



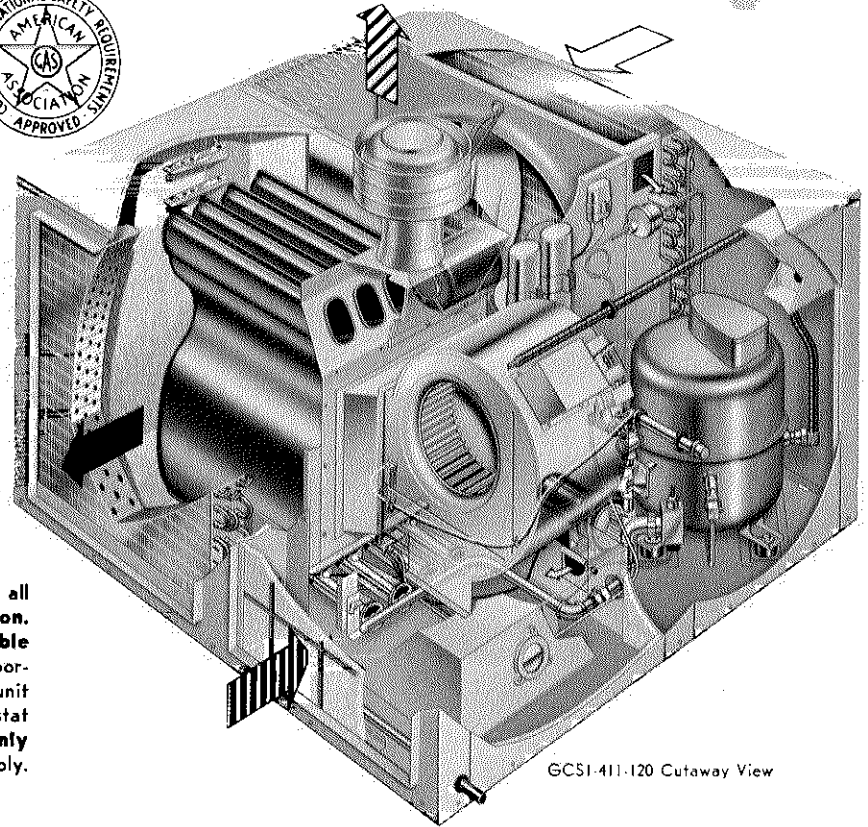
ALL-SEASON—COOLING & GAS HEATING
GCSI—2 & 3 TON MODELS—HORIZONTAL

2 & 3 Tons of Cooling with
60,000 to 120,000 Btuh of Gas Heat



VERIFICATION APPLIES ONLY
WHEN USED WITH PROPER
COMPONENTS AS DESIGNATED
BY MANUFACTURER

- Precharged refrigeration system
- DURACURVE™ Heat Exchanger
- Cleanable filter furnished
- Choice of heating capacity
- Large service access panels
- Thick interior insulation
- Adjustable speed blower
- Power supply choice

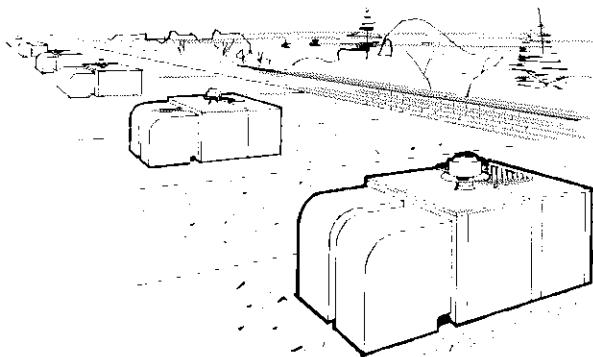


GCSI-411-120 Cutaway View

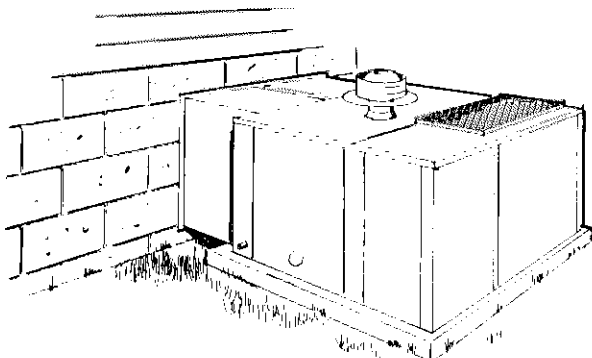
**Save Valuable Floor Space
And Installation Costs**

Complete air cooled DX cooling and gas fired heating all in one compact package designed for outdoor installation. Install on a rooftop or slab at grade level saving valuable interior floor space. All refrigeration components (evaporator and condenser units) blower, filters and gas heating unit are all assembled in one package. Heating-Cooling thermostat and wire are furnished as standard. The installer has only to set unit, run ducts and connect wiring and gas supply.

INSTALLATION



Multiple units on rooftop



Single Unit on slab at grade level

- ➡ Supply Air
- ➡ Return Air
- ➡ Condenser Exhaust Air
- ➡ Condenser Entering Air
- ➡ Combustion Air

UNIT SELECTOR

Model No.	*Cooling Capacity (Btuh)	Heating Input (Btuh)	Air Volume Range (cfm)	Power Supply
GCSI-261-60	23,000	60,000	595-1046	230v 60 cy—1ϕ
GCSI-261-90	23,000	90,000	595-1046	230v 60 cy—1ϕ
GCSI-411-90	36,000	90,000	882-1555	230v 60 cy—1ϕ
GCSI-411-120	36,000	120,000	810-1512	230v 60 cy—1ϕ
GCSI-413-90	36,000	90,000	882-1555	208/220v 60 cy—3ϕ
GCSI-413-120	36,000	120,000	810-1512	208/220v 60 cy—3ϕ
GCSI-413-120-440	36,000	120,000	810-1512	440v 60 cy—3ϕ

*At ARI standard 210-62 test conditions.

MAJOR FEATURES

NO REFRIGERANT CHARGING ON THE JOB—Refrigeration system is **completely charged**. No expensive and time consuming charging procedures are necessary.

DURACURVE—A major engineering breakthrough—Lennox engineering and experience brings to the heating industry the first direct-fired heat exchanger which **eliminates** all the historic fatigue failure, ticking, resonance and cleanability problems inherent in clam type furnaces. Its name is DURACURVE Its secret—freedom.

Old style clam type heat exchangers were rigidly constrained, dimpled, ribbed and internally baffled to maintain proper and constant flue restriction required for complete combustion and maximum efficiency while maintaining proper venting. Metal so constrained and held—ticked, groaned and sometimes cracked as its desire to expand during heating was restricted.

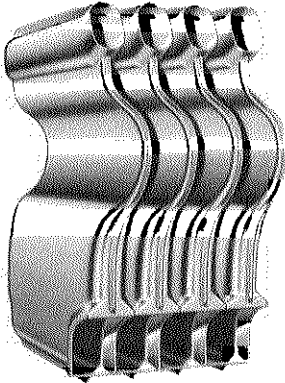
Not so with DURACURVE !!!

In this unique Lennox design the sides of the clam-section form a flue restriction zone comprised of sections of two concentric cylinders. As the sides grow on heating they expand and move—but in the same direction and at the same rate.

Result—perfect combustion, proper venting and absolute freedom of movement for the metal. No stress or strain—no ticking, groaning or popping noises caused by internal metal expansion forces—and complete elimination of clam-section failure due to fatigue cracking.

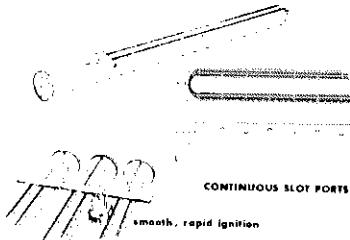
Resonance eliminated—The flat drum-like surface of old style heat exchangers could—and did—vibrate in harmony with the pulsations of the combustion process. The result was the irritating, noisy and elusive phenomenon known as resonance. Since all DURACURVE surfaces are sections of concentric cylinders there are no drum-like surfaces and, hence no resonance.

No cleaning problem exists in the DURACURVE since it has no ribs, dimples or internal baffling to interfere with a flexible cleaning tool. **The rugged DURACURVE** heat exchanger is the quietest, most durable clam type heat exchanger ever developed—another Lennox Engineering breakthrough!!



CONTINUOUS PORT ALUMINIZED STEEL BURNERS—Each burner has four rows of practically continuous ports which result in amazingly **quiet and clean combustion**.

These continuous ports provide almost twice the "port area" as do conventional burners. This produces a clean, short, soft, quiet and efficient flame. A new super **quiet crossover igniter** of actual burner ports, perpendicular to the main burner carries a positive flame from burner to burner to achieve the fastest, surest and **quietest ignition** of multiple burners known in the industry. No "flame roll" here, just the most quiet ignition possible.



RUGGED CABINET—Heavy gauge hot dipped steel cabinet panels with a baked **acrylic enamel** finish. A **five station wash** metal preparation assures a **perfect bonding** surface for the baked acrylic enamel.

ADJUSTABLE SPEED BLOWER—Lennox designed and built resilient **blower**. Equipped with a transformer speed controller giving a **choice of blower speeds**. Factory wired for **automatic** changeover of **high speed** for cooling to **lower speed** for heating. Wiring is easily changed to give other speeds for heating if desired. See blower performance charts.

DEPENDABLE COMPRESSOR—Resiliently mounted compressor carries a full **five year warranty**. It is **suction cooled**, has **accessible gauge ports** and has **overload protection**. Internal operational features minimize chances of liquid refrigerant slugging.

THICK INTERIOR INSULATION—All of the interior panels where conditioned air is handled are lined with 1" thick **fiberglass insulation**. This results in **quiet and efficient** operation due to the excellent sound deadening and insulating qualities of fiberglass.

LENNOX COILS—Extra large coils (condenser and evaporator) are constructed of ripple-edged **aluminum fins** which are flat bonded to seamless **copper tubes** for maximum strength and contact area. Both coils are pressure leak tested at 400 psi for evaporator coil and 455 psi for condenser coil. Condenser coil guard furnished as standard equipment.

EFFICIENT CONDENSER FAN—Pulls **large volumes** of air through the condenser coil and discharges the air out the top of the cabinet. The extra large air volume results in **high refrigerant cooling capacity**.

STANDARD CONTROLS—Dual limit controls protect against **abnormal operating conditions**. Timed start **blower control** assures **proper operation** within **60 seconds** after the burner comes on. **Adjustable** blower-off setting **70F to 110F**. Three bulb **2 stage heating** and **single stage cooling thermostat** is furnished as standard equipment.

COMBUSTION AIR BLOWER—Equipped with an end switch which **proves blower operation** before allowing automatic main gas valve to **open**.

ELECTRIC PILOT—Unit has an **automatic** reigniter system. It is never necessary to manually light the pilot. Pilot stays lit **permanently** during the heating season. In case of pilot outage, the pilot system will automatically **reignite** the pilot. When the thermostat calls for cooling the pilot is out and the automatic pilot system is de-energized.

THOROUGHLY TESTED AND APPROVED—A.G.A. approved as a forced air furnace with cooling unit. **Heating and cooling** tested. Complies with ASA Safety Codes. Cooling system has been thoroughly tested and rated in the Lennox calorimeter room according to **ARI Standard 210-62**. Laboratory **life cycle** testing of the heat exchanger **insures long life** of element. In addition each unit is **test operated** at the factory before shipment.

ASSEMBLED UNIT—Equipment is shipped completely assembled, **wired and plumbed** ready to install. Installer has only to connect ductwork, gas supply, power supply and thermostat wire to complete the job.

REFRIGERATION SYSTEM—Complete **factory sealed** refrigeration system consists of compressor, condenser coil and fan, evaporator coil and blower, **refrigerant drier**, refrigerant lines connected and a full charge of refrigerant. Controls consist of necessary pressure switches, capacitors, compressor relay and overload protection.

RUGGED CABINET—Heavy gauge hot dipped steel cabinet panels with a baked **acrylic enamel** finish. A **five station wash** metal preparation assures a **perfect bonding** surface for the baked acrylic enamel.

CLEANABLE AIR FILTER—Washable, vacuum cleanable polyurethane filter media is furnished as standard. It has a **large dust holding capacity** and is easily accessible for cleaning.

LARGE SERVICE ACCESS PANELS—Complete service access is accomplished through the large access panels. The **entire top** is easily **removed** giving complete access to all internal parts.

SPECIFICATIONS

Model No.		*GCS1-261-60	GCS1-261-90	*GCS1-411-90 *GCS1-413-90	GCS1-411-120 GCS1-413-120 GCS1-413-120-440
Heating capacity input (Btuh)		60,000	90,000	190,000	120,000
Heating capacity bonnet output (Btuh)		45,000	67,500	67,500	90,000
Gas piping size, mat., I.P.S. (in.)		1/2	1/2	1/2	1/2
High statics approved by A.G.A. (in. wg.)		.50	.50	.50	.50
Approx. shipping weight (lbs)		490	510	600	620
Blower wheel nominal diam. x width (in.)		9 x 7		10 x 8	
Blower motor hp.		1/6		1/3	
No. of filters & size (in.)		(1) 20x25x1/2		(1) 20x25x1/2	
Total cooling capacity (Btuh)		23,000		36,000	
Dehumidifying capacity % of total capacity		30		27	
Compressor watts		2550		4220	
Condensate drain size o.d. (in.)		7/8		7/8	
Refrigerant type and charge furnished (lbs)		R-22—5 lbs. 5 oz.		R-22—8 lbs. 0 oz.	
Condenser Coil	Net face area (sq ft)	5.5		5.5	
	Tube diameter (in.)	1/2		1/2	
	No. rows of tubes	2		3	
	Fins per inch	13		13	
Condenser Fan	Diam. (in.) & No. of blades	18—4		22—4	
	Air volume cfm (factory setting)	2050		2550	
	Rpm (factory setting)	1067		792	
	Motor horsepower	1/6		1/3	
	Motor watts (factory setting)	280		545	
Evaporator Coil	Net face area (sq. ft.)	3.47		3.47	
	Tube diameter (in.)	1/2		1/2	
	No. rows of tubes	2		3	
	Fins per inch	10		10	

*A.G.A. approved as a 45F to 75F rise furnace only.

†May be derated to 60,000 Btuh input giving an output of 45,000 Btuh.

COOLING RATINGS

GCS1-261

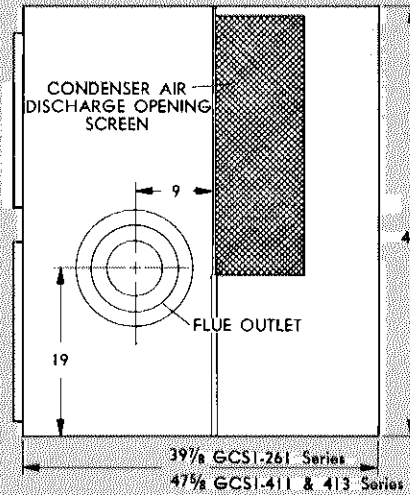
Evaporator Air 80F Dry Bulb		Outdoor Air Temperature Entering Condenser (F)											
Entering Wet Bulb (F)	Total Air Volume (cfm)	85			95			105			115		
		Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
64	800	23,000	.77	2220	22,300	.79	2420	20,400	.87	2650	17,650	.86	2870
	900	23,600	.82	2270	23,400	.85	2480	22,000	.89	2720	19,500	.94	2950
	1000	23,850	.88	2320	23,700	.92	2540	22,400	.96	2790	20,150	1.0	3030
67	800	23,900	.65	2255	22,900	.67	2490	21,000	.69	2730	18,850	.70	2970
	900	24,500	.69	2320	24,000	.70	2550	22,600	.73	2790	20,700	.76	3030
	1000	24,750	.73	2380	24,300	.75	2620	23,000	.78	2860	21,350	.81	3100
70	800	24,900	.55	2320	23,500	.57	2560	21,900	.58	2790	20,050	.59	3030
	900	25,500	.58	2370	24,600	.59	2620	23,500	.60	2860	21,900	.62	3110
	1000	25,750	.60	2420	24,900	.61	2680	23,900	.63	2930	22,550	.65	3190

COOLING RATINGS

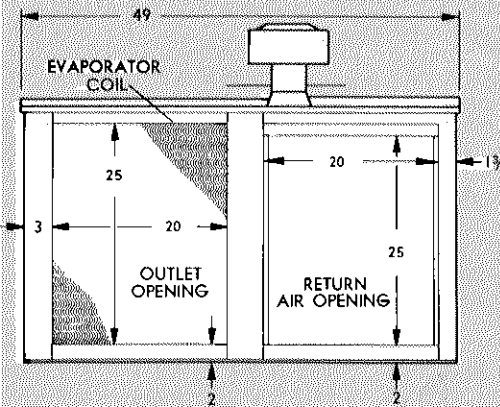
GCSI-411-413

Evaporator Air 80F Dry Bulb		Outdoor Air Temperature Entering Condenser (F)											
		85			95			105			115		
Entering Wet Bulb (F)	Total Air Volume (cfm)	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input	Total Cooling Capacity (Btuh)	Sensible To Total Ratio (S/T)	Comp. Motor Watts Input
64	1200	34,500	.850	3760	33,500	.850	4030	30,400	.870	4220	26,200	.930	4350
	1350	35,600	.870	3820	34,600	.875	4110	31,700	.905	4290	27,100	.945	4410
	1500	36,500	.890	3900	35,600	.900	4170	32,700	.925	4360	28,800	.970	4480
67	1200	36,000	.700	3870	35,100	.700	4150	32,300	.760	4320	28,000	.785	4440
	1350	36,800	.715	3970	36,000	.730	4220	33,400	.780	4400	29,000	.810	4500
	1500	37,700	.735	4010	36,800	.750	4260	34,600	.800	4440	30,800	.830	4560
70	1200	36,700	.580	3960	35,900	.610	4220	33,300	.620	4410	29,300	.630	4530
	1350	37,700	.605	4050	36,800	.635	4300	34,600	.645	4470	30,800	.650	4550
	1500	38,600	.630	4110	37,600	.655	4350	35,500	.670	4510	31,800	.670	4610

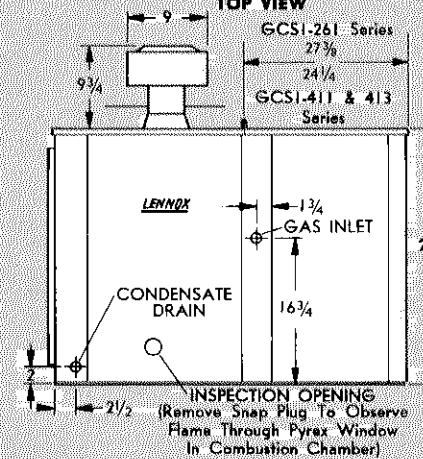
DIMENSIONS (in.)



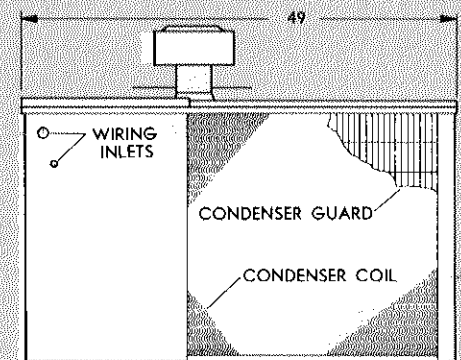
TOP VIEW



EVAPORATOR SIDE VIEW



FRONT VIEW



CONDENSER SIDE VIEW

BLOWER PERFORMANCE

NOTE—All cfm data is measured external to the unit using standard return air opening and with the air filter in place. Tested by A.M.C.A. code.

GCS1-261-60 & GCS1-261-90

External Static Pressure (in. wg.)	Air Volume (cfm) @ various controller speeds		
	High	Medium	Low
0	1064	915	770
.05	1040	905	762
.10	1016	885	754
.15	990	868	743
.20	960	850	730
.25	934	829	714
.30	900	806	695
.35	870	780	676
.40	835	750	655
.45	800	715	627
.50	756	675	595

GCS1-411-90 & GCS1-413-90

External Static Pressure (in. wg.)	Air volume (cfm) @ various controller speeds			
	High (1)	High (2)	Medium	Low
0	1555	1435	1255	1000
.05	1528	1416	1245	995
.10	1500	1394	1236	950
.15	1472	1372	1218	980
.20	1444	1345	1202	977
.25	1414	1320	1185	968
.30	1382	1294	1165	958
.35	1350	1265	1145	944
.40	1318	1235	1122	925
.45	1285	1206	1098	905
.50	1250	1175	1074	882

**GCS1-411-120, GCS1-413-120
and GCS1-413-120-440**

External Static Pressure (in. wg.)	Air volume (cfm) @ various controller speeds			
	High (1)	High (2)	Medium	Low
0	1512	1370	1200	955
.05	1484	1340	1187	945
.10	1454	1317	1172	935
.15	1425	1291	1155	925
.20	1394	1265	1136	912
.25	1362	1236	1117	900
.30	1332	1210	1095	886
.35	1300	1182	1075	872
.40	1265	1152	1050	853
.45	1228	1120	1025	832
.50	1193	1090	1000	810

INSTALLATION CLEARANCES

Approved only for outdoor installation with the following minimum installation clearances:

Top — 36 inches Condenser Side — 24 inches Rear — 6 inches

Front Access — 24 inches Duct Side of Cabinet — 6 inches

Approved for installation on combustible floors.

ELECTRICAL DATA

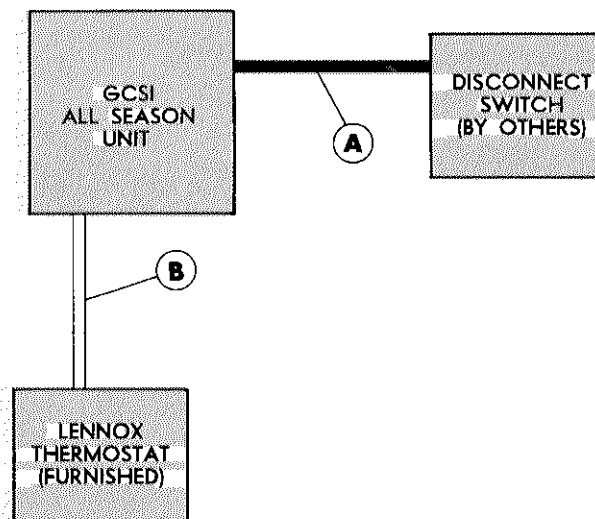
Model No.		GCS1-261-60 GCS1-261-90	GCS1-411-90 GCS1-411-120	GCS-413-90 GCS1-413-120	GCS1-413-120-440
Line voltage data		230-60cy-1 ϕ	230-60cy-1 ϕ	208/220-60cy-3 ϕ	440v-60cy-3 ϕ
Compressor	*Running amps	12.5	19.5	12.9	6.4
	Power factor	.89	.94	.86	.86
	Locked rotor amps	48.0	80.0	65.0	32.5
Condenser Coil Fan	Running amps	1.05	3.2	3.2	3.2**
	Locked rotor amps	2.61	6.6	6.6	6.6**
Evaporator Coil Blower	Running amps	1.05	3.0	3.0	3.0**
	Locked rotor amps	2.61	6.3	6.3	6.3**
Maximum unit amps		14.6	25.7	19.1	9.5
AWG Wire Size For Various Lengths of Run	10'	12	8	10	14
	50'	12	8	10	14
	100'	12	8	10	14
	200'	10	6	8	12
Disconnect size		30	60	30	30
‡Fusetron size		20	40	30	15

*Running amps are at ARI standard conditions.

‡Use cartridge type only. If circuit breakers are used the next size larger is required. This may also affect wire sizing—consult local codes.

**Motors are rated at 230 volt, 1 phase with step-down transformer.

† FIELD WIRING



A—Two or three wire power—see electrical data table

B—Five wire low voltage—18 ga. minimum

All wiring must conform to NEC and local electrical codes.

†If local electrical code permits may be class 2 wiring.

LENNOX Industries Inc.

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SALT LAKE CITY, UTAH • LENNOX INDUSTRIES (CANADA) LTD., TORONTO, ONTARIO • CALGARY, ALBERTA