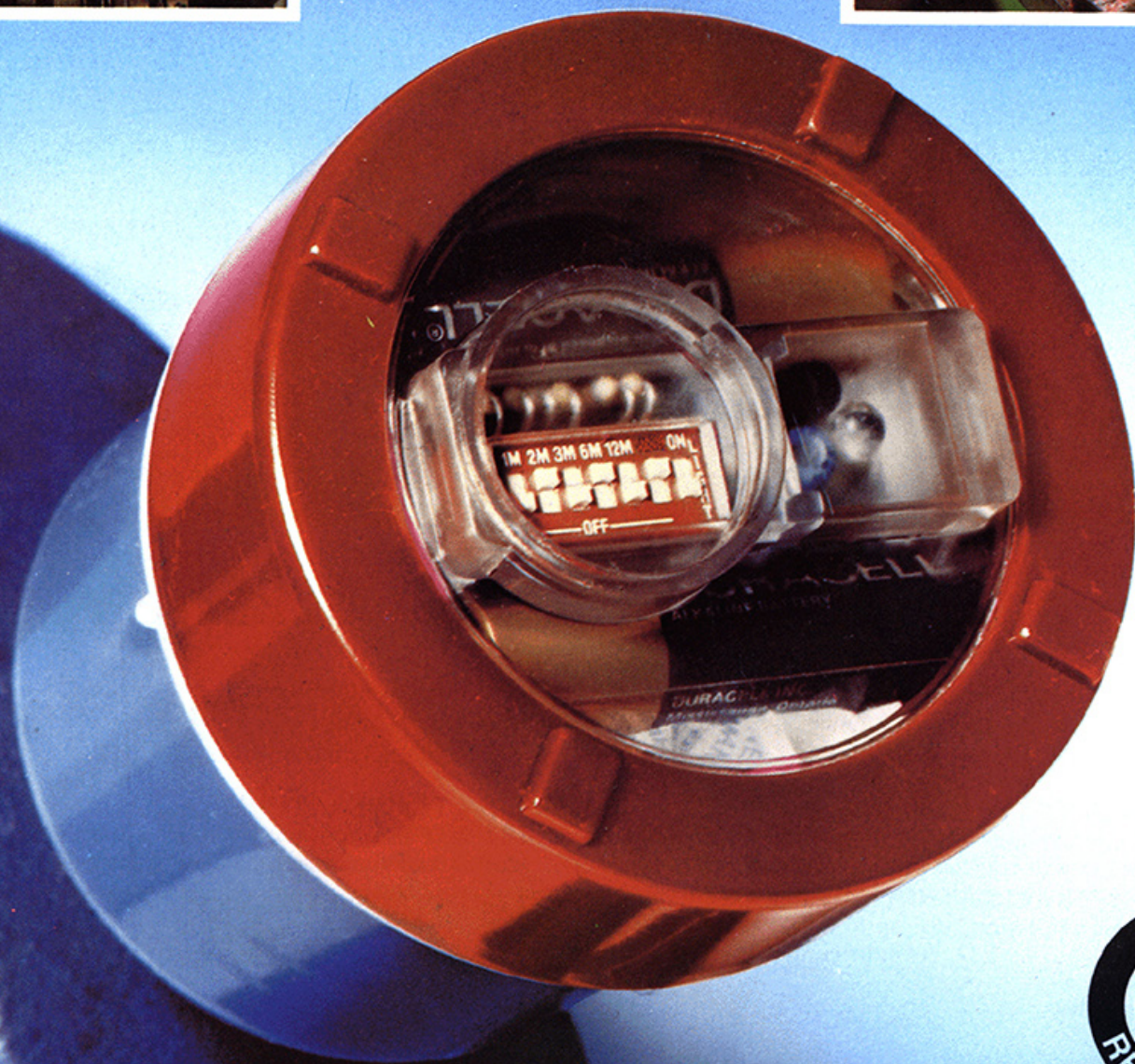


ELECTRO-LUBERTM

AUTOMATIC ELECTRONIC LUBE DISPENSER



*A little today...
or a lot tomorrow!*



ISO 9002: 1994
FM 66860

The ELECTRO-LUBER™ DISPENSER

WORKING PRINCIPLE

When one of the selector switches is closed, an electro-chemical reactor cell is activated, and an electro-chemical reaction takes place by which electrical energy is converted into nitrogen gas. The gas is trapped in a hermetically sealed bellows type gas chamber. As the gas is produced, an internal pressure builds up, which is applied against a piston. The piston then forces the lubricant out of the cylinder and into the lube point. The strength of the electrical current determines the amount of gas produced, which in turn, controls the rate of lubricant flow and the length of time the Electro-Luber™ will operate.

RED RING STANDARD ELECTRO-LUBERS.™
Maximum operating temperature: +55°C (+131°F)
over a period of time.

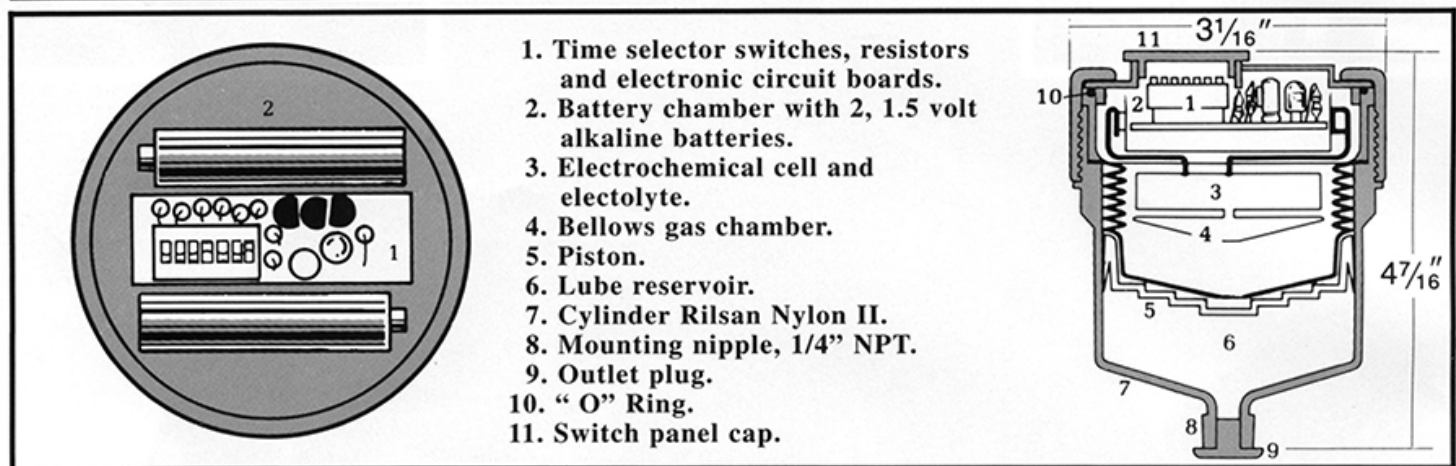
BLUE RING LOW TEMPERATURE ELECTRO-LUBERS.™
Operating temperatures: -40°C (-40°F) to +40°C (+104°F).

Minimum operating temperatures:
With EP1 lubricant: -30°C (-22°F)
With EP2 lubricant: -15°C (+3°F).

The plastic housing can withstand temperatures to -70°C (-94°F) before crystallizing.

PLEASE NOTE: 24M has been cancelled and is used only as a booster.

FUNCTIONAL DIAGRAM



INSTALLATION INSTRUCTIONS

1. Before installing the Electro-Luber™ dispenser on a bearing, use a standard hand lube gun and pump a few shots of the same type of grease into the bearing to ensure all old grease is removed and the passage is free of restrictions.
2. At change out time NO PURGING is necessary.
3. Install the Electro-Luber™ dispenser, if possible, directly on the bearing. For a bearing having a 1/8" NPT thread, use a 1/4" to 1/8" adaptor.
4. DO NOT use the Electro-Luber™ dispenser above +55°C (+130°F).
5. DO NOT use the Electro-Luber™ dispenser on a system that requires more than 50 p.s.i.g. or 3.5 atm.
6. DO NOT use the Electro-Luber™ dispenser to feed more than one bearing.
7. DO NOT use the Electro-Luber™ dispenser on hoses, pipes, or tubing smaller than 1/4" I.D.

ELEVATED TEMPERATURES

DO NOT use Lotemp lubricant with the outlet down. The lubricant will run out without control.

REMOTE INSTALLATION

For remote installation, use up to 3 feet or 1 metre tubing or pipe 1/4" I.D. for lubricant.

For oil, use up to 15 feet or 5 metres of tubing or pipe.

NOTE

Fill all lines with oil or grease before installing the dispenser.

LOW TEMPERATURES

DO NOT use high temperature lubricant. It will harden and the dispenser cannot push it out.

ELEVATED ALTITUDES

The Electro-Luber™ dispenser should perform normally up to 300 m (1000 ft.) above sea level. The dispensing rate will increase above 300 m. For example, at 2000 m (6000 ft.) the discharge rate can be as much as 50% higher than normal. For application in high elevations, ask for special instructions.

PLEASE INSTALL WATERPROOF CAP UNDER ALL CONDITIONS.

NOTE: Not responsible for consequential damage beyond replacement of ELECTRO-LUBER™, or refund of amount paid.

STARTING PROCEDURE

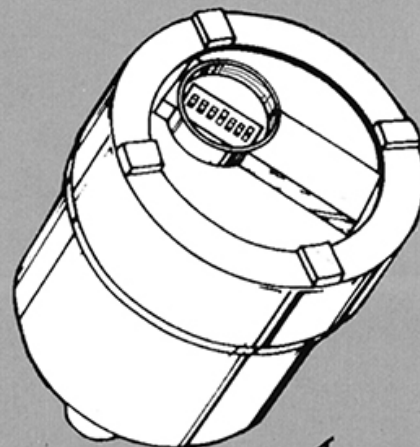
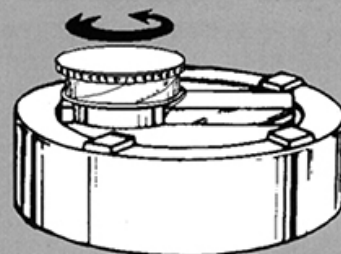
Select the dispensing time and the amount of lubricant required, then click on the appropriate switch. This action closes a circuit for the gas generation. Also click on the "LIGHT" switch. The light signal first appears in approximately 20 seconds and repeats every 15 to 20 seconds for as long as the circuit is closed. The presence of the LED light ensures that the system is in working order. After the circuit is closed there is a delay before enough gas is formed to start moving the piston. At the 1 month rate the delay is 18 to 24 hours, increasing to about 240 to 280 hours at the 12 months rate.

In case immediate lubrication is required, pre-start the unit for 12 hours with ALL switches in ON position. After this time return all switches to the OFF position EXCEPT the one for the chosen dispensing rate.

- A 1-month setting will start to dispense in 18 to 24 hours.
- A 2-month setting will start to dispense in 40 to 48 hours.
- A 3-month setting will start to dispense in 60 to 70 hours.
- A 6-month setting will start to dispense in 120 to 140 hours.
- A 12-month setting will start to dispense in 240 to 280 hours.

NOTE

IF, DURING OPERATION AND INSPECTION, THE LED LIGHT IS FOUND TO BE PERMANENTLY ON, REMOVE SWITCH PANEL CAP AND SWITCH LIGHT OFF. THIS WILL ENSURE THAT LIGHT DOES NOT DRAIN BATTERIES.



Click switch with pen or small screwdriver



OPERATING PROCEDURES

IF it is necessary to increase or decrease the dispensing rate during operation, simply click switch in use to OFF, then click on new switch.

TO INCREASE dispensing rate, use a switch with a LOWER monthly rate.

TO DECREASE dispensing rate, use with a HIGHER monthly rate.

Leave "LIGHT" switch in ON position.

STOP

For shutdown period, click the dispensing rate switch and the "LIGHT" switch to OFF.

REMOVAL DURING OPERATION

Removing a dispenser in operation and partly discharged will cause a discharge until the point of equilibrium in the expandable gas chamber is reached. In a bearing with no back pressure no discharge will occur.

TO PREVENT ACCIDENTS

DO NOT DISMANTLE DISCHARGED ELECTRO-LUBERS™ (UNDER PRESSURE UP TO 50 PSI OR 3 ATM) WITHOUT FIRST PUNCTURING HOLE THROUGH BOTTOM OUTLET INTO PISTON AND GAS CHAMBER TO RELIEVE PRESSURE.

CAUTION:

PROPER MAINTANCE INSPECTION IS VITAL TO THE USAGE OF THE ELECTRO-LUBE SYSTEM.

The Electro-Luber has a built in gas generator in which the pressure can build up in excess of 100 P.S.I.G. At this point the top assembly will separate. In order to prevent this from happening please ensure free flow of lubricant. ie: Check for movement of orange piston during maintenance inspection.

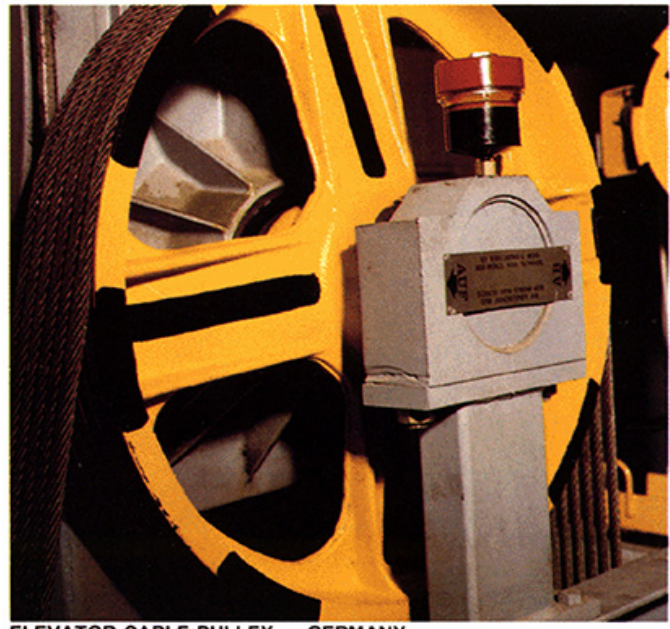
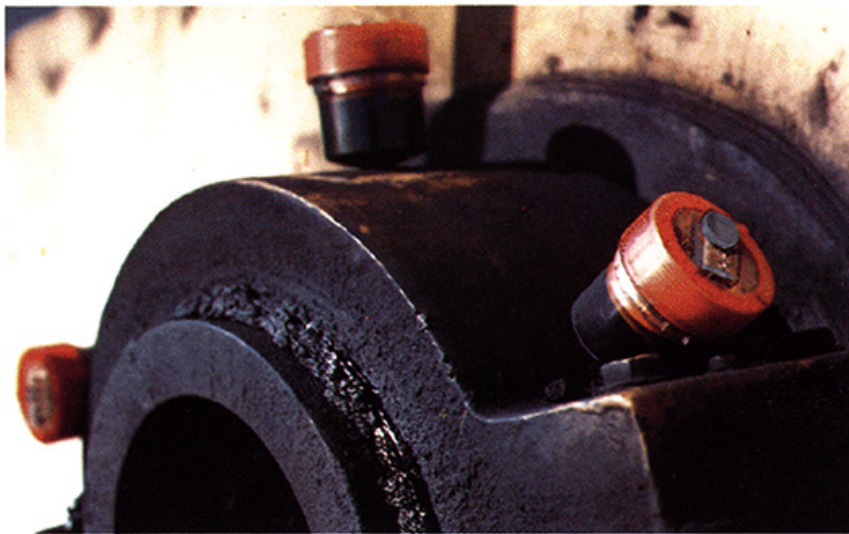
WEATHERPROOF SWITCH CAP

"Electro-Luber"™ dispensers are supplied with a waterproof switch cap.

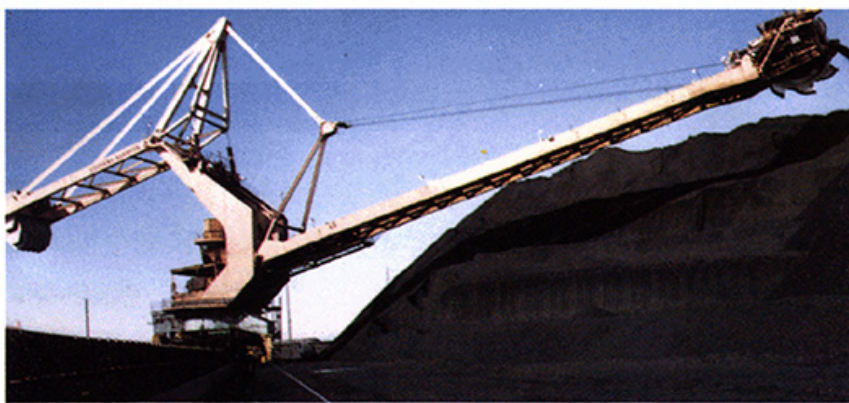
Units are CSA approved and UL listed as intrinsically safe provided the waterproof switch cap is properly fitted

NOTE: Not responsible for consequential damage beyond replacement of ELECTRO-LUBE™, or refund of amount paid.

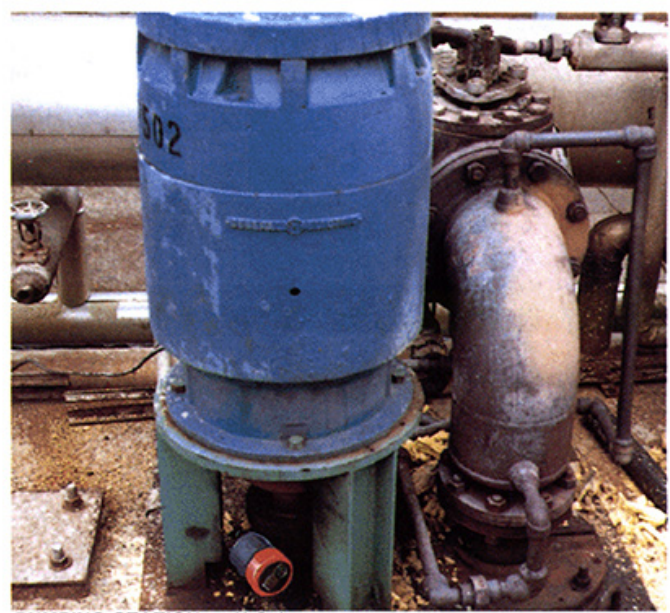
THE ELECTRO-LUBE AT WORK



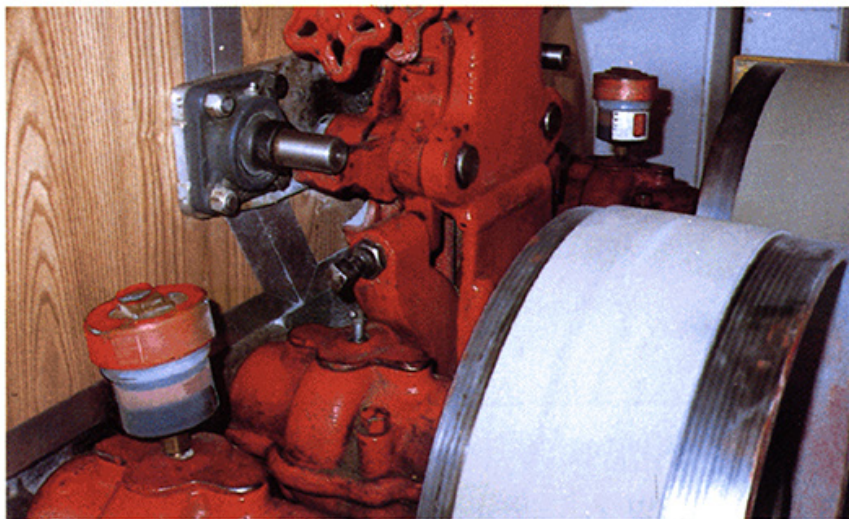
ELEVATOR CABLE PULLEY — GERMANY



COAL STACKER — CANADA



PUMPING STATION — U.S.A.

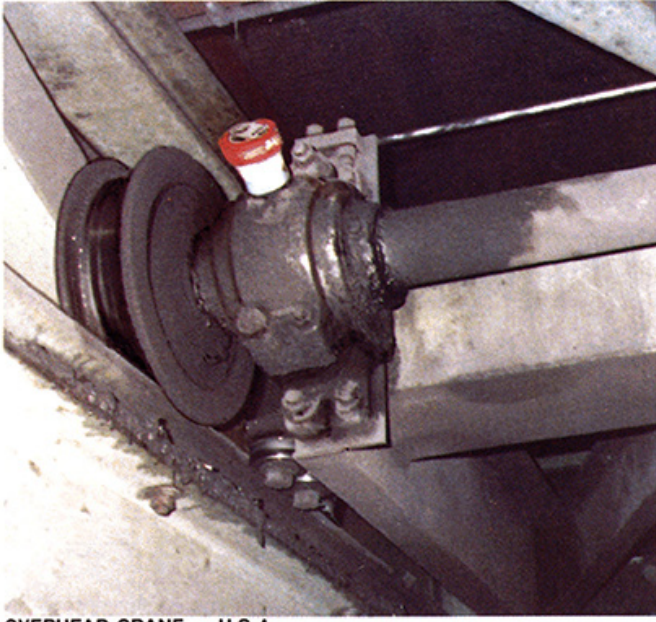


FLOUR MILL — U.S.A.

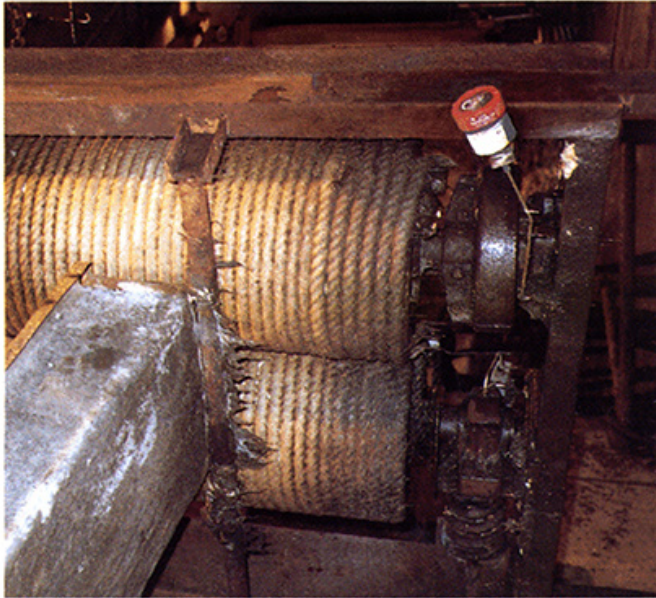
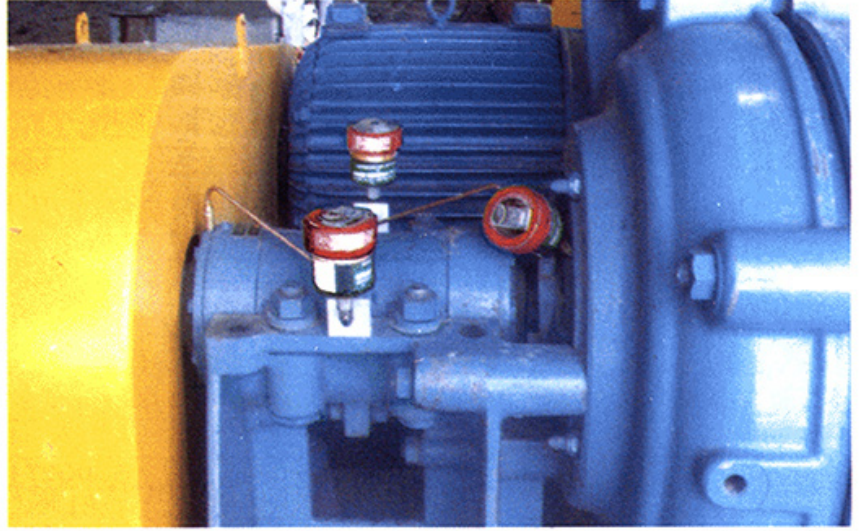


SCREW CONVEYOR — CANADA

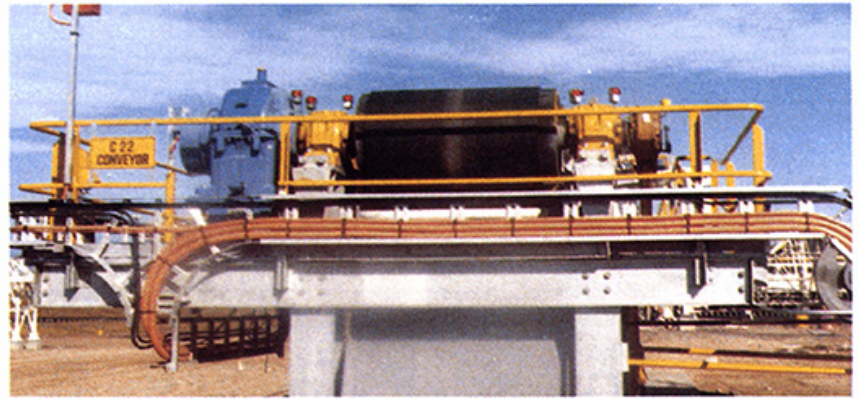
K AROUND THE WORLD...



OVERHEAD CRANE — U.S.A.



RAWHIDE TREATMENT PLANT — U.S.A.



COAL MINE — AUSTRALIA



SEMI-TRAILER FRONT END KINGPINS



GAS PLANT COOLING UNIT — CANADA

Lube Dispensing

The dispensing rates in the following charts are based on a 24-hour operation. In the case of an 8 or 16-hour operation, less lubricant is required, and the dispensing rate must be set accordingly. The rates are calculated at 68°F (20 °C) at sea level. However, as the temperature RISES, the dispensing rate increases; and as the temperature FALLS, the dispensing rate decreases. Likewise, as the altitude increases, the dispensing rate will also increase due to lower atmospheric pressure. Please consult the charts for setting adjustments for temperature and altitude.

Capacities: Mini-Luber: 4.5 oz (125cc)

Budget-Luber: 8 oz. (250cc)

Jumbo-Luber: 16 oz. (475cc)

Comparison Chart

This chart compares the lubricant output rate of the ELECTRO-LUBER™ with several common manual lubrication schedules. The ELECTRO-LUBER™ switch setting indicated will provide comparable lubrication to that of the manual practice shown. **Do not over-lubricate bearings.**

Manual Lubrication Schedule	MINI LUBER Setting		BUDGET LUBER Setting		JUMBO LUBER Setting	
	Unit Life	Switch Setting	Unit Life	Switch Setting	Unit Life	Switch Setting
Daily lubrication 3 – 4 strokes	1 month		2 months		4 months	
2 – 3 lubrication 3 – 4 strokes	2 months		4 months		8 months	
Weekly lubrication 8 – 10 strokes	3 months		6 months		12 months	
Bi-weekly lubrication 8 – 10 strokes	6 months		12 months			
Monthly lubrication 8 – 10 strokes	12 months					

A “Rule of Thumb” for Switch Setting

This chart offers a “Rule for Thumb” for selecting appropriate switch settings and lubricant output rates for some basic applications. Many variables must be considered when determining the best setting for your operating environment. Areas of high contamination and heavy water washout generally require a slight increase in lubricant flow rate. Because of the wide number of variables found in actual operating environments, this chart should only be considered as a guide in making a selection of the proper switch settings.

ALWAYS AVOID OVER-LUBRICATING.

Bearing Shaft Size	MINI LUBER		BUDGET LUBER	
	Switch Setting	Days to Empty	Switch Setting	Days to Empty
4 ¾" to 6 ½"		15		30
4" to 4 ¾"		30		60
3 ¼" to 4"		60		120
2 ¾" to 3 ¼"		90		180
2 ¼" to 2 ¾"		180		360
1 ¾" to 2 ¼"		360		

	JUMBO LUBER	
	Switch Setting	Days to Empty
12" to 14 ¾"		20
10 ¾" to 12"		30
8 ½" to 10 ¾"		60
6 ½" to 8 ½"		90
4" to 6 ½"		120
2 ¾" to 4"		360

Adjustment for Altitude

The ELECTRO-LUBER™ operates in normal fashion at altitudes to 1000 feet above sea level. The dispensing rate will increase above 1000 feet due to reduced atmospheric pressure. For example, at 2000 feet the discharge rate will be 10% faster. For every additional 1000 feet of altitude the discharge rate will increase by an additional 5%. For applications at high elevations please request special instructions.

NOTE: Not responsible for consequential damage beyond replacement of ELECTRO-LUBER™ or refund of amount paid.

Selection of Switch Settings

One stroke from a typical grease gun is equal to approximately one cubic centimetre (cc). To select the switch setting appropriate for your application first look across the temperature row for the approximate ambient temperature for the application. For fluctuating temperature applications, take the average between the high and the low temperature. Next, look down the column for the desired output of lubricant, remembering that 1 cc is equal to approximately one stroke from a grease gun. The switch settings are shown in the left most column.

Lubricant output rates for various temperatures at altitudes from sea level to 1000 feet

Mini Luber (125cc)

Switch settings	+14°F		+32°F		+50°F		+68°F		+77°F		+86°F		+95°F		+113°F		+131°F	
	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty
All	6.0	20	6.8	18	7.7	16	8.5	14.2	8.9	13	9.4	13	9.8	12	10.6	11	11.1	11
1	2.8	43	3.2	38	3.6	33	4.0	30	4.2	29	4.4	27	4.6	26	5.0	24	5.2	23
2	1.4	86	1.6	75	1.8	67	2.0	60	2.1	57	2.2	55	2.3	52	2.5	48	2.6	46
3	0.9	129	1.1	113	1.2	100	1.33	90	1.4	86	1.5	82	1.5	78	1.7	72	1.7	69
6+12	0.7	171	0.8	150	0.9	133	1.0	120	1.1	114	1.1	109	1.2	104	1.3	96	1.3	92
6+B	0.6	190	0.7	167	0.8	148	0.9	133	0.9	127	1.0	121	1.0	116	1.1	107	1.2	103
6	0.5	256	0.5	224	0.6	199	0.67	180	0.7	171	0.7	163	0.8	156	0.8	143	0.9	136
12+B	0.4	343	0.4	300	0.5	267	0.5	240	0.5	229	0.6	218	0.6	209	0.6	192	0.7	185
12	0.2	519	0.3	455	0.3	404	0.33	360	0.3	346	0.4	331	0.4	316	0.4	291	0.4	280

Budget Luber (250cc)

Switch settings	+14°F		+32°F		+50°F		+68°F		+77°F		+86°F		+95°F		+113°F		+131°F	
	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty
All	12.5	20	13.9	18	15.6	16	17.4	14.2	19.0	13	19.2	13	20.6	12	22.0	11	22.7	11
1	5.8	43	6.6	38	7.6	33	8.3	30	8.6	29	9.3	27	9.6	26	10.4	24	10.8	23
2	2.9	86	3.3	75	3.7	67	4.1	60	4.4	57	4.5	55	4.8	52	5.2	48	5.4	46
3	1.9	129	2.2	113	2.5	100	2.7	90	2.9	86	3.0	82	3.2	78	3.5	72	3.6	69
6+12	1.5	171	1.7	150	1.9	133	2.0	120	2.2	114	2.3	109	2.4	104	2.6	96	2.7	92
6+B	1.3	190	1.5	167	1.7	148	1.8	133	2.0	127	2.1	121	2.2	116	2.3	107	2.4	103
6	1.0	256	1.1	224	1.3	199	1.3	180	1.5	171	1.5	163	1.6	156	1.7	143	1.8	136
12+B	0.7	343	0.8	300	0.9	267	1.0	240	1.1	229	1.1	218	1.2	209	1.3	192	1.4	185
12	0.5	519	0.6	455	0.6	404	0.7	360	0.7	346	0.8	331	0.8	316	0.9	291	0.9	280

Jumbo Luber (475cc)

Switch settings	+14°F		+32°F		+50°F		+68°F		+77°F		+86°F		+95°F		+113°F		+131°F	
	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty	Daily output cc's	Days until empty
All	22.3	20	25.5	18	28.7	16	31.8	14.2	33.5	13	35.1	13	36.7	12	39.8	11	43.5	10
1	10.5	43	12.0	37	13.5	33	15.0	30	15.8	28	16.5	27	17.3	26	18.8	24	20.5	22
2	5.3	85	6.0	74	6.8	66	7.5	60	7.9	57	8.3	54	8.6	52	9.4	48	10.2	44
3	3.5	128	4.0	112	4.5	99	5.0	90	5.3	85	5.5	81	5.8	78	6.3	71	6.8	65
6+12	2.6	171	3.0	150	3.4	133	3.7	120	3.9	114	4.1	109	4.3	104	4.7	96	5.1	88
6+B	2.4	190	2.7	166	3.0	148	3.4	133	3.5	127	3.7	121	3.9	116	4.2	106	4.6	97
6	1.8	255	2.0	223	2.3	198	2.5	180	2.6	170	2.8	162	2.9	155	3.1	143	3.4	131
12+B	1.3	337	1.5	295	1.7	262	1.9	240	2.0	225	2.1	214	2.2	205	2.4	189	2.6	173
12	0.9	510	1.0	447	1.1	397	1.25	360	1.3	340	1.4	325	1.4	311	1.6	286	1.7	262

Adjustment for Temperature Variation

The ELECTRO-LUBER™ dispensing rate is calculated at 20°C (68°F) at sea level, and 14.7 PSI/G. However, as the temperature RISES, the dispensing rate INCREASES. As the temperature FALLS, the dispensing rate DECREASES. To calculate the dispensing rate of the ELECTRO-LUBER™ dispenser at higher or lower average temperatures refer to the following chart, and apply the factor to the above charts.

	°F	°C	FACTOR			
		+131°	+55°		+35%	Standard dispenser - maximum working life 90 days at 55° C (131° F)
Red Ring MOST EFFECTIVE OPERATING TEMPERATURES	+113°	+45°	+30%			
	+104°	+40°	+20%			
	+95°	+35°	+15%			
	+86°	+30°	+10%			
	+77°	+25°	+5%			
	+68°	+20°	Stable			
		+15°	-5%	EXAMPLE 1 A "30 day" unit installed at 40° C will empty 20% faster (24 day discharge).		
	Blue Ring MOST EFFECTIVE OPERATING TEMPERATURES	+50°	+10°		-10%	
		+41°	+5°		-15%	
		+32°	0°		-20%	
+23°		-5°	-25%			
+14°		-10°	-30%			
+3.2°		-16°	-35%			
-4.0°		-20°	-40%			
		-14.8°	-26°		-45%	
		-22°	-30°		-50%	
		-32.8°	-36°	-55%		
	-40°	-40°	-60%	Standard dispensing will function normally to a temperature of -40° C (-40° F).		

THE ADVANTAGES OF CONTINUOUS ELECTRO-LUBE LUBRICATION

The continuous lubrication of bearings removes foreign material from the bearing, aids in dissipating the heat generated by the bearing, retards oxidation, and ensures a constant supply of fresh lubricant. The advantages of continuous lubrication as produced by the Electro-Lube dispensers are as follows:

1. Continuously feeding a small amount of lubricant into the bearing pushes out wear material such as chrome flakes, keeps out dirt, water and foreign material and generally keeps the bearing cleaner. The constant flow of the Electro-Lube keeps the seals lubricated so they are more effective in preventing bearing contamination.
2. As a bearing cools down, it creates a slight vacuum or negative pressure. In the intermittently lubricated bearing, the vacuum may draw in foreign material. In the continuously lubricated bearing, the vacuum draws in more lubrication. In dusty environments, such as are found in gravel pit operations, iron ore mining, coal mining, grain handling and in operations where silica is suspended in the air, the continuous dispensing system will tend to keep harmful material out of the bearing and prolong bearing life.

3. If the bearing operates in a moist or acidic environment such as is present in lumber mills or pulp and paper mills, the continuous injection of lubricant will reduce oxidation and bearing breakdown. The bearing cavity will tend to be filled with lubricants and flush out moisture and harmful chemicals, which may otherwise accumulate if the bearing is unused for some time.
4. In some bearings, the lubricant near the race is used over and over again until it is used up and breaks down while the remainder of the lubricant in the cavity has not been used. Sometimes 95% of the lubricant remains unused. In these cases the bearing may have an adequate supply of lubricant but the bearing is inadequately lubricated. The Electro-Lube continually moves the lubricant into the bearing so that the old lubricant is constantly being replaced by fresh lubricant.
5. By being in constant contact with the moving parts, a constant supply of lubrication can dissipate some of the heat generated on the contact surfaces and reduce the friction and wear between the rubbing surfaces.

Helmut Fandrich, Consultant

THE ELECTRO-LUBE AUTOMATIC ELECTRONIC LUBE DISPENSER

Invented, designed, and manufactured in Canada, the Electro-Lube dispenser is available with a wide selection of lubricants for every purpose.

Each unit is colour coded — red cap for normal and high temperature use, and blue cap for low temperature use. White cap for food industry.



SOLVE YOUR LUBRICATION PROBLEMS WITH THE AUTOMATIC ELECTRONIC LUBE DISPENSER

PATENTS

U.S.A. — 4023648
U.S.A. — 4671386
CANADA — 101490
BRITAIN — 1496841
JAPAN — 1011803
GERMANY — DE 2520241 C3

ENERGY, MINES AND RESOURCES CANADA
For use in Hazardous Locations
GASEOUS MINES CATEGORY
Certificate No 600



LISTED
71YO

PTB Nr Ex- 85/2091
Electrische Betriebsmittel für explosionsgefährdete Bereiche
EN 50 014-1977 / VDE 0171 Teil 1/5.78
Allgemeine Bestimmungen
EN 50 020-1977 / VDE 0171 Teil 7/5.78
Eigensicherheit "I"
EEX ib IIB T4 (79/196/EWG)

EX 1 CERCHAR
Matériel ou Système Electrique Pour Mines Grisouteuses
EN 50 014 . 1977 (NF C 23-514)
EN 50 020 . 1977 (NF C 23-520)
EEx ia I

BVS Nr 87.1065 EX 1
Europäische Gemeinschaften 82/130 EWG
Allgemeine Bestimmungen
EN 50014-1977/VDE 0170/0171 Teil 1/5.78
Eigensicherheit "I"
EN 50020-1977/VDE 0170/0171 Teil 7/5.78
EEx ib I

EX CERCHAR
Matériel Electrique Utilisable en Atmosphere Explosible
EN 50.014 . 1977 (NF C 23-514)
EN 50.020 . 1977 (NF C 23-520)
EEx ia IIC T5



ISO 9002: 1994
FM 66860

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