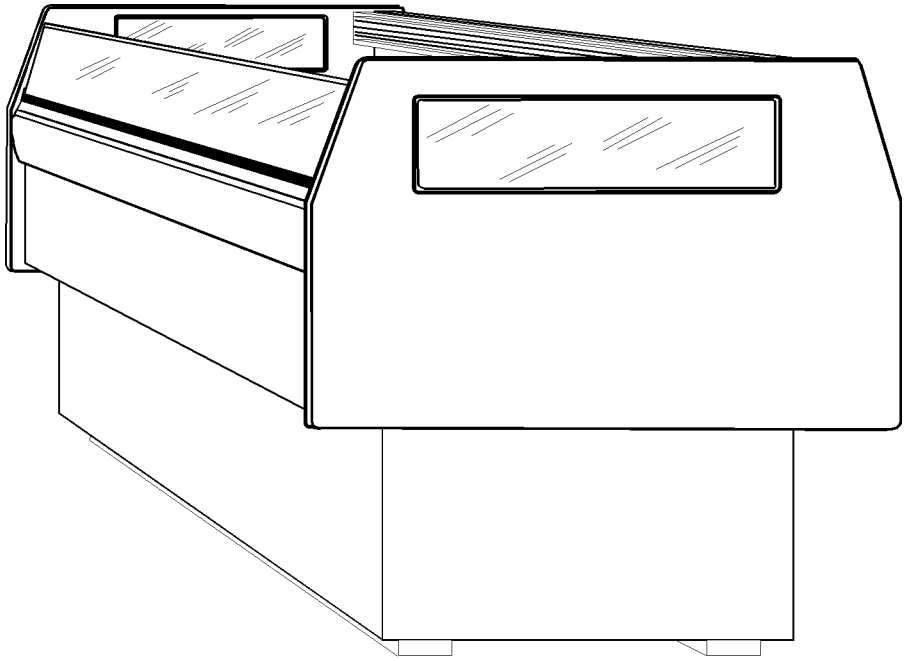
TYLER

series Advantage

Installation & Service Manual



LFSC5, LF5, LNSC5, LN5

SELF-SERVE SELF-CONTAINED & REMOTE SPOT MERCHANDISERS
Low and Medium Temperature Refrigerated Display Cases

This manual has been designed to be used in conjunction with the General Installation & Service Manual.
Save the Instructions in Both Manuals for Future Reference!!

This merchandiser conforms to the Commercial Refrigeration Manufacturers Association Health and Sanitation standard CRS-S1-96.

PRINTED IN IN U.S.A.	Specifications subject to change without notice.	REPLACES EDITION	9/99	ISSUE DATE	5/04	PART NO.	9027525	REV.	D

Tyler Refrigeration * Niles, Michigan 49120

CONTENTS

The following Low and Medium Temperature Self-Contained and Remote Spot Merchandiser models are covered in this manual:

MODELS	DESCRIPTION
LFSC5	LOW/MEDIUM DUAL TEMP. SELF-CONTAINED SPOT MERCHANDISER
LF5	LOW/MEDIUM DUAL TEMP. REMOTE SPOT MERCHANDISER
LNSC5	MEDIUM TEMPERATURE SELF-CONTAINED SPOT MERCHANDISER
LF5	MEDIUM TEMPERATURE REMOTE SPOT MERCHANDISER

SPECIFICATIONS

LFSC5/LF5 Low Temperature Glass Top Spot Merchandiser Specification

MODEL	LFSC5/LF5	LFSC5/LF5
USAGE	FROZEN	ICE CREAM
BTUH	2590	3180
SUCTION°	-20F	-28F
ENTER AIR°	-10F	-19F

DATA BASED ON: Store Temp. of 75F & 55% Relative Humidity (Maximum). This case is designed to operate at dual temp. Desired medium temps can be achieved by adjusting the thermostat.

NOTE: COMPRESSOR SIZING SHOULD ALLOW FOR SUCTION LINE PRESSURE DROP.

THE ABOVE RATINGS ARE FOR COMPRESSOR SELECTION ONLY. FOR ENERGY CALCULATION DATA REFER TO THE ENERGY SECTION. FOR COMPRESSOR SIZING INFORMATION REFER TO THE "GOLD" SECTION & FOR LINE SIZING INFORMATION REFER TO THE "BUFF" SECTION OF THE TYLER SPECIFICATION GUIDE.

DEFROST CONTROL (REMOTE)				BACKUP PRESSURE SETTINGS			EPR SETTINGS	
PER DAY	MODE	TIME	TERM.		CUT IN	CUT OUT	R22	R404A
2	ELECT / FF	36 MIN.	50F	FF	14# @ R404A	4# @ R404A	- - -	17.0
2	ELECT / IC	36 MIN.	50F	IC	9# @ R404A	0# @ R404A	- - -	12.0
2	HOT GAS / FF	15MIN.	55F*	FF	14# @ R404A	4# @ R404A	- - -	17.0
2	HOT GAS / IC	15 MIN.	55F*	IC	9# @ R404A	0# @ R404A	- - -	12.0

* If an Electronic Sensor is used for termination, it should be set at 70°F termination temperature.

SELF-CONTAINED DATA

Refrigerant	50 oz. R-404A
Defrost	See Above Table
Control Settings	See Above Table
Maximum Overcurrent Protection	115v - 20 amps
Minimum Circuit Capacity	115v - 16 amps
Electrical: 120v 60Hz 1ph	Fan amps = .5 A-S Heater amps = .9 Condensate Htr. amps = 3.5 Defrost Heater amps = 8.7
Condensing Unit	Copeaweld FJAF-A075-CAA
Drain	No External Drain Required**

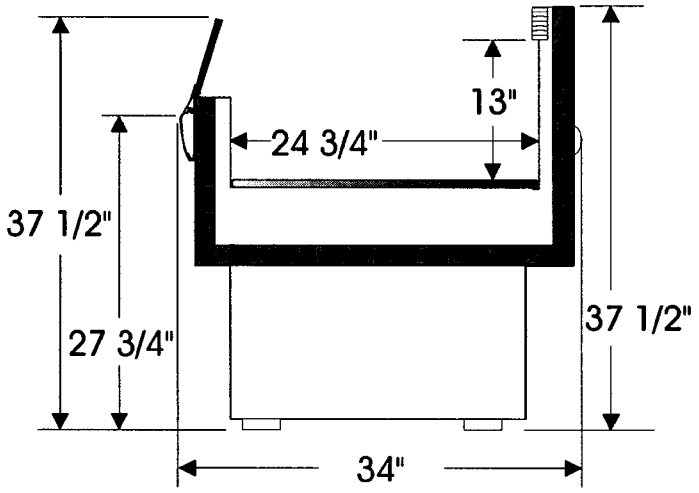
REMOTE DATA

Defrost	See Above Table
Control Setting	See Above Table
Electrical: 120v 60Hz 1ph 220v 60Hz 1ph	Fan amps = .5 A-S Heater amps = .9 Total Fan & A-S = 1.4 Defrost Heater amps 4.5
Drain	1 1/2" PVC

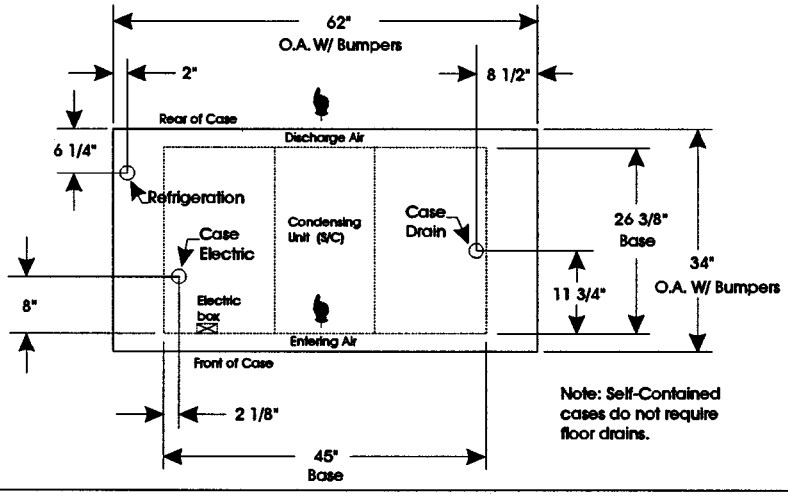
** Defrost water evaporated by 400w Condensate Heater Pan equipped with a float switch.

CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering air temperature with absolute maximum operating ambient limits of **75F & 55RH**.

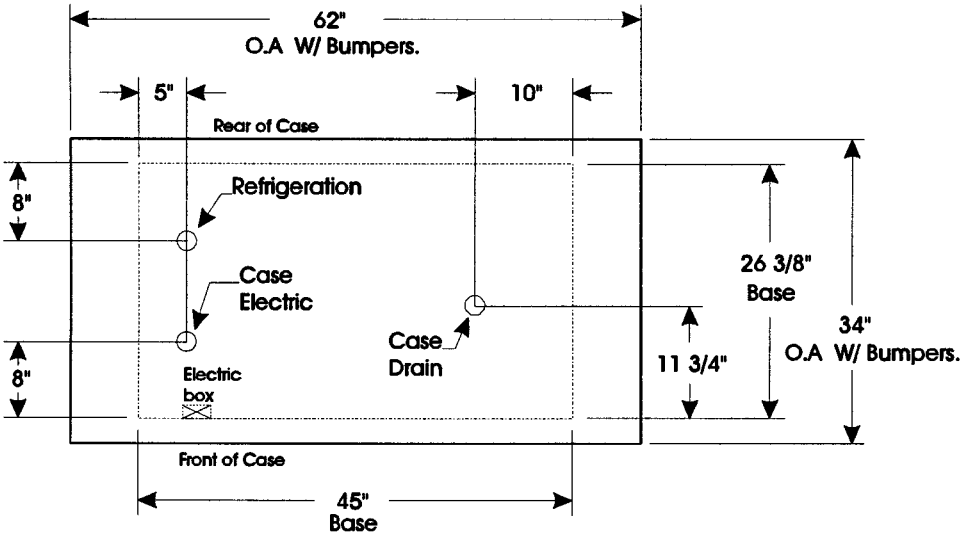
LFSC5/LF5 Low Temperature Glass Top Spot Merchandisers



FLOOR PLAN - SELF-CONTAINED UNIT



FLOOR PLAN - REMOTE UNIT



LNSC5 Medium Temperature Spot Merchandisers (Self-Contained)

Self-Contained Refrigeration & Defrost Data:

CASE USAGE	REFRIGERANT (R22) DESIGN PRESSURE		DISCHARGE AIR		DEFROSTS		THERMOSTAT SETTINGS		REFRIGERATION CHARGE (LBS / CASE)
	LOW SIDE (PSIG)	HIGH SIDE (PSIG)	TEMPERATURE (°F)	VELOCITY (FPM)	DEFROSTS PER DAY	DURATION TIME (MIN.)	CUT-IN (°F)	CUT-OUT (°F)	
MED TEMP	183	400	+20	219*	2	30	+37	+32	2.7

* Air velocity measured 1 hour after defrost at the discharge air duct using an ALNOR JR. velometer with a scoop.

FOR SPECIFIC COMPRESSOR SIZING AND/OR LINE SIZING INFORMATION, REFER TO THE "GOLD" AND/OR "BUFF" SECTIONS IN THE TYLER SPECIFICATION GUIDE.

Electrical Data:

CASE ELECTRICAL CIRCUIT: One 120V Electrical Power Supply is required for this Self-Contained case.
This 120V Power Supply runs all circuits and components in this unit.

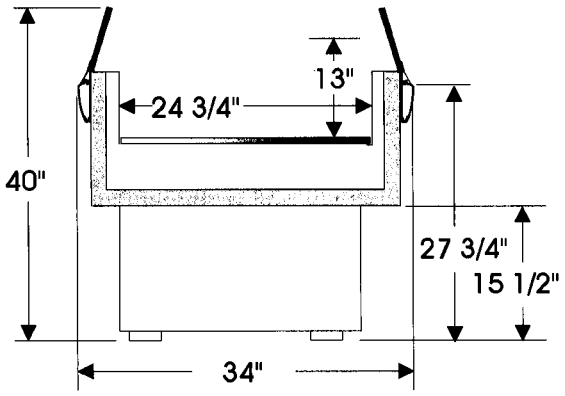
Self-Contained Electrical Data (120 Volt)

MODEL	SELF-CONTAINED COMPRESSOR			M.C.A.***	M.O.P.****	TOTAL ANTI-SWEATS		DEFROST HEATER	
	UNIT	R.L.A.*	L.R.A.**	AMPS	AMPS	AMPS	WATTS	AMPS	WATTS
LNSC5	120V 60Hz 1 Ph, 1/3 HP	7.1	29.0	14.7	15.0	0.71	85.0	7.45	894.0

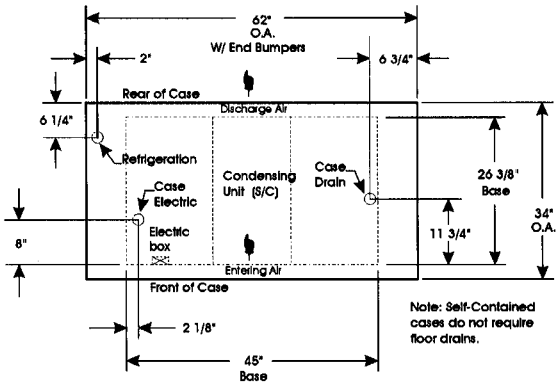
* Run Load Amperage (includes the condenser fan).
** Locked Rotor Amperage.
*** Minimum Circuit Ampacity (includes condenser fan, defrost heater and anti-sweat heaters)
**** Maximum Overcurrent Protection.

NOTE: These units do not require a condensate pan heater. The water is dissipated via hot gas loop off the compressor.

LNSC5 CROSS SECTION



LNSC5 FLOOR PLAN



CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering-air temperature with absolute maximum operating ambient limits of **75°F & 55RH.**

LN5 Medium Temperature Spot Merchandisers (Remote)

Refrigeration Data:

MODEL	CASE LENGTH	CASE USAGE	CAPACITY (BTUH / FT)		EVAPORATOR (°F)	UNIT SIZING (°F)	DISCHARGE AIR		AVG. REF. CHARGE (LBS/FT)
			PARALLEL	CONVENTIONAL			TEMPERATURE (°F)	VELOCITY (FPM)	
LN5	5'	MED TEMP	1,750*	1,826*	+13**	+11	+20	219***	0.44****

* **For sizing all refrigeration equipment other than TYLER, use conventional BTUH values.**
** **Evaporator temperature is based on the saturated pressure leaving the case.**
*** **Air velocity measured 1 hour after defrost at the discharge air duct using an ALNOR JR. velometer with a scoop.**
**** **This is an average refrigeration charge per foot based on R22 and R404A refrigerant usage.**

FOR SPECIFIC COMPRESSOR SIZING AND/OR LINE SIZING INFORMATION, REFER TO THE "GOLD" AND/OR "BUFF" SECTIONS IN THE TYLER SPECIFICATION GUIDE.

Electrical Data:
Fans and Heaters (120 and 208 Volt)

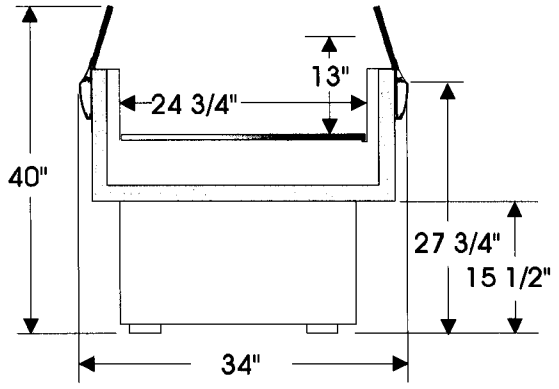
MODEL	CASE LENGTH	FANS / CASE	TOTAL STANDARD FANS		TOTAL ECM FANS		TOTAL ANTI-SWEATS (120V)		208 VOLT DEFROST HEATER	
			AMPS	WATTS	AMPS	WATTS	DISCHARGE AIR AMPS	DISCHARGE AIR WATTS	AMPS	WATTS
LN5	5'	1	0.34	30.2	0.22	11.0	0.71	85.0	4.30	894.0

Defrost Data:

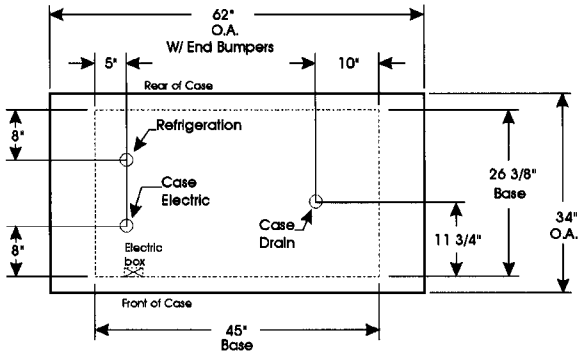
DEFROST TYPE*	DEFROSTS PER DAY	DURATION TIME (MIN)	TERMINATION (°F)	BACKUP PRESSURE SETTINGS **		EPR SETTINGS ***		DEFROST WATER (LB / FT / DAY)
				CUT IN	CUT OUT	R22 (PSIG)	R404A (PSIG)	
ELECTRIC	2	30	50	40# @ R22	30# @ R22	43	56	0.75
HOT GAS	2	15	55*					

* If an Electronic Sensor is used for termination, it should be set at 70°F termination temperature. The sensor must be located in the same location as the defrost termination klixon for that defrost type.
** Used with Thermostat or EPR Control.
*** Set EPR to give this pressure at the case.

LN5 CROSS SECTION



LN5 FLOOR PLAN



CASE BTUH REQUIREMENTS are calculated to produce approximately the indicated entering-air temperature with absolute maximum operating ambient limits of **75°F & 55RH.**

INSTALLATION PROCEDURES

Carpentry Procedures

NOTE

If installing LF5 or LN5 remote models, see the plumbing and refrigeration procedure sections in the "General I&S Manual".

Electrical Procedures

Electrical Considerations

CAUTION

Make sure all electrical connections are tight. This will prevent burning of electrical terminals and/or premature component failure.

Case Fan Circuit (LF5/LN5 Only)

This circuit is to be supplied by an uninterrupted, protected 120V circuit. The case fan circuit is not cycled during defrost on any of these models.

Self-Contained Circuit (LFSC5/LNSC5 Only)

LFSC5 and LNSC5 cases are self-contained units. Specific electrical information pertaining to self-contained units should be obtained directly from TYLER Refrigeration.

LFSC5/LNSC5 Condensing Unit Start-Up and Maintenance

1. Condensing unit access is obtained by removing the front and rear ventilation panels.
2. Electrical supply should be wired directly to the terminal block alongside the defrost clock. Electrical supply should be a 40A, 115V 60Hz cicuit. **Be sure the case is properly grounded.**

NOTE

See "Wiring Diagrams" in this manual for wiring specifics.

3. The compressor is mounted on rubber grommets. **Do not loosen the nuts.**
4. Set the thermostat for 0°F to 5°F for LFSC5 or 35°F for LNSC5. A screwdriver will be required to turn the slotted dial.

NOTE

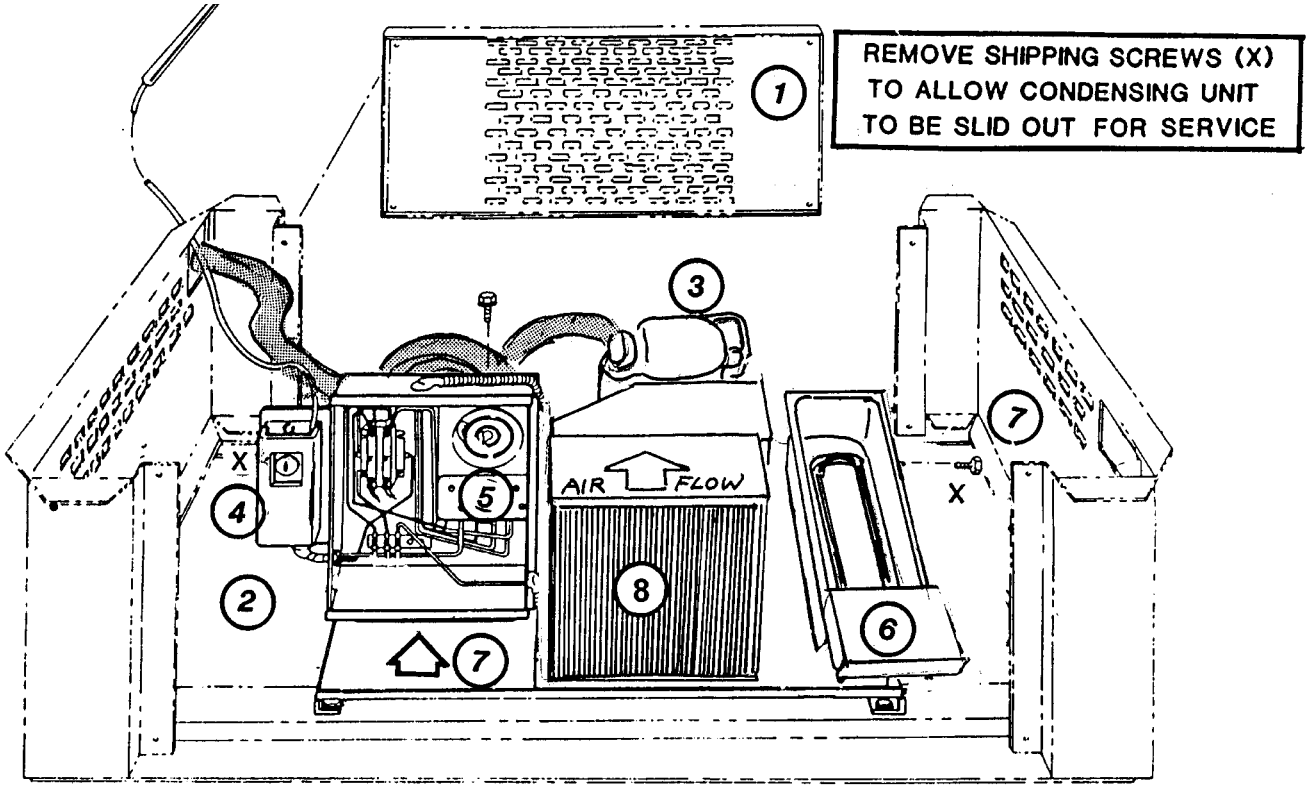
The sensing bulb should be located in the return air. After the air passes through the coil, it will be about 10° lower.

5. Set defrost control for two defrosts per day at 36 minutes failsafe for the LFSC5 or 30 minutes failsafe for the LNSC5. There is a 1000W electric heater which defrosts the coil. The defrost limit switch opens at 50°F and turns off the heater. The unit will resume the refrigeration cycle when the failsafe is expired.
6. On the LFSC5, the condensate pan is stainless steel and is equipped with a 400W heater. The heater is connected to a 190°F limit switch and a float switch to prevent the it from operating when water is not present.

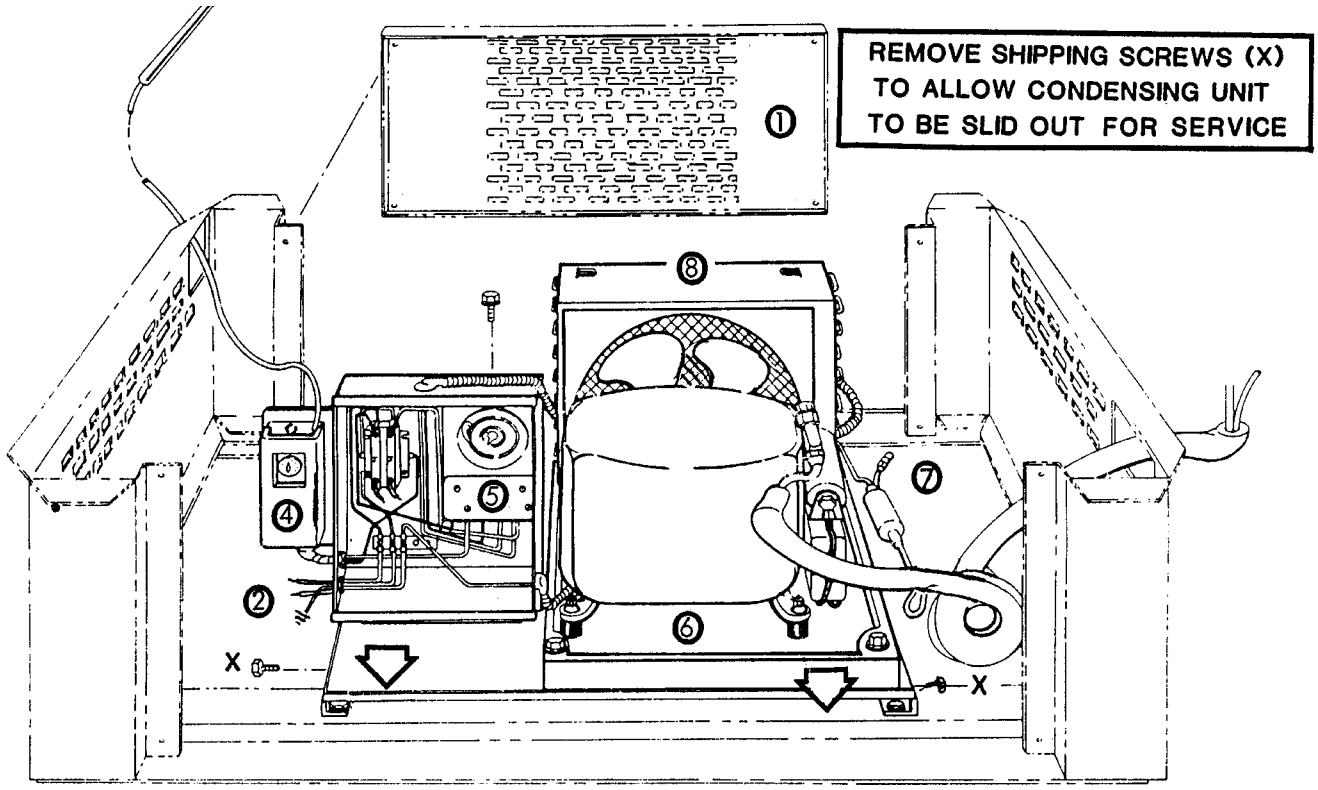
   On the LNSC5, the condensate water is eliminated using the heat from the compressor. No resistance electrical heat is required. The water from the case coil defrosting makes the unit more efficient when water is in the pan.

   The pan in either case will not handle wash water! The plastic drain hose can be pulled out to drain case interior to a bucket during cleaning. Be sure to replace the plastic hose securely after cleaning.
7. Service pressure access to the system is through the Schrader valve and the suction service valve on the compressor. The condensing unit is on a slide-out base.
8. Keep the condenser efficient by cleaning it regularly, at least every six months. Clean more frequently if it gets clogged with dust in less time. Use a shop vacuum and/or air pressure to clear the finned coil of dust and dirt.

LFSC5 Self-Contained Unit



LNSC5 Self-Contained Unit



Defrost Information

See "General I&S Manual" for operational descriptions for each type of defrost control.

Defrost Control Chart

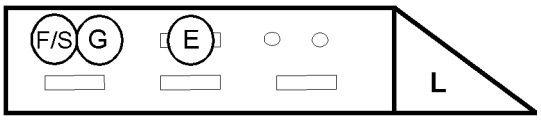
LFSC5/LF5 Defrost Option Settings

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Electric/FF	2	36	50°F
Electric/IC	2	36	50°F
Gas/FF	2	15	55°F
Gas/IC	2	15	55°F

LNSC5/LN5 Defrost Option Settings

Defrost Type	Defrosts Per Day	Defrost Duration (Min)	Term. Temp.
Electric	2	30	-----
Gas	2	15	-----

Most klixons are located on the left end of the evaporator coil. The diagram shows the location for each defrost type that uses a klixon.



E = Electric Defrost Termination
G = Gas Defrost Fan Delay (Dual Temp.)
F/S = Electric Defrost Failsafe (Optional)

NOTE

The termination klixon for gas defrost is located at the bypass check valve.

CAUTION

If electronic sensors are used in place of the klixons, the sensors must be located in the same location as the klixons for that defrost type. Any other location will effect the refrigeration efficiency of the case.

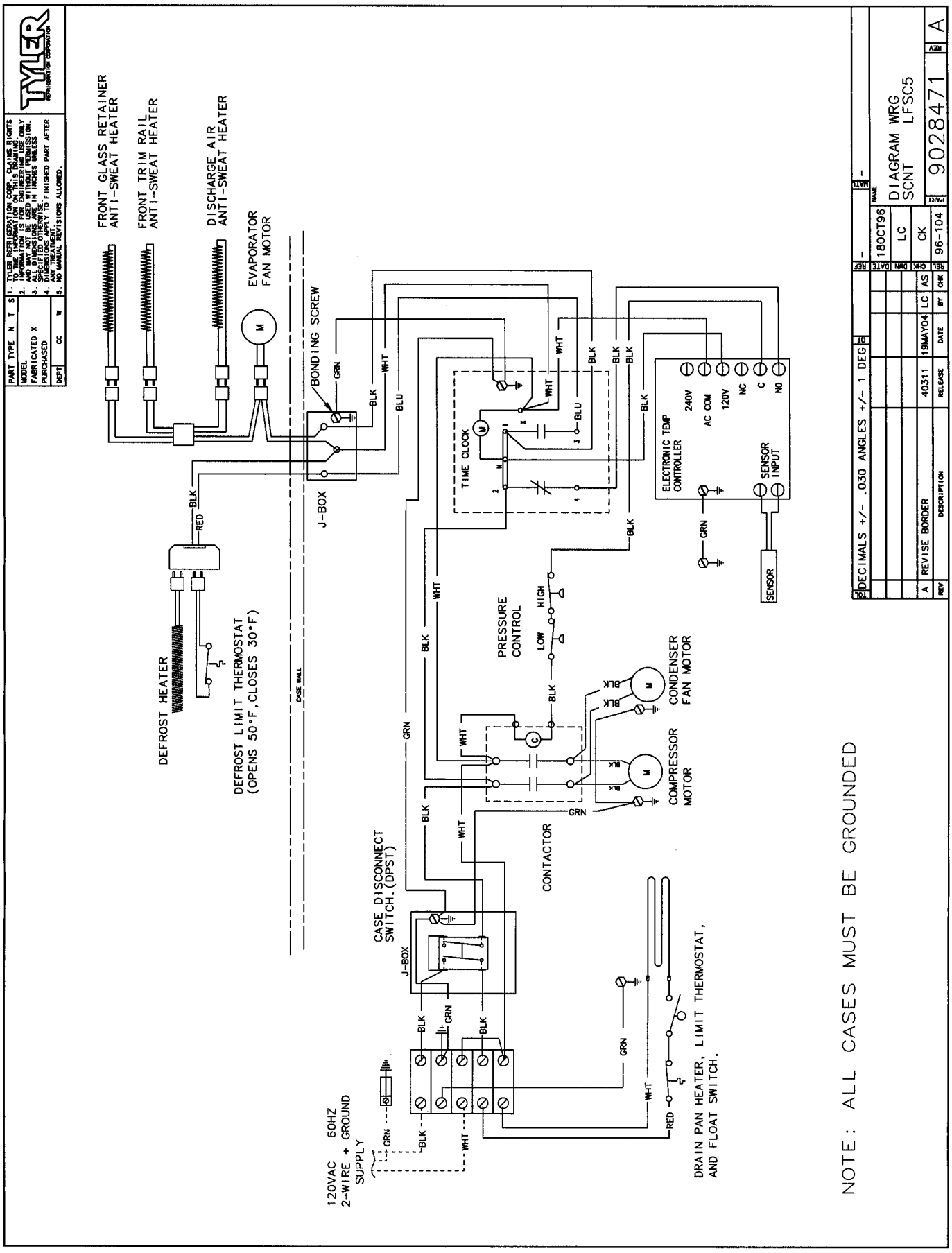
WIRING DIAGRAMS

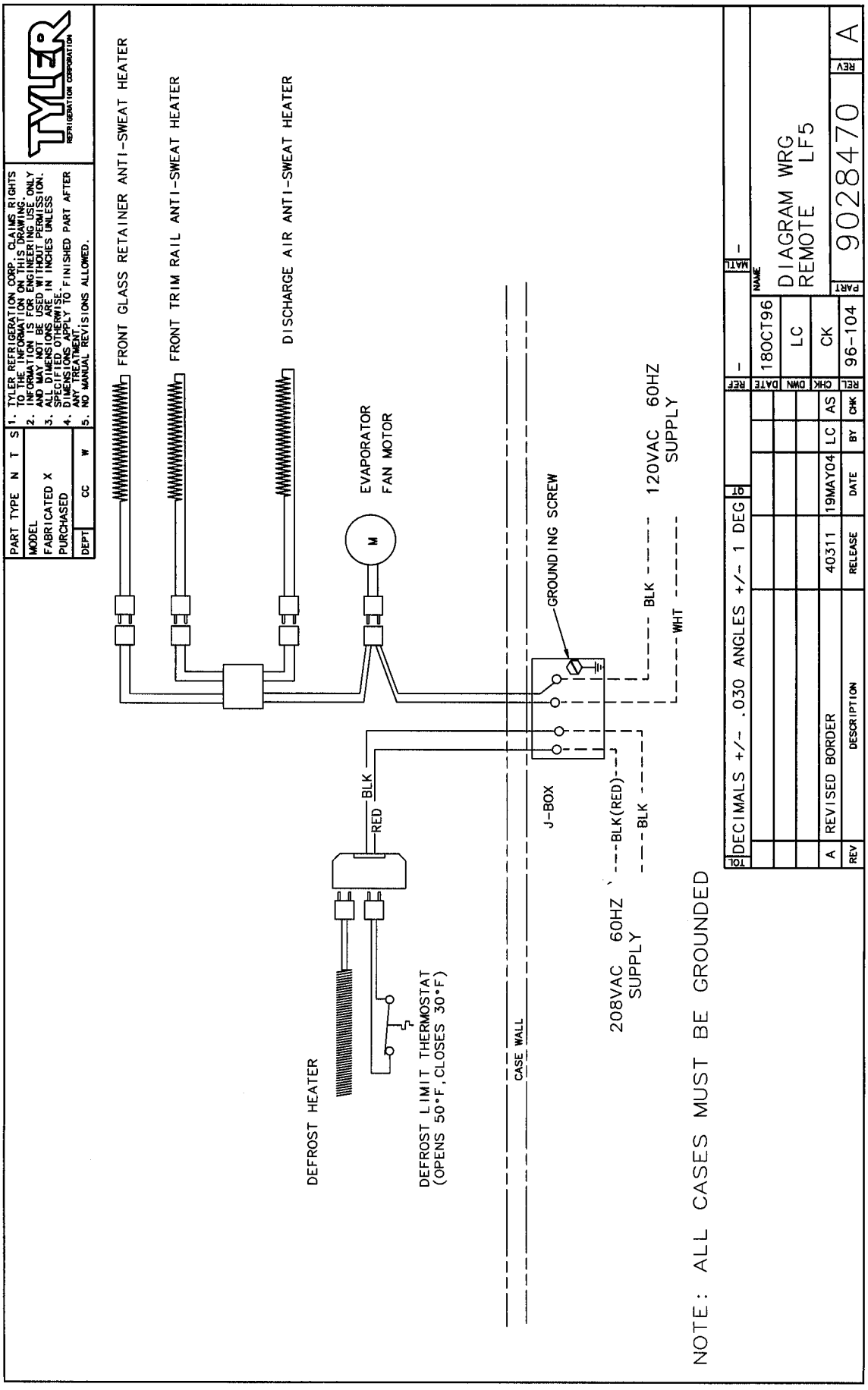
ELECTRICIAN NOTE - OVERCURRENT PROTECTION

120V circuits should be protected by 15 or 20 Amp devices per the requirements noted on the cabinet nameplate or the National Electrical Code, Canadian Electrical Code - Part 1, Section 28. 208V defrost circuits employ No. 12 AWG field wire leads for field connections. On remote cases intended for end to end line-ups, bonding for ground may rely upon the pull-up bolts.

The following wiring diagrams on pages 12 thru 15 will cover the LFSC5/LF5/LNSC5/LN5 case circuits. The defrost circuits are shown in the case circuits.

LFSC5 Domestic & Export (50 Hz) Case Circuits




TYLER REFRIGERATION
REFRIGERATION CORPORATION
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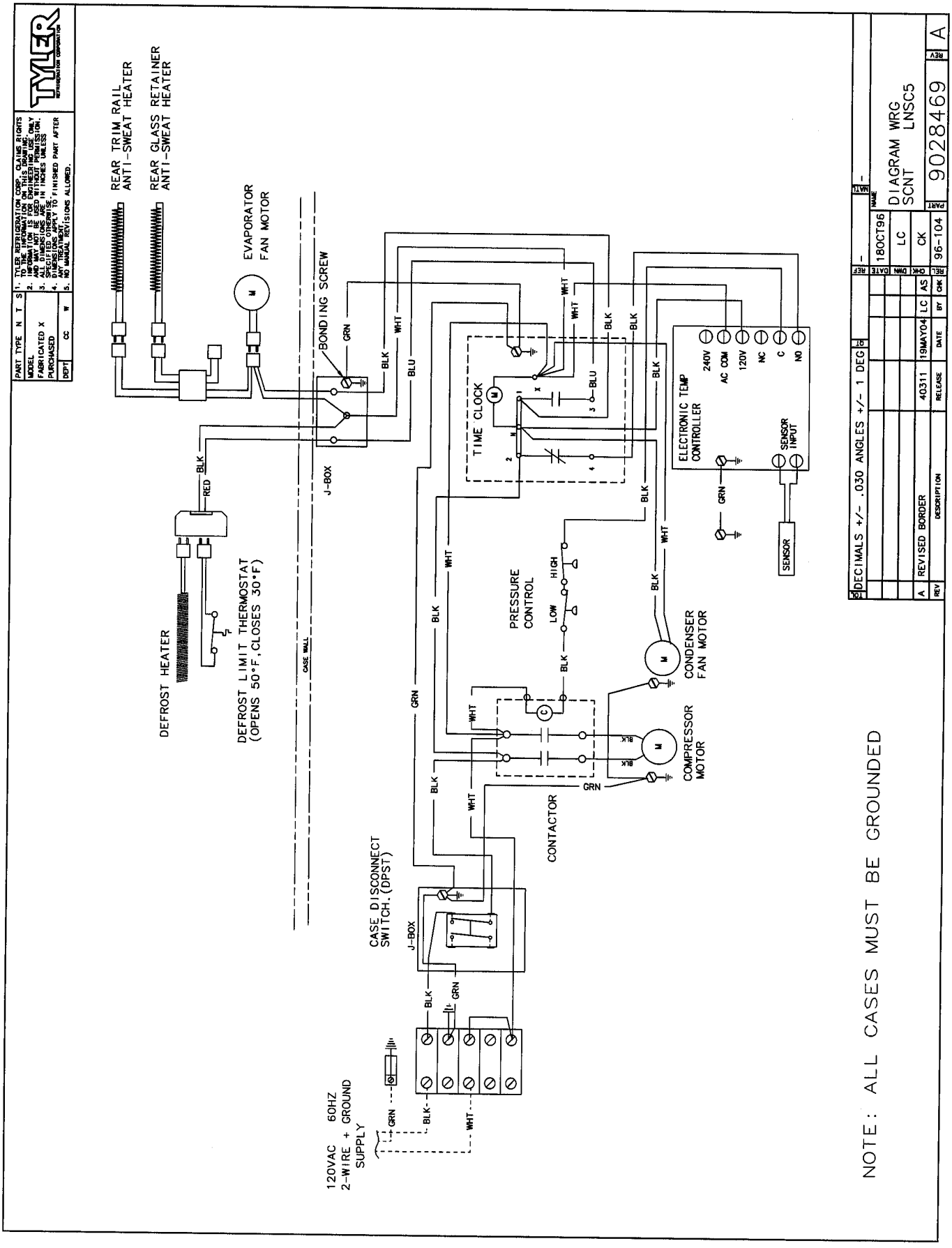
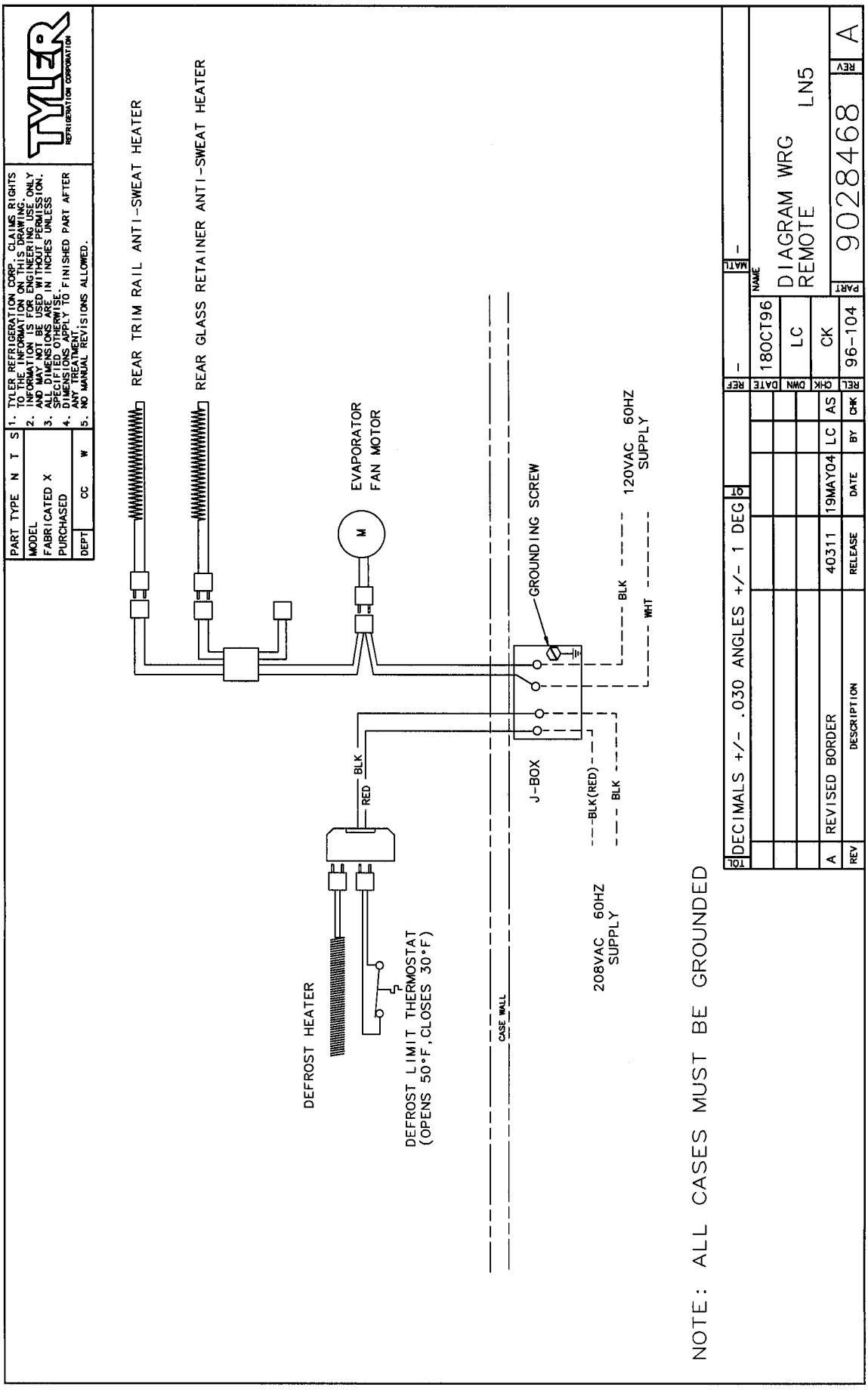
2. INFORMATION IS FOR ENGINEERING USE ONLY AND MAY NOT BE USED WITHOUT PERMISSION.
3. ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
4. DIMENSIONS APPLY TO FINISHED PART AFTER ANY TREATMENT.
5. NO MANUAL REVISIONS ALLOWED.
PART TYPE N T S
MODEL
FABRICATED X
PURCHASED
DEPT CC W
FRONT GLASS RETAINER ANTI-SWEAT HEATER
FRONT TRIM RAIL ANTI-SWEAT HEATER
DISCHARGE AIR ANTI-SWEAT HEATER
EVAPORATOR FAN MOTOR
M
GROUNDING SCREW
BLK
WHT
120VAC 60HZ SUPPLY
J-BOX
BLK
RED
BLK(RED)
BLK
208VAC 60HZ SUPPLY
CASE WALL
DEFROST HEATER
DEFROST LIMIT THERMOSTAT (OPENS 50°F, CLOSES 30°F)
NOTE: ALL CASES MUST BE GROUNDED
DECIMALS +/- .030 ANGLES +/- 1 DEG
REF -
DATE 180CT96
DWN LC
CHK CK
REL 96-104
MATL -
NAME DIAGRAM WRG REMOTE LF5
PART 9028470
REV A
A REVISED BORDER 40311 19MAY04 LC AS
REV DESCRIPTION RELEASE DATE BY CHK

LNSC5 Domestic & Export (50 Hz) Case Circuits

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ALL DIMENSIONS ARE IN INCHES UNLESS SPECIFIED OTHERWISE.
DIMENSIONS APPLY TO FINISHED PART AFTER ANY SECONDARY OPERATIONS.
NO MANUAL REVISIONS ALLOWED.
PART TYPE N T S
MODEL
FABRICATED X
PURCHASED
DEPT CC W
REAR TRIM RAIL ANTI-SWEAT HEATER
REAR GLASS RETAINER ANTI-SWEAT HEATER
EVAPORATOR FAN MOTOR
M
GROUNDING SCREW
120VAC 60HZ SUPPLY
BLK
WHT
J-BOX
BLK
RED
BLK(RED)
BLK
208VAC 60HZ SUPPLY
DEFROST HEATER
DEFROST LIMIT THERMOSTAT (OPENS 50°F, CLOSES 30°F)
CASE WALL
NOTE: ALL CASES MUST BE GROUNDED
TOL DECIMALS +/- .030 ANGLES +/- 1 DEG
REF -
MATL -
DATE 180CT96
DWN LC
CHK CK
REL 96-104
NAME DIAGRAM WRG REMOTE LN5
PART 90288468
REV A
A REVISED BORDER 40311 19MAY04 LC AS
REV DESCRIPTION RELEASE DATE BY CHK

SERVICE INSTRUCTIONS

Troubleshooting Self-Contained Units (LFSC5/LNSC5 Only)

WARNING

Never work on electrically powered equipment while it is energized! Electrical shock could cause personal injury and/or death.

TROUBLE	COMMON CAUSE	REMEDY
1. Unit will not run	Blown fuse	Replace fuse.
	Low voltage	Check outlet with voltmeter. Voltage should be 115V or 220V (±10%).
	Inoperative motor or temperature control	Check connections.
2. Refrigerated section is too warm	Shelves overloaded; blocked air flow	Make sure items do not block the air flow.
	Thermostat set incorrectly	Check setting.
	Pressure control set incorrectly	Check setting.
	Case fans not operating	Check terminal block connections.
3. Refrigerated section too cold	Thermostat set incorrectly	Check setting.
	Pressure control set incorrectly	Check setting.
4. Unit runs all the time	Inadequate air circulation	Relocate cabinet or remove obstruction. Check installation requirements.
	Room temperature too warm	Ventilate room appropriately.
	Thermostat set incorrectly	Reset thermostat.
	Refrigerant charge low	Have unit serviced by a qualified service technician.
5. Noisy operation	Loose baffles	Tighten or brace baffles.
	Tubing contacting cabinet or other tubing	Move tubing.
	Cabinet not level	Level cabinet.
6. Frost or ice on evaporator coil	Defrost clock doesn't work	Check electrical conections. Have unit serviced by a qualified service technician.
7. Water dripping from case drain	Condensate drain clogged	Clear drain.
	Dissipator not functioning	Check electrical supply. Check float assembly.

NOTE

See "General I&S Manual" for fan blade & motor and color band & bumper replacement instructions.

PARTS INFORMATION

Operational Parts List

	Domestic	
Case Usage	**LFSC5/LF5**	**LNSC5/LN5**
Electrical Circuit	115 Volt 60 Hertz	115 Volt 60 Hertz
Fan Motor	5125532 5 Watt	5125532 5 Watt
Fan Motor Brackets	5962269	5962269
Fan Blades (7" 20° 5B)	5960943	5960943
Anti-Sweat Heater Wire		
(Lo-Watt)	5217424	5217424
(Hi-Watt)	5136615	5136615
Electric Defrost Heater		
(LFSC5/LNSC5)	5108188	5108188
(LF5/LN5)	5109046	5109046
Electric Defrost Limit Switch	5125211	5125211
Opt. Gas Defrost Thermostat	9023508	9023508
Self-Contained Unit Parts (LFSC5/LNSC5 Only)		
Defrost Time Clock	5161076	5161076
Magnetic Contactor	5960949	5960949
Condensing Unit	5932118	5234874
Condensing Unit Fan Motor	SP-B6SE192	SP-B6SE192
Condensate Pan Thermostat	5216455	----
Condensate Pan Float Switch	5900533	----
Condensate Pan Heater	5217665	----

For information on operational parts not listed above contact the TYLER Service Parts Department.

Cladding and Trim Parts Lists

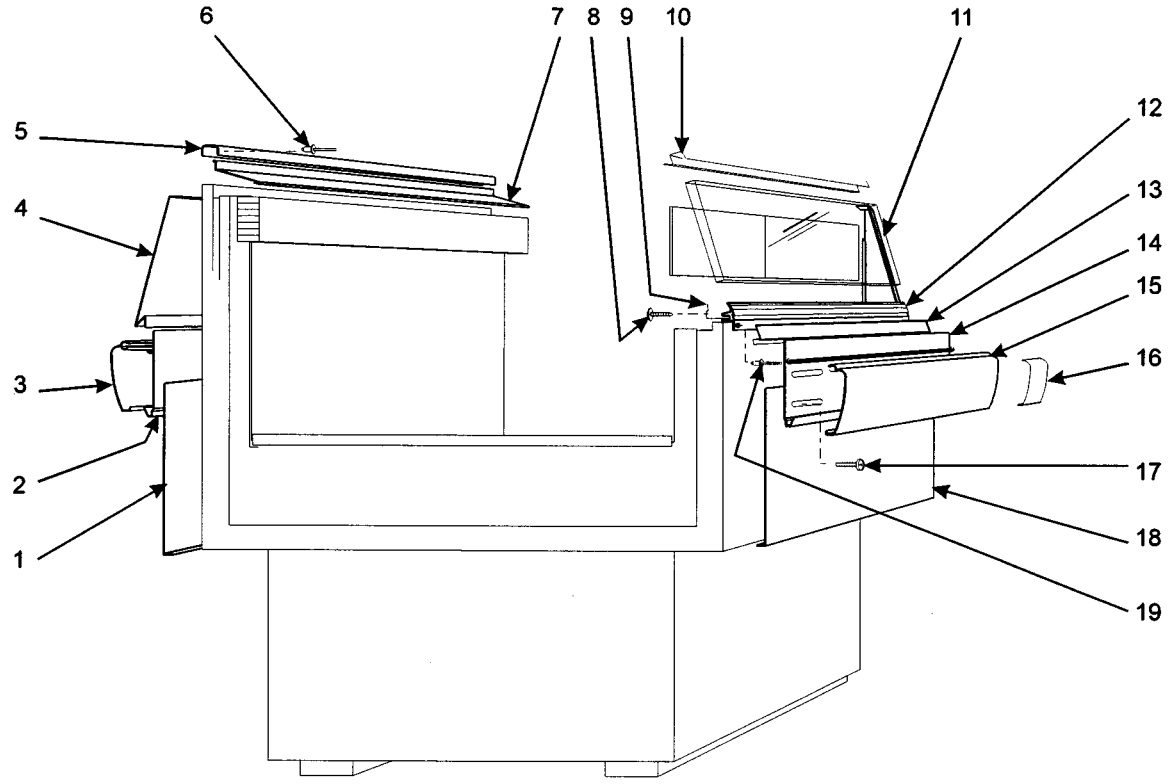
Item	Description	LFSC5/LF5
1	Rear Cladding, Painted	9022761
2	Rear Bumper Retainer	9025147
3	Bumper	color per order
4	Rear Color Band, Pntd.	9022762
5	Rear Trim Rail	9022806
6	Rivet	5104702 (21)
7	Rear Riser Trim Assy.	5960862
8	Screw	5203018 (5)
9	Rear Glass Retainer	5217422
10	Frt. Glass Trim Rail Assy.	9022803
11	RH Front Glass Support	5217453
	LH Front Glass Support	5217454
12	Frt. Glass Retainer Assy.	5217662
13	Frt. Color Band, Pntd.	9020966
14	Frt. Bumper Retainer	9025047
15	Bumper	color per order
16	Bumper Backer	color per order
17	Screw	9025833 (16)
18	Frt. Cladding, Pntd.	9022761
19	Rivet	5105037 (4)

For additional information on parts not listed above contact the TYLER Service Parts Department.

Item	Description	LNSC5/LN5
1	Rear Cladding, Painted	9022761
2	Bumper Retainer	9025047
3	Bumper	color per order
4	Color Band, Pntd.	9020966
5	Rear Glass Retainer Assy.	5991856
6	Rear Glass Trim Rail Assy.	5991860
7	Rivet	5104702 (2)
8	Rear Glass Retainer	5955527
9	Screw	5203018 (10)
10	Rear Glass Retainer	5955527
11	Frt. Glass Trim Rail Assy.	5991858
12	RH Front Glass Support	5217448
	LH Front Glass Support	5217449
	RH 3-Pane Glass Support	5217453
	LH 3-Pane Glass Support	5217454
13	Front Glass Retainer	5217423
14	Color Band, Painted	9020966
15	Bumper Retainer	9025047
16	Bumper	color per order
17	Bumper Backer	color per order
18	Front Cladding, Painted	9022761
19	Screw	9025833 (16)
20	Rivet	5105037 (4)

For additional information on parts not listed above contact the TYLER Service Parts Department.

LFSC5/LF5



LNSC5/LN5