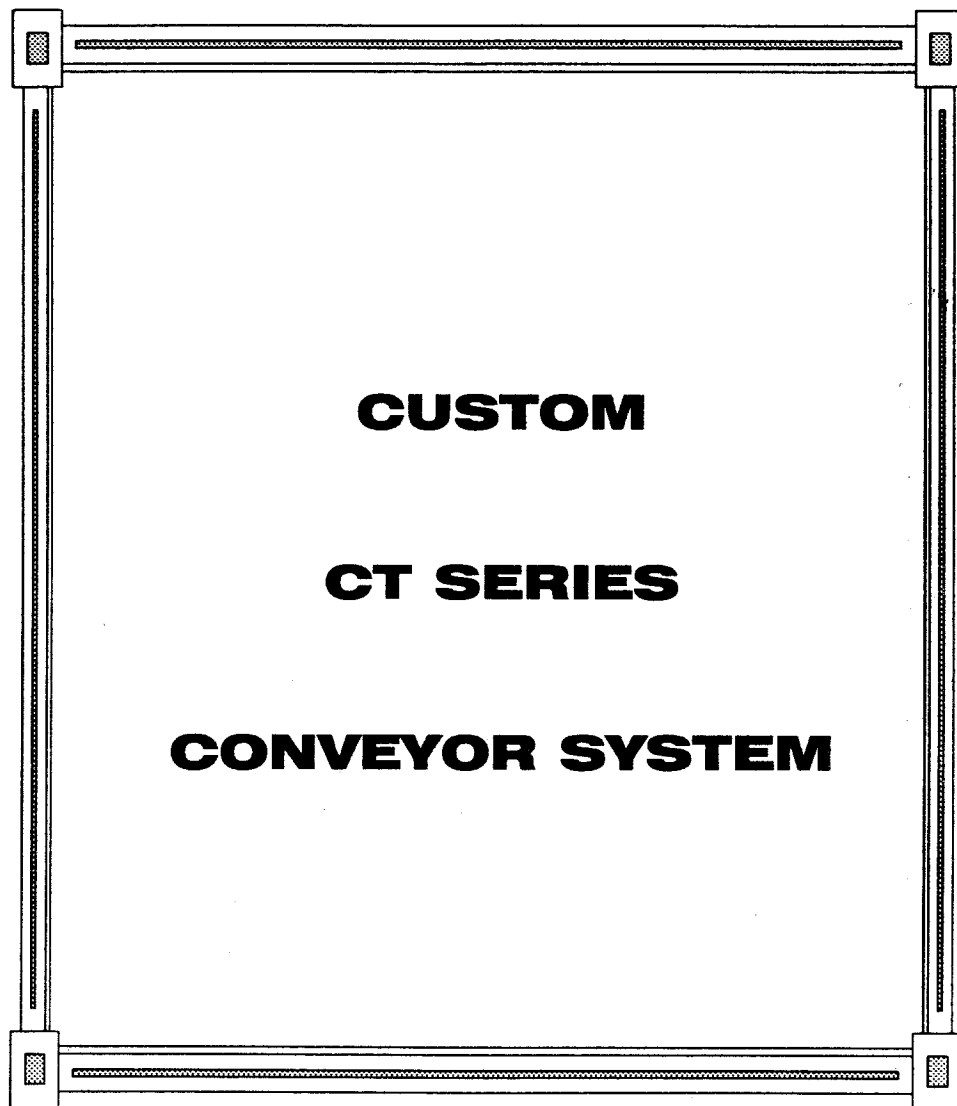


ISSUE DATE: 7/96

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-¾ 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 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.)

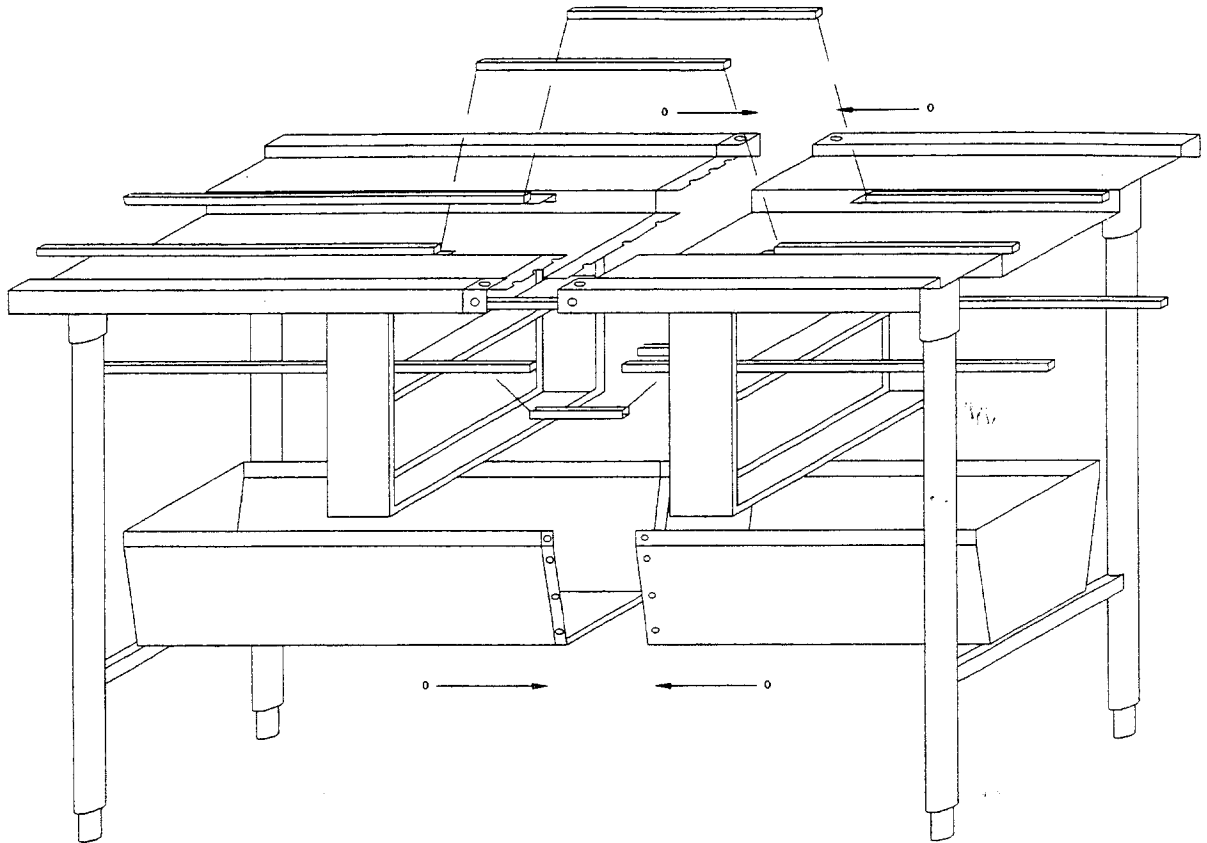
NOTES: **ORDINARY WOOL OR STEEL BRUSHES SHOULD NEVER** BE USED ON STAINLESS STEEL SURFACES. PARTICLES OF STEEL MAY BECOME IMBEDDED IN THE STAINLESS STEEL SURFACE, AND RUSTING OF THESE PARTICLES WILL EVENTUALLY APPEAR AS STAINS. USE STAINLESS STEEL WOOL OR SPONGE ON STAINLESS STEEL EQUIPMENT. HEAT TINT 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.

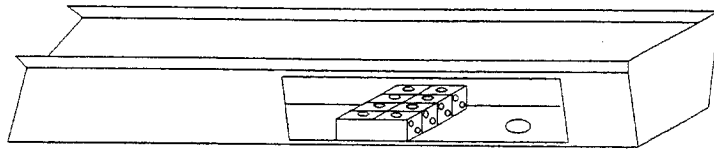
The raceway is assembled in this same manner.

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.

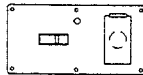
The bottom guide rails butt at the ends and are secured with saddle straps which secure to the weld studs provided on the guide rails.

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

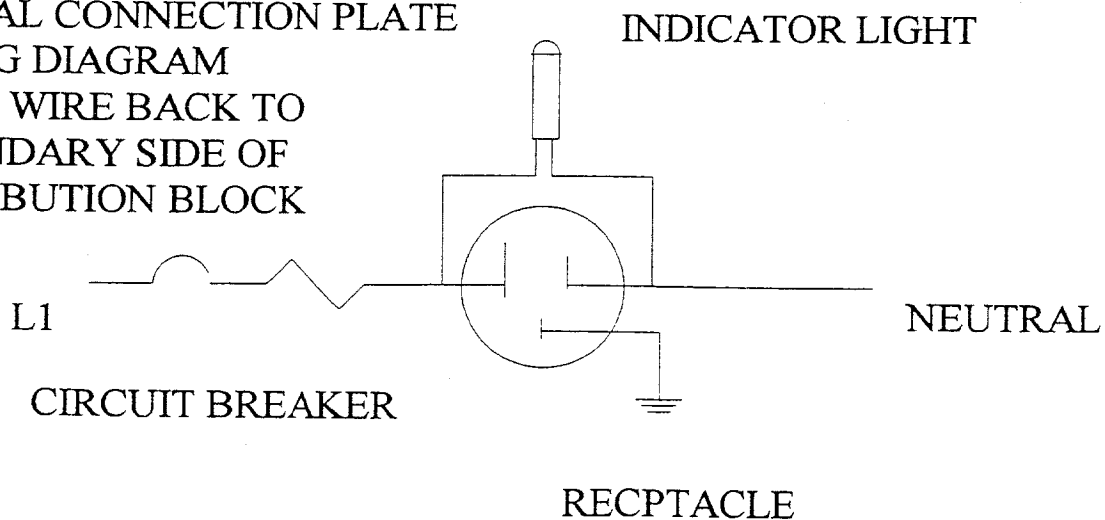


THREE PHASE SET UP SHOWN
FOR SINGLE PHASE ONLY THREE
TERMINAL PROVIDED
7/8" K.O. PROVIDED STANDARD
AT INCOMING POINT



TYPICAL OUTLET CONNECTION PLATE

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

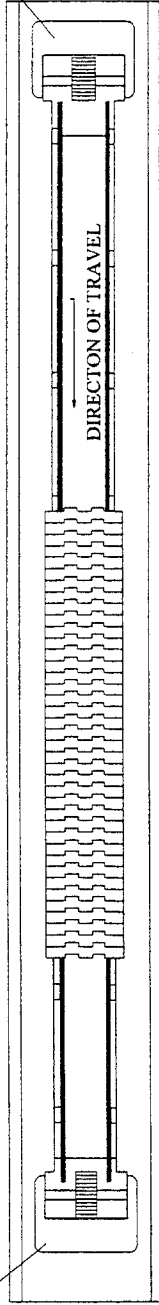


JUNE 1966

LOW TEMP INDUSTRIES TRAY MAKE-UP BELT ASSEMBLY

UHMW
DRIVE GEAR
GUARD

UHMW
DRIVE GEAR
GUARD

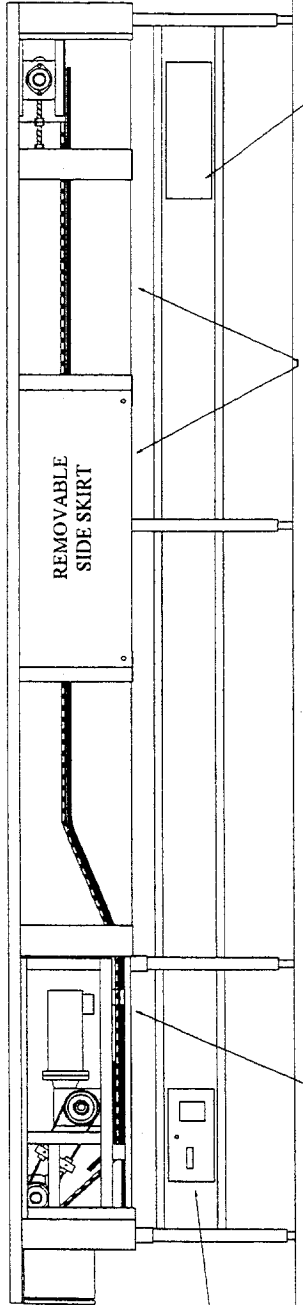


TOP VIEW

DRIVE HOUSING
(CHECKER END)

TAIL SECTION
(STARTER END)

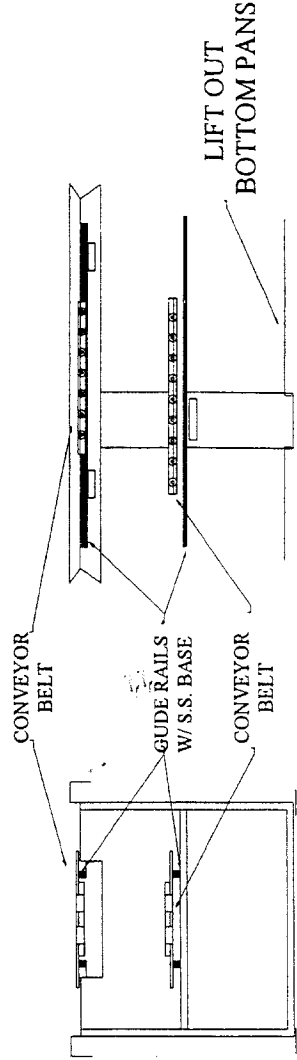
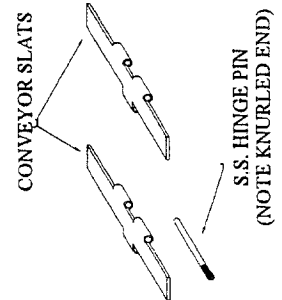
CONTROL
PANEL



LIFT OUT BOTTOM
PANS BETWEEN
FRAME SUPPORTS

SIDE VIEW

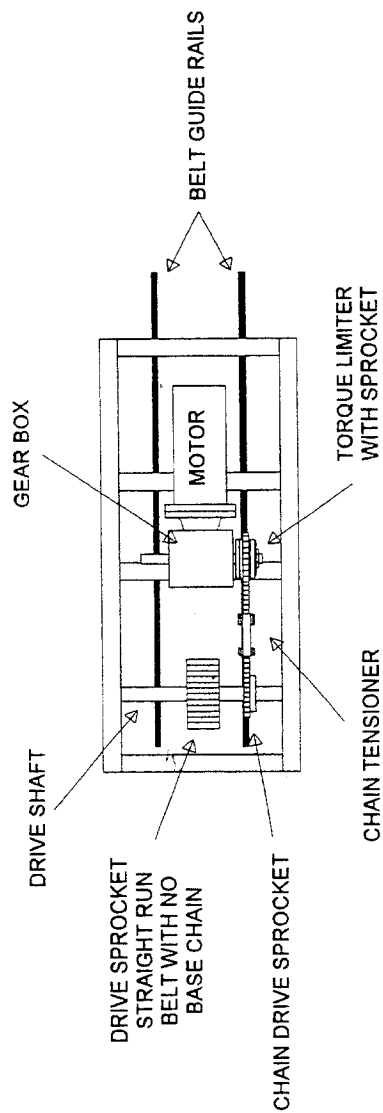
INCOMING POWER
CONNECTION ACCESS
(LOCATION AS SPECIFIED)



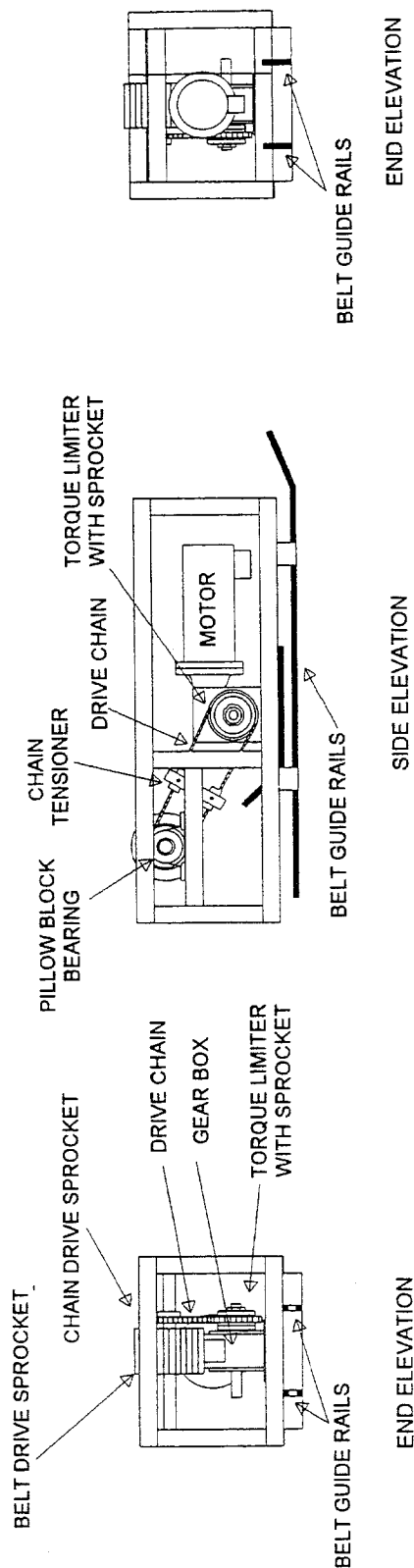
CONVEYOR BELT ASSEMBLY

END SECTION

SIDE SECTION



TOP VIEW

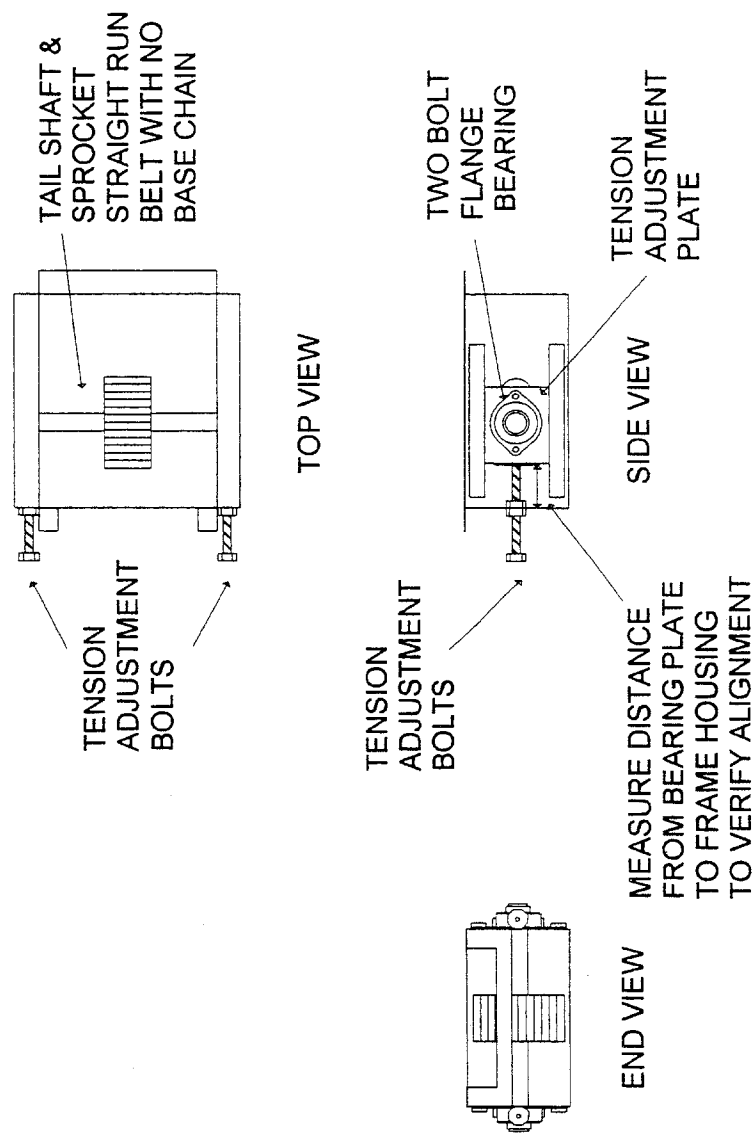


SCALE: 3/4" = 12"

DATED 4-30-96

CONVEYOR DRIVE HOUSING
TRAY MAKE-UP STRAIGHT RUN BELT

LOW TEMP INDUSTRIES INC.
JONESBORO, GEORGIA



TOP VIEW

SIDE VIEW

END VIEW

LOW TEMP INDUSTRIES
JONESBORO GEORGIA

CONVEYOR TAIL SECTION
FOR STRAIGHT RUN BELT

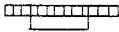
SCALE 1" = 12"

DATE MAY 1, 1996

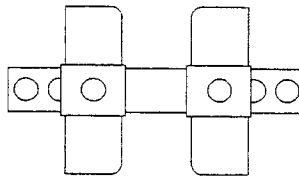
LOW TEMP INDUSTRIES CT SERIES CONVEYOR DRIVE COMPONENTS (CONT.)

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.

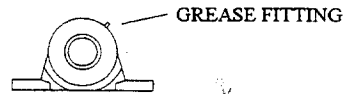
THE BERAINGS ARE PROVIDED WITH GREASE FITTINGS AND SHOULD BE GREASED EVERY 30 TO 60 DAYS.



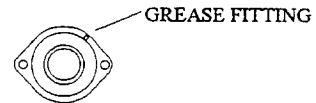
TOP DRIVE SPROCKET
#50, 19TOOTH
1" BORE
1/4" X 1/8" KEY WAY



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



PILLOW BLOCK
BEARING
1" BORE

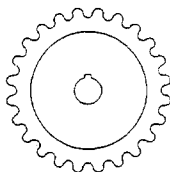


TWO (2) BOLT
FLANGE BEARING
1" BORE

CONVEYOR BELT DRIVE SPROCKETS



USED WITH STRAIGHT
RUN 821 STYLE BELT



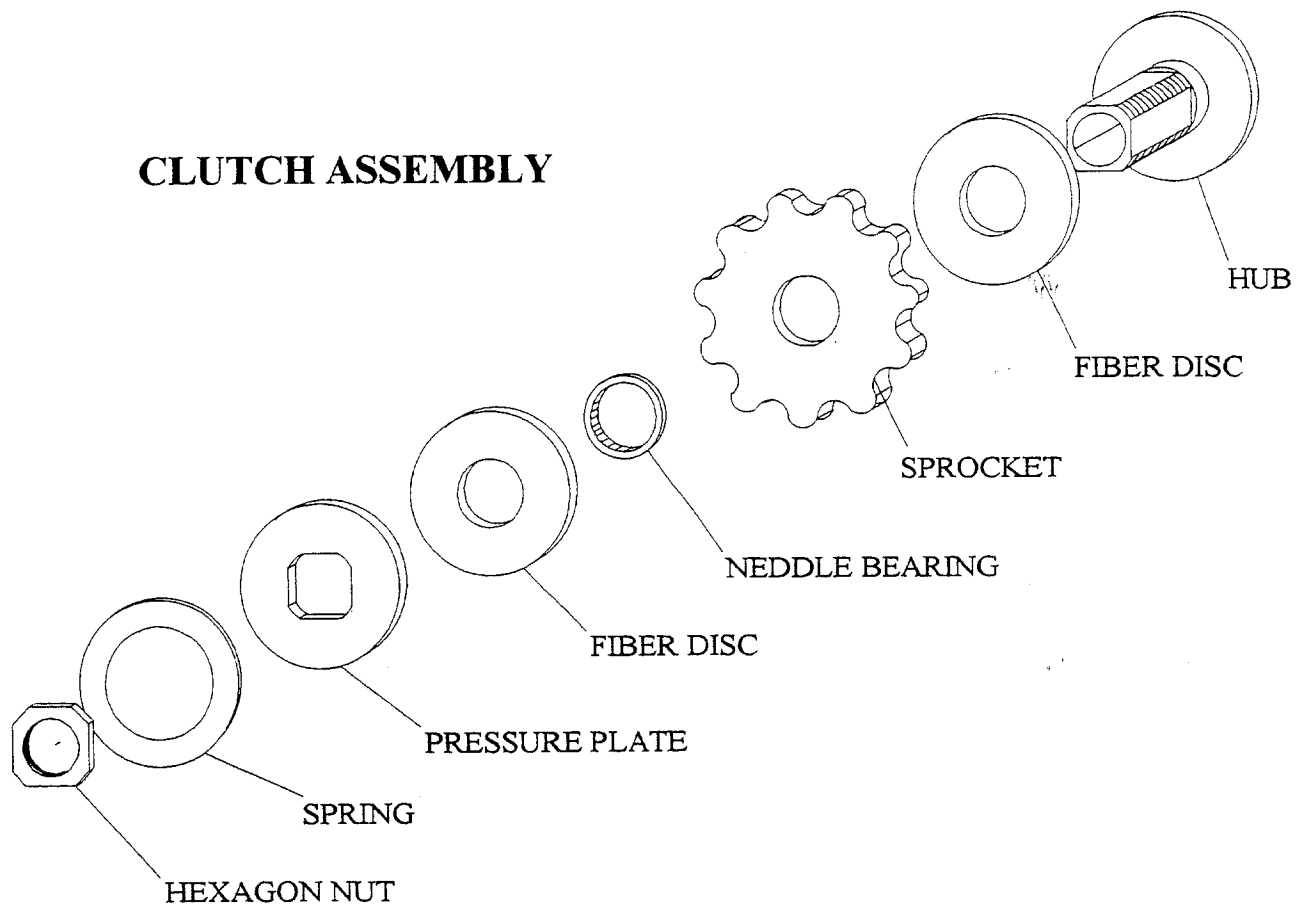
MODEL N821-25TTH
25TOOTH 821 STYLE
1" BORE
1/4" X 1/8" KEY WAY

LOW TEMP INDUSTRIES

CT SERIES CONVEYOR DRIVE COMPONENTS

(CONT.)

CLUTCH ASSEMBLY

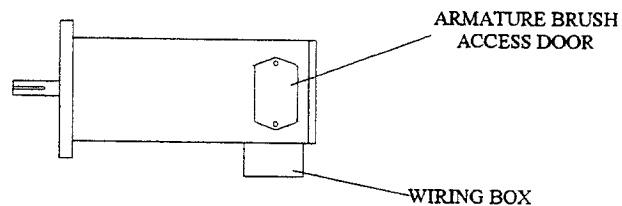


| MODEL NO. | HP | BORE | TORINGTON BEARING NO. | SPROCKET |
|-----------|-----|------|--------------------------|----------|
| OSD-337 | 1/2 | 7/8" | B-248 | 50A-21G |

LOW TEMP INDUSTRIES CONVEYOR DRIVE COMPONENTS

DC MOTOR SEPCIFICATIONS

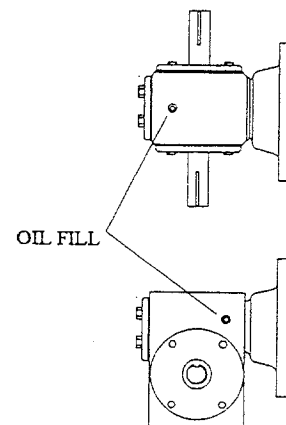
| MODEL NO. | FRAME | HP | RPM | VOLTS DC | ENCL | AG. MAX | WT. |
|------------------|-------|-----|------|----------|------|---------|-----|
| 4660-535-1543-XX | 56C | 1/2 | 1725 | 90 | TENV | 11.69 | 31 |



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 |

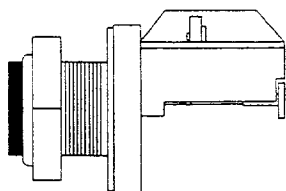
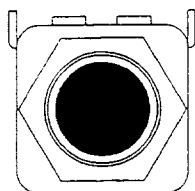
**NOTE! ALL GEAR BOXES ARE FACTORY FILLED WITH
MOBIL TYPE SHC-634 SYNTHETIC GEAR OIL
REPLACE WITH SAME TYPE GEAR OIL
DO NOT MIX MINERAL BASE GEAR OIL
WITH SYNTHETIC GEAR OIL**



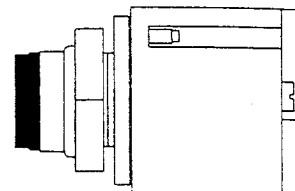
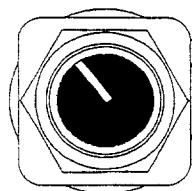
LOW TEMP INDUSTRIES

CT SERIES CONVEYOR CONTROL PANEL

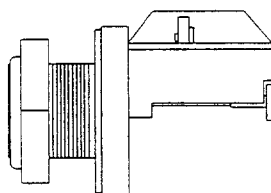
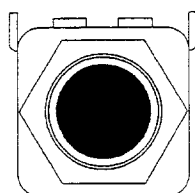
DOOR MOUNTED COMPONENTS



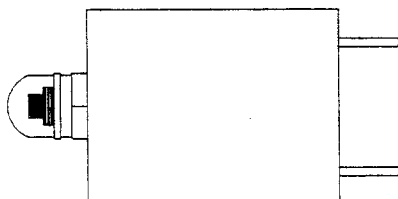
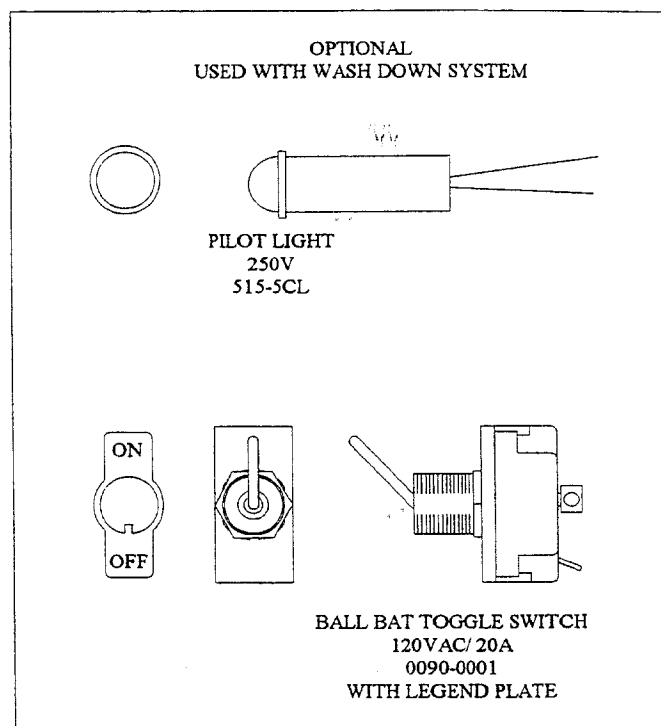
STOP PUSH BOTTON
NORMALLY CLOSED CONTACTS
RED ACTUATOR
800H-BR6D2



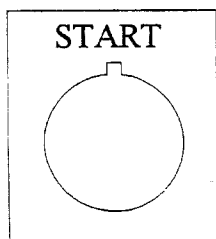
POTENTIOMETER
5000 OHM
800H-UR24



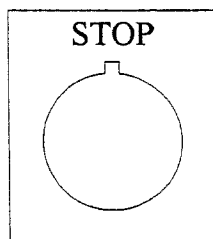
START PUSH BOTTON
NORMALLY OPEN CONTACTS
GREEN ACTUATOR
800H-AR1D1



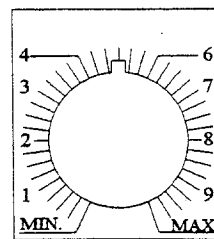
CIRCUIT BREAKER
15 AMP/ SINGLE POLE
PUSH TO TRIP/PUSH TO RESET
45-700-IG1-P10-DD
WITH PROTECTIVE BOOT
N.1.480.08



START
LEGNED PLATE
800H-W126



STOP
LEGNED PLATE
800H-W371

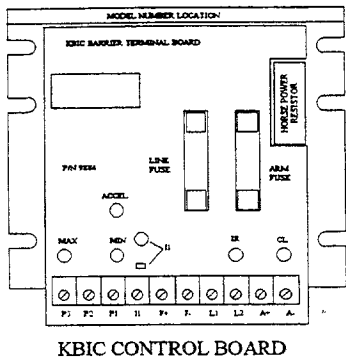


POTENTIOMETER
LEGNED PLATE
800H-W080

LOW TEMP INDUSTRIES

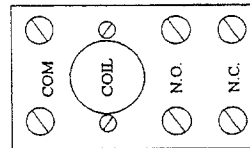
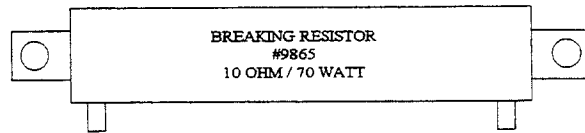
CT SERIES CONVEYOR CONTROL PANEL

MAIN INTERIOR COMPONENTS

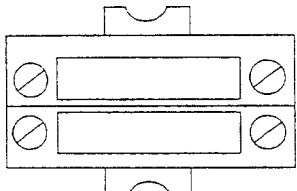


KBIC CONTROL BOARD

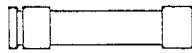
KBIC BOARD FUSES
NORMAL BLOW
CERAMIC
TYPE 3AG OR MDA



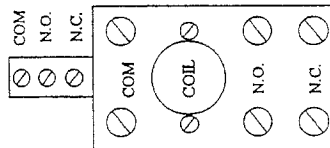
BREAKING
RELAY
900 DPDT
120V



ARMATURE FUSE HOLDER
LH25030-2C

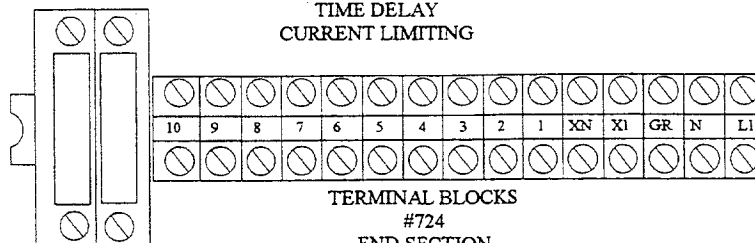


ARMATURE FUSE
TRR STYLE
TIME DELAY
CURRENT LIMITING



CONTROL
RELAY
900 DPDT-1C
120V

LINE FUSE
TRM STYLE
TIME DELAY
CURRENT LIMITING



TERMINAL BLOCKS

#724

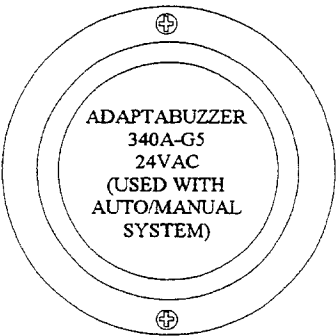
END SECTION

#730

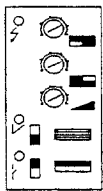
LINE FUSE HOLDER
#330
END SECTION
#362

LOW TEMP INDUSTRIES CONVEYOR CONTROL PANEL OPTIONAL INTERIOR COMPONENTS

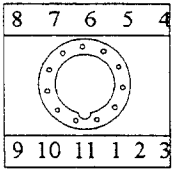
PHTOT EYE LIMIT SWITCH COMPONENTS



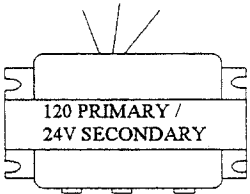
NOTE! BUZZER IS
 MOUNTED OUTSIDE
 OF CONTROL CABINET



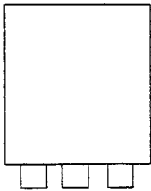
AMPLIFIER
 PA11A302 / 24VAC



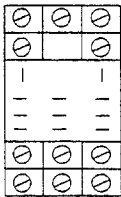
11 PIN SOCKET BASE
 SR3P06



STEP DOWN
 TRANSFORMER
 #592



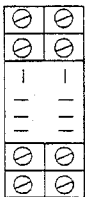
3 POLE
 RELAY
 BASE
 RH3B-24V



3 POLE
 RELAY
 BASE
 SR3P-06

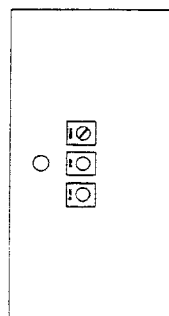
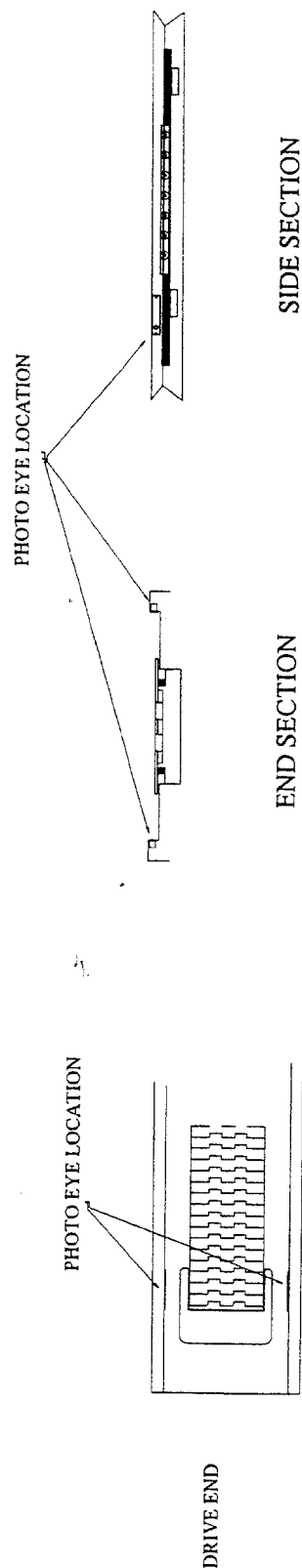


2 POLE
 RELAY
 BASE
 RH2B-24V



2 POLE
 RELAY
 BASE
 SR3P-24V

LOW TEMP INDUSTRIES CT SERIES CONVEYOR ELECTRICAL COMPONENT LOCATIONS

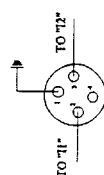


MAIN CONTROL PANEL
(LOCATED AT DRIVE END)

OPTIONAL



REMOTE START/STOP
(LOCATED AT TAIL SECTION
OR STARTER END)



WIRING DIAGRAM

CORD RELIEF

FOOT PEDDLE

MT. MALE

PANEL MT.

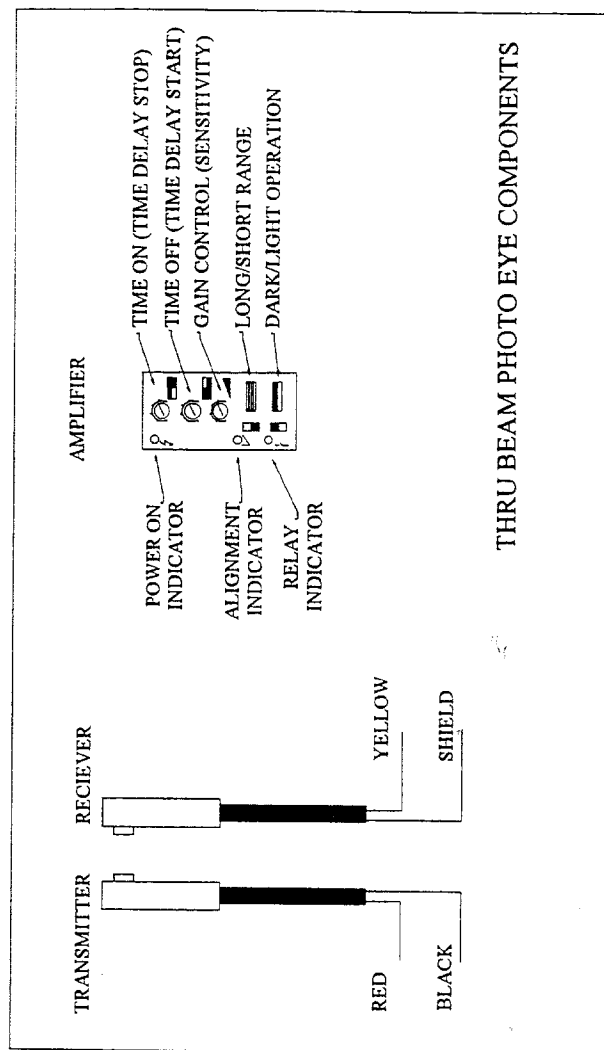
FEMALE

FOOT PEDDLE CONNECTOR

FOOT PEDDLE CONNECTOR

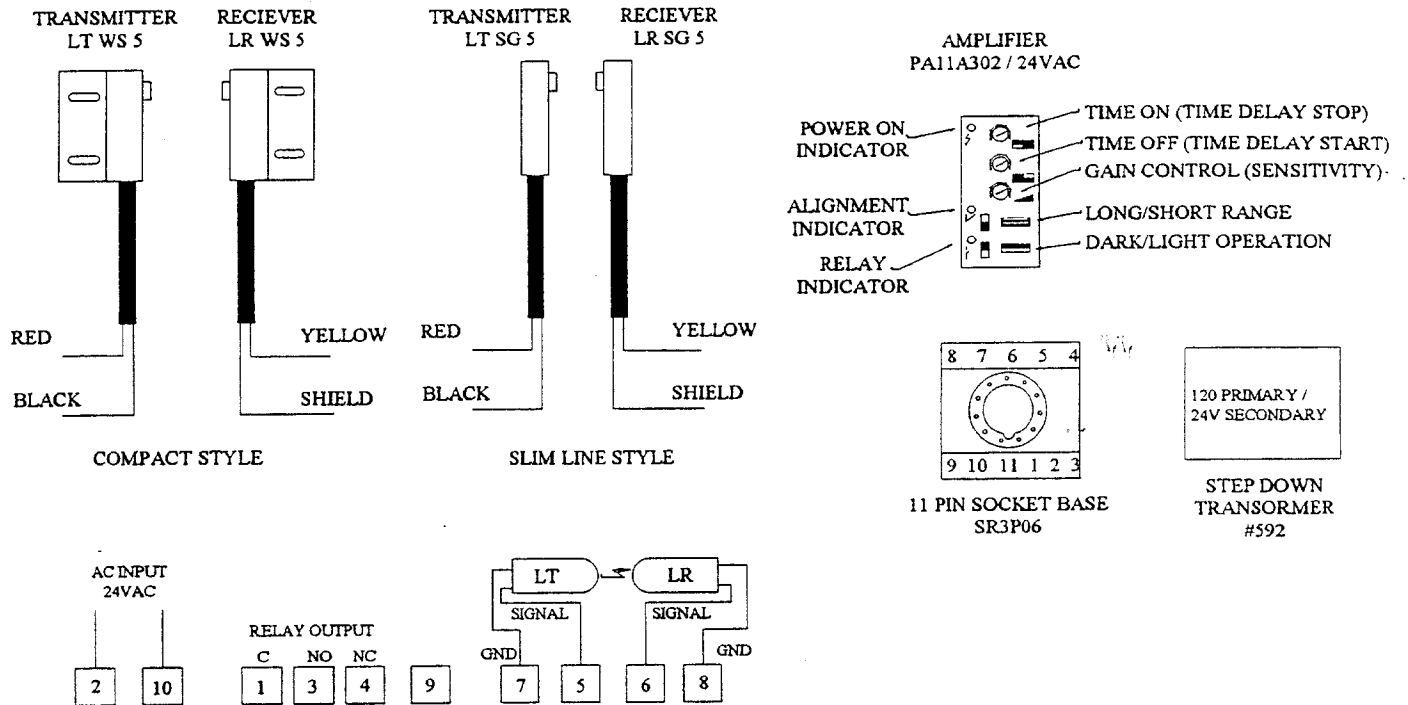


FOOT OPERATED
LIMIT SWITCH
LOCATED AT DRIVE END
WIRED INTO
MAIN CONTROL PANEL



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

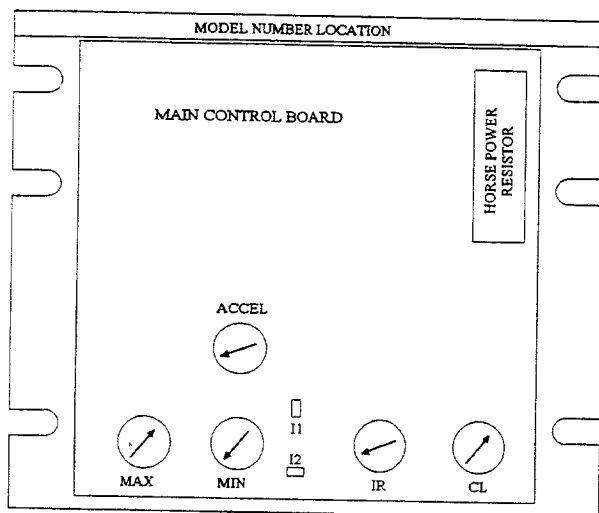
SAFETY WARNING

THIS PRODUCT MUST BE INSTALLED AND SERVICED BY QUALIFIED ELECTRICAL MAINTENANCE 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.

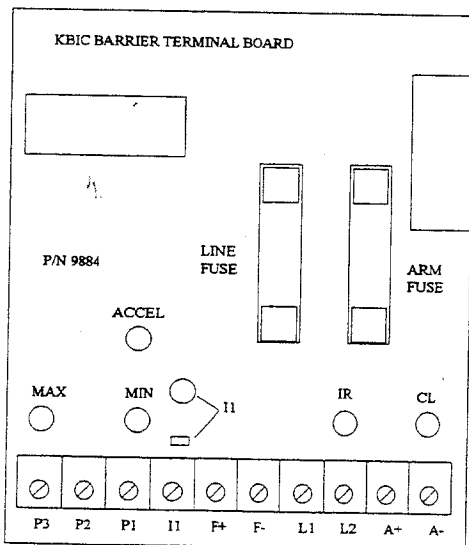
THE CONTROL BOARD TAKES AN INPUT VOLTAGE OF 120VAC AND CONVERTS IT TO A VARIABLE OUTPUT OF 0 TO 90VDC.

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

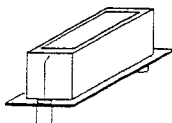
| MODEL NUMBER | AC LINE VOLTAGE | MOTOR VOLTAGE (VDC) | AC LOAD CURRENT (RMS AMPS) | DC LOAD CURRENT (AVG. AMPS) | MAX HP |
|----------------------------|-----------------|---------------------|----------------------------|-----------------------------|--------|
| KBIC-120 | 120 | 90-130 | 9.0 | 6.0 | 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.

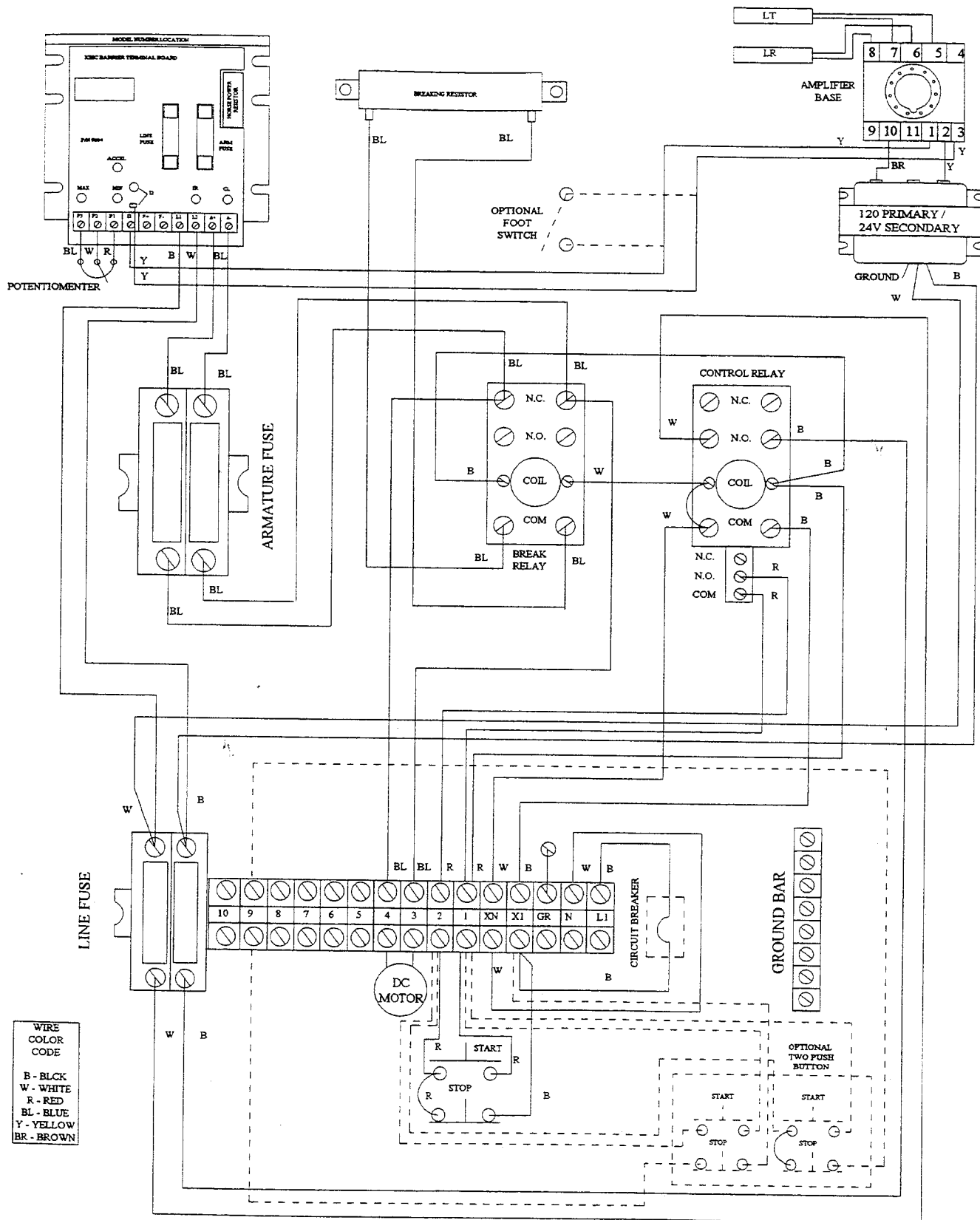
ARMATURE SWITCHING: IF THE ARMATURE IS TO BE DISCONNECTED AND RECONNECTED WITH THE "AC" POWER APPLIED THE INHIBIT CIRCUIT MUST BE SIMULTANEOUSLY ACTIVATED AND DEACTIVATED. CONNECT "I1" AND "I2" TOGETHER TO ACTIVATE THE INHIBIT CIRCUIT.

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.



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 SJEO |
| 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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