obstructions.

12. Staple wire along entire length of wire run from the register to the gas meter. Staple wire along floor joist or beams inside the building allowing sufficient wire for neat installation and easy connection to the Read-o-Matic generator on the gas meter.

ADDITIONAL INSTALLATION TIPS

- Never short yourself on wire. It is better to have a little excess than to have to go back and rewire.
- If after wiring, unit does not operate, check for bare wires touching each other. Also, make sure "pull me" tag is removed.
- When stapling wire, be careful not to pierce covering. This could short out unit.
- When wiring unit, strip wire to allow an excess of approximately two inches. Loop wire around terminal screws. Hold excess wire tight in hand and secure screw. Twist this excess wire clockwise until wire fractures. This will form a cone-shaped lock assuring proper mechanical contact, and it will also enhance the electrical connection.

When installing the unit on buildings having a stone or masonry exterior, the use of masonry cleats and fasteners is required. After determining register location, use a 3/16 carbide-tip masonry drill and drill two register mounting holes. Insert masonry cleats and attach register with round head screws. Drill entrance hole for wire and secure wire near entrance hole with a No. 8 masonry fastener. Snug wire inside building and caulk opening. Follow same procedure for completing installation as outlined above.

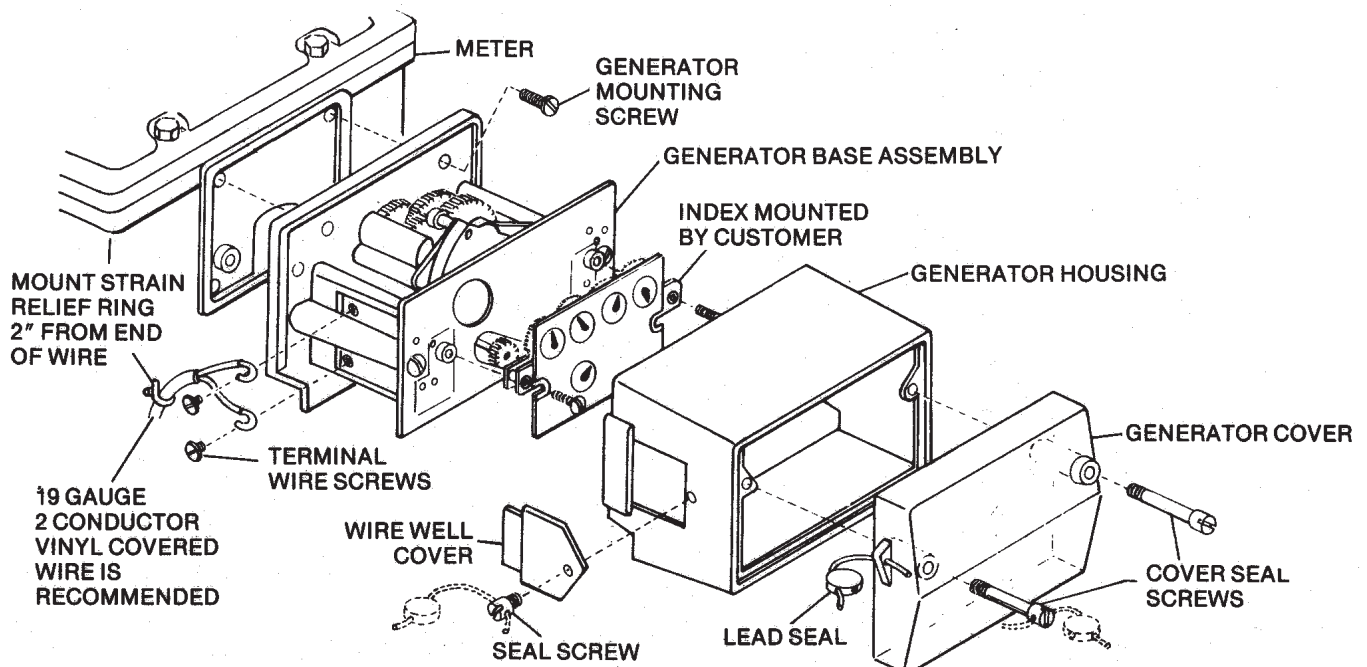
GENERATOR INSTALLATION

For specific generator installation instructions, refer to the installation data tag supplied with each generator shipment. Because of the vast differences in the various types and models of gas meters, it is not practical to discuss a generic installation procedure for the Read-o-Matic generator. However, the following list of helpful installation tips will generally provide trouble-free operation.

- Before proceeding with the installation, make sure that the generator code matches the model number of the gas meter. (Refer to Read-o-Matic selection tables or ask your Badger Meter representative.)

- Use care in handling the Read-o-Matic generator to insure that the drive pawl is not subjected to any physical abuse which might cause this drive spindle to become bent, mis-aligned, or otherwise inoperative.
- When mounting the generator to the gas meter, make sure that the meter drive dog engages the generator drive pawl and that these two drive pawls mate without causing any binding or potential for disengagement.
- When attaching the gas meter index to the ROM generator, make sure the meter index mounts securely to the Read-o-Matic generator and that the two drive pawls mate without causing any binding or potential for disengagement.

ADDITIONAL INSTALLATION TIPS



- Place strain relief ring around wire and secure. Position strain relief ring to eliminate the possibility of breaking the wire connection at the terminals if the wire is accidentally pulled.
- Strip insulation from both wires and connect to generator terminal screws. It is not necessary to observe polarity. To enhance this electrical junction, the bare wire should be tightly wrapped around the terminal screw in a clockwise direction. The terminal screw should be tightened to firmly grip the wire between the screw head and terminal. Excess bare wire ends should be removed.

- Never short yourself on wire. It is better to have a few inches of extra wire than to have to go back and rewire. Use cable ties to attach any loose (excess) wire to gas pipe to insure a neat installation.
- Once the complete system is wired, it is important to check for continuity using an ohm meter. (Refer to ROM-T-2.) By following test procedure #1, both the register and generator, as well as the wiring, can be checked to insure that the system has been installed correctly. If the system fails to pass this test, procedures #2 or #3 can be used to isolate and identify the problem.

SETTING OUTDOOR REGISTERS

Should it be necessary to set an outdoor register to a specific reading or reset a register after test or maintenance, refer to the applicable procedures given below:

Remove cover from register.

The number wheel stack on the Badger Model 570 Read-o-Matic outside register has a spring loaded feature which allows resetting of the register without any special tools or fixtures. This spring (item A) is located on the left side of the number wheel spindle.

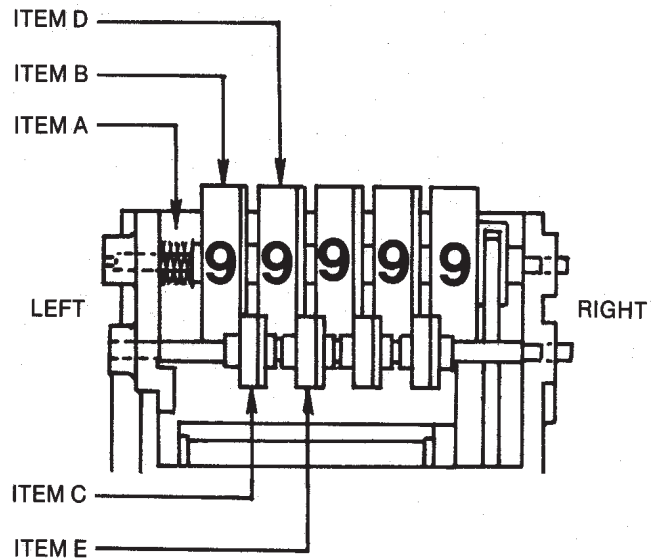
To reset the number wheel stack to zero or any other combination, follow this procedure. First, with your thumb move the 5th number wheel (item B) to the left towards the register frame depressing the spring. This will disengage the 5th number wheel from the 4th trip pinion (item C) allowing you to set the 5th wheel to desired number. To reset the 4th number wheel (item D) place right thumb between 4th and 5th number wheel and left thumb between 4th and 3rd trip pinion (item E) push 4th pinion and 5th wheel to depress spring. Spring can now be held depressed with the left thumb only freeing right hand to reset the 4th wheel to desired setting. Follow this procedure to reset all but the 1st and 2nd number wheels which can be reset by turning backward only.

Reinstall cover on register.

NOTE: In order to insure proper operation of reset registers, care must be taken that all trip pinions are properly aligned. You will note that the trip pinions have both full and half teeth around the diameter. The proper setting requires that the full tooth on the pinion be showing nearest the number wheel.

⚠ WARNING

At no time should any tools (screw driver, pliers, etc.) be used to assist in setting or resetting the number wheels. Care must be taken to insure that the teeth on the number wheels and trip pinions are not damaged. Even the smallest deformity will impair reliable operation.



PERFORMANCE CHECK

The Read-o-Matic installation should be checked for proper operation by using one of the following methods:

NOTE: If meter is installed backwards, the Read-o-Matic generator will not pulse the remote register. To insure meter is installed correctly, follow flow meter manufacturer's direction. The Read-o-Matic generator is designed to mate properly with the meter drive dog and to rotate only in the same direction (clockwise or counter-clockwise) as the meter's index drive. The Read-o-Matic generator's direction of rotation is marked on the back of each unit.

• **On Meter Test** - Install generator on meter, then run 100 cubic feet of gas through the meter and observe that outdoor register advances one digit.

• **Ohm Meter Test** - Once the complete system is wired, it is important to check for continuity using an ohm meter. (Refer to ROM-T-2) By following test procedure #1, both the register and generator, as well as the wiring, can be checked to ensure that the system has been installed correctly. If the system fails to pass this test, procedures #2 or #3 can be used to isolate and identify the problem.

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