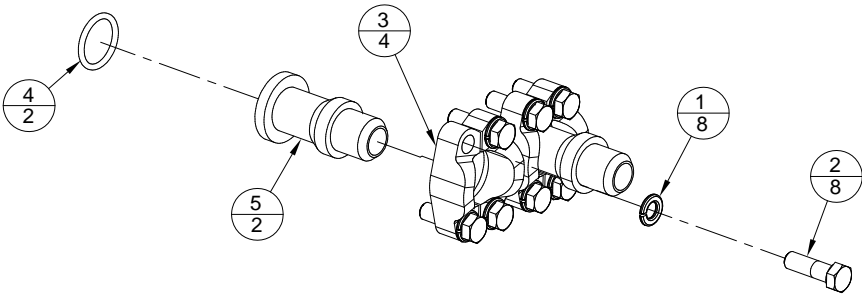
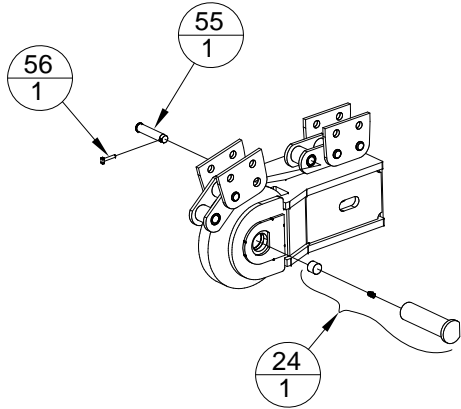


High Flow Motor Hydraulic Adapter (9987VA)

ITEM	PART NO.	QTY	DESCRIPTION
1	1075PP	8	3/8" LOCK WASHER
2	7850PP	8	3/8"-16 X 1 1/4" LG HHCS
3	7972PP	4	HYDRAULIC FLANGE HIGH FLOW #12
4	7974PP	2	ORING HIGH FLOW ADAPTER
5	9184PP	2	ADAPTER STD FLOW



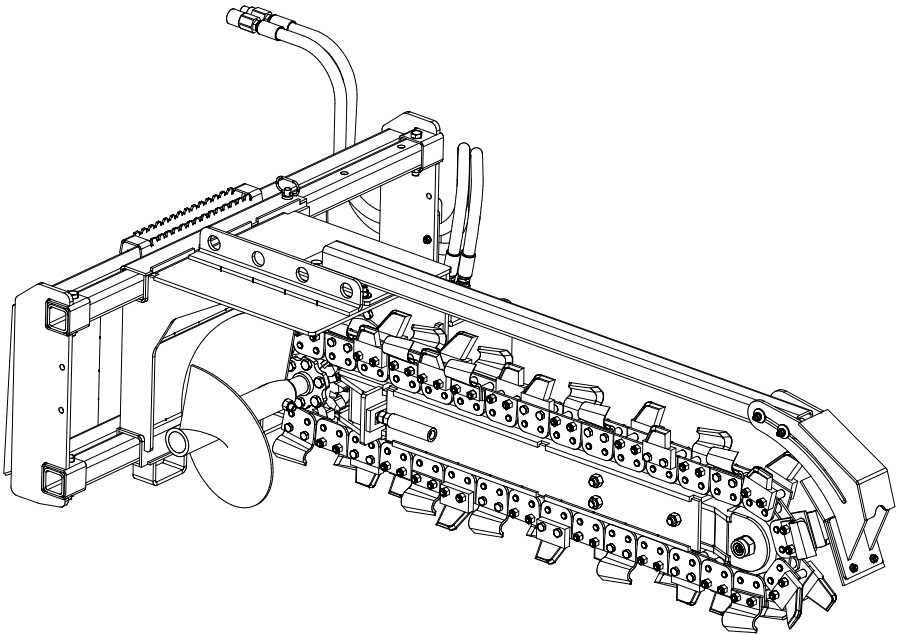
Chain Connection and Idler Shaft



Items 55 and 56 are supplied with the chain. To remove 10155PP (Item 55-Chain Pin), bend 10154PP (Item 56-T Head Keeper) straight and remove. Use a punch to pound out pin. Take note of Chain Pin orientation as the pin can only be installed from one side of the chain. Reinstall T Head Keeper and bend to secure the pin (a new keeper may be required).

Item 24 (9848PP-Idler Shaft) contains a grease fitting. To grease, remove the plug on the nut side of the Idler Shaft, grease and reinstall plug.

Trencher



Model Number TRN.

Serial Number _____.

Maximum Flow Rate GPM.

Serial Number 119700 - Current
Manufacture Date 01/10/17 - Current

Phone: 320-393-7080

01/01/16
Revised 01/10/17

TRN

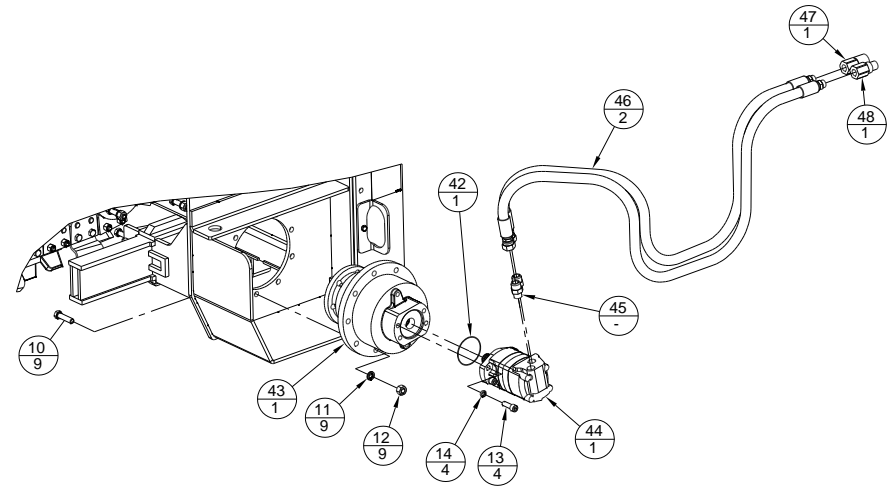
Features of Virnig Mfg. Inc. Trencher include:

- 50,000# 2" Anti-Back Flex (ABF) chain.
- Dig depths of 36", 48" and 60" available in 6", 8", 10" and 12" chain widths (not all chain widths available with all dig depths).
- 3 position manual side shift allows closer trenching to structures while still allowing the spoil auger to move material away from the trench.
- 3 hydraulic motor options available, 1 standard flow and 2 high flow options to optimize trencher performance with machine hydraulics.
- Direct drive utilizing a planetary with flange output.
- Large 17 1/4" diameter removable/replaceable spoil auger pushes excavated soil away from trench.
- Two idler compression springs act as a damper providing protection for the chain and drive components when encountering obstructions while trenching.
- Standard crumber aids in removing loose soil from trench resulting in a clean bottom to the trench.
- Multiple chain/tooth configurations available including Single Standard, Double Standard, 50/50 Terminator and 50/50 Rock. (Other chain/tooth configurations available upon request).
- Machine specific hydraulic package to best utilize machine hydraulics.
- Recommended for loaders with an operating capacity greater than 1500 lb.

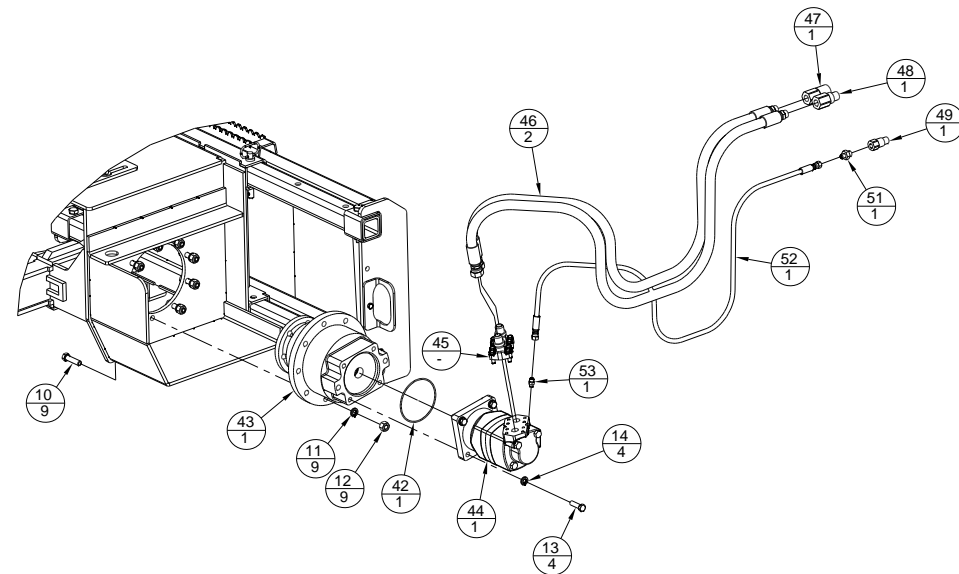
Initial Use

- Read and understand all warning information in this manual before operating this attachment.
- Never exceed the maximum attachment operating pressure of 3500 psi for standard flow trenchers, 4000 psi for high flow trenchers.
- Check that quick-tach on frame fits onto loader properly. Pins must engage through 3/8" plates at bottom of quick-tach.
- Slowly roll back attachment. Make sure there is no interference between attachment and loader.
- Connect hydraulic hoses making sure hoses do not pinch during roll back. Hoses may be routed through hose guide on the side of the quick-tach frame if necessary.
- Lift trencher and slowly roll forward to the full dump position making sure the hoses do not catch on the quick-tach frame and that they are not stretched at any point.

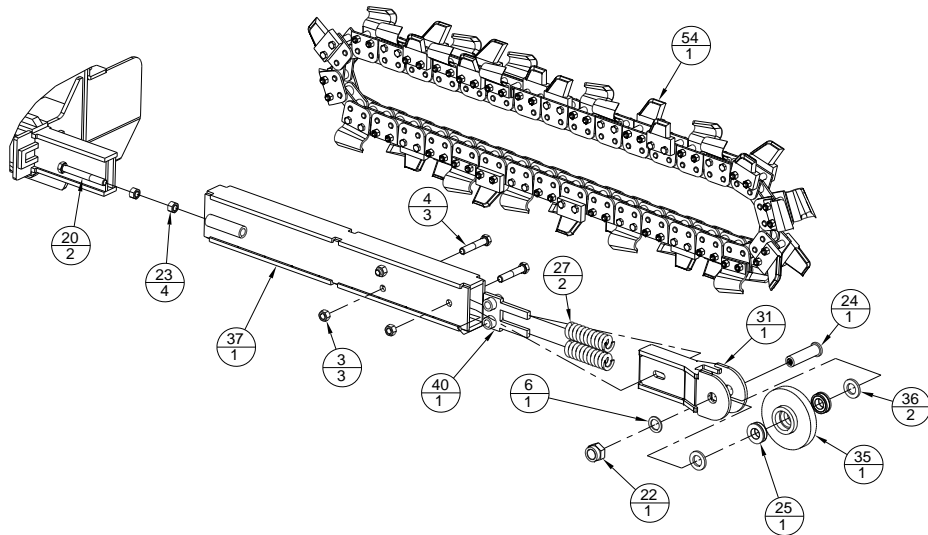
Standard Flow Installation



High Flow Installation

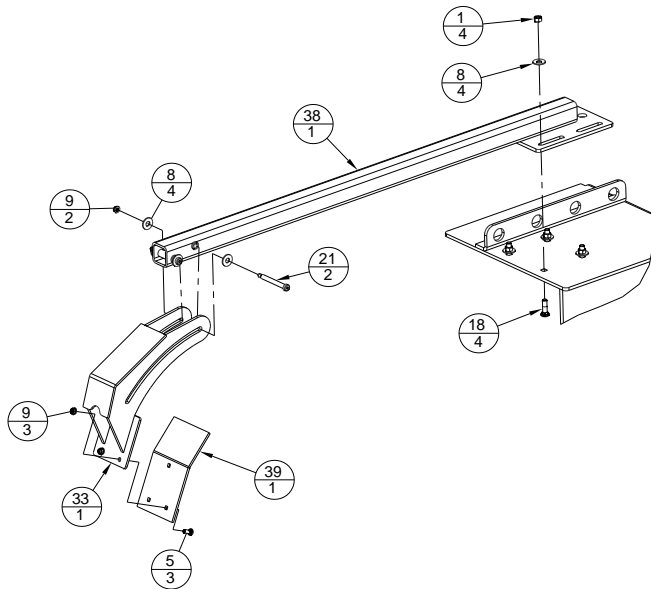


Boom Installation



TRN48 Shown

Crumber Installation



TRN48 Shown

Initial Use (cont.)

- After connecting hydraulic hoses, engage the machines hydraulics using the machines detent position. If the trencher is spinning in the wrong direction, the couplers on the lead hoses can be switched to match the machines detent position.
- After 10 to 20 minutes of operation, the chain tension should be checked. It is common for the chain to need adjustment after the initial seating of the chain and drive sprocket. See "Maintenance" section for adjustment procedure.

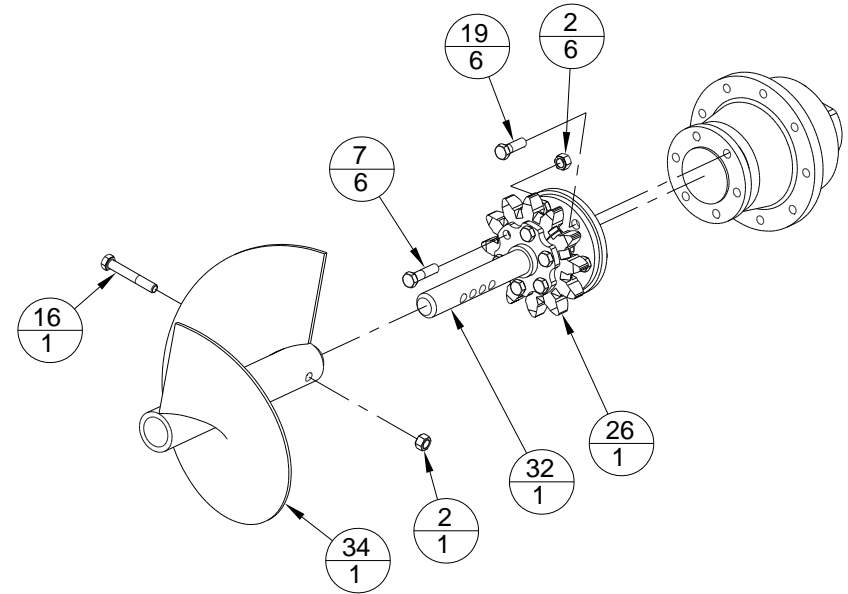
Operation

- Always follow safety and operating information in this manual.
- Always follow all safety and operating instructions of the loader.
- Never remove material deflectors or warning labels.
- Never operate a trencher unless you have been properly trained.
- Make sure all safety labels are in place. Look in the "Label Locations" section in this manual for their locations.
- Stay alert for any hazards that may be located in the area being trenched. Unseen hazards could result in attachment or machine breakage, as well as possible injury to operator or bystanders, or damage to surroundings. If a hazard is struck, immediately shut down trencher and inspect for damage. Repair as needed.
- Never dig near underground utilities. If unsure of utilities, call local authorities to have all utilities located. Make sure to check how close you can dig to flags/markings they have positioned.
- Keep bystanders back 10 feet.
- Always relieve pressure before connecting or disconnecting hydraulic hoses.
- Clean any debris from attachment. Pay special attention to any debris in quick-tach area before hooking up attachment.
- Never drop the trencher boom to make contact with the ground while the chain is moving. This may cause a sudden and unexpected movement of the machine.
- Engage and disengage the trencher hydraulics at low engine speeds. This will help prolong the life of the hydraulic components.

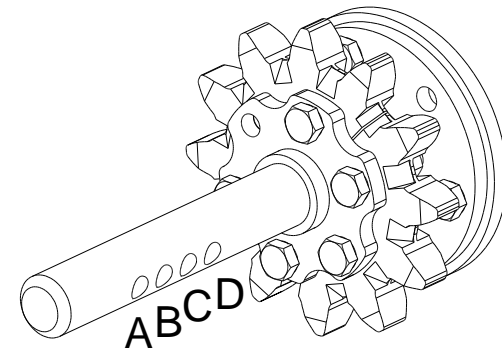
Operation (cont.)

- To begin trenching, position the trencher in desired location and set the boom at a shallow angle (15°), set engine speed at half throttle and slowly lower the trencher until the chain contacts the ground. Slowly roll the trencher forward to increase the cutting depth and angle. The preferred trenching angle is approximately 65°. After the preferred angle is reached, set the engine speed at full throttle and lower the machine boom to achieve the desired depth and move the machine slowly in reverse. (Trenching is a slow process so the machine ground speed is dependent on soil conditions, depth and width of the trench. If the trencher is stalling frequently, slow down the machine travel speed. Frequent stalling may contribute to machine overheating).
- If the trencher should stall, either drive the machine forward a couple of inches or lift the trencher a couple of inches to allow the chain to restart. If this does not restart the trencher chain, shut off the machines hydraulics and reverse hydraulic flow to run the chain in reverse until obstruction is cleared. Stop hydraulic flow, reengage hydraulics in digging direction and proceed with trenching.
- To side shift the trencher, disconnect the trencher from the machine (hydraulic hoses do not need to be disconnected provided the machine is only backed away from the trench a few inches). Remove the pin at the top of the trencher. Push the quick-tach frame of the trencher to the new location and reinstall pin. Reconnect the trencher to the machine and proceed with trenching.
- Do not make sharp turns with the trencher boom in the ground. This could cause damage to the trencher unit.
- After the trench has been dug, keep people and equipment away as a cave in may occur.
- Trencher performance can be affected by several factors. Ground speed, soil conditions, trencher chain wear and trencher chain type all affect trencher performance. Below are some general recommendations for chain type and soil conditions.
 - Single Standard: Used in soft to medium digging conditions and for sticky materials such as clay.
 - Double Standard: Used in soft materials such as sandy conditions.
 - 50/50 Terminator: Used in medium to hard digging conditions to break hard ground and remove material.
 - 50/50 Rock: Used in hard digging conditions to break hard ground/rocks/frost and remove material

Drive and Spoil Auger Installation

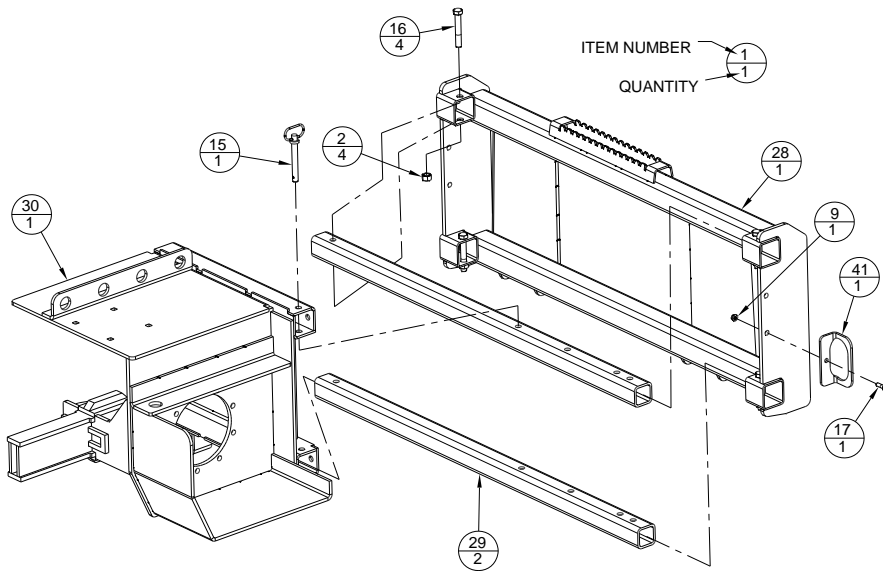


Note: Apply Locktite to Item #19 prior to assembly.



LOCATION	CRUMBER WIDTH
A	12"
B	10"
C	8"
D	6"

Main Component Assembly



TRN48 Shown

Maintenance

*Before each use and after every 10 hours of operation

- Grease idler shaft pin (1 fitting). See "Chain Connection and Idler Shaft" section.
- Make sure all safety labels are in place, look in the "Label Locations" section of this manual for locations.
- Check for loose, worn, or missing parts, repair or replace as needed.
- Remove any foreign debris such as string, wire, etc. that may have wrapped around the trencher chain, spoil auger or planetary.
- Inspect motor, planetary, hydraulic fittings, and hoses for leaks and damage. Replace as needed. Make sure machine is shut off and hydraulic pressure is relieved before checking for leaks. Never use hands to check for high pressure hydraulic leaks.
- Proper chain tension is critical to provide the most efficient operation of the trencher. When the chain is tensioned properly, there should be approximately 1" of slack between the chain and the bottom of the boom with the trencher boom off of the ground. If there is more than 1" of slack, the boom needs to be adjusted using the following procedure:
 - Loosen the jam nuts on the tensioning bolts.
 - Tighten the adjustment nuts to push the boom away from the trencher head, thus tightening the chain. Make sure to adjust both sides by the same amount to ensure the boom is straight.
 - Retighten the jam nuts.
 - Whenever the boom is adjusted, the crumpler should also be adjusted. Loosen the 4 nuts holding the crumpler.
 - Slide the crumpler outward to maintain a minimum of 2" of clearance between the crumpler cleanout plate and chain teeth.
 - Retighten the 4 nuts holding the crumpler, making sure that the crumpler is in-line with the trencher boom.
- Even though the planetary may not have an obvious leak; the oil level should be checked. With the trencher sitting on the ground, remove the plug on the planetary facing the quick-tach of the trencher. If oil comes out of the hole, the oil level is fine. If no oil comes out, add enough oil so that it does come out of the hole. Reinstall plug.
- Add oil as required (see below for correct oil type.) Do not overfill. Overfilling may cause oil to be forced out between the planetary and the motor as the oil heats up from use. A planetary that is run dry will not be covered by warranty.

Maintenance (cont.)

- If the trencher is still under warranty, contact your dealer before attempting any repairs. A planetary and/or motor that has been disassembled without prior approval will not be covered under warranty. The planetary and/or motor needs to be intact for Virnig Mfg. Inc. to get any warranty reimbursement from the component manufacturer. If the component manufacturer declines warranty due to tampering or misuse, Virnig Mfg. Inc. reserves the right to void warranty as well.
- Contact your dealer for any required replacement parts.

***After the first 50 hours of operation**

- Replace planetary oil.
 - Position trencher on a flat surface.
 - Remove lower drain plug located on the planetary below the hydraulic motor. Drain oil into a suitable container. Dispose of oil in a proper manner.
 - Add oil (17 oz. standard flow units / 20 oz. high flow units) into the upper plug located on the planetary, just above the hydraulic motor. Oil to be SAE 80W-90 gear lubricant, API-GL-5 approved.

Chain Replacement Instructions

- Position trencher so that the chain is not making contact with the ground. This can be done by blocking up the head of the trencher (under the skid plate).
- Remove the spoil auger.
- Removal of the crumber may provide easier access to the chain. To remove, loosen and remove the ½" hardware holding the crumber to the trencher. This step is optional.
- Loosen the jam nuts on the tensioning bolts. The jam nuts and adjustment nuts can be moved as close to the head of the tensioning bolts as possible.
- Locate the chain pin with the T head keeper. The best position for the chain pin is about 12"-18" in front of the drive sprocket. If the chain pin is not in this location, connect the hydraulic couplers together and manually turn the chain until this location is reached.
- Straighten and remove the T head keeper.
- Using a hammer and punch, remove the chain pin.
- At this point, the chain should be able to be removed. Use caution since the chain is heavy and there may be sharp edges with many pinch points. (The use of a lifting device such as an overhead crane or cherry picker would greatly aid in handling of the chain.)

Trencher (TRN) Parts List (cont.)

Table 1: Trencher Options

MODEL	TRN36	TRN48	TRN60
TRENCHER BOOM ARM WDT	9935VW	9916VW	9940VW
CRUMBER ARM WELDMNT	9938VW	9920VW	9943VW

FLOW RATE	25 GPM	33 GPM	42 GPM
1/2"-13 MOTOR BOLT	6719PP	8866PP	8866PP
1/2" LOCK WASHER	6720PP	8712PP	8712PP
O-RING	6730PP	10236PP	10236PP
TRENCHER PLANETARY	9840PP	9841PP	9841PP
HYDRAULIC MOTOR	9842PP	7784PP	7785PP
MOTOR HYDRAULIC ADAPTER	9028PP (2)	9987VA (1)	9987VA (1)

CHAIN WIDTH	6"	8"	10"	12"
CRUMBER CLEANOUT PLATE	9923VP	9930VP	9931VP	9932VP

Table 2: Chain Assemblies

Depth	Width	Single Standard	Double Standard	50/50 Terminator	50/50 Rock
36	6	10138PP	10139PP	10140PP	10141PP
	8	10242PP	10142PP	10145PP	10146PP
	10	10243PP	10143PP	N/A	N/A
	12	10244PP	10144PP	N/A	N/A
48	6	9866PP	9867PP	9868PP	9869PP
	8	10245PP	10147PP	10150PP	10002PP
	10	10246PP	10148PP	N/A	N/A
	12	10247PP	10149PP	N/A	N/A
60	6	9994PP	9995PP	9996PP	9997PP
	8	10248PP	10151PP	10152PP	10153PP
	10	N/A	N/A	N/A	N/A
	12	N/A	N/A	N/A	N/A

Additional chain configurations are also available. Please contact your dealer for availability.

Trencher (TRN) Parts List (cont.)

	ITEM	PART NO.	QTY	DESCRIPTION
	40	9924VW	1	TRENCHER SPRING GUIDE WELDMENT
	41	10049VP	1	TRENCHER HOSE GUIDE
A	42	-----	1	O-RING
A	43	-----	1	TRENCHER PLANETARY
A	44	-----	1	HYDRAULIC MOTOR
A	45	-----	-	MOTOR HYDRAULIC ADAPTER
	46	9988PP	2	HYD HOSE 3/4" X 96" LG 12MB TO 12FJX 4000PSI
B	47	6734PP	1	COUPLER FEMALE 12FB
		7978PP		COUPLER FEMALE 12FB 5/8" BODY
		10766PP		COUPLER FEMALE 12FB 3/4" BODY
B	48	6735PP	1	COUPLER MALE 12FB
		7979PP		COUPLER MALE 12FB 5/8" BODY
		10767PP		COUPLER MALE 12FB 3/4" BODY
C	49	7982PP	1	COUPLER FEMALE CASE DRAIN 3/8"
		7983PP		COUPLER MALE CASE DRAIN 3/8"
		9448PP		MALE COUPLER CASE DRAIN 1/4"
		9449PP		FEMALE COUPLER CASE DRAIN 1/4"
	50			
C,D C,E	51	1145PP	1	ADAPTER 6MJ TO 8MB
		7796PP		ADAPTER 6MJ TO 6MB
C	52	1143PP	1	HYD HOSE 1/4" X 102" LG 6FJX TO 6FJX
C	53	7984PP	1	ADAPTER 6MJ TO 4MB
F	54	-----	1	TRENCHER CHAIN
G	55	10154PP	1	T HEAD KEEPER
G	56	10155PP	1	CHAIN PIN

A - See Table 1: Trencher Options.

B - Trencher supplied with one of each, depending on make/model of machine.

C - Required on high flow trencher only, depending on make/model of machine.

D - Used with 3/8" case drain coupler.

E - Used with 1/4" case drain coupler.

F - See Table 2: Chain Assemblies.

G - Item comes standard with the Trencher Chain or can be ordered as replacement parts.

Chain Replacement Instructions (cont.)

- Layout new chain making sure the digging teeth are in the proper orientation (digging teeth should be facing the trencher head on the bottom side of the trencher boom).
- Install chain so that the connecting link is on the top side of the trencher boom.
- Using some sort of a clamping or tightening device, pull the ends of the trencher chain together until the chain pin can be installed. (Remember the orientation of the chain pin when it was removed from the new chain and reinstall in the same orientation—the pin only installs in one direction.) Using a hammer, pound in the pin until the T head keeper can be installed. Bend over the T head keeper so that it will not come out.
- Tighten the adjustment nuts until there is approximately 1" of slack between the bottom of the trencher boom and the chain. Make sure to tighten both sides evenly to keep the boom straight. Tighten jam nuts.
- Reinstall crumber, if removed and make sure the trencher boom and crumber are in-line.
- Adjust crumber to maintain a minimum clearance of 2" between crumber cleanout plate and chain teeth and tighten crumber hardware.
- Reinstall spoil auger, making sure to use the correct cross hole in the trencher drive shaft weldment for the chain width installed.

Bolt Torque

1/2" Bolts SHCS Motor to planetary (Standard Flow): 105-115 ft.-lb.

1/2" Bolts Grade 8 Motor to planetary (High Flow): 100-110 ft.-lb.

9/16" Bolts Planetary to trencher head: 140-150 ft.-lb.

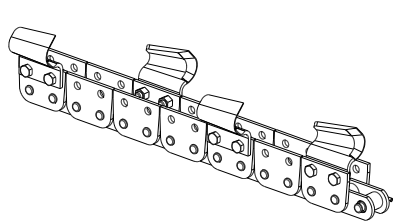
5/8" Bolts Grade 5 Sprocket to drive shaft: 145 - 155 ft.-lb.

5/8" Bolts Grade 8 Drive shaft to planetary: 205 – 215 ft.-lb.

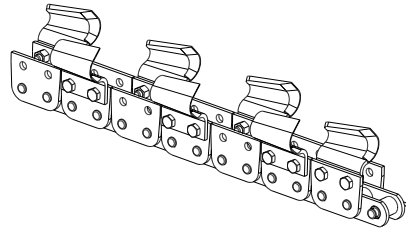
1 1/4" Idler Shaft Nut Tighten to engage locking portion of nut (nut and end of idler shaft should be approximately flush). Do not over tighten. The Trencher Idler Wheel Weldment needs to spin freely on the Idler Shaft. Over tightening could result in premature failure of the Idler Bearing Assembly and prevent the Idler Wheel Weldment from turning.

Trencher Chain Guide

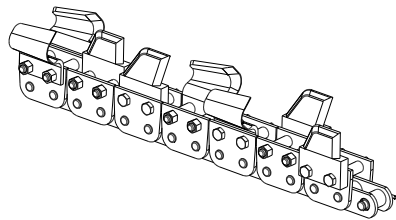
The following chain layouts are a guide to aid users in determining what type of chain is installed on the trencher.



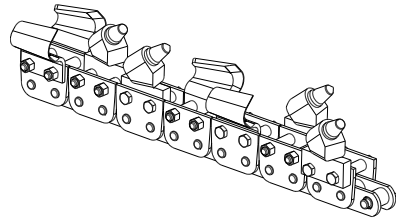
SINGLE STANDARD



DOUBLE STANDARD



50/50 TERMINATOR



50/50 ROCK

Additional chain configurations are also available. Please contact your dealer for availability.

There are several different naming conventions for a similar style chain in the industry. Below are listed some of the more common alternative names:

Single Standard: Half Set, Tooth Every Other Station

Double Standard: Full Set, Tooth Every Station, Double Cup

Terminator: Shark Tooth, Scorpion, Aggressive Shark

Rock: Bullet, Rock and Frost, Carbide

Trencher (TRN) Parts List

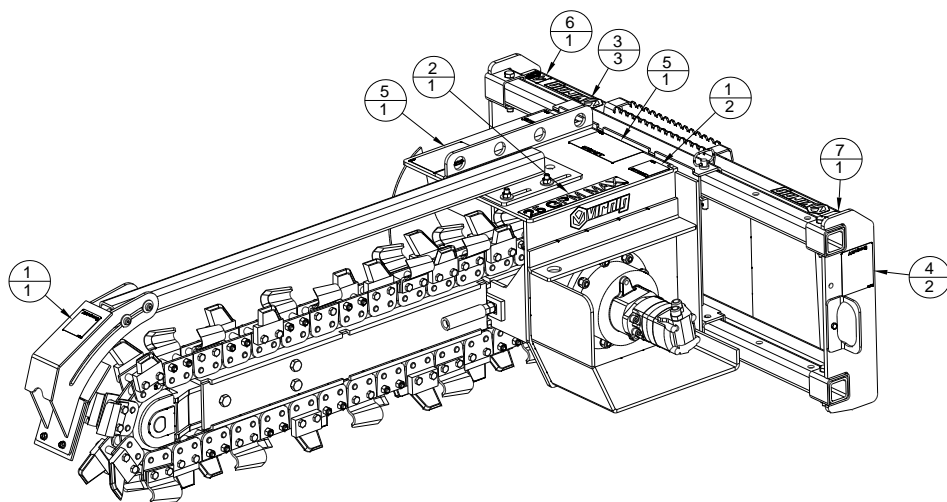
ITEM	PART NO.	QTY	DESCRIPTION
1	1003PP	4	1/2"-13 REVERSE LOCK NUT
2	1008PP	11	5/8"-11 TOP LOCK NUT
3	1011PP	3	3/4"-10 TOP LOCK NUT
4	1085PP	3	3/4"-10 X 4" LG HHCS
5	1089PP	3	3/8"-16 X 1" LG CARRIAGE BOLT
6	1094PP	1	1 1/4" X 10GA MACH BUSHING
7	5130PP	6	5/8"-11 X 2 1/2" LG HHCS
8	5148PP	8	1/2" USS FLAT WASHER
9	6140PP	6	3/8"-16 TOP LOCK FLANGE NUT
10	6716PP	9	9/16"-12 X 2 1/4" LG HHCS GR8
11	6717PP	9	9/16" HI-ALLOY LOCK WASHER
12	6718PP	9	9/16"-12 NUT GR8
A 13	-----	4	1/2"-13 MOTOR BOLT
A 14	-----	4	1/2" LOCK WASHER
15	7320PP	1	5/8" X 4 3/4" LG HITCH PIN
16	7624PP	5	5/8"-11 X 4" LG HHCS
17	7850PP	1	3/8"-16 X 1 1/4" LG HHCS
18	8986PP	4	1/2"-13 X 1 3/4" LG CB
19	9051PP	6	5/8"-11 X 2" LG HHCS GR8
20	9927PP	2	3/4"-10 X 6" LG HHCS GR8
21	9928PP	2	3/8"-16 X 1/2" X 4" LG BOLT
22	9929PP	1	1 1/4"-12 TOP LOCK NUT
23	9933PP	4	3/4"-10 HEX NUT GR8
24	9848PP	1	IDLER SHAFT 4 1/2" LG
25	9849PP	1	IDLER BEARING ASSEMBLY
26	9870PP	1	TRENCHER DRIVE SPROCKET
27	10029PP	2	SPRING COMPRESSION TRENCHER
28	9872VW	1	TRENCHER QT FRAME WELDMENT
29	9877VP	2	TRENCHER HEAD ADJUSTMENT TUBE
30	9878VW	1	TRENCHER HEAD WELDMENT
31	9893VW	1	IDLER WHEEL MOUNT WELDMENT
32	9900VW	1	TRENCHER DRIVE SHAFT WELDMENT
33	9906VW	1	TRENCHER CRUMBER WELDMENT
34	9910VW	1	TRENCHER SPOIL AUGER WELDMENT
35	9913VW	1	TRENCHER IDLER WHEEL WELDMENT
36	9915VP	2	TRENCHER IDLER BEARING CAP
A 37	-----	1	TRENCHER BOOM ARM WDT
A 38	-----	1	CRUMBER ARM WELDMENT
A 39	-----	1	CRUMBER CLEANOUT PLATE

Trencher Label Parts List

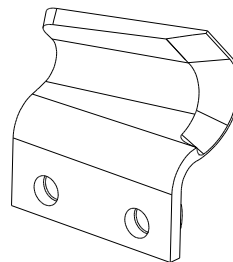
ITEM	PART NO.	QTY	DESCRIPTION
A	1	3	PINCH POINT WARNING LABEL
	2	1	7490PP 25 GPM MAX LABEL
	7794PP		33 GPM MAX LABEL
	7795PP		42 GPM MAX LABEL
	3	3	VIRNIG LOGO LONG
A	4	2	TRENCHER WARNING LABEL
	5	2	TRENCHER DANGER LABEL
	6	1	9390PP 36 WIDTH LABEL
	10259PP		48 WIDTH LABEL
	9392PP		60 WIDTH LABEL
	7	1	SERIALTAG SERIAL NUMBER TAG

A - Trencher supplied with one of each, depending on trencher configuration.

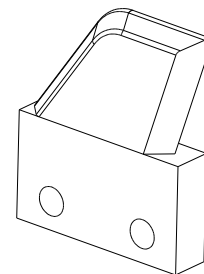
Label Locations



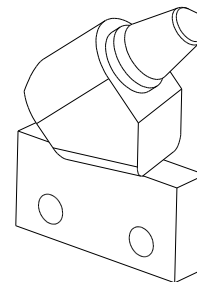
Tooth Guide



CUP STYLE



TERMINATOR STYLE



ROCK STYLE

All trencher teeth are available as left and right hand options. Terminator and Rock style teeth are available with various pitches to accommodate various chain patterns.

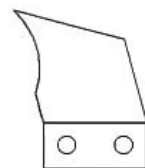
Cup Style: Face hardened, used in soft and/or sticky materials and for material removal.

Terminator Style: Carbide insert at the tip, used to break up hard ground.

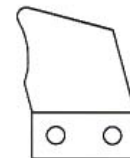
Rock Style: Replaceable carbide tipped tooth, used to break up hard ground, rocks and frost.

Tooth Wear

The following diagram is a guide to determine the performance percentage of tooth wear when compared to a new tooth. The greater the percentage, the better the performance. Teeth that are at 25% should be replaced shortly, while teeth that are at 0% should be replaced immediately. Severely worn teeth will greatly reduce the performance of the trencher.



100%



75%



50%



25%



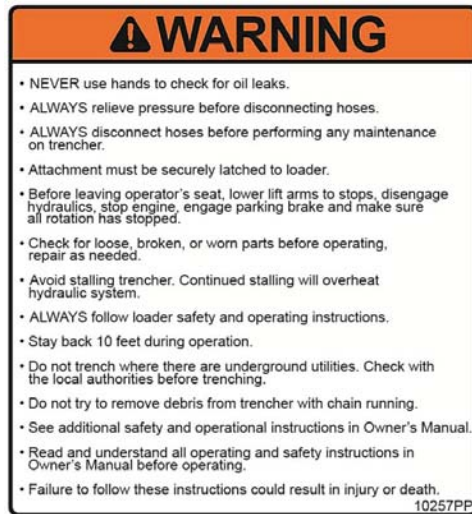
0%

Labels on Trencher Attachment



10258PP - TRENCHER DANGER LABEL

This label has several important instructions for safe operation regarding rotational and digging hazards.



10257PP - TRENCHER WARNING LABEL

All bystanders must stay clear during operation.
This label has several important instructions that must be followed for safe operation of this attachment.

Labels on Trencher Attachment (cont.)



5263PP - PINCH POINT WARNING LABEL

Always keep hands clear of moving parts when loader hydraulic system is operational.



7490PP - 25 GPM MAX LABEL



or

7794PP - 33 GPM MAX LABEL



or

7795PP - 42 GPM MAX LABEL

This label indicates the maximum flow rate for this attachment.