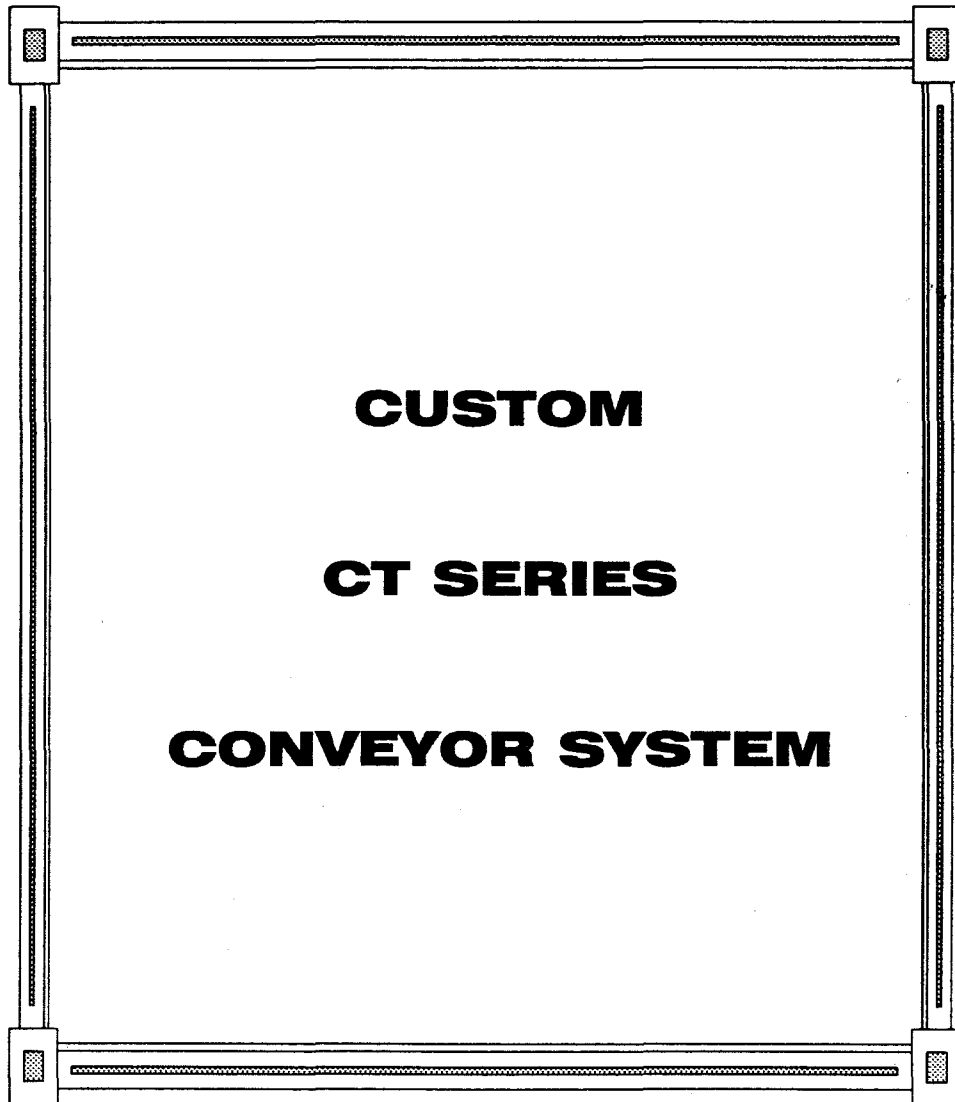


ISSUE DATE: 7/96

**OPERATIONS AND MAINTENANCE MANUAL
REPLACEMENT PARTS LIST
FOR:**



LOW TEMP
MANUFACTURING COMPANY

DIVISION OF LOW TEMP INDUSTRIES, INC
9192 TARA BOULEVARD P.O. BOX 795 JONESBORO, GEORGIA 30237
TELEPHONE: (770) 478-8803

CUSTOM FABRICATORS OF STAINLESS STEEL FOOD SERVICE EQUIPMENT

THIS MANUAL COVERS CONVEYOR SYSTEMS MANUFACTURED AFTER JULY 1, 1996. FOR OLDER MODELS SOME PARTS AND CONSTRUCTIONS MAY VARY. FOR QUESTIONS CALL THE FACTORY AT 770-478-8803, FAX. 770-471-3715.

ALL OF THE LOW TEMP SYSTEMS ARE LISTED BY UNDERWRITERS LABORATORIES FOR SAFETY AND CLASSIFIED BY UNDERWRITERS LABORATORIES FOR SANITATION UNDER NSF STANDARD NO. 2.

SAFETY NOTICE

THIS SYSTEM MUST BE SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH ELECTRICAL AND MECHANICAL SYSTEMS. THIS MANUAL IS DESIGNED TO GIVE GENERAL INFORMATION ON THE ELECTRICAL AND MECHANICAL OPERATION OF THIS CONVEYOR SYSTEM. THESE CONVEYOR SYSTEMS ARE CUSTOM BUILT AND THE SPECIFIC CONFIGURATION WILL VARY FROM SYSTEM TO SYSTEM. THE SYSTEM MUST BE INSTALLED PER NEC ELECTRICAL CODE AND ANY APPLICABLE PLUMBING CODES.

MODEL NUMBER CODE:

CTAA-10-00-020-1A1 (TRAY MAKE UP CONVEYOR, ½ H.P., 120 VAC SUPPLY, SINGLE 10" WIDE BELT, 20 FEET AXIAL LENGTH, ONE (1) REMOTE START STOP, WITH RACEWAY, SINGLE LIMIT SWITCH.

C - CONVEYOR

T - TRAY MAKE UP (B-BUSSING) (D-SOILED DISH)

A - ½ H.P. (B-3/4 H.P.) (C-1 H.P.)

A - 120V (B-208V) MAIN SUPPLY VOLTAGE

10 - WIDTH OF FIRST OR ONLY BELT

00 - WIDTH OF SECOND BELT

020 - BELT AXIAL LENGTH IN FEET

1 - QUANTITY OF ACCESSORY START/STOP STATIONS

A - ELECTRICAL RACEWAY ONLY) (B-WASH DOWN SYSTEM ONLY)(C-BOTH RACEWAY AND WASH DOWN) (N-NEITHER RACEWAY OR WASH DOWN)

1 - QUANTITY OF LIMIT SWITCHES

THE CONVEYOR SYSTEMS MANUFACTURED BY LOW TEMP INDUSTRIES ARE INTENDED TO CARY FOOD SERVICE TRAYS. THE SYSTEMS CARRY A MAXIMUM LOAD RATING OF 10 LBS.. PER FOOT WITH A MAXIMUM SPEED OF 40 FEET PER MINUTE.

BASIC ELECTRICAL OPERATION

THE STANDARD ELECTRICAL SUPPLY TO THE SYSTEM IS 120 VAC (208 V OPTIONAL). THE SYSTEM IS OPERATED THROUGH A GREEN START PUSH BUTTON CONTROL MOUNTED ON THE MAIN CONTROL PANEL; OPTIONAL START/STOP STATIONS MAY BE PROVIDED. THE POWER IS PASSED THROUGH A CONTROL RELAY WHICH PROVIDES AN ELECTRICAL INTERLOCK FOR THE PUSH BUTTONS CIRCUIT. THE AC SUPPLY IS WIRED THROUGH A SCR CONTROLLER (SEE THE SECTION ON CONVEYOR CONTROL BOARD LAYOUT) WHICH CONVERTS IT TO A VARIABLE DC VOLTAGE WHICH IS PASSED THROUGH A BREAKING CONTACT OR AND SUPPLIES POWER TO THE MOTOR. THE VOLTAGE IS VARIED THROUGH A POTENTIOMETER WHICH IS MOUNTED ON THE MAIN CONTROL PANEL. THE SYSTEM CAN BE STOPPED BY PUSHING THE RED STOP PUSH BUTTON. WHEN THIS PUSH BUTTON IS DEPRESSED THE ELECTRICAL INTERLOCK ON THE MAIN CONTROL RELAY IS OPENED. WHEN THE STOP PUSH BUTTON IS DEPRESSED THE BREAKING RELAY IS CLOSED AND THE EXCESS POWER IS PASSED OVER THE POWER RESISTOR.

ARMATURE SWITCHING (PHOTO EYE CIRCUITS)

IF THE SYSTEM IS TO BE STOPPED AND STARTED AUTOMATICALLY WITHOUT REMOVING POWER AN INHIBIT CIRCUIT IS PROVIDED ON THE MAIN CONTROL BOARD. TO THE SYSTEM CAN BE STOPPED BY CONNECTING TERMINALS "I1" AND "I2". WHEN THESE TERMINALS ARE OPENED THE SYSTEM WILL AUTOMATICALLY RESTART. THE THROUGH BEAM PHOTO EYE SWITCHES PROVIDED WITH THIS SYSTEM ARE WIRED THROUGH THE "I1" AND "I2" TERMINALS. SEE THE SECTION ON SWITCHING CIRCUITS AND PHOTO EYE LIMIT SWITCH LATER IN THIS MANUAL.

MECHANICAL SYSTEM

THE SYSTEM IS DRIVEN BY A 90 VDC PERMANENT MAGNET MOTOR WHICH IS MOUNTED TO A "C" FACED FIGHT ANGLE GEAR BOX. THE OUTPUT SHAFT OF THE GEAR BOX IS EQUIPPED WITH A TORQUE LIMITING DEVICE WITH A #50 DRIVE SPROCKET. THIS SPROCKET IS CONNECTED TO THE MAIN DRIVE SHAFT BY A STANDARD #50 5/8" PITCH ANSI CHAIN WHICH CONNECTS TO A MATING SPROCKET MOUNTED ON THE MAIN DRIVE SHAFT. THE MAIN SHAFT IS PROVIDED WITH A DRIVE SPROCKET WHICH PULLS THE CONVEYOR BELT ASSEMBLY.

THE CHAIN TENSION ON THE #50 DRIVE CHAIN IS MAINTAINED BY A "SNAP IDLER" WHICH SADDLES AROUND THE CHAIN AND PROVIDES CONSTANT CHAIN TENSION. THIS CHAIN IS A STANDARD CARBON STEEL CHAIN AND SHOULD BE LUBRICATED EVERY 30 TO 60 DAYS WITH A STANDARD CHAIN LUBE. THE MAIN DRIVE SHAFTS ARE STAINLESS STEEL AND RIDE IN BEARINGS. THESE BEARINGS SHOULD BE CHECKED EVERY 30 TO 60 DAYS AND KEPT GREASED.

FOR STRAIGHT RUN SYSTEMS A REXNORD #821 STYLE BELT IS USED. THIS IS AN ALL PLASTIC BELT WITH STAINLESS STEEL HINGE PINS AT EVERY JOINT. SEE THE DETAIL SHEET LATER IN THIS MANUAL FOR DETAILS ON THIS BELT.

THE CONVEYOR CHAIN TENSION IS MAINTAINED AT THE TAIL SECTION OF THE CONVEYOR. A TWO BOLT THREADED SYSTEM IS PROVIDED WHICH WILL MOVE THE ENTIRE TAIL SHAFT. THIS MUST BE KEPT STRAIGHT FOR THE SYSTEM TO TRACK PROPERLY. A CANTINARY SAG OF 3 TO 4 INCHES IS NORMAL. ANY MORE THAN THAT AND THE SYSTEM MAY BIND WHEN ENTERING THE RETURN GUIDE RAILS.

BELT WASH & PAN WASH SYSTEM (OPTIONAL)

WARNING

NOTE! DO NOT OPEN THE WASH TANK ACCESS DOOR IF THE BELT IS MOVING. DURING NORMAL CLEANING OPERATIONS ALWAYS DEPRESS THE STOP BUTTON AND REMOVE POWER FROM THE SYSTEM.

THE PLUMBING SYSTEM PROVIDED ON THIS SYSTEM IS MADE OF CPVC PLASTIC PIPING. A MAXIMUM INLET PRESSURE OF 40 TO 60 PSI IS RECOMMENDED. THERE ARE THREE (3) SEPARATE PLUMBING CIRCUITS ON THE SYSTEM. A BELT WASH, TOP PAN WASH AND BOTTOM PAN WASH. EACH CIRCUIT HAS ITS OWN SOLENOID AND BALL VALVE.

THE BELT WASH SYSTEM PROVIDED HAS SIX (6) SPRAY HEADS LOCATED IN THE BELT WASH TANK. THESE HEADS ARE PLUMBED THROUGH A SOLENOID AND WILL OPERATE ONLY WHEN THE BELT IS MOVING. DETERGENT IS PULLED INTO THE SYSTEM BY A "DEMA" INJECTOR SYSTEM. THE VOLUME OF WATER TO THE SPRAY HEADS IS ADJUSTABLE BY A BALL VALVE LOCATED IN THE PLUMBING MANIFOLD. THIS VOLUME SHOULD BE SET AT A MINIMUM WHICH WILL HELP PREVENT OVER SPRAY FROM THE TANK. THE "DEMA" INJECTOR IS FULLY ADJUSTABLE AND THE INJECTION RATE IS BASED UPON THE TYPE OF FLUID USED. SEE THE SECTION ON THE PLUMBING COMPONENTS AND THE "DEMA" INJECTOR FOR ADJUSTMENT INSTRUCTIONS. THE WASH TANK IS PROVIDED WITH **TWO (2) REMOVABLE SCRAP BASKETS** AND SHOULD BE **CLEANED DAILY** TO REMOVE ANY NAPKINS OR LARGE OBJECTS WHICH MAY CLOG THE DRAIN SYSTEM.

THE SYSTEM IS ALSO PROVIDED WITH FLUSH HEADS ON THE TOP PAN AND DRAIN PAN. THIS WATER SYSTEM IS **NOT INTENDED TO BE A SELF CLEANING SYSTEM**. THIS SYSTEM PROVIDES A WATER SUPPLY TO ASSIST THE OPERATOR IN CLEANING THE SYSTEM.

CLEANING THE SYSTEM

THE CONVEYOR BEN AND FRAME WORK IS FABRICATED OF ALL STAINLESS STEEL. SEE THE LATER SECTION ON "HOW TO CLEAN STAINLESS STEEL" FOR TIPS ON MAINTAINING THE STAINLESS STEEL PORTIONS OF THE SYSTEM.

CAUTION

BEFORE CLEANING THE BELT ALWAYS PUSH THE RED STOP BUTTON AND REMOVE POWER FROM THE SYSTEM. NEVER USE A LOOSE RAG AROUND THE CONVEYOR BELT WHEN MOVING.

THE CONVEYOR BELT AND TROUGH AREA MUST BE HAND WIPED TO ENSURE PROPER CLEANING. THE BELT CAN BE LIFTED UP OFF THE GUIDE RAILS AND CLEANED. WHEN SUPPLIED WITH THE OPTIONAL BELT WASH REMOVE AND CLEAN THE SCRAP BASKETS LOCATED IN THE WASH TANK DAILY.

HOW TO CLEAN STAINLESS STEEL

THE FOLLOWING INFORMATION WAS TAKEN FROM A PAMPHLET BY MR. RICHARD E. PARET, STAINLESS STEEL SPECIALIST, AMERICAN IRON AND STEEL INSTITUTE.

STAINLESS STEEL IS ONE OF THE EASIEST MATERIALS TO CLEAN AND KEEP CLEAN.

THE REASONS FOR STAINLESS STEEL'S EASE OF CLEANING ARE EASY TO SEE; THEY LIE IN THE NATURE OF THE METAL ITSELF.

1. IT'S HARD, TOUGH SURFACE. STAINLESS STEEL WILL WORK HARDEN, THAT IS, THE MORE IT IS USED, THE MORE RESISTANT TO WEAR IT BECOMES. STAINLESS STEEL WILL NOT DEVELOP ROUGH SPOTS THAT HARBOR BACTERIA AND SOIL.

2. HIGH CORROSIVE RESISTANCE. STAINLESS STEEL IS PRACTICALLY UNTOUCHED BY THE CORROSIVE ATTACKS OF MOISTURE, DETERGENTS, FOOD ACIDS, BLOOD SALTS AND OTHER CORRODENTS CONNECTED WITH FOOD PREPARATION. THIS MEANS THAT STAINLESS STEEL ALWAYS HAS A BRIGHT SURFACE FREE FROM OXIDES THAT CAN AFFECT THE FLAVOR OF FOODS.

THE SECRET OF MAINTAINING STAINLESS STEEL IS FREQUENT, SCHEDULED CLEANING THAT WILL PREVENT BUILD UP OF SURFACE DEPOSITS. SURFACE DEPOSITS, IF ALLOWED TO REMAIN FOR LONG PERIODS OF TIME CAN HAM STAINLESS STEEL. STAINLESS STEEL THRIVES ON EXPOSURE TO AIR; UNDER CERTAIN CONDITIONS, THE LENGTHY DEPRIVATION OF OXYGEN BY HEAVY SOIL DEPOSITS CAN CAUSE LOCALIZED PITTING OR STAINING.

NEGLECTING THE MATERIAL IN THIS MANNER IS **DEFINITE ABUSE** WHICH EVEN STAINLESS STEEL IS NOT IMMUNE.

TWO BASIC RULES:

1. CLEAN FREQUENTLY, AND ON A FIXED SCHEDULE.
2. SELECT THE SIMPLEST METHOD.

TO REMOVE ORDINARY DIRT AND FOOD RESIDUE FROM STAINLESS STEEL EQUIPMENT THAT OPERATES AT LOW TEMPERATURES, USE ORDINARY SOAP AND WATER AND APPLY WITH A SPONGE, FIBER BRUSH OR CLOTH. TO HASTEN ACTION, ADD EITHER SODA ASH, BAKING SODA, BORAX OR ANY OF SEVERAL NON-ABRASIVE COMMERCIAL CLEANSING AGENTS.

TO REMOVE SPLATTER OR CONDENSED VAPOR WHICH HAVE "BAKED" ONTO THE EQUIPMENT, THE TREATMENT OUTLINED ABOVE IS OFTEN SUFFICIENT. IN OTHER CASES A GENTLE TO VIGOROUS POLISHING ACTION MAY BE NECESSARY.

FIRST TRY A PASTE MADE WITH WATER AND AMMONIA AS THE LIQUID AND EITHER MAGNESIUM OXIDE, FINELY POWDER PUMICE OR FRENCH CHALK AS THE SOLID. YOU CAN ALSO USE ONE OF SEVERAL COMMERCIAL CLEANERS LISTED IN THE FOLLOWING TABLE.

RUB AS GENTLY AS POSSIBLE IN THE DIRECTION OF THE POLISHING MARKS ON THE STEEL, USING A SOFT CLOTH. FOR MORE RESISTANT DEPOSITS, USE A STAINLESS STEEL SCOURING SPONGE OR STAINLESS STEEL WOOL OF THE FINEST POSSIBLE TEXTURE.

HOW TO CLEAN STAINLESS STEEL **(CONT.)**

WHAT NOT TO DO:

DO NOT USE COMMON STEEL WOOL, SCOURING PADS, SCRAPERS, WIRE BRUSHES, FILES OR OTHER STEEL TOOLS, SINCE THESE CAN MAR THE STAINLESS STEEL. THESE PARTICLES WILL EVENTUALLY RUST AND STAIN THE SURFACE, AND YOU MAY HAVE TO REFINISH IT.

SLIGHTLY DARKENED AREAS SOMETIMES APPEAR ON STAINLESS STEEL SURFACES WHERE HEAT HAS BEEN APPLIED DURING FABRICATION OR IN SERVICE.

THESE ARE CAUSED BY THICKENING OF THE PROTECTIVE SURFACE OF STAINLESS STEEL, AND ARE NOT HARMFUL. REMOVAL CALLS FOR ENERGETIC SCOURING, AGAIN USING A STAINLESS STEEL WOOL OR SCOURING PAD, COMBINED WITH A SCOURING POWDER OR ONE OF THE HEAT-TINT REMOVERS LISTED IN THE TABLE.

THREE RULES WILL PREVENT HEAT TINTING:

- 1) USE ONLY ENOUGH HEAT TO DO THE JOB EFFICIENTLY.
- 2) DO NOT APPLY HEAT TO EMPTY EQUIPMENT.
- 3) AVOID CONCENTRATING HEAT ON A SMALL AREA.

***** CAUTION IS ADVISED *****

IN STERILIZING STAINLESS STEEL EQUIPMENT, PAY PARTICULAR ATTENTION TO AGENTS CONTAINING CHLORINE COMPOUNDS SUCH AS POTASSIUM HYPOCHLORITE. THESE COMPOUNDS MAY BREAK DOWN AND RELEASE FREE CHLORINE, OR HYDROLYZE TO FORM HYDROCHLORIC ACID.

STAINLESS STEEL RESISTS ATTACK BY SUCH COMPOUNDS FOR UP TO TWO HOURS. SEVERE LOCALIZED PITTING MAY OCCUR FROM LONGER EXPOSURE. FOR SAFE USE OF THESE AGENTS, KEEP CONTACT TIME SHORT, FLUSH THOROUGHLY WITH WATER, AND OPERATE EQUIPMENT NORMALLY BETWEEN APPLICATIONS. USING THESE PRECAUTIONS, THE STERILIZATION PROCESS CAN BE REPEATED ANY NUMBER OF TIMES.

CLEANERS AND THEIR EFFECT ON STAINLESS STEEL

Cleaning agent	Method of Application Finish	Effect on
1. Tightly adhering deposits of "baked on" spatter, oil, grease, weather stain, dyes or other light discoloration may be removed with any of the following cleaners.		
Grade FFF Italian pumice whiting or bon ami	scour or rub with damp cloth	satisfactory for all finishes use light pressure on no.7
Liquid NuSteel	scour with small amount on dry cloth	satisfactory for all finishes if rubbing pressure is light
Paste NuSteel or Temp	scour with small amount on dry cloth	satisfactory for no. 4 finish. Will scratch no.7
House hold cleaners such as Old Dutch, Sunbrite, Wyandotte, Bob-O, Gold Dust and Sapolio	Rub with damp cloth	Will scratch no. 4 finish slightly
Grade F Italian Pumice	Rub with damp cloth	Will scratch no.4 finish slightly
Cooper's stainless steel polish	satisfactory Rub with damp cloth	for no. 4 finish
Allen stainless steel polish	Rub with damp cloth	scratches but leaves mirror reflection
Best effect chemical co. cleaner & Passivator	Rub with damp cloth	May scratch no.4 finish slightly

CLEANERS AND THEIR EFFECT ON
STAINLESS STEEL
(Cont.)

Cleaning agent	Method of Application	Effect on Finish
2. Heat tint or heavy discoloration with the following (see notes below)		
Allen stainless polish	Small amount on damp cloth	Excellent heat tint remover
Birdsall's "Staybright"	Rub with damp cloth	Very good for heat tint removable. Does not scratch no.4 finish but does scratch no.7
Wyandotte or Bob-O	Rub with damp cloth	Good for heat tint removal
Oxalic acid (use warm) or 5-15% nitric acid	Swab or immerse. Always follow with a 5% sodium carbonate or neutralizer rinse	Good discoloration remover
Best effect chemical co. cleaner Passivator	Rub with damp cloth	May scratch no 4 finish but leaves a clean surface
3. The following detergents and solvents are excellent removers of grease, oil and fatty acids, where swabbing or rubbing is not practical.		
4 to 6% solution of (sodium Metasilicate) (Trisodium Phosphate) (Sodium Metaphosphate) (Sodium Pyrophosphate)		All excellent removers of grease, oil, and milkstone
5-15% caustic soda (hot or cold)		Will remove grease and milkstone
4. The following organic solvents may be used for removing oils and grease deposits:		
Carbon-tetrachloride, Naphtha, Trichlorethylene Acetone, Kerosene, Gasoline, Ether, Alcohol, Benzene		No affect on finish, however, take all precautions against fire.

CLEANERS AND THEIR EFFECT ON
STAINLESS STEEL
(Cont.)

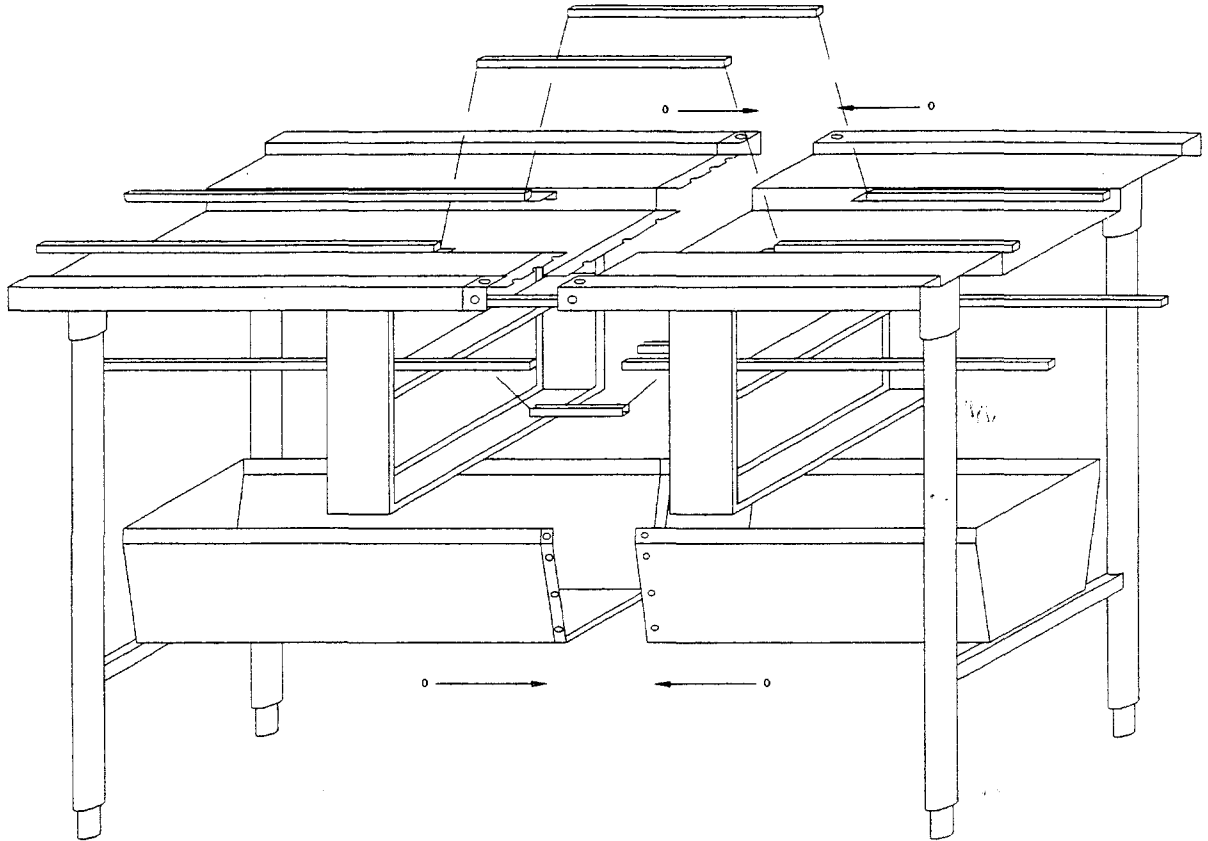
NOTES: **ORDINARY WOOL OR STEEL BRUSHES SHOULD NEVER** BE USED ON STAINLESS STEEL SURFACES. PARTICLES OF STEEL MAY BECOME IMBEDDED IN THE STAINLESS STEEL SURFACE, AND RUSTING OF THESE PARTICLES WILL EVENTUALLY APPEAR AS STAINS. USE STAINLESS STEEL WOOL OR SPONGE ON STAINLESS STEEL EQUIPMENT. HEAT TINT REMOVERS WILL USUALLY SCRATCH STAINLESS STEEL SURFACES. THIS, HOWEVER, IS NECESSARY IN REMOVING HEAT TINT BY HAND. OAKITE, A FIBROUS MATERIAL, MAY BE USED IN PLACE OF METAL SPONGES OR CLOTH PADS FOR APPLYING CLEANERS AND POLISHES. THIS MATERIAL IS EFFECTIVE IN AIDING IN REMOVAL OF MILKSTONE.

FOR HEAVY HARD WATER DEPOSITS, 15-20% (BY VOLUME) NITRIC ACID IS VERY EFFECTIVE. ACID TREATMENT SHOULD BE FOLLOWED BY A THOROUGH WATER RINSE.

THE ACTION OF SOLDERING FLUXES SHOULD BE NEUTRALIZED IMMEDIATELY WITH A 5% SODIUM CARBONATE SOLUTION.

SOAP AND WATER FOLLOWED BY A WATER RINSE WILL NOT HARM STAINLESS STEEL.

LOW TEMP INDUSTRIES TRAY MAKE-UP BOLTED FIELD JOINT



SET SYSTEM IN PLACE AND LEVEL BEFORE ASSEMBLING

The bolted field joint is provided with weld studs located underneath the top bed of the system. The matching plates mate around the weld studs and are secured with the nuts provided.

The outer rim of the conveyor is provided with matching plates which are pre drilled and taped holes in the top and sides of the rim.

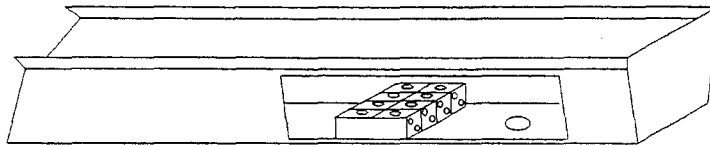
The raceway is assembled in this same manner.

The top belt guide rails are provided with two (2) 16" long matching pieces which are secured to support bracket by nuts which mate the weld studs on the bottom of the rails.

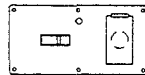
The bottom guide rails butt at the ends and are secured with saddle straps which secure to the weld studs provided on the guide rails.

LOW TEMP INDUSTRIES RACEWAY FIELD WIRING DIAGRAM

FIELD CONNECTION TERMINALS
POWER DISTRIBUTION BLOCKS
PRIMARY TERMINALS 2/0 TO 14 AWG
SECONDARY TERMINALS 2 TO 14 AWG



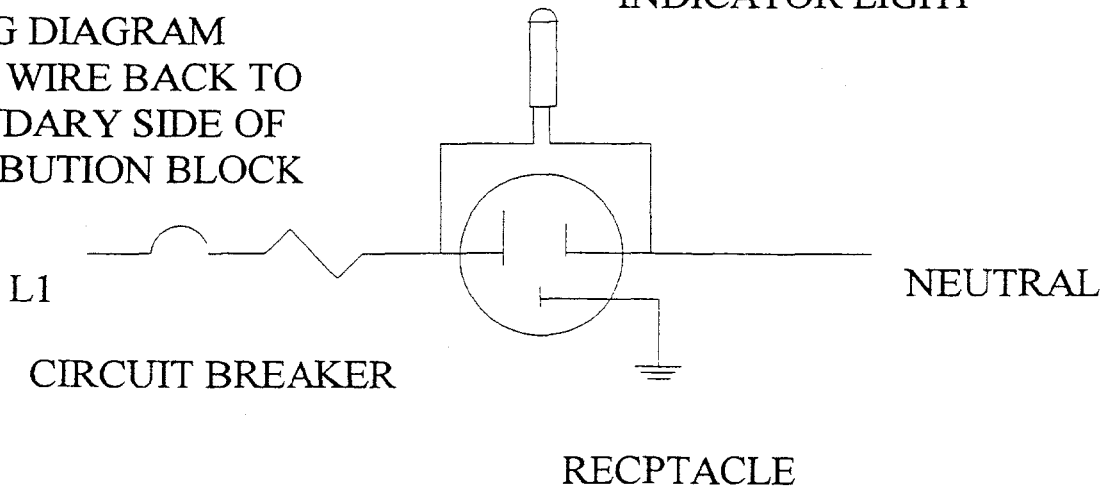
THREE PHASE SET UP SHOWN
FOR SINGLE PHASE ONLY THREE
TERMINAL PROVIDED
7/8" K.O. PROVIDED STANDARD
AT INCOMING POINT



TYPICAL OUTLET CONNECTION PLATE

TYPICAL CONNECTION PLATE
WIRING DIAGRAM
L1 & N WIRE BACK TO
SECONDARY SIDE OF
DISTRIBUTION BLOCK

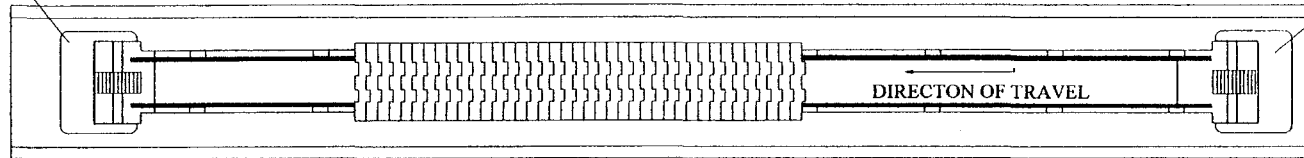
INDICATOR LIGHT



LOW TEMP INDUSTRIES TRAY MAKE-UP BELT ASSEMBLY

UHMW
DRIVE GEAR
GUARD

UHMW
DRIVE GEAR
GUARD



TOP VIEW

DRIVE HOUSING
(CHECKER END)

TAIL SECTION
(STARTER END)

CONTROL
PANEL

REMOVABLE
SIDE SKIRT

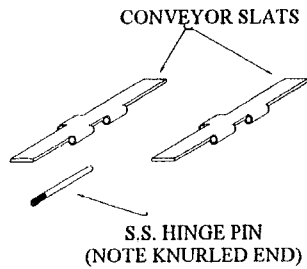
TYPICAL RACEWAY
CONNECTION PLATE

HINGED BOTTOM PAN
UNDERNEATH DRIVE HOUSING

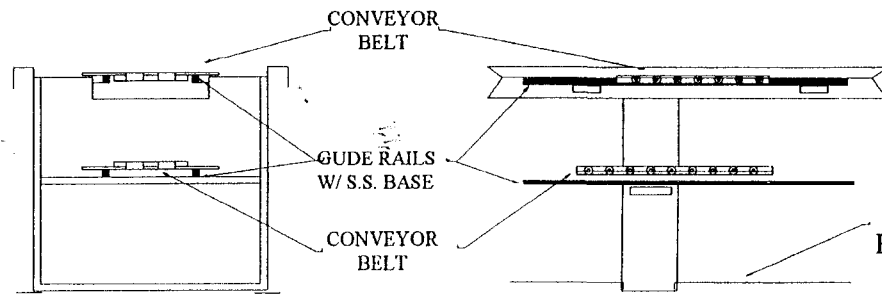
LIFT OUT BOTTOM
PANS BETWEEN
FRAME SUPPORTS

INCOMING POWER
CONNECTION ACCESS
(LOCATION AS SPECIFIED)

SIE VIEW

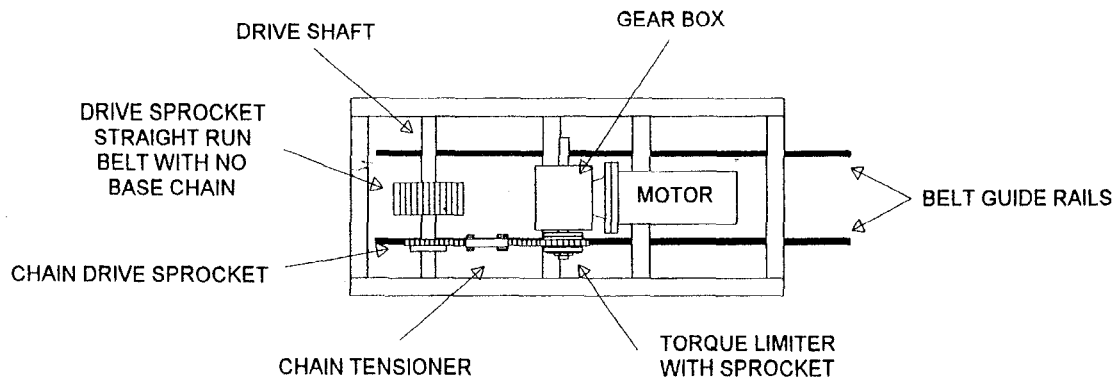


CONVEYOR BELT ASSEMBLY

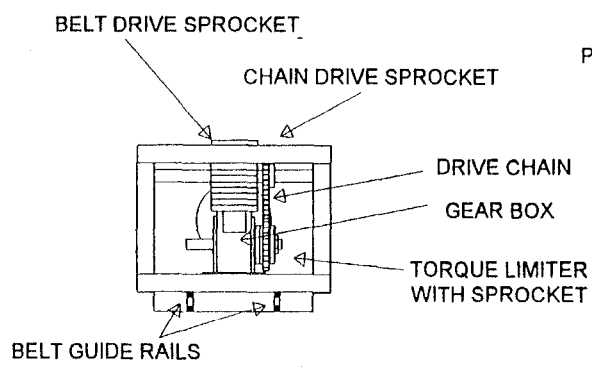


END SECTION

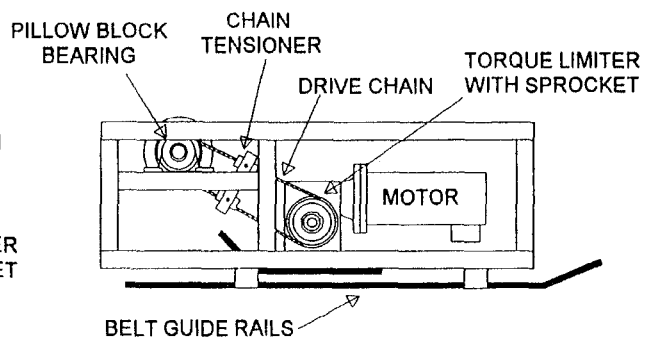
SIDE SECTION



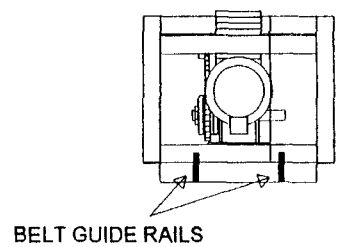
TOP VIEW



END ELEVATION



SIDE ELEVATION



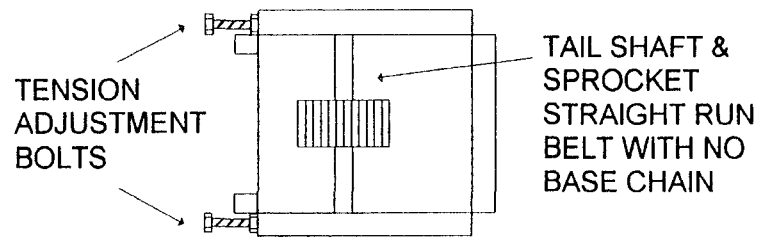
END ELEVATION

LOW TEMP INDUSTRIES INC.
JONESBORO, GEORGIA

CONVEYOR DRIVE HOUSING
TRAY MAKE-UP STRAIGHT RUN BELT

DATED 4-30-96

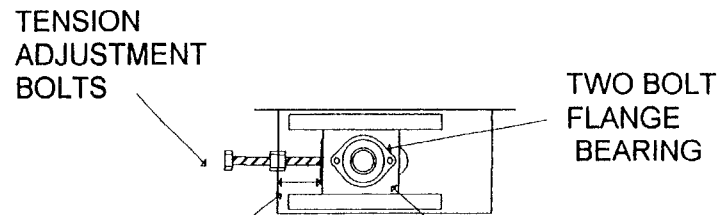
SCALE: 3/4" = 12"



TOP VIEW



END VIEW



SIDE VIEW

MEASURE DISTANCE FROM BEARING PLATE TO FRAME HOUSING TO VERIFY ALIGNMENT

LOW TEMP INDUSTRIES
JONESBORO GEORGIA

CONVEYOR TAIL SECTION
FOR STRAIGHT RUN BELT

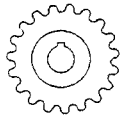
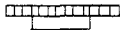
SCALE 1" = 12"

DATE MAY 1, 1996

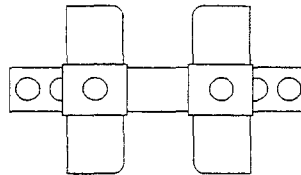
LOW TEMP INDUSTRIES CT SERIES CONVEYOR DRIVE COMPONENTS (CONT.)

NOTE! THE MAIN DRIVE CHAIN WHICH CONNECTS THE CLUTCH ASSEMBLY SPROCKET TO THE TOP DRIVE SPROCKET IS A STANARD NO. 50 ROLLER CHAIN. THIS CHAIN SHOULD BE KEPT COATED WITH A GOOD COMMERCIAL GRADE CHAIN LUBRICANT TO REDUCE WARE.

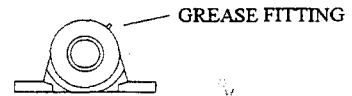
THE BERAINGS ARE PROVIDED WITH GREASE FITTINGS AND SHOULD BE GREASED EVERY 30 TO 60 DAYS.



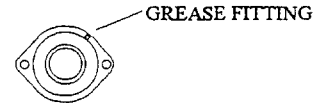
TOP DRIVE SPROCKET
#50, 19TOOTH
1" BORE
1/4" X 1/8" KEY WAY



#50 SNAP IDLER
MAINTAINS CONSTANT
CHAIN TENSION ON
MAIN DRIVE CHAIN

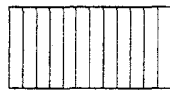


PILLOW BLOCK
BEARING
1" BORE

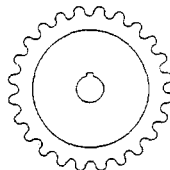


TWO (2) BOLT
FLANGE BEARING
1" BORE

CONVEYOR BELT DRIVE SPROCKETS



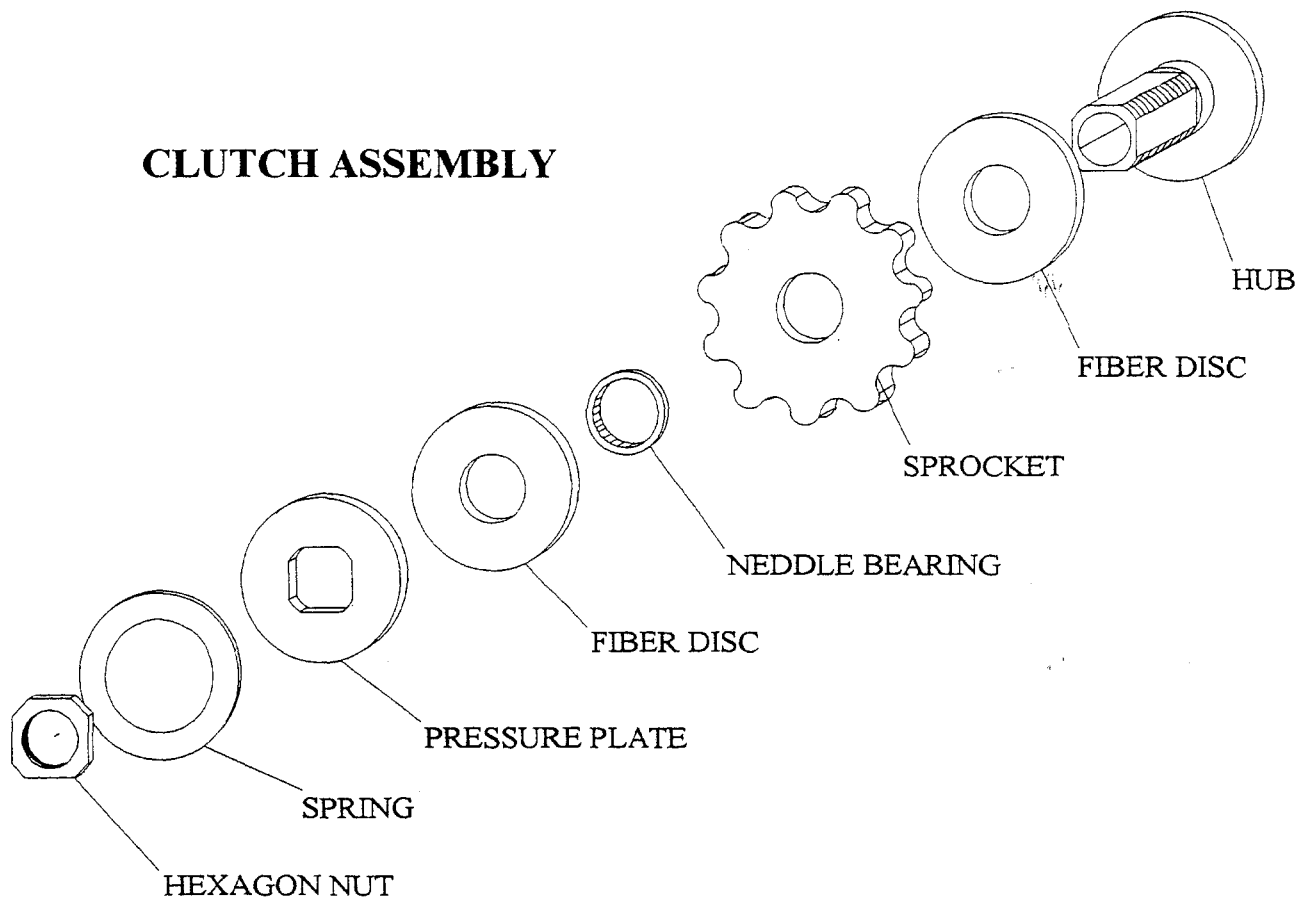
USED WITH STRAIGHT
RUN 821 STYLE BELT



MODEL N821-25TTH
25TOOTH 821 STYLE
1" BORE
1/4" X 1/8" KEY WAY

LOW TEMP INDUSTRIES CT SERIES CONVEYOR DRIVE COMPONENTS (CONT.)

CLUTCH ASSEMBLY

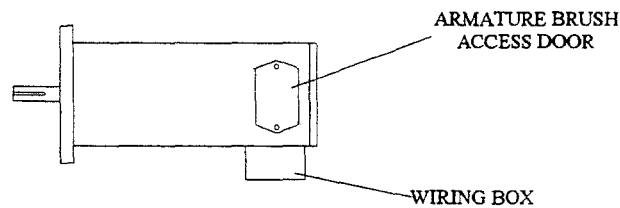


MODEL NO.	HP	BORE	TORINGTON BEARING NO.	SPROCKET
OSD-337	1/2	7/8"	B-248	50A-21G

LOW TEMP INDUSTRIES CONVEYOR DRIVE COMPONENTS

DC MOTOR SEPCIFICATIONS

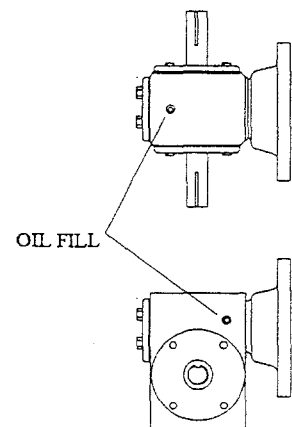
MODEL NO.	FRAME	HP	RPM	VOLTS DC	ENCL	AG. MAX	WT.
4660-535-1543-XX	56C	1/2	1725	90	TENV	11.69	31



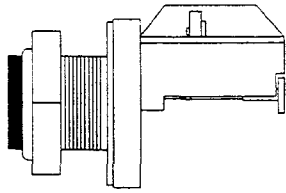
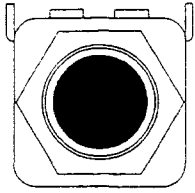
WORM GEAR REDUCER SEPCIFICATIONS

MODEL NO.	HP	OUTPUT SHAFT DIA	FRAME	OIL CAPACITY BY VOLUME (APPROX.)		WT
				WORM TOP	WORM BOTTOM	
214	1/2	7/8"	56C	1 PT	.75 PT	23

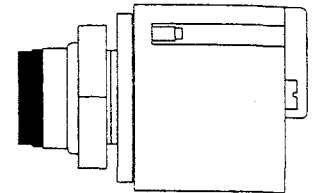
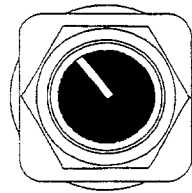
**NOTE! ALL GEAR BOXES ARE FACTORY FILLED WITH
MOBIL TYPE SHC-634 SYNTHETIC GEAR OIL
REPLACE WITH SAME TYPE GEAR OIL
DO NOT MIX MINERAL BASE GEAR OIL
WITH SYNTHETIC GEAR OIL**



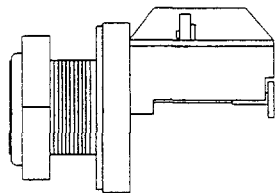
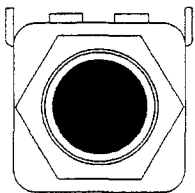
LOW TEMP INDUSTRIES CT SERIES CONVEYOR CONTROL PANEL DOOR MOUNTED COMPONENTS



STOP PUSH BOTTON
NORMALLY CLOSED CONTACTS
RED ACTUATOR
800H-BR6D2




POTENTIOMETER
5000 OHM
800H-UR24

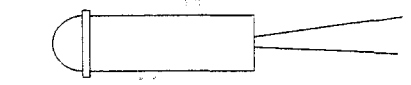


START PUSH BOTTON
NORMALLY OPEN CONTACTS
GREEN ACTUATOR
800H-AR1D1

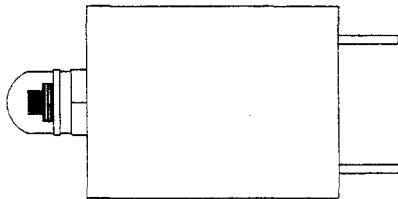
OPTIONAL
USED WITH WASH DOWN SYSTEM



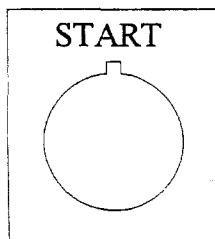
PILOT LIGHT
250V
515-5CL



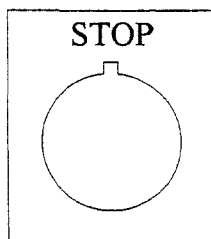
BALL BAT TOGGLE SWITCH
120VAC/ 20A
0090-0001
WITH LEGEND PLATE



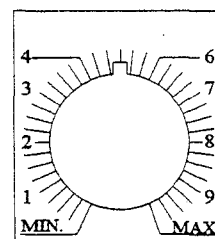
CIRCUIT BREAKER
15 AMP/ SINGLE POLE
PUSH TO TRIP/PUSH TO RESET
45-700-IG1-P10-DD
WITH PROTECTIVE BOOT
N.1.480.08



START
LEGNED PLATE
800H-W126

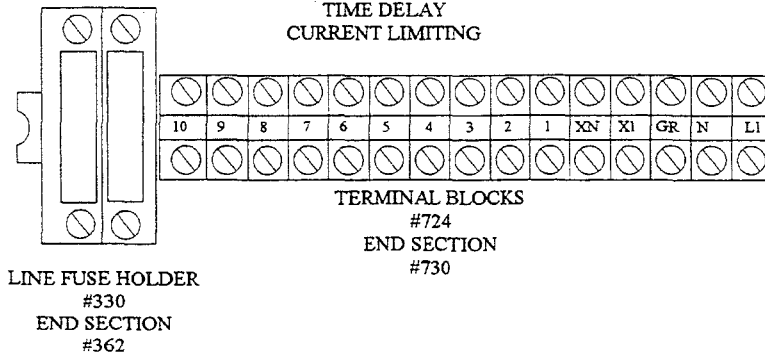
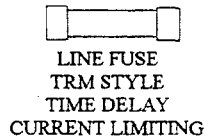
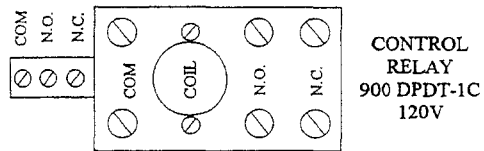
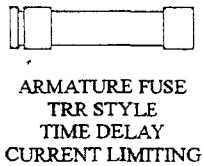
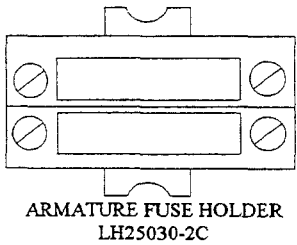
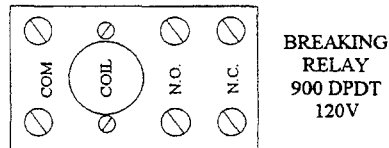
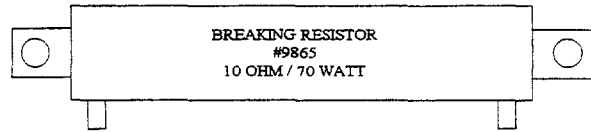
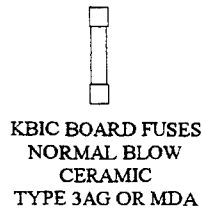
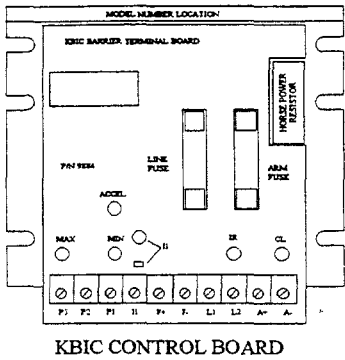


STOP
LEGNED PLATE
800H-W371



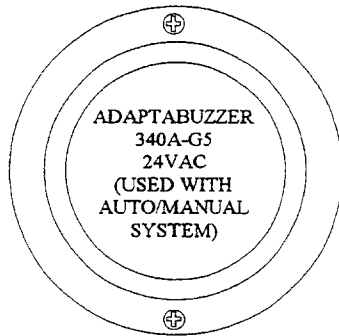
POTENTIOMETER
LEGNED PLATE
800H-W080

LOW TEMP INDUSTRIES CT SERIES CONVEYOR CONTROL PANEL MAIN INTERIOR COMPONENTS

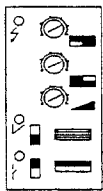


LOW TEMP INDUSTRIES CONVEYOR CONTROL PANEL OPTIONAL INTERIOR COMPONENTS

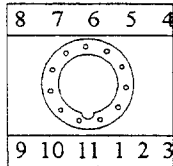
PHOT EYE LIMIT SWITCH COMPONENTS



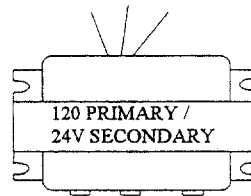
NOTE! BUZZER IS MOUNTED OUTSIDE OF CONTROL CABINET



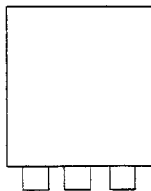
AMPLIFIER
PA11A302 / 24VAC



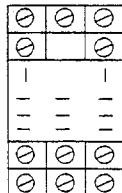
11 PIN SOCKET BASE
SR3P06



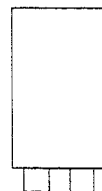
STEP DOWN TRANSFORMER
#592



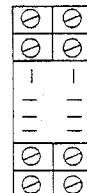
3 POLE RELAY BASE
RH3B-24V



3 POLE RELAY BASE
SR3P-06

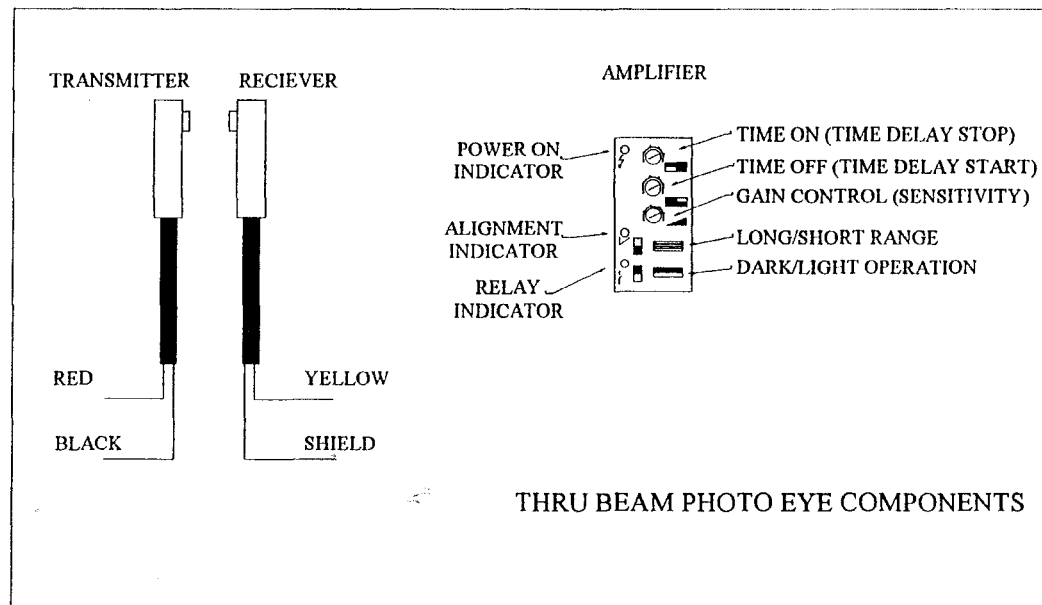
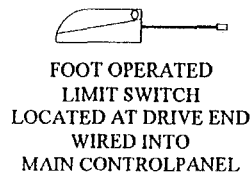
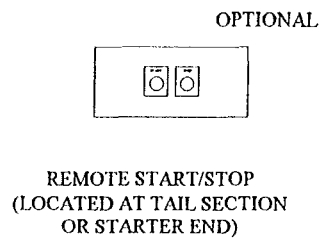
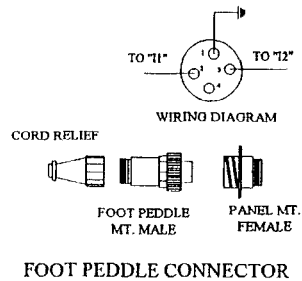
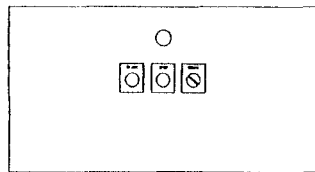
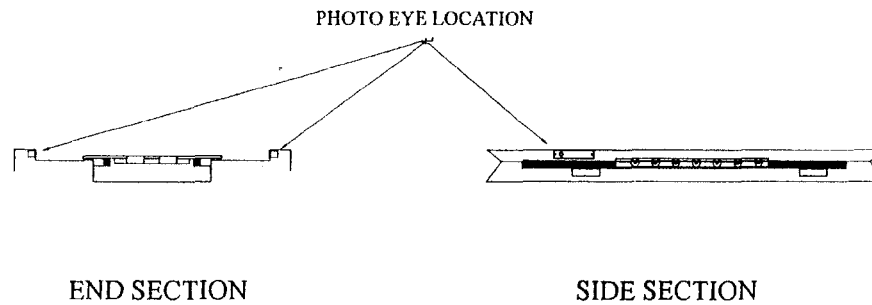
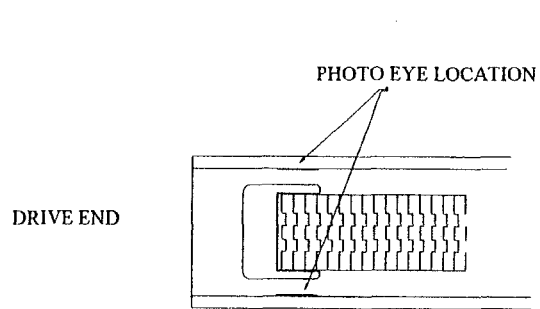


2 POLE RELAY BASE
RH2B-24V



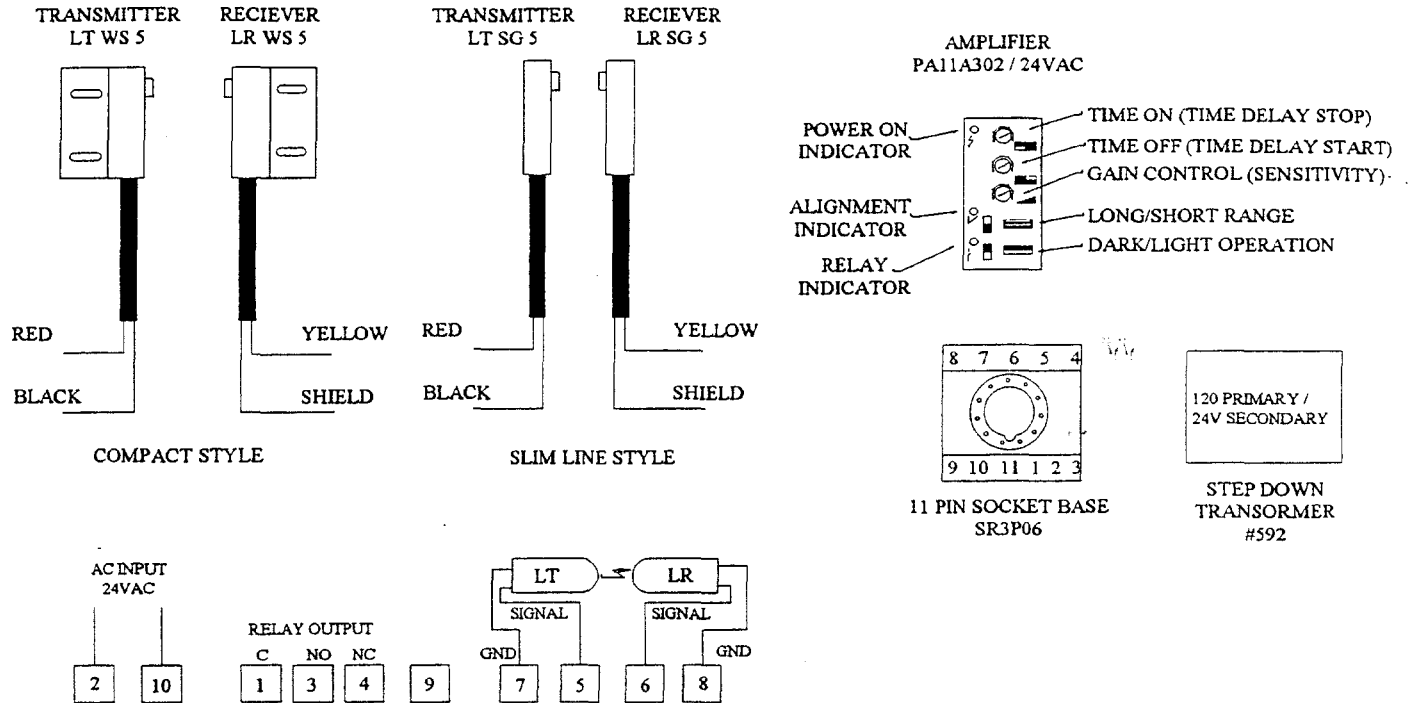
2 POLE RELAY BASE
SR3P-24V

LOW TEMP INDUSTRIES CT SERIES CONVEYOR ELECTRICAL COMPONENT LOCATIONS



LOW TEMP INDUSTRIES SOILED DISH OR BUSSING CONVEYOR PHOTO EYE LIMIT SWITCH

THRU BEAM PHOTO EYE COMPONENTS



THE PURPOSE OF THE THROUGH BEAM PHOTO EYE SWITCH USED ON THIS SYSTEM IS TO PROVIDE A METHOD OF STOPPING AND STARTING THE SYSTEM AUTOMATICALLY WITHOUT HAVING TO MANUALLY PUSH THE START AND STOP BUTTONS.

TWO STYLES OF TRANSMITTER AND RECEIVER ARE AVAILABLE AND OPERATE EXACTLY THE SAME. THEY ARE SELECTED BASED UPON THE PHYSICAL MOUNTING ARRANGEMENTS AVAILABLE FOR SPECIFIC SYSTEMS. THE TRANSMITTER AND RECEIVER SHOULD BE ALIGNED AS CLOSE AS POSSIBLE BUT EXACT ALIGNMENT IS NOT REQUIRED. AN ALIGNMENT INDICATOR IS PROVIDED ON THE AMPLIFIER AND WILL ILLUMINATE WHEN THE PHOTO EYES ARE ALIGNED.

THE AMPLIFIER CONTROLS ALL OF THE FUNCTIONS OF THE PHOTO EYES. THE TOP POWER INDICATOR WILL ILLUMINATE (GREEN) WHEN POWER IS SUPPLIED TO THE AMPLIFIER. THE BOTTOM SWITCH SHOULD ALWAYS BE IN THE DARK POSITION (TOWARD DARK BAN), THE SECOND SWITCH SHOULD ALWAYS BE IN THE SHORT RANGE (ARROWS POINTING INWARD). THE THREE ADJUSTMENT POTS CONTROL THE TIME ON (TIME DELAY STOP), TIME OFF (TIME DELAY START) AND GAIN CONTROL (SENSITIVITY). THE TIME ON & TIME OFF SHOULD BE IN THE FULL COUNTER CLOCK WISE POSITION IF NO DELAYS ARE REQUIRED. THE GAIN CONTROL IS PRESET AT THE FACTORY AND SHOULD NOT NEED ADJUSTING. IF ADJUSTMENT IS REQUIRED, TURN THE GAIN TO THE FULL COUNTER CLOCK WISE POSITION AND SLOWLY TURN CLOCK WISE UNTIL THE PHOTO EYE SENSES THE TRAY. **NOTE! EXCESSIVE GAIN CAN CAUSE THE PHOTO EYE NOT TO SENSE THE OBJECT. THE GAIN CONTROL IS BASED UPON THE DENSITY OF THE OBJECT. A MINIMAL GAIN IS RECOMMENDED.**

THE SWITCHING FUNCTION OF THE PHOTO EYE IS PROVIDED THROUGH A RELAY OUTPUT. THIS OUTPUT IS CONNECTED THROUGH A SECONDARY RELAY WHICH IS WIRED THROUGH THE "11" AND "12" TERMINALS ON THE CONTROL BOARD. THE RELAY INDICATOR ON THE AMPLIFIER INDICATES THE STATUS OF THE RELAY CONTACTS.

LOW TEMP INDUSTRIES CONVEYOR CONTROL BOARD LAYOUT

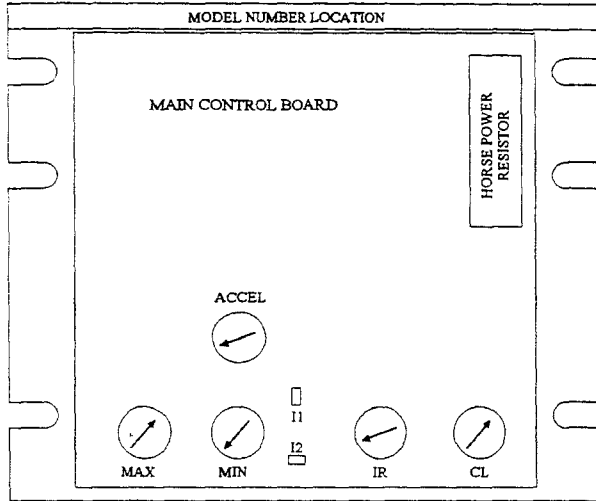
SAFETY WARNING

THIS PRODUCT MUST BE INSTALLED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONELL FAMILIAR WITH "SCR" CONTROLLERS AND THE HAZARDS INVOLVED. FAILURE TO DISCONNECT POWER BEFORE WIRING AND SERVICING AND TO CONNECT PROPER GROUND WIRE MAY RESULT IN AN ELECTRICAL SHOCK. IF ADJUSTMENTS ARE MADE WITH THE CONTROL DOOR OPEN AND UNDER POWER, INSULTAED ADJUSTMENT TOOLS MUST BE USED AND EYE PROTECTION SUCH AS SAFETY GLASSES MUST BE WORN.

ALL LOW TEMP CONVEYOR SYSTEMS USE THE "KBIC" SERIES DC CONTROL BOARDS.

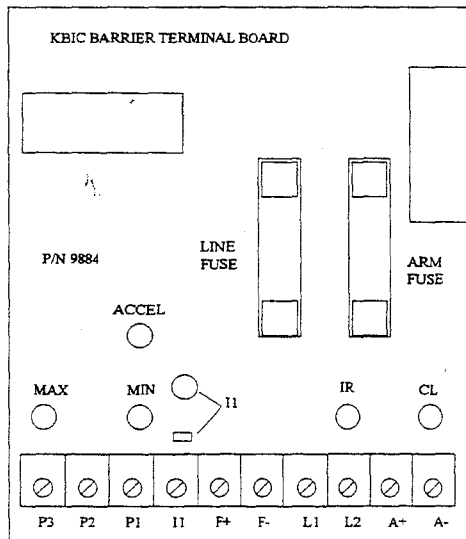
THE CONTROL BOARD TAKES AN INPUT VOLTAGE OF 120VAC AND CONVERTS IT TO A VARIABLE OUTPUT OF 0 TO 90VDC.

THE INPUT VOLTAGE IS CONNECTED TO TERMINALS L1 AND L2. THE OUTPUT IS CONNECTED TO TERMINALS A+ AND A-. TERMINALS A+ AND A- CONNECT TO A PERMANENT MAGNET DC MOTOR



THE BOARD IS PROVIDED WITH VARIOUS TRIM POTS. LISTED BELOW ARE THE NORMAL TRIM POT SETTINGS (expressed in % of full CW rotation). SEE DETAILED INSTRUCTIONS LATER IN THIS MANUAL.

MIN (MINIMUM SPEED)	0%	
MAX (MAXIMUM SPEED)	60%	
IR (IR COMPENSATION)	15%	
CL (CURRENT LIMIT/TORQUE)	65%	
ACCEL (ACCELERATION START)	50%	



ELECTRICAL RATINGS FOR KBIC BOARDS

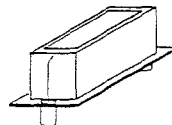
MODEL NUMBER	AC LINE VOLTAGE	MOTOR VOLTAGE (VDC)	AC LOAD CURRENT (RMS AMPS)	DC LOAD CURRENT (AVG. AMPS)	MAX. HP
KBIC-120	120	90-130	9.0	6.0	1/2
KBIC-125	120	90-130	12.0	8.0	3/4
KBIC-120 W/ AUX HEAT SINK	120	90-130	18.0	12.0	1
KBIC-125 W/ AUX HEAT SINK	120	90-130	24.0	16.0	1-1/2

NOTE: THE BARRIER BOARD ATTACHES TO THE MAIN CONTROL BOARD. TO COMPLETE CIRCUIT "I1" A GRAY JUMPER MUST BE ATTACHED FROM TERMINAL "I1" ON MAIN CONTROL BOARD TO TERMINAL "I1" ON BARRIER BOARD. TERMINAL "I2" IS LOCATED ON MAIN CONTROL BOARD.

THE OUTPUT VOLTAGE FROM THE BOARD WHICH VARIES THE MOTOR SPEED IS CONTROLLED BY A 5000 OHM (5K) POTENTIOMETER THE POTENTIOMETER IS CONNECTED ACROSS TERMINALS P1, P2 AND P3 WITH THE CENTER WIPER CONNECTED TO P2

PLUG IN HORSEPOWER RESISTOR

A PLUG IN HORSEPOWER RESISTOR MUST BE INSTALLED TO MATCH THE KBIC BOARD TO THE MOTOR HORSEPOWER AND VOLTAGE



MOTOR HORSE POWER RANGE	PLUG-IN HORSEPOWER RESISTOR RESISTANCE VALUE(OHMS)	KB P/N
ARMATURE VOLTAGE 90-130		
1/2	.025	9841
3/4	.015	9842
1	.01	9843

LOW TEMP INDUSTRIES CONVEYOR CONTROL BOARD INSTRUCTIONS

SAFETY WARNING

THIS PRODUCT MUST BE INSTALLED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE PERSONNEL FAMILIAR WITH "SCR" CONTROLLERS AND THE HAZARDS INVOLVED. FAILURE TO DISCONNECT POWER BEFORE WIRING AND SERVICING AND TO CONNECT PROPER GROUND WIRE MAY RESULT IN AN ELECTRICAL SHOCK. IF ADJUSTMENTS ARE MADE WITH THE CONTROL DOOR OPEN AND UNDER POWER, INSULATED ADJUSTMENT TOOLS MUST BE USED AND EYE PROTECTION SUCH AS SAFETY GLASSES MUST BE WORN.

ALL LOW TEMP CONVEYOR SYSTEMS USE THE "KBIC" SERIES DC CONTROL BOARDS. THESE BOARDS ARE DESIGNED TO TAKE AN INPUT VOLTAGE OF 120VAC AND CONVERT IT TO AN OUTPUT VOLTAGE WHICH CAN VARY FROM 0 TO 90 VDC. THE CONTROL BOARD IS CONNECTED TO A PERMANENT MAGNET DC MOTOR WITH AN ARMATURE VOLTAGE OF 90VDC. THE CONTROL BOARD IS EQUIPPED WITH A LINE FUSE AND ARMATURE FUSE LOCATED ON THE BARRIER BOARD. SEE THE "ELECTRICAL RATING CHART ON THE CONVEYOR CONTROL BOARD LAYOUT" PAGE FOR PROPER FUSE SIZING. THE FUSES SHOULD BE **NORMAL BLOW CERAMIC 3AG OF MDA** OR EQUIVALENT TYPE. THE SPEED OF THE MOTOR IS CONTROLLED BY A **5000 OHM (5K) POTENTIOMETER**. MOST SYSTEMS ARE PROVIDED WITH SOME TYPE OF INHIBIT DEVICE. UNLESS OTHERWISE SPECIFIED A THROUGH BEAM PHOTO EYE SYSTEM WILL BE PROVIDED. THIS SYSTEM CONNECTS THROUGH TERMINALS "I1" AND "I2" ON THE MAIN CONTROL BOARD. THIS INHIBIT CIRCUIT WILL MOMENTARILY STOP THE SYSTEM WHILE THE CIRCUIT IS CLOSED. ONCE THE CIRCUIT IS OPEN THE CONVEYOR WILL RESTART AUTOMATICALLY. SEE THE FOLLOWING SECTIONS ON SWITCHING CIRCUITS.

ADJUSTMENT AND CONTROL FUNCTIONS

THE TRIM POT DESCRIBED ON THE CONTROL BOARD LAYOUT PAGE ARE PRESET AT THE FACTORY HOWEVER IF ADJUSTMENTS ARE NECESSARY FOLLOW THE DIRECTIONS GIVEN BELOW.

ACCELERATION START: THIS TRIP POT IS FACTORY SET AT 2 SEC AND SHOULD NOT BE ADJUSTED. THIS IS THE AMOUNT OF TIME IT TAKES THE CONVEYOR TO RESTART AFTER THE INHIBIT CIRCUIT HAS BEEN OPENED.

MAXIMUM SPEED ADJUSTMENT: TURN SPEED CONTROL KNOB (POTENTIOMETER) TO FULL SPEED (MAXIMUM CW POSITION. ADJUST MAX. SPEED TRIM TO NEW DESIRED SETTING.

NOTE! THE MAXIMUM SPEED POT HAS BEEN FACTORY ADJUSTED TO PROVIDE A MAXIMUM TRAVEL RATE OF 40 FEET PER MINUTE. IF TRIM POT IS ADJUSTED **DO NOT** ADJUST ABOVE 90VDC ACROSS TERMINALS A+ AND A-. IF ARMATURE VOLTAGE IS EXCEEDED PREMATURE MOTOR FAILURE CAN OCCUR AND VOID FACTORY WARRANTY.

MINIMUM SPEED ADJUSTMENT: IF A HIGHER THAN ZERO MINIMUM SPEED IS DESIRED, READJUST THE MINIMUM SPEED BY TURNING THE SPEED CONTROL KNOB (POTENTIOMETER) TO ZERO SETTING (FULL CCW POSITION) THEN ADJUST THE MIN SPEED TRIMPOT TO THE DESIRED SETTING. ADJUSTING THE MIN. SPEED SETTING WILL AFFECT THE MAX SPEED SETTING. THEREFORE, IT IS NECESSARY TO READJUST THE MAX SPEED AFTER THE MIN SPEED, AND MAY BE NECESSARY TO REPEAT THE SEQUENCE UNTIL BOTH MIN AND MAX SPEED ARE SET TO DESIRED LEVELS.

ADJUSTMENT AND CONTROL FUNCTIONS (CONT.)

CURRENT LIMIT (CL/TORQUE ADJUSTMENT): "CL" CIRCUITRY IS PROVIDED TO PROTECT THE MOTOR AND CONTROL AGAINST OVERLOADS. THE "CL" LIMITS THE INRUSH CURRENT TO A SAFE LEVEL DURING STARTUP. THE "CL" IS FACTORY SET TO APPROXIMATELY 1.5 TIMES THE FULL LOAD RATING OF THE MOTOR ("CL" TRIMPOT IS NOMINALLY SET TO APPROXIMATELY 75% OF FULL CW ROTATION.

NOTE! THE CORRECT VALUE HORSEPOWER RESISTOR MUST BE INSTALLED IN ORDER FOR THE "CL" AND "IR" COMP TO OPERATE PROPERLY.

TO SET THE "CL" TO FACTORY SPECIFICATIONS ADJUST AS FOLLOWS:

1. SET SPEED CONTROL KNOB TO APPROXIMATELY 30-50% CW ROTATION. SET "CL" TRIMPOT TO FULL CCW POSITION.
2. CONNECT A **DC AMMETER** IN SERIES WITH THE ARMATURE LEAD.
3. LOCK SHAFT OF MOTOR (BE SURE "CL" POT IS IN FULL CCW POSITION). APPLY POWER AND ROTATE "CL" POT CW SLOWLY UNTIL AMMETER READS **1.5 TIMES** MOTOR RATING (**DO NOT EXCEED 2 TIMES MOTOR RATING**).

NOTE! IF ONLY AN **AC AMMETER** IS AVAILABLE, IT CAN BE INSTALLED IN SERIES WITH THE AC INPUT LINE. FOLLOW ABOVE INSTRUCTIONS; HOWEVER, SET AC AMPERAGE AT **.75 TIMES** MOTOR RATING.

IR COMPENSATION ADJUSTMENT: "IR" COMPENSATION IS PROVIDED TO SUBSTANTIALLY IMPROVE LOAD REGULATION. IF THE LOAD PRESENTED TO THE MOTOR DOES NOT VARY SUBSTANTIALLY, THE "IR" ADJUSTMENT MAY BE SET AT A MINIMUM LEVEL (APPROXIMATELY 1/4 OF FULL SETTING). THE CONTROL IS FACTORY ADJUSTED TO APPROXIMATELY 3% REGULATION. IF SUPERIOR PERFORMANCE IS DESIRED (LESS THAN 1% SPEED CHANGE OF BASE SPEED FROM 0 TO FULL LOAD), THEN THE "IR" COMP SHOULD BE ADJUSTED AS FOLLOWS:

NOTE! EXCESSIVE "IR" COMP. WILL CAUSE THE CONTROL TO BECOME UNSTABLE, WHICH CAUSES MOTOR COGGING (BELT WILL JUMP).

1. SET "IR" TRIMPOT TO APPROXIMATELY 25% OF CW ROTATION. RUN MOTOR UNLOADED AT APPROXIMATELY 1/3 SPEED AND RECORD RPM.
2. RUN MOTOR AT MAXIMUM LOAD AND ADJUST "IR" COMP TRIMPOT SO THAT THE MOTOR SPEED UNDERLOAD EQUALS THE UNLOADED SPEED PER STEP 1.
3. REMOVE LOAD AND RECHECK UNLOADED RPM. IF UNLOADED RPM HAS SHIFTED, REPEAT PROCEDURE FOR MORE EXACT REGULATION.

THE CONTROL IS NOW COMPENSATED TO PROVIDE MINIMAL SPEED CHANGE UNDER LARGE VARIATIONS OF APPLIED LOAD.

SWITCHING CIRCUITS

THE FOLLOWING SECTIONS CONTAINS VARIOUS WAYS THAT THE SYSTEM CAN BE TURNED "ON" AND "OFF" . THERE ARE TWO (2) BASIC WAYS TO CONTROL THE SYSTEM; "AC" LINE SWITCHING AND ARMATURE SWITCHING

"AC" LINE SWITCHING: THE KBIC CAN BE TURNED "ON" AND "OFF" BY BREAKING THE AC INPUT TO THE BOARD. THIS IS DONE BY PUSHING THE "START" AND "STOP" BUTTONS ON THE MAIN CONTROL PANEL. THE "AUTO INHIBIT" CIRCUITRY CONTAINED IN THE KBIC BOARD AUTOMATICALLY RESETS CRITICAL COMPONENTS EACH TIME THE "AC" LINE IS INTERRUPTED. THIS ALONG WITH ACCELERATION START AND "CL", PROVIDES A SMOOTH START EACH TIME THE "AC" LINE IS CONNECTED.

WARNING: DO NOT DISCONNECT AND RECONNECT THE ARMATURE WITH THE "AC" LINE APPLIED OR CATASTROPHIC FAILURE WILL RESULT.

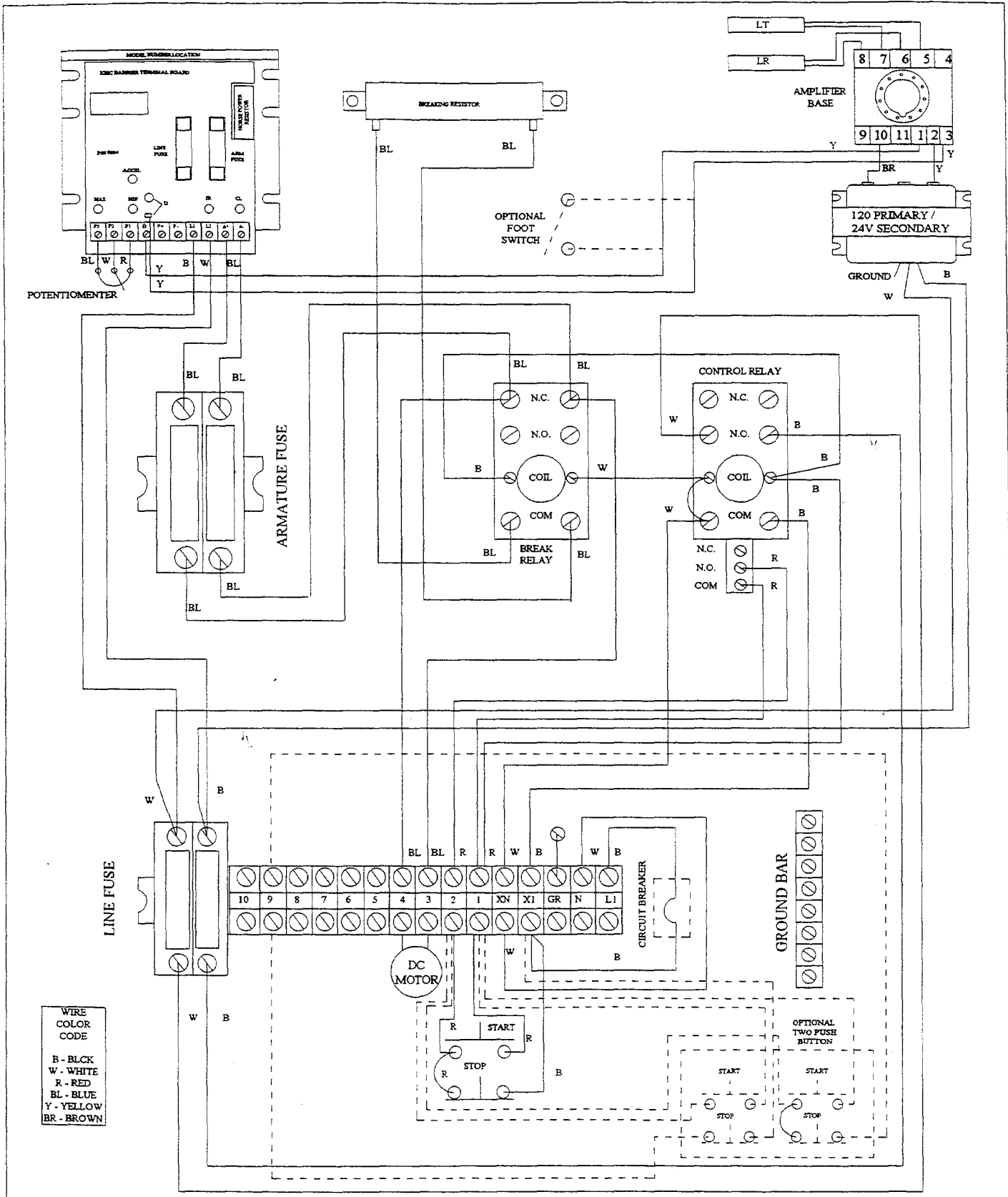
ARMATURE SWITCHING: IF THE ARMATURE IS TO BE DISCONNECTED AND RECONNECTED WITH THE "AC" POWER APPLIED THE INHIBIT CIRCUIT MUST BE SIMULTANEOUSLY ACTIVATED AND DEACTIVATED. CONNECT "I1" AND "I2" TOGETHER TO ACTIVATE THE INHIBIT CIRCUIT.

THE LIMIT SWITCH DEVICE INSTALLED ON YOUR CONVEYOR IS WIRED THROUGH THIS "I1" AND "I2" CIRCUIT. WHEN SERVICING BE SURE TO CHECK THE WIRING DIAGRAM TO ENSURE THAT THIS CIRCUIT IS REINSTALLED PROPERLY.

THIS IS A NO LOAD INTERNAL TAP TO THE CONTROL BOARD AND IS NOT DESIGNED TO DRIVE A LOAD.

DYNAMIC BRAKE: THE SYSTEM IS PROVIDED WITH A 10 OHM / 70 WATT BREAKING RESISTOR WHICH IS CONNECTED ACROSS THE BREAKING CONTACT OR. WHEN THE "AC" LINE VOLTAGE IS BROKEN ON THE SYSTEM THE CONTACTS OF THE BREAKING RESISTOR DISTRIBUTE THE EXTRA ELECTRICAL ENERGY GENERATED BY THE MOTOR ACROSS THE RESISTOR. THIS CAUSES AN INSTANT STOP TO THE SYSTEM. NOTE! THIS DYNAMIC BRAKE IS NOT ENERGIZED DURING ARMATURE SWITCHING.

REVERSING: THE CONVEYOR BELT USED ON THESE SYSTEMS ARE NOT DESIGNED TO OPERATE IN BOTH DIRECTIONS. CHECK THE DIRECTIONAL TRAVEL ARROW ON THE BOTTOM SIDE OF THE BELT. IF FOR SERVICE PURPOSES THE BELT BECOMES JAMMED THE SYSTEM MAY BE REVERSED. TO REVERSE THE SYSTEM SWAP THE WIRE LEADS ON TERMINALS A+ AND A-. TURN THE SPEED CONTROL TO A MINIMAL SETTING AND SLOWLY REVERSE THE BELT UNTIL THE JAMB HAS BEEN CLEARED. REPLACE THE WIRES ON TERMINALS A+ AND A- TO THEIR ORIGINAL POSITION.



LOW TEMP INDUSTRIES INC.
JONESBORO, GEORGIA

CONVEYOR WIRING DIAGRAM
TRAY MAKE-UP SYSTEM
NO WASH DOWN

DIAGRAM NO.
LTCONWD-004

DATE: 7-18-96

CT SERIES CONVEYOR PARTS LIST 1/2 H.P. SYSTEM

NOTE: CHECK NAME PLATE FOR VOLTAGE AND H.P. OF YOUR UNIT

ITEM NO.	PART NAME	STOCK NO.	MFG. NAME & PART NO.
ELECTRICAL CONTROLS			
1	1/2 H.P.D.C. CONTROL BOARD	514600	KBIC-120 (FOR 1/2H.P.)
2	1/2 H.P. RESISTOR	514610	9814 (.025 OHM)
3	TERMINAL BARRIER BOARD	514620	9844 KBIC TERMINAL
4	BOARD ARMATURE FUSE 6 AMP	514750	ABC 6 (6 AMP)
4A	BOARD LINE FUSE 8 AMP	514720	ABC 8 (8 AMP)
5	BREAKING RESISTOR	514740	9865 (10 OHM/70WATT)
6	TERMINAL STRIP	513700	BUCHANAN 724
6A	TERMINAL END SECTION	513730	BUCHANAN 730
7	LINE FUSE BLOCK	513900	BUCHANAN 362
7A	LINE FUSE BLOCK END	514000	BUCHANAN 330
8	LINE FUSE	513910	TRM-8 (8 AMP)
9	ARMATURE FUSE BLOCK	514020	LITTLE LH25030-2C
10	ARMATURE FUSE	513892	TR6R (6 AMP)
11	CONTROL RELAY	514100	DELTROL 900DPDT-1C
12	BREAKING RELAY	514200	DELTROL 900 DPDT
13	CIRCUIT BREAKER 15 A	515110	ETA 45-700-1G1-P10-DD
13A	BOOT FOR CIRCUIT BREAKER	515120	ETA N.1.480.08
14	SPEED POTENTIOMETER	518300	A/B 800H-UR24
14A	SPEED POT. LEGEND PLATE	518310	A/B 800H-W080
15	START PUSH BUTTON	517310	A/B 800H-AR1D1
15A	START LEGEND PLATE	517360	A/B 800H-W126
16	STOP PUSH BUTTON	517320	A/B 800H-BR6D2
16A	STOP LEGEND PLATE	517330	A/B 800H-W371

PHOTOEYE COMPONENTS & CONTROLS

17	CONTROL TRANSFORMER	514430	EDWARDS #592
18	PHOTO ELEC. SOCKET BASE	515360	IDEC SR3P-06
19	PHOTO ELEC. AMPLIFIER 24V	515350	TELCO PA-11A-302
20	SLIM LINE RECIEVER	515310	TELCO LR-SG-15M
20A	SLIM LINE TRANSMITTER	515320	TELCO LT-SG-15M
21	COMPACT RECIEVER	515330	TELCO LR-WS-15M
21A	COMPACT TRANSMITTER	515340	TELCO LT-WS-15M
22	FOOT SWITCH	513650	NAUTILUS WP-541-S
23	ELEC. CONN. FEMALE RECEPTACLE	513651	AMP 206430-1
23A	ELEC. CONNECTOR PINS FEMALE	513652	AMP 66100-7
24	ELEC. CONNECTOR PLUG	513653	AMP 206429-1
24A	ELEC. CONNECTOR PINS MALE	513654	AMP 66098-7
24B	ELEC. CONNECTOR CORD RELIEF	513655	AMP 206062-3
24C	ELEC. CORD	250910	16-3 TYPE SJE0
25	RELAY BASE DOUBLE POLE	515820	IDEC SH2B05
25A	RELAY DOUBLE POLE 24VAC	515830	IDEC RH2BUAC24V
26	RELAY BASE THREE POLE	515800	IDEC SH3B05
26A	REALAY THREE POLE 24VAC	515810	IDEC RH3BUAC24V
27	ADAPTOR BUZZER (OPTIONAL)	515900	EDWARDS 340A-G5

**CT SERIES CONVEYOR
PARTS LIST
1/2 H.P. SYSTEM
(CONT.)**

ITEM NO.	PART NAME	STOCK	MFG. NAME. & PART NO.
PLUMBING COMPONENTS (OPTIONAL)			
26	DETERGENT INJECTOR	514510	DEMA 202B
27	MIXING VALVE	519800	WATTS #70-AT-1/2"
28	SOLENOID VALVE	502800	ASCO 8210D1-2NC
29	VACUME BRAEAKER	519900	WATTS 288A
30	"Y" STARAINER (CPVC)	522000	HAYWARD YS20050S
31	TRUE UNION BALL VALVE (CPVC)	527100	CHEMTROL U51TB-E
32	TANK SPRAY HEAD	479120	SPRAY SYS. 1/4QTT+6505
33	PAN WASH NOZZLE INLET	240000	CMPNT. HDWE. K36-6000
34	TOGGLE SWITCH	335900	McGILL 0090-0001
35	PILOT LIGHT	335800	JEMCO 515-5CL
DRIVE COMPONENTS			
37	1/2 H.P. MOTOR	513250	IG 4660-535-1143-XX
38	1/2 H.P. GEAR BOX	513210	HUB CITY 214
39	GEAR OIL	513270	MOBIL SHC-634
40	1/2 H.P. CLUTCH 7/8" BORE	518410	OSD-337
40A	1/2 H.P. CLUTCH SPROCKET	518420	50A-21G
41	TOP DRIVE SPROCKET	519010	#50, 19 TOOTH 1" BORE
42	SNAP IDLER (CHAIN TENSIONER)	519130	#50 SNAP IDLER
43	PILLOW BLOCK BEARING 1" BORE	519500	(AMI) BLL5-19
44	FLANGE BEARING 1" BORE	519530	(AMI) BFX 205-16
46	821 BELT DRIVE SPROCKET (PLASTIC) 1" BORE	518500	REX. N821-25T
49	821 STRAIGHT RUN BELT (SOLD IN 10 FT LENGTH)	519611	REX. D821-K10
51	GUIDE RAIL/FLAT TOP UHMW/SS (USED WITH 821 STRAIGHT SYSTEM)	310800	NOLU DGR-7012-120
52	#50 ROLLER CHAIN 5/8" PITCH	518800	MORSE #50 RIV
53	#50 MASTER LINK	518820	5/8" PITCH #50
54	#50 HALF LINK	518830	5/8" PITCH #50
56	DRIVE SHAFT 1" DIA. 16-1/2" S.S.	518510	1" DIA 1/4 X 1/8 KEY
57	TAIL SHAFT 1" DIA. 15-3/4" S.S.	518520	1" DIA 1/4 X 1/8 KEY

TROUBLE SHOOTING (ELECTRICAL)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
CONVEYOR WILL NOT START		
START BUTTON DEPRESSED NOTHING HAPPENS	1. OPEN LINE VOLTAGE SUPPLYING SYSTEM CHECK LINE VOLTAGE AT TERMINAL L1 AND N	1. CHECK MAIN BREAKER FEEDING SYSTEM.
	2. OPEN CIRCUIT BREAKER ON SYSTEM	2. CHECK CIRCUIT BREAKER LOCATED IN CONTROL PANEL. RESET IF TRIPPED.
START BUTTON DEPRESSED CONTROL RELAY & BREAKING RELAY ACTIVATE	1. CHECK LINE VOLTAGE ON CONTROL RELAY AT COM AND N.O.	1. IF VOLTAGE AT COM BUT NOT AT N.O. RELAY IS BAD. REPLACE
	2. CHECK VOLTAGE AT FUSE BLOCK AT TOP OF TERMINAL STRIP.	2. IF FUSES BLOWN REPLACE
	3. CHECK LINE VOLTAGE AT TERMINALS L1 & L2 ON KBIC BOARD.	3. IF NO VOLTAGE FUSE AT END OF TERMINAL STRIP IS BLOWN.
	4. CHECK LINE FUSE & ARMATURE FUSE ON KBIC BOARD	4. IF BLOWN REPLACE
	5. CHECK OUT VOLTAGE AT TERMINALS A+ AND A- ON KBIC BOARD	5. IF INHIBIT (ARMATURE SWITCHING CIRCUIT) IS USED REMOVE JUMPER FROM "I2" TO REMOVE INHIBIT CIRCUIT BEFORE PROCEEDING. IF NO DC VOLTAGE IS SEEN REMOVE WIRE LEADS FROM A+ AND A- TO ISOLATE BOARD ADJUST SPEED POT. TO FULL CLOCKWISE POSITION. IF NO VOLTAGE PRESENT REPLACE BOARD.
	6. CHECK ARMATURE FUSES BETWEEN THE CONTROL BOARD AND MOTOR	6. IF FUSE IS BLOWN REPLACE.

NOTE! ALSO INSPECT THE ARMATURE BRUSHES ON THE DC MOTOR BEFORE REPLACING WITH A NEW CONTROL BOARD. ARMATURE BRUSHES WORN DOWN TO THE CASING SHORTED TO THE ARMATURE CAN CAUSE PROBLEMS WITH CONTROL BOARD.

**TROUBLE SHOOTING
(ELECTRICAL)
(CONT.)**

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
CONVEYOR WILL NOT START (CONT).		
SYSTEM WILL NOT RUN WITH INHIBIT CIRCUIT WIRED IN BUT WILL RUN WITH "I2" JUMPER REMOVED.	1. AMPLIFIER SET TO LIGHT POSITION	1. SWITCH TO DARK
	2. PHOTO EYE IS BLOCKED	2. REMOVE OBJECT FROM BEAM PATH
	3. PHOTO EYE IS OUT OF ALIGNMENT	3. CHECK ALIGNMENT INDICATOR ON AMPLIFIER
	4. GAIN SET TOO LOW	4. ADJUST GAIN ON AMPLIFIER
	5. DEFECTIVE PHOTO EYE OR AMPLIFIER	5. REPLACE
CONVEYOR WILL NOT STOP		
STOP BUTTON IS DEPRESSED AND HAS NO EFFECT.	1. CHECK CONTACTS ON STOP BUTTON	1. IF DEFECTIVE REPLACE
	2. PHOTO EYE OR AMPLIFIER DEFECTIVE	2. REPLACE
CONVEYOR RUNS FOR A SHORT TIME AND STOPS		
INHIBIT CIRCUIT REMOVED FROM	1. CURRENT LIMIT OUT OF ADJUSTMENT ON KBIC BOARD.	1. SEE THE SECTION ON SYSTEM CONVEYOR CONTROL BOARD AND ADJUST "CL" AS SHOWN.
	2. MOTOR BRUSHES WORN AND CAUSING SHORT TO CONTROL BOARD	2. REPLACE BRUSHES
INHIBIT CIRCUIT IN SYSTEM	1. PHOTO EYE IS BLOCKED OR MISALIGNED AND TIME ON SETTING IS IN USE	1. CLEAR PHOTO EYE
BELT JUMPING (COGGING)		
SYSTEM RUNS SMOOTH THEN STARTS TO JUMP	1. "IR" COMP. OUT OF ADJUSTMENT	1. SEE SECTION ON CONTROL BOARD FOR ADJUSTMENT

TROUBLE SHOOTING (MECHANICAL)

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
NOISY SYSTEM		
BELT IS TRAVELING SMOOTHLY BUT POPS	1. SPROCKET HAS SHIFTED ON DRIVE SHAFT	1. CENTER SPROCKET ON SHAFT
	2. TAIL SECTION TENSION ADJUSTMENT BRACKET NOT STRAIGHT	2. REALIGN TAIL SECTION ADJUSTMENT BRACKET
	3. CHECK CANTINARY SAG OF BELT	3. ADJUST BELT TENSION
DRIVE SHAFT NOISY	1. BEARING NEEDS GREASING	1. GREASE BEARING
DRIVE CHAIN POPPING	1. CHAIN TENSION LOOSE	1. READJUST SNAP IDLER
	2. CHAIN NEEDS LUBING	2. LUBRICATE CHAIN
	3. CHAIN WORN OUT	3. REPLACE CHAIN
GEAR BOX NOISY	1. LOW OIL LEVEL IN GEAR BOX	1. FILL AS REQUIRED
MOTOR NOISY	1. WORN BEARINGS	1. REPLACE BEARINGS OR MOTOR

NOTE! IF THE SYSTEM BECOMES JABBED IT CAN BE REVERSED BY SWAPPING THE A+ AND A- TERMINALS ON THE "KBIC" BOARD.

BROKEN SLAT ON CONVEYOR BELT

STRAIGHT RUN 821 SYSTEM

TO REPLACE A BROKEN SLAT REFER TO THE DRAWING PROVIDED IN THIS MANUAL FOR THIS SYSTEM. EACH SLAT HAS A HINGE PIN AT EACH SLAT. NOTE THAT ONE HINGE OPENING IS LARGER THAN THE OTHER. THE HINGE PIN HAS A KNURLED END AND CAN BE DRIVEN IN ONE DIRECTION ONLY.

**TROUBLE SHOOTING
(PLUMBING)
WITH OPTIONAL WASH DOWN ONLY**

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
WATER WILL NOT START		
CONVEYOR IS RUNNING BUT TANK WASH SPRAY IS NOT SUPPLY FEEDING THE SYSTEM WORKING	1. WATER SUPPLY IS OFF	1. CHECK MAIN WATER
	2. BALL VALVE IS CLOSED ON CONVEYOR SYSTEM	2. CHECK BALL VALVE ON CONVEYOR FEEDING THE TANK.
	3. SOLENOID NOT OPEN	3. CHECK POWER FEEDING SOLENOID FROM CONTROL PANEL.
	4. SOLENOID CLOGGED OR DEFECTIVE	4. REMOVE SOLENOID AND INSPECT FOR DEBRIS. REPLACE IF NECESSARY
PAN WASH SWITCHES ARE ON BUT NO WATER TO NOZZLES SUPPLY FEEDING THE SYSTEM	1. WATER SUPPLY IS OFF	1. CHECK MAIN WATER
	2. BALL VALVE IS CLOSED ON CONVEYOR SYSTEM	2. CHECK BALL VALVE ON CONVEYOR FEEDING THE TANK.
	3. SOLENOID NOT OPEN	3. CHECK POWER FEEDING SOLENOID FROM CONTROL PANEL SWITCH.
	4. SOLENOID CLOGGED OR DEFECTIVE	4. REMOVE SOLENOID AND INSPECT FOR DEBRIS. REPLACE IF NECESSARY.
WATER WILL NOT STOP		
1. SOLENOID COIL CLOSING	1. CHECK ELECTRICAL SIGNAL FROM CONTROL PANEL.	
2. SOLENOID CLOGGED OR DEFECTIVE	2. REMOVE SOLENOID AND INSPECT FOR DEBRIS. IF NECESSARY.	

“DEMA” INJECTOR NOT DRAWING SEE THE SECTION IN THE MANUAL DETAILING THE FLUID OR DRAWING TOO MUCH OPERATION AND ADJUSTMENT OF THE “DEMA” INJECTOR.

WARRANTY

ALL LOW TEMP INDUSTRIES FOOD SERVICE EQUIPMENT IS FULLY WARRANTED BY THE MANUFACTURER AGAINST DEFECTS IN MATERIALS OR WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF PURCHASE BY THE ORIGINAL USER AND ONLY TO THE ORIGINAL PURCHASER PROVIDED IT IS INSTALLED AND OPERATED IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED WITH THE UNIT. ALSO, IT MUST NOT BE MISUSED, ALTERED OR NEGLECTED AND USED ONLY ON CIRCUITS AND VOLTAGES REQUIRED FOR THAT UNIT.

OUR OBLIGATION UNDER THIS WARRANTY SHALL BE LIMITED TO ONE OF THE FOLLOWING PROCEDURES. SELECTION OF A PROCEDURE SHALL BE AT THE SOLE DISCRETION OF LOW TEMP INDUSTRIES INC.

- A. REPLACEMENT OF DEFECTIVE PARTS, SHIPPED F.O.B. FACTORY, IN EXCHANGE FOR THE RETURNED DEFECTIVE PART, SHIPPED PREPAID FREIGHT.
- B. FREE REPLACEMENT OF DEFECTIVE PART, SHIPPED F.O.B. FACTORY.
- C. DEFECTIVE PART SHIPPED PREPAID FREIGHT TO FACTORY, REPAIRED AND RETURNED, SHIPPED F.O.B. . FACTORY.
- D. ALL **LABOR COSTS** SHALL BE COVERED FOR A PERIOD OF **90 DAYS** FROM THE DATE OF PURCHASE.

LOW TEMP INDUSTRIES INC. SHALL NOT BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY FIRE, FLOOD, WINDSTORM, OR ANY OTHER ACT OF GOD; WAR, WHETHER DECLARED OR UNDECLARED NOR SHALL WE BE RESPONSIBLE FOR THE LOSS OF FOOD OR OTHER PRODUCTS DUE TO POWER OR MECHANICAL FAILURE. THIS WARRANTY SHALL NOT COVER ANY DAMAGE CAUSED DURING SHIPMENT WHICH SHOULD BE REPORTED TO THE DELIVERING CARRIER.

LOW TEMP MANUFACTURING COMPANY

**A DIVISION OF LOW TEMP INDUSTRIES INC.
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