

MITCHELL

EQUIPMENT CORPORATION

ONE MAN GANG for BACKHOE LOADERS

ROBOTIC TIE EXTRACTOR/INSERTER
MODULAR HI-RAIL
QUICK COUPLERS
SPECIAL BUCKETS AND ATTACHMENTS
HYDRAULIC TOOL POWER SOURCE



BACKHOE TIE GANG SYSTEM

The **Mitchell Backhoe Tie Gang System** fits a wide range of manufacturers' loader backhoes. The attachments are modular in design allowing them to be easily removed and the backhoe used for other non-railroad applications.

The modular attachments consists of **Front Hi-Rail Assembly** that bolts to the front frame, a **Rear Hi-Rail/Stabilizer/Rail Clamp Assembly** that pins in place of the standard stabilizers, and a **Robotic Style Tie Head/Scarifier** that pins in place of the bucket through a quick coupler.

The **Mitchell Backhoe Tie Gang System** uses a Hi-Rail System that is easy to operate and has a built in suspension system that compensates for uneven track. The Hi-Rail System allows even the most inexperienced operator to easily get on or off track anywhere by simply raising or lowering the Hi-Rail wheels. The Mitchell Hi-Rail does not rely on the use of stabilizers, machine buckets, or any other unsafe means to lift the machine and engage the Hi-Rail. To get off track, just raise the Hi-Rail and drive off.

The **Mitchell Backhoe Tie Gang System** uses a robotic style tie head/scarifier attachment to perform all the necessary manipulation of the tie required in the tie replacement process. Unlike ordinary mobile backhoe tie inserters or rail bound tie inserters, the **Mitchell Backhoe Tie Gang System** does not require a tie crane to position new ties for insertion or old ties for retrieval. The robotic style tie head reaches out and grabs ties in any position. Just like a robotic hand, the tie head picks up tie plates quickly and easily, eliminating the need for a ground man to retrieve tie plates.

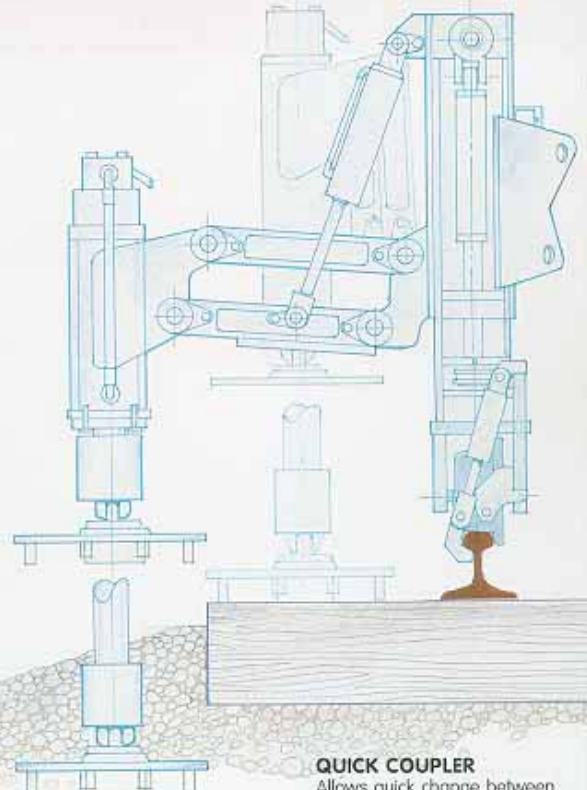
The best that can be expected from ordinary mobile tie inserter/extractors are machines that can insert and extract ties similar to production tie removers and tie inserters, except they have less production capabilities. Just like the production machines, they need additional equipment and ground men to function. The **Mitchell Backhoe Tie Gang System** is a one man tie gang that makes every move count.

As shown to the right in the operation sequence, the **Mitchell Backhoe Tie Gang System** is an extremely efficient method to replace ties. Valuable time is not lost, wasting movements or moving the machine to perform individual operations. The **Mitchell Backhoe Tie Gang System** can replace an average of 300 ties per day, per machine, based on a 10 hour day.

With the Mitchell Backhoe Tie Gang System, every move counts.

HYDRAULIC TOOL POWER SOURCE

The optional hydraulic tool circuit allows hydraulic track tools to be operated while the backhoe replaces railroad ties. Special **One Man Gang** independent tool circuit systems available isolate the hydraulic tools from the backhoe hydraulics keeping the hydraulic tool operating temperature at an efficient level.

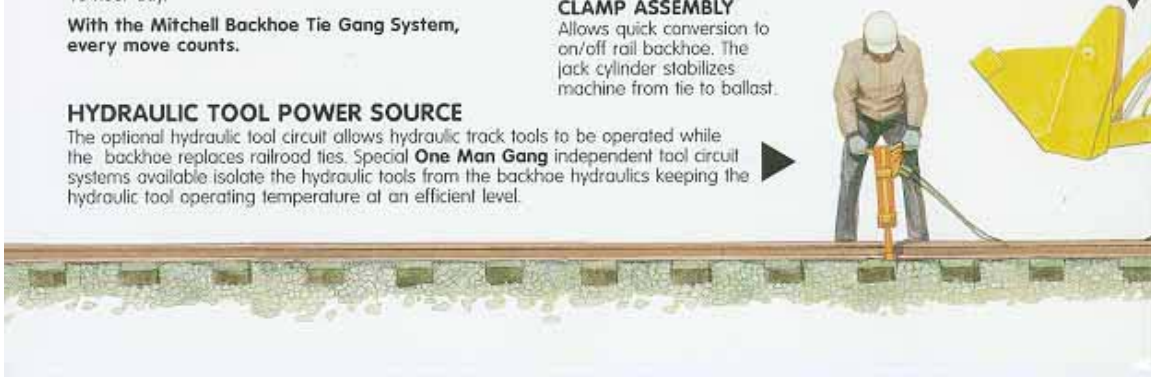


MODULAR HI-RAIL/ STABILIZER/ RAIL CLAMP ASSEMBLY

Allows quick conversion to on/off rail backhoe. The jack cylinder stabilizes machine from tie to ballast.

QUICK COUPLER

Allows quick change between standard bucket and specialized **One Man Gang** attachments.

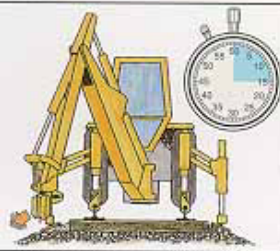


ONE MAN TIE GANG THAT MAKES EVERY SECOND COUNT

OPERATION SEQUENCE

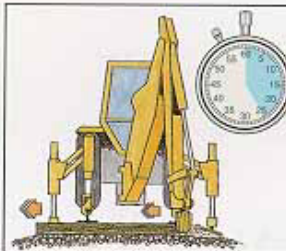
1 BACK DRAG BALLAST

The stabilizer jacks are extended, and the rail clamps are engaged. As the backhoe swings around to the end of the tie, the scarifier blade is pivoted into position and back drags the ballast at the end of the tie to clear the way for the new tie that will be inserted.



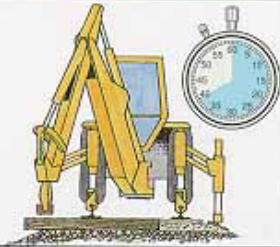
2 PUSH OUT OLD TIE

The boom swings around to the opposite side of the track and the scarifier blade pushes the tie out from under the rail, exposing it on the opposite side of the track. One tie plate falls inside the track and one falls outside the track.



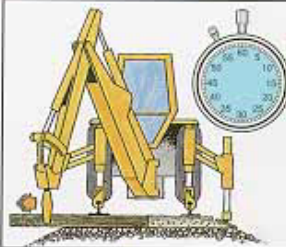
3 RETRIEVE TIE PLATE

As the boom swings over to the opposite side of the track, the robotic tie head is pivoted into position, rotated, and opened over the tie plate that fell outside the track. The tie head is lowered, and the tie plate is retrieved and dropped inside the track.



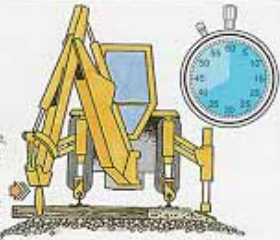
4 EXTRACT OLD TIE

The boom pivots the robotic tie head into position. The tie head is lowered down, and the tie head arms close, securing the exposed tie and extracting it from under the rail. The old tie is uniformly positioned with other extracted ties along side the track for retrieval.



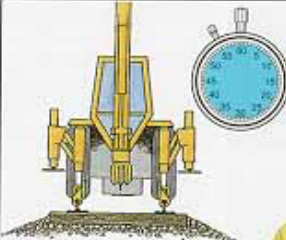
5 INSERT NEW TIE

The backhoe boom swings over the new tie while the robotic tie head opens and rotates into position. The tie head lowers over the new tie, and the tie head arms close, securely clamping onto the new tie. The backhoe boom then inserts the tie under the rail with one smooth motion.



6 MOVE TO NEXT TIE

The rail clamps are released, the stabilizer jack cylinders are retracted, and the machine moves to the next tie.



The above operation sequence times may vary depending on track conditions. The operation times shown are based on time studies conducted on actual customer machines replacing ties on average track conditions.



QUICK COUPLER
Allows quick change between tie head and standard bucket.

PATENTS 5,119,723 AND 5,649,490



MITCHELL BACKHOE TIE GANG ATTACHMENTS



ROBOTIC TIE HEAD/SCARIFIER

The Tie Head is a combination robotic style rotating Tie Head with integral Scarifier Blade. The Tie Head grabs ties in any position for extraction, insertion, and placement. The Scarifier Blade kicks ties out and back drags ballast. For wood ties, the Tie Head opens to ten inches and closes to zero. The ties are securely clamped and held with self-aligning tie pads. An optional arrangement is available to accommodate concrete and steel ties.



RAIL CLAMPS

The rail clamps are an integral part of the modular combination Hi-Rail/Stabilizer/Rail Clamp Assembly. The Rail Clamps raise and lower with the Hi-Rail wheels. The Rail Clamp arm with the replaceable arm and jaw is hydraulically wedged against the web of the rail, locking the backhoe on rail. With the Rail Clamps engaged, the rail can be raised taking pressure off the tie by extending the stabilizers.



PARALLEL LINKAGE STABILIZERS

The Patented Parallel Linkage Stabilizers are part of the modular combination Hi-Rail/Stabilizer/Rail Clamp Assembly. The stabilizer jack cylinder remains vertical and can be extended throughout the entire horizontal travel. An optional arrangement can accommodate third rail transit track configurations.



REAR HI-RAIL

The heavy-duty Rear Hi-Rail is part of the modular combination Hi-Rail/Stabilizer/Rail Clamp Assembly. The Rear Hi-Rail raises and lowers vertically, making getting on/off track easy. When the Hi-Rail is lowered to the on-track position, the lowering hydraulic cylinder engages the automatic compensating suspension system. An optional arrangement is available that allows the original machine stabilizers to be re-attached to the machine.



FRONT HI-RAIL

The Front Hi-Rail, like the Rear, uses heavy-duty, single piece, hardened rail wheels with replaceable heavy-duty Timken tapered roller bearings. The Front Hi-Rail is a modular unit mounted to the frame of the backhoe that is designed with optimum approach angles. Like the Rear Hi-Rail, the Front is designed to easily get on/off track.

ONE MAN GANG SYSTEMS for BACKHOE LOADERS

Quick on/off rail backhoe loaders can be configured into other specialized **Mitchell Backhoe Gang Systems** by combining various quick coupler attachments such as special buckets, tie forks, grapples, material handling arms, brush cutters, hydraulic hammers, and specialized hydraulic tools that custom fit **One Man Gang** applications.

With Mitchell One Man Gang Systems, Every Move Counts

Constant improvement and engineering advancements make it necessary that we reserve the right to make specification, equipment, and price changes without notice. Illustrations shown may include optional equipment and may not include all standard equipment.