Installation and Maintenance Manual

with Safety Information and Parts List

RECOMMENDED SPARE PARTS HIGHLIGHTED IN GRAY
CAN BE SHIPPED FROM JONESBORO, AR THE SAME DAY.

Model TH

Effective June, 1997

Bulletin #1027

HYTROL CONVEYOR CO., INC.

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Warning Signs

In an effort to reduce the possibility of injury to personnel working around HYTROL conveying equipment, warning signs are placed at various points on the equipment to alert them of potential dangers. Please check equipment and note all warning signs. Make certain your personnel are alerted to and obey these warnings. Shown below are typical signs that are attached to this equipment.

**WARNING!**
**DO NOT START CONVEYOR UNTIL PERSONNEL ARE CLEAR**

- Placed on all powered conveyors near drive and/or controls.

**WARNING**
**Servicing moving or energized equipment can cause severe injury**

- Lock out power before removing guard.

- Placed next to drive, both sides.

**DANGER**
**Climbing, sitting, walking or riding on conveyor at any time will cause severe injury or death**

- Placed on 20 ft. intervals, both sides.

**WARNING**
**Moving equipment can cause severe injury**

- Placed on terminating ends.

**WARNING**
**Exposed moving parts can cause severe injury**

- Lock out power before removing guard.

- Placed on all chain guards.

**WARNING**
**Never . . start conveyor until personnel are clear**

- Never . . lubricate or repair while conveyor is running.
- Never . . run conveyor with guards removed.
- Never . . put your hands on the conveyor or in the path of the conveyor when it is running.
- Never . . allow any part of your body to come in contact with the conveyor while it is running.

It is the employer’s responsibility to implement the above and also to provide adequate protection for any particular use, operation or service.

**DO NOT REMOVE THIS SIGN FROM THIS MACHINE**

- Placed at drive of all powered conveyors.
INTRODUCTION

This manual provides guidelines and procedures for installing, operating, and maintaining your conveyor. A complete parts list is provided with recommended spare parts highlighted in gray. Important safety information is also provided throughout the manual. For safety to personnel and for proper operation of your conveyor, it is recommended that you read and follow the instructions provided in this manual.

Receiving and Uncrating

1. Check the number of items received against the bill of lading.
2. Examine condition of equipment to determine if any damage occurred during shipment.
3. Move all crates to area of installation.
4. Remove crating and check for optional equipment that may be fastened to the conveyor. Make sure these parts (or any foreign pieces) are removed.

NOTE: If damage has occurred or freight is missing, see the “Important Notice” attached to the crate.

INSTALLATION

Installation Safety Precautions for Conveyors and Related Equipment

GUARDS AND GUARDING

Interfacing of Equipment. When two or more pieces of equipment are interfaced, special attention shall be given to the interfaced area to insure the presence of adequate guarding and safety devices.

Guarding Exceptions. Wherever conditions prevail that would require guarding under these standards, but such guarding would render the conveyor unusable, prominent warning means shall be provided in the area or on the equipment in lieu of guarding.

Guarded by Location or Position. Where necessary for the protection of employees from hazards, all exposed moving machinery parts that present a hazard to employees at their work station shall be mechanically or electrically guarded, or guarded by location or position.

When a conveyor passes over a walkway, roadway, or work station, it is considered guarded solely by location or position if all moving parts are at least 8 ft. (2.44 m) above the floor or walking surface or are otherwise located so that the employee cannot inadvertently come in contact with hazardous moving parts.

Although overhead conveyors may be guarded by location, spill guard, pan guards, or equivalent shall be provided if the product may fall off the conveyor for any reason and if personnel would be endangered.

HEADROOM

When conveyors are installed above exit passageways, aisles, or corridors, there shall be provided a minimum clearance of 6 ft. 8 in. (2.032 m) measured vertically from the floor or walking surface to the lowest part of the conveyor or guards. Where system function will be impaired by providing the minimum clearance of 6 ft. 8 in. (2.032 m) through an emergency exit, alternate passageways shall be provided.

It is permissible to allow passage under conveyors with less than 6 ft. 8 in. (2.032 m) clearance from the floor for other than emergency exits if a suitable warning indicates low headroom.
Support Installation

1... Determine primary direction of product flow. Figure 4A indicates the preferred flow as related to the drive.
2... Refer to “Match-Mark” numbers on ends of conveyor sections. (Figure 4A)
3... Attach supports to both ends of drive section and to one end of intermediate or tail sections (Figure 4A). Hand tighten bolts only at this time.
4... Adjust elevation to required height.

Ceiling Hanger Installation

If conveyors are to be used in an overhead application, ceiling hangers may have been supplied in place of floor supports.

Figure 4B shows how a ceiling hanger mounts to a conveyor section. Ceiling hangers should be mounted at section joints. For safety information concerning conveyors mounted overhead, refer to “Installation Safety Precautions” on Page 3.

NOTE: When installing ceiling hanger rods in an existing building, all methods of attachment must comply with local building codes.
Conveyor Set-Up

1. Mark a chalk line on floor to locate center of the conveyor.
2. Place the drive section in position.
3. Install remaining sections, placing end without support on extended support of previous section (Figures 4A and 5A). Check “Match Mark” Numbers to see that adjoining sections are in proper sequence.
4. Fasten sections together with butt couplings and pivot plates (Figure 5B). Hand tighten bolts only at this time.
5. Check to see that conveyor is level across width and length of unit. Adjust supports as necessary.
6. Tighten all butt coupling and support mounting bolts and lag conveyor to floor.
8. Install and track belt per instructions on Pages 8, 9, and 10.
Electrical Equipment

WARNING!
Electrical controls shall be installed and wired by a qualified electrician. Wiring information for the motor and controls are furnished by the equipment manufacturer.

CONTROLS

Electrical Code: All motor controls and wiring shall conform to the National Electrical Code (Article 670 or other applicable articles) as published by the National Fire Protection Association and as approved by the American Standards Institute, Inc.

CONTROL STATIONS

A) Control stations should be so arranged and located that the operation of the equipment is visible from them, and shall be clearly marked or labeled to indicate the function controlled.

B) A conveyor which would cause injury when started shall not be started until employees in the area are alerted by a signal or by a designated person that the conveyor is about to start.

When a conveyor would cause injury when started and is automatically controlled or must be controlled from a remote location, an audible device shall be provided which can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts. A flashing light or similar visual warning may be used in conjunction with or in place of the audible device if more effective in particular circumstances.

Where system function would be seriously hindered or adversely affected by the required time delay or where the intent of the warning may be misinterpreted (i.e., a work area with many different conveyors and allied devices), clear, concise, and legible warning shall be provided. The warning shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. The warnings shall be provided along the conveyor at areas not guarded by position or location.

C) Remotely and automatically controlled conveyors, and conveyors where operator stations are not manned or are beyond voice and visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations on the conveyor path not guarded by location, position, or guards, shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices.

All such emergency stop devices shall be easily identifiable in the immediate vicinity of such locations unless guarded by location, position, or guards. Where the design, function, and operation of such conveyor clearly is not hazardous to personnel, an emergency stop device is not required.

The emergency stop device shall act directly on the control of the conveyor concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

D) Inactive and unused actuators, controllers, and wiring should be removed from control stations and panel boards, together with obsolete diagrams, indicators, control labels, and other material which serve to confuse the operator.

SAFETY DEVICES

A) All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a “Fail-Safe” manner, that is, if power failure or failure of the device itself would occur, a hazardous condition must not result.

B) Emergency Stops and Restarts. Conveyor controls shall be so arranged that, in case of emergency stop, manual reset or start at the location where the emergency stop was initiated, shall be required of the conveyor(s) and associated equipment to resume operation.

C) Before restarting a conveyor which has been stopped because of an emergency, an inspection of the conveyor shall be made and the cause of the stoppage determined. The starting device shall be locked out before any attempt is made to remove the cause of stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

A) Only trained employees shall be permitted to operate conveyors. Training shall include instruction in operation under normal conditions and emergency situations.

B) Where employee safety is dependent upon stopping and/or starting devices, they shall be kept free of obstructions to permit ready access.

C) The area around loading and unloading points shall be kept clear of obstructions which could endanger personnel.

D) No person shall ride the load-carrying element of a conveyor under any circumstances unless that person is specifically authorized by the owner or employer to do so. Under those circumstances, such employee shall only ride a conveyor which incorporates within its supporting structure, platforms or control stations specifically designed for carrying personnel. Under no circumstances shall any person ride on any element of a vertical conveyor. Owners of conveyors should affix warning devices to the conveyor reading Do Not Ride Conveyor.

E) Personnel working on or near a conveyor shall be instructed as to the location and operation of pertinent stopping devices.

F) A conveyor shall be used to transport only material it is capable of handling safely.

G) Under no circumstances shall the safety characteristics of the conveyor be altered if such alterations would endanger personnel.

H) Routine inspections and preventive and corrective maintenance programs shall be conducted to insure that all safety features and devices are retained and function properly.

I) Personnel should be alerted to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing, and jewelry.

J) As a general rule, conveyors should not be cleaned while in operation. Where proper cleaning requires the conveyor to be in motion and a hazard exists, personnel should be made aware of the associated hazard.

Conveyor Start-Up

Before conveyor is turned on, check for foreign objects that may have been left inside conveyor during installation. These objects could cause serious damage during start-up.

After conveyor has been turned on and is operating, check motors, reducers, and moving parts to make sure they are working freely.

CAUTION!
Because of the many moving parts on the conveyor, all personnel in the area of the conveyor need to be warned that the conveyor is about to be started.
Belt Installation

INSTALLING THE BELT
The conveyor belt has been cut to the proper length and lacing installed at the factory. To install follow these steps:

1. Thread belt through conveyor as shown in Figure 8A.
2. Pull ends together and insert lacing pin. (Figure 8B). If belt ends cannot be pulled together by hand, loosen take-ups (in center drive or at tail pulley) and/or use a belt puller so lacing pin can be inserted.
3. Adjust belt tension with take-up pulley. Keep pulley square by moving both take-up bolts an equal amount. Maintain enough tension so drive pulley will not slip.

CAUTION!
Excessive slippage will reduce belt life and damage drive pulley lagging. Never apply more tension than is needed. Over-tension will cause extra wear to belt and bearings and will require extra power from drive.

4. Track belt per instructions on Pages 9 and 10.
How is the Conveyor Belt Tracked

The belt is tracked by adjusting: Drive Pulley, Tail Pulley, Return Idlers, and Snub Idlers. The same tracking principles apply to conveyors supplied with end drives, center drives, or underside take-ups.

Pre-Tracking Inspection

Before attempting to physically track the belt:

1. Make sure conveyor is level across the width and length of unit. Adjust supports as necessary.
2. Check to make sure: Drive Pulley, Tail Pulley, Snub Idlers, and all Return Idlers are square with conveyor bed. See Illustrations 9A, 9B, & 9C. Dimension “A” should be equal on both sides of unit.
3. Make sure belt has been properly threaded through conveyor. See “Belt Installation”, Page 8.
4. Check for improper loading. Feed should be in direction of belt travel, centered on belt.
5. Make sure belt lacing has been installed correctly and is square with the belt.
CAUTION!
Only trained personnel should track conveyor belt which must be done while conveyor is in operation.

IMPORTANT: When belt tracking adjustments are made, they should be minor (1/16 in. at a time on idlers, etc., should be sufficient.). Give the belt adequate time to react to the adjustments. It may take several complete revolutions around the conveyor for the belt to begin tracking properly on long, slow conveyor lines.

A) Stand at tail pulley looking toward drive and note what direction belt is traveling.

B) Having observed belt and determined tracking problem, follow procedures in “How to Steer The Belt”, See Figure 10A.

HOW TO STEER THE BELT

Condition 1. . .When the belt is running in the direction (FLOW) with the arrow, but tracking (drifting) towards Side “X”, move the Snub Idler nearest the INFEED end of Side “Y” towards the DISCHARGE end of the conveyor.

Condition 2. . . When the belt is running in the direction (FLOW) with the arrow, but tracking (drifting) towards Side “Y”, move the Snub Idler nearest the INFEED end of Side “X” towards the DISCHARGE end of the conveyor.

If Belt Direction (FLOW) is reversed, all the above conditions will remain the same as in Figure 10A, except you are now viewing the conveyor from the opposite end.

If belt continues to track improperly, re-check all items covered in “Pre-Tracking Inspection” and make corrections as necessary.

NOTE: In all conditions, you are viewing the Conveyor Belt from the INFEED end. All corrections will be made from the INFEED end of conveyor.
**Maintenance Safety Precautions**

A) Maintenance, such as lubrication and adjustments, shall be performed only by qualified and trained personnel.

B) It is important that a maintenance program be established to insure that all conveyor components are maintained in a condition which does not constitute a hazard to personnel.

C) When a conveyor is stopped for maintenance purposes, starting devices or powered accessories shall be locked or tagged out in accordance with a formalized procedure designed to protect all person or groups involved with the conveyor against an unexpected start.

D) Replace all safety devices and guards before starting equipment for normal operation.

E) Whenever practical, DO NOT lubricate conveyors while they are in motion. Only trained personnel who are aware of the hazard of the conveyor in motion shall be allowed to lubricate.

**SAFETY GUARDS**
Maintain all guards and safety devices **IN POSITION and IN SAFE REPAIR**.

**WARNING SIGNS**
Maintain all warning signs in a legible condition and obey all warnings. See Page 2 of this manual for examples of warning signs.

**Lubrication**

**BEARINGS**
STANDARD: Supplied sealed and pre-lubricated. No lubrication required.

**CHAIN**
It is recommended that the drive chain be lubricated with SAE-30 oil approximately every 40 hours of operation. Under extreme conditions, more frequent lubrication may be required. (Also, See “Drive Chain Alignment and Tension”).

**REDUCERS**
MANUFACTURED BY HYTROL: See separate manual in Packing Envelope that contains lubrication and maintenance instructions for HYTROL’s Gear Reducer.

MANUFACTURED BY OTHERS: Refer to their recommendations.
Drive Chain Alignment and Tension

The drive chain and sprockets should be checked periodically for proper tension and alignment. Improper adjustment will cause extensive wear to the drive components.

TO MAKE ADJUSTMENTS

1. Remove chain guard.
2. Check sprocket alignment by placing a straightedge across the face of both sprockets. (Figure 12A.) Loosen set screws and adjust as needed. Re-tighten set screws.
3. To adjust chain tension, loosen bolts that fasten motor base to mounting angles, both sides of conveyor. Tighten take-up bolts until desired chain tension is reached. (Figures 12B & 12C). Re-tighten mounting bolts.
4. Lubricate chain per lubrication instructions.
5. Replace chain guard so that it does not interfere with drive.

CAUTION!
Never remove chain guards while the conveyor is running. Always replace guards after adjustments are made.
# Trouble Shooting

The following charts list possible problems that may occur in the operation of a powered conveyor.

## TROUBLE SHOOTING DRIVES

<table>
<thead>
<tr>
<th>TROUBLE</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
</table>
| Conveyor will not start or motor quits frequently. | 1) Motor is overloaded or drawing too much current. | 1) Check for overloading of conveyor.  
2) Check heater or circuit breaker and change if necessary. |
| Drive chain and sprockets wear excessively. | 1) Lack of lubrication on chain causing chain stretch which creates improper chain to sprocket mesh.  
2) Sprockets are out of alignment.  
3) Loose chain. | 1) Replace chain and sprockets. Provide adequate lubrication.  
NOTE: If problem reoccurs, a chain take-up may be required.  
2) Align sprockets. See “Drive Chain Alignment and Tension” in this manual.  
3) Tighten chain. |
| Loud popping or grinding noise.             | 1) Defective bearing.  
2) Loose set screw.  
3) Loose drive chain. | 1) Replace bearing.  
2) Tighten set screw.  
3) Tighten chain. |
| Motor or reducer overheating.               | 1) Conveyor is overloaded.  
2) Low voltage to motor.  
3) Low lubricant level in reducer. | 1) Check capacity of conveyor and reduce load to recommended level.  
2) Have electrician check and correct as necessary.  
3) Relubricate per manufacturer’s recommendations. For HYTROL reducer, refer to separate manual. |
| Belt doesn’t move, but drive runs.          | 1) Conveyor is overloaded.  
2) Belt is too loose.  
3) Lagging on drive pulley is worn. | 1) Reduce load.  
2) Use belt take-up to tighten belt.  
3) Replace drive pulley lagging and tighten belt. |

## TROUBLE SHOOTING DRIVE BELT TRACKING

<table>
<thead>
<tr>
<th>TROUBLE</th>
<th>CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
</table>
| Entire length of belt creeps off at one spot only. | 1) One or more idlers (usually near trouble spot) are out of line.  
2) One conveyor section not level or square.  
3) Material build-up on rollers, pulleys, or idlers. | 1) Adjust as necessary. See “Belt Tracking Pre-Tracking Inspection” in this manual for details.  
2) Make necessary adjustments to supports.  
3) Remove residue from pulleys or idlers. Install belt, cleaners, or scrapers if possible. |
| Belt creeps to one side at tail pulley.      | 1) Tail pulley, return idler, or snub idler near tail pulley not properly aligned or square with bed. | 1) Adjust as necessary. See “Belt Tracking Pre-Tracking Inspection” in this manual on how to square tail pulley, snub idler, and return idler. |
| Entire belt creeps to one side.              | 1) Conveyor not straight.  
2) Conveyor not level.  
3) Material build-up on rollers, pulleys, or idlers. | 1) Re-align bed sections as necessary.  
2) Correct as necessary.  
3) Remove residue and install belt cleaners or scrapers if possible. |
Preventive Maintenance Checklist

The following is a general maintenance checklist which covers the major components of your conveyor. This will be helpful in establishing a standard maintenance schedule.

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>SUGGESTED ACTION</th>
<th>SCHEDULE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Weekly</td>
</tr>
<tr>
<td>MOTOR</td>
<td>Check Noise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Mounting Bolts</td>
<td></td>
</tr>
<tr>
<td>REDUCER</td>
<td>Check Noise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Oil Level</td>
<td></td>
</tr>
<tr>
<td>BELT</td>
<td>Check Tracking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Tension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Lacing</td>
<td></td>
</tr>
<tr>
<td>BEARINGS (Pulleys &amp; Rollers)</td>
<td>Check Noise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Lubrication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Mounting Bolts</td>
<td></td>
</tr>
<tr>
<td>DRIVE CHAIN</td>
<td>Check Noise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lubricate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check For Wear</td>
<td></td>
</tr>
<tr>
<td>SPROCKETS</td>
<td>Check For Wear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check Set Screws &amp; Keys</td>
<td></td>
</tr>
<tr>
<td>V-BELTS</td>
<td>Check Tension</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check For Wear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check For Sheave Alignment</td>
<td></td>
</tr>
<tr>
<td>STRUCTURAL</td>
<td>General Check: All loose bolts, etc., tightened</td>
<td></td>
</tr>
</tbody>
</table>

How to Order Replacement Parts

Included in this manual are parts drawings with complete replacement parts lists. Minor fasteners, such as nuts and bolts, are not included.

When ordering replacement parts:
1. Contact Dealer from whom conveyor was purchased or nearest HYTROL Distributor.
2. Give Conveyor Model Number and Serial Number or HYTROL Factory Order Number.
3. Give Part Number and complete description from Parts List.
4. If you are in a breakdown situation, tell us.
Model TH Parts Drawing

6' DIA. TAIL PULLEY
31" - 49" BR
UP TO 150'

4' DIA. TAIL PULLEY

SECTION "A-A"
Model TH Parts List

See Page 14 For Information On How to Order Replacement Parts

Recommended Spare Parts List Highlighted in Gray
### 8" Center Drive Parts Drawing & Parts List

#### Recommended Spare Parts List Highlighted in Gray

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>010.102</td>
<td>Riveted Roller Chain</td>
</tr>
<tr>
<td>2</td>
<td>010.101</td>
<td>#50 Riveted Roller Chain</td>
</tr>
<tr>
<td>3</td>
<td>010.102</td>
<td>Riveted Roller Chain</td>
</tr>
<tr>
<td>4</td>
<td>010.201</td>
<td>#50 Riveted Roller Chain</td>
</tr>
<tr>
<td>5</td>
<td>010.202</td>
<td>#60 Riveted Roller Chain</td>
</tr>
<tr>
<td>6</td>
<td>028.2519</td>
<td>60B26 x 1-11/16 in. Bore (Heavy Duty Drive)</td>
</tr>
<tr>
<td>7</td>
<td>028.2519</td>
<td>60B26 x 1-11/16 in. Bore (Heavy Duty Drive)</td>
</tr>
<tr>
<td>8</td>
<td>028.119</td>
<td>Sprocket - Reducer</td>
</tr>
<tr>
<td>9</td>
<td>028.1701</td>
<td>50B13 x 1 in. Bore (SAC) (Heavy Duty Drive)</td>
</tr>
<tr>
<td>10</td>
<td>040.3111</td>
<td>Hex Head Cap Screw - 3/8-16 x 3-1/4 in. Long</td>
</tr>
<tr>
<td>11</td>
<td>049.310</td>
<td>U-Type Speed Nut - 1/4-20</td>
</tr>
</tbody>
</table>

See Page 14 For Information On How to Order Replacement Parts
## Underside Take-Up Parts Drawing & List

### Parts Drawing & List

#### Ref. No.   Part No.   Description

1. **B-06041** Side Channel Assembly - RH
2. **B-19062-R** Side Channel Assembly - LH
3. **B-06042** Take-up Pulley
4. **B-05040** Bearing - 3-Bolt Flange
5. **B-07987** Bearing Spacer
6. **B-02042** Take-up Plate
7. **B-05966** Upper Bearing Guide
8. **B-04655** Lower Bearing Guide Spacer
9. **B-04161** Lower Bearing Guide
10. **040.311** Take-up Bolt, 1/2-13 x 9 in. Long
11. **041.201** Hex Jam Nut, 1/2-13
12. **B-04842** 11/16 in. Hex Idler Bracket
13. **B-21755** 6 in. Dia. Pulley (Specify OAW)
14. **B-049.310** U-Type Speed Nut - 1/4-20
15. **B-08337** Bottom Belt Guard Angle (Specify OAW)
16. **B-08338** Side Belt Guard - RH
17. **B-08339** Side Belt Guard - LH
18. **B-08339** Formed Clip
19. **B-08338** Bottom Belt Guard (Specify OAW)
20. **B-08339** Formed Clip
21. **B-08338** Bottom Belt Guard (Specify OAW)

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See Page 14 For Information On How to Order Replacement Parts

Recommended Spare Parts List Highlighted in Gray
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EFFECTIVE JUNE, 1997

Printed 6/97 Creative Multigraphics, Inc.