TC HYDRAULIC COMPACTORS

OWNER'S MANUAL

OPERATION, SERVICE & PARTS FOR TC SERIES COMPACTORS

BTI® an Astec Industries Co.

www.rockbreaker.com

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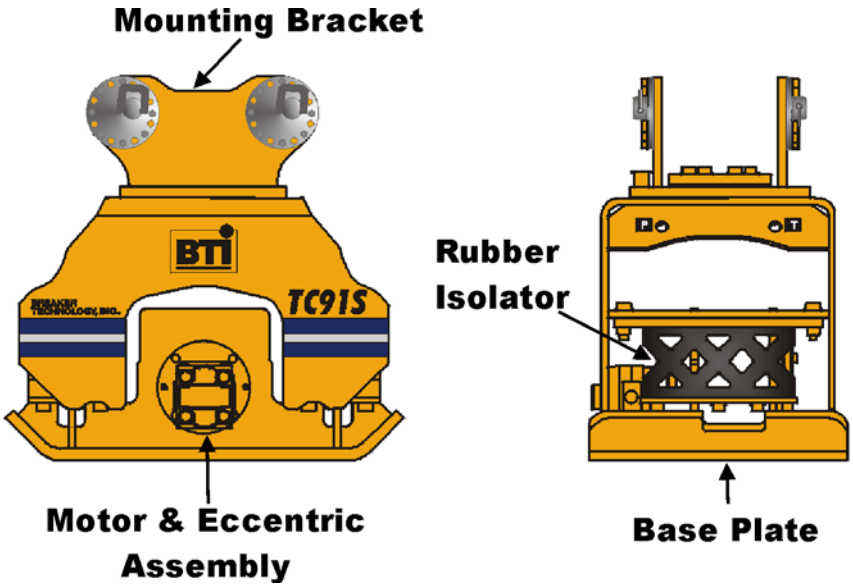
BTI compactors are designed to mount on mini-excavators, backhoes and excavators. BTI compactors combine centrifical force, down pressure, and vibration to work as soil compactors or pile/sheet drivers.

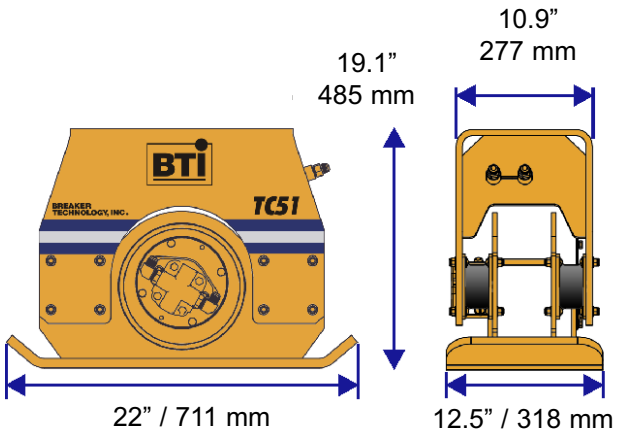
The compactor has 3 basic components:

- Mounting Bracket: attaches the compactor to the carrier boom and is complete with adjustable mounting pins.
- Rubber Isolators: act as suspension between the base and the mount & isolate the compactor forces from the carrier.
- Base: includes a hydraulic motor coupled to an eccentric, encased in a steel housing with the base plate attached.



	TC51L/FC	TC51H/FC
Impulse Force:	1,930 - 3,000 lb 875 - 1,360 kg	1,930 - 3,000 lb 875 - 1,360 kg
Oil Flow Req'd:	7.2 - 12 USgpm 27.2 - 45 l/min	10.7 - 18 USgpm 40.4 - 68 l/min
Cycles/Minute:	1,800 - 2,240	1,800 - 2,240
Hydraulic Connections:	#8 JIC Male	#8 JIC Male
Minimum Tube I.D.:	1/2"	1/2"
Operating Pressure:	920 - 1,135 psi 63 - 78 bar	700 - 860 psi 102 - 150 bar
Base Plate Dimension:	12.5 x 28" 317.5 x 711 mm	12.5 x 28" 317.5 x 711 mm
Compaction Area:	1.91 sq ft 0.177 sq M	1.91 sq ft 0.177 sq M
Weight:	295 lb 134 kg	295 lb 134 kg
Swivel Rotation:	N/A	N/A
Locking Positions:	N/A	N/A
Carrier Weight:	2,000 - 10,000 lb 907 - 4, 535 kg	2,000 - 10,000 lb 907 - 4, 535 kg
Max. Relief Valve Setting:	2,800 psi 193 bar	2,800 psi 193 bar

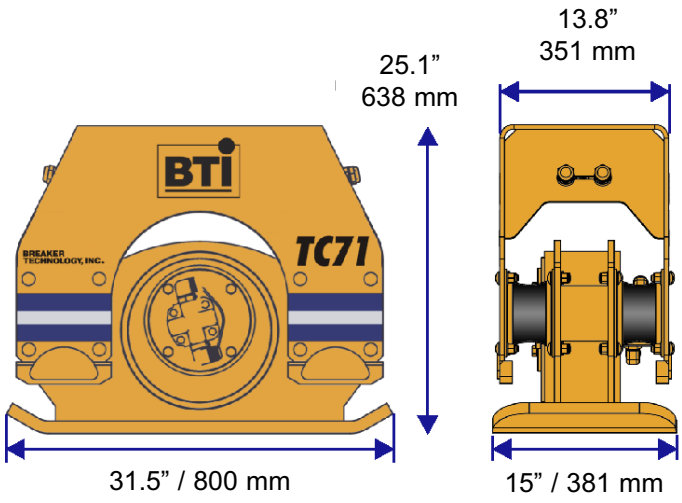
Recommended Relief Valve Setting for both models: 2000 psi / 138 bar.
Max Continuous Return Line Pressure for both models: 245 psi / 17 bar.
Max Intermittent Return Line Pressure for Both Models: 490 psi / 34 bar.



TC71 SPECIFICATIONS

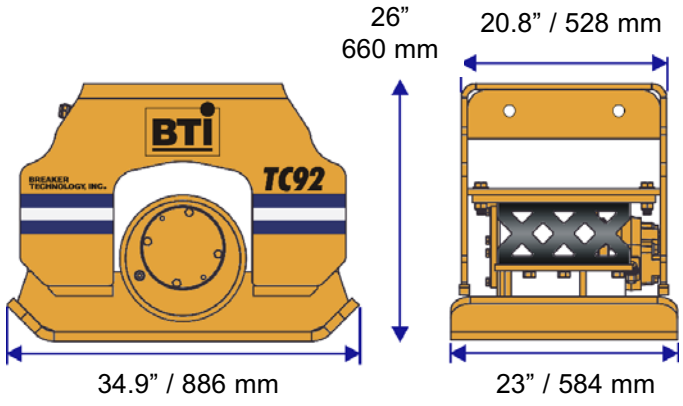
	TC71	TC71FC
Impulse Force:	2,600 - 5,000 lb 1,179 - 2,268 kg	2,600 - 5,000 lb 1,179 - 2,268 kg
Oil Flow Req'd:	11.7 - 16.3 US gpm 44.2 - 61.6 l/min	11.7 - 22 USgpm 44.2 - 83.2 l/min
Cycles/Minute:	1,800 - 2,500	1,800 - 2,500
Hydraulic Connections:	#12 JIC Male	#12 JIC Male
Minimum Tube I.D.:	¾"	¾"
Operating Pressure:	1,200 - 2,000 psi 81 - 136 bar	1,200 - 2,000 psi 81 - 136 bar
Base Plate Dimension:	15 x 31.5" 381 x 800 mm	15 x 31.5" 381 x 800 mm
Compaction Area:	2.71 sq ft 0.252 sq M	2.71 sq ft 0.252 sq M
Weight:	610 lb 277 kg	610 lb 277 kg
Swivel Rotation:	N/A	N/A
Locking Positions:	N/A	N/A
Carrier Weight:	5,500 - 15,500 lb 2,494 - 7,030 kg	5,500 - 15,500 lb 2,494 - 7,030 kg
Max. Relief Valve Setting:	2,800 psi 193 bar	2,800 psi 193 bar

Recommended Relief Valve Setting for both models: 2000 psi / 138 bar.
Max Continuous Return Line Pressure for both models: 245 psi / 17 bar.
Max Intermittent Return Line Pressure for Both Models: 490 psi / 34 bar.



	TC92
Impulse Force:	5,500 - 8,200 lb 2,494 - 3,719 kg
Oil Flow Req'd:	20.6 - 25.2 US gpm 77.9 - 95.3 l/min
Cycles/Minute:	1,800 - 2,200
Hydraulic Connections:	#12 JIC Male
Minimum Tube I.D.:	¾"
Operating Pressure:	970 - 1,200 psi 67 - 83 bar
Base Plate Dimension:	23 x 34.9" 584 x 886 mm
Compaction Area:	4.3 sq ft 0.40 sq M
Weight:	1,130 lb 512 kg
Swivel Rotation:	180°
Locking Positions:	90°, 45°, 0°, 45°, 90°
Carrier Weight:	7,700 - 25,300 lb 3,492 - 11, 474 kg
Max. Relief Valve Setting:	2,800 psi 193 bar

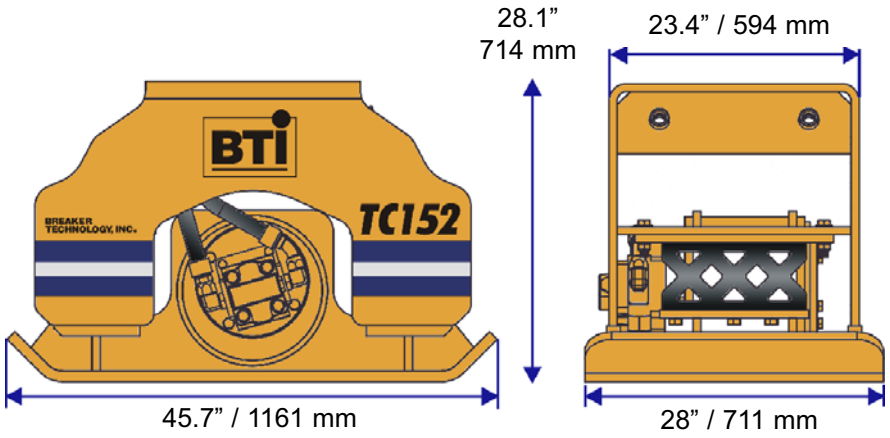
Recommended Relief Valve Setting: 2000 psi / 138 bar.
Max Continuous Return Line Pressure: 245 psi / 17 bar.
Max Intermittent Return Line Pressure: 490 psi / 34 bar.



TC152 SPECIFICATIONS

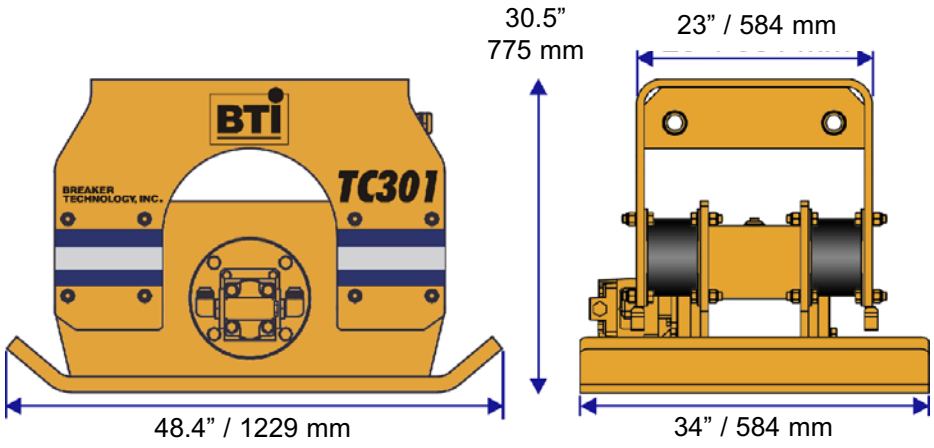
	TC152L	TC152H
Impulse Force:	11,130 - 16,630 lb 5,048 - 7,542 kg	11,130 - 16,630 lb 5,048 - 7,550 kg
Oil Flow Req'd:	26.7 - 32.7 US gpm 100.9 - 123.6 l/min	37.4 - 45.7 US gpm 141.4 - 172.7 l/min
Cycles/Minute:	1,800 - 2,200	1,800 - 2,200
Hydraulic Connections:	#16 JIC Male	#16 JIC Male
Minimum Tube I.D.:	1"	1”
Operating Pressure:	1,600 - 1,964 psi 110 - 135 bar	1,190 - 1,460 psi 82 - 101 bar
Base Plate Dimension:	28 x 45.7" 711 x 1161mm	28 x 45.7” 711 x 1161mm
Compaction Area:	7.1 sq ft 0.66 sq M	7.1 sq ft 0.66 sq M
Weight:	1,820 lb 825 kg	1,825 lb 828 kg
Swivel Rotation:	180^{o}	180^{o}
Locking Positions:	90^{o},45^{o},0^{o},45^{o},90^{o}	90^{o},45^{o},0^{o},45^{o},90^{o}
Carrier Weight:	15,400 - 48,400 lb 6,984 - 21,950 kg	15,400 - 48,400 lb 6,984 - 21,950 kg
Max. Relief Valve Setting:	2,800 psi 193 bar	2,800 psi 193 bar

Recommended Relief Valve Setting for both models: 2000 psi / 138 bar.
Max Continuous Return Line Pressure for both models: 245 psi / 17 bar.
Max Intermittent Return Line Pressure for Both Models: 490 psi / 34 bar.



	TC301L	TC301H
Impulse Force:	16,300 - 24,400 lb 7,406 - 11,066 kg	16,300 - 24,400 lb 7,406 - 11,066 kg
Oil Flow Req'd:	37.4 - 45.7 US gpm 141.4 - 172.7 l/min	53.5 - 65.3 gpm 202.2 - 246.8 l/min
Cycles/Minute:	1,800 - 2,200	1,800 - 2,200
Hydraulic Connections:	#16 JIC Male	#20 JIC Male
Minimum Tube I.D.:	1"	1 1/4"
Operating Pressure:	1,480 - 1,820 psi 102 - 126 bar	1,080 - 1,330 psi 74 - 92 bar
Base Plate Dimension:	34 x 48.4" 864 x 1229 mm	34 x 48.4" 864 x 1229 mm
Compaction Area:	8.74 sq ft 0.812 sq M	8.74 sq ft 0.812 sq M
Weight:	2,150 lb 975 kg	2,155 lb 977
Carrier Weight:	14,500 - 105,600 lb 6,576 - 47,891 kg	14,500 - 105,600 lb 6,576 - 47,891 kg
Max. Relief Valve Setting:	2,800 psi 193 bar	2,300 psi 159 bar

Recommended Relief Valve Setting for both models: 2000 psi / 138 bar.
Max Continuous Return Line Pressure for both models: 245 psi / 17 bar.
Max Intermittent Return Line Pressure for Both Models: 490 psi / 34 bar.



Danger, Warning, and Caution are hazard alerts used in this manual and on the compactor decals to identify hazards on or near the carrier and compactor.

⚠DANGER

Danger - Immediate hazards, which WILL result in severe personal injury or death if the proper precautions are not taken.

⚠WARNING

Warning - Hazards or unsafe practices, which COULD result in personal injury or death if the proper precautions are not taken.

⚠CAUTION

Caution - Hazards or unsafe practices, which COULD result in product or property damage if the proper precautions are not taken.

BTI cannot anticipate every possible circumstance that might involve a hazard. The hazard alerts in this publication and on the product are therefore not all inclusive. If a tool, procedure, work method or operating technique not specifically recommended by BTI is used, you must satisfy yourself that it is safe for you and others. You should also ensure that the compactor and carrier will not be damaged or made unsafe by the operation, maintenance or repair procedures you choose.

⚠WARNING

Do not operate the compactor with personnel in the immediate area of the carrier and compactor.

⚠WARNING

Note and avoid all hazards and obstructions such as overhangs, ledges, slide areas, electrical lines, underground cables, water mains, gas lines, etc. When operating close to electrical lines, underground cables, water mains or gas lines, contact the responsible authority and request assistance.

⚠WARNING

Do not operate this machine unless you have read and understood the instructions and warnings in the Compactor Owner's Manual. Failure to follow the instructions or heed the warnings could result in injury or death. Proper care is your responsibility. Contact your distributor or BTI for replacement manuals or decals.

⚠WARNING

Hydraulic fluids are under high pressure. Fluid escaping under pressure can penetrate the skin causing serious injury. Relieve all pressure before disconnecting hoses. Do not use your hand to check for hydraulic leaks. If any fluid is injected into the skin, a doctor must surgically remove it within a few hours or gangrene may set in.

⚠WARNING

Do not attempt to repair or modify the compactor unless you are a qualified service technician. Read and understand your owner's manuals. Failure to follow the instructions or heed the warnings could result in severe personal injury or death. Proper care is your responsibility. Contact your distributor or BTI for replacement parts.

⚠CAUTION

Some compactor components are heavy or awkward, plan carefully how you will handle them when installing, removing, or disassembling.


Head Protection


Foot Protection


Eye Protection


Hearing Protection

Do not operate or service the compactor unless you are qualified.

Avoid loose fitting clothing, loose or uncovered long hair, jewelry and loose personal articles. These can get caught in moving parts. Jewelry may also ground a live circuit.

Know and use the protective equipment that is to be worn when operating or servicing the carrier. Hard hats, protective glasses, protective shoes, gloves, reflector type vests and ear protection are types of equipment that may be required.

Never drive or operate any carrier while you are under the influence of alcohol or drugs.

Consult your supervisor if you do not understand the Compactor Owner's Manual.

The compactor must be sized properly for both the carrier on which it will be mounted and the work to be done.

Sizing the Compactor based on the Type of Work

Most applications require the soil under a road or load bearing surface to be compacted to 95% or greater than the proctor density. This can be achieved with a compactor, provided the soil is the correct type and moisture.
Uniform materials like clay and sand are difficult to compact. Virgin dirt, pit run gravel, or soil with non-uniform particle size is preferred. The moisture content in most material should be less than ten percent for best results.

A typical production rate to compact soils to over 95% proctor density.

Typical Production Rate

TC51: 14- 22 cu yds /hr	(11 - 17 cu M/hr)
TC71: 18- 27 cu yds /hr	(14 - 21 cu M/hr)
TC92: 25- 35 cu yds /hr	(19 - 27 cu M/hr)
TC152L: 65- 75 cu yds/hr	(50 - 57 cu M/hr)
TC152H: 65- 75 cu yds/hr	(50 - 57 cu M/hr)
TC301: 110- 130 cu yds/hr	(84 - 99 cu M/hr)
TC301H: 110- 130 cu yds/hr	(84 - 99 cu M/hr)

For proper compaction we recommend the following lift size;

Lift Sizes

TC51: .5- 1 foot	(0.15 - 0.3 M)
TC71: .5- 1 foot	(0.15 - 0.3 M)
TC92: 1- 2 foot	(0.3 - 0.6 M)
TC152L: 2- 3 foot	(0.6 - 0.9 M)
TC152H: 2- 3 foot	(0.6 - 0.9 M)
TC301: 2- 4 foot	(0.6 - 1.2 M)
TC301H: 2- 4 foot	(0.6 - 1.2 M)

Using a higher depth of material may result in less than 95% compaction.

Always use a compactor sized to the carrier. A compactor that is too small for the carrier will damage the compactor, while a compactor too big will damage the carrier. Ensure you have the proper installation kit for attaching the compactor and that the carrier's hydraulic system meets the compactor flow and pressure requirements.

The carrier that is selected to operate the compactor must have sufficient reach to compact the deepest area of the trench or excavation. Therefore, **sizing the compactor based on the carrier size becomes the most important factor** in choosing the correct sized compactor.

BTI has assigned a 'Recommended Carrier Weight' range to each compactor. If the operating weight of the carrier falls within this range, the carrier will safely handle this model. If the desired compactor falls outside of the recommended carrier weight range, the carrier's lifting capacity and oil flow will need to be verified to ensure a proper fit.

Carrier Lifting Capacity

Provided the weight of the compactor does not exceed the maximum lifting capacity of the carrier at any position, the carrier is assumed to be stable. On most loader backhoes and excavators, the maximum lifting capacity is lowest when the boom is at full reach. This is the value that must be compared to the operating weight of the compactor.

Carrier Oil Flow

A required oil flow range is specified for each compactor, oil flow to the compactor within this range is adequate for operation. However, for maximum productivity the carrier should be capable of providing the maximum required flow. Compare the maximum oil flow requirement of the compactor with the oil flow capacity of the carrier. Remember the compactor will be operating at 1100-2100-psi (75-136 bar), therefore, oil flow should be evaluated at the operating pressure.

Below is the Carrier Sizing Chart, outlining the recommended carrier weight range for the compactor models.

To run, a compactor needs hydraulic flow in one direction within a working pressure range. When installing the compactor the carrier hydraulic circuit must have the following:

- The carrier must have a hydraulic circuit which will provide the correct flow
- A switch to activate the compactor
- A circuit relief valve

In conditions where back pressures in the main return line to the carrier are higher than recommended, BTI requires the use of an external case drain from the gear motor to the carrier's hydraulic tank. This separate drain line allows for low pressure-direct communication between the low pressure cavity of the hydraulic motor and the carrier's hydraulic tank.

This translates into a 1/4" or 3/8" case drain line for TC51 and TC71 compactors and a 3/8" or 1/2" case drain line for TC92 to TC301 compactors.

The case drain allows the oil to drain to tank without having overcome the back pressure caused by higher flows and restrictive valves.

If a case drain is not a viable option the customer can review the possibility of modifying the return line circuitry within the carrier to reduce the back pressure. Each situation is different however typically:

1. Increasing the diameter of the return line will reduce the back presure.

2. Bypassing restrictive valves in the return line will reduce the back pressure.

3. Insuring the return filer (if equipped) is clean and properly sized for the application will reduce back pressure.

4. Using lower viscosity hydraulic oil (within carrier manufacturer's specification) will reduce back pressure.

5. Insuring the carrier's hydraulic circuit is at proper operating temperature before operation.

This should be carried out by a trained technician under the approval of the carrier manufacturer.

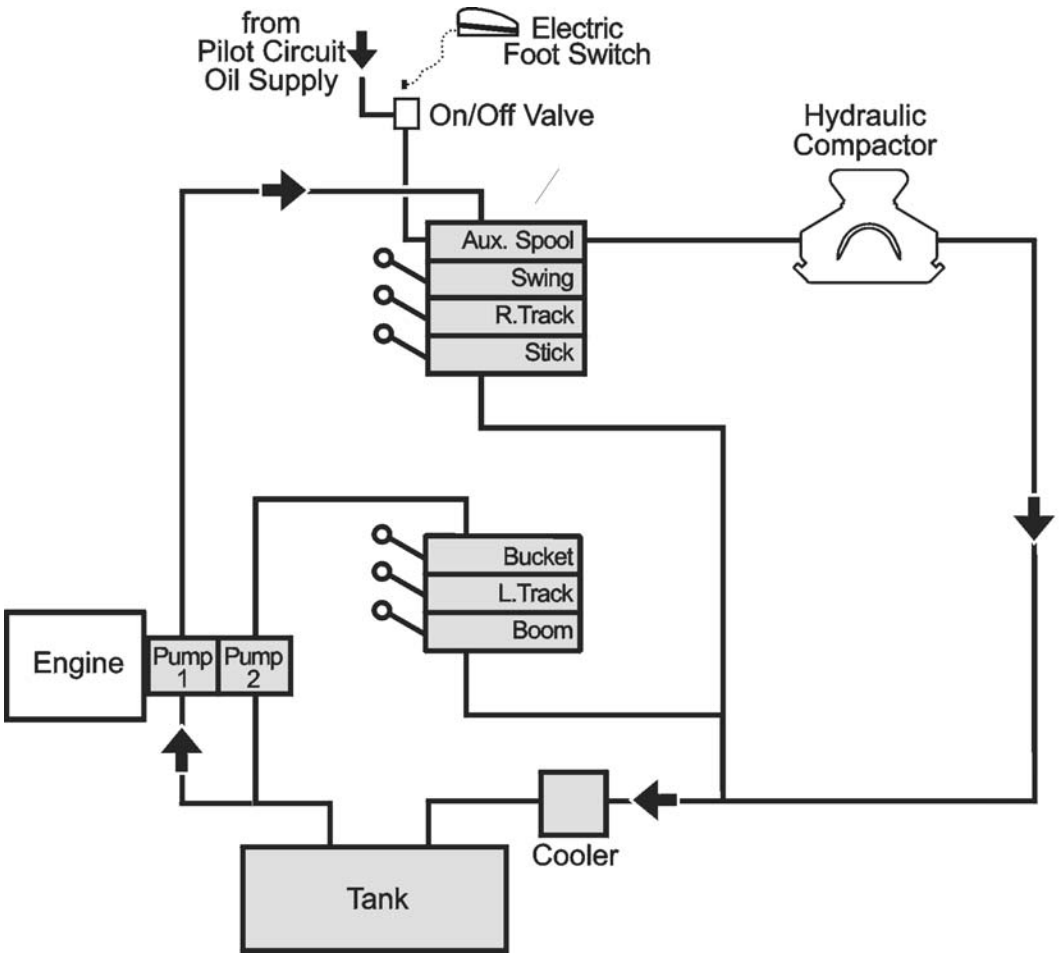
Carrier with Auxiliary Circuit

Often a carrier is equipped with an auxiliary control valve (see Figure 1), this valve can be adjusted to provide the correct amount of oil flow to the compactor. A pressure relief cartridge can also be installed to protect the hydraulic components.

Make sure that oil is not routed back through the return port of this auxiliary valve. Instead, send the oil directly back to the tank, via the cooler and filter.

If the circuit is plumbed using both ports on the auxiliary valve, the return line should have a bleed line connected to tank, to prevent damaging pressure spikes from the returning oil.

Figure 1, Carrier with Auxiliary Circuit

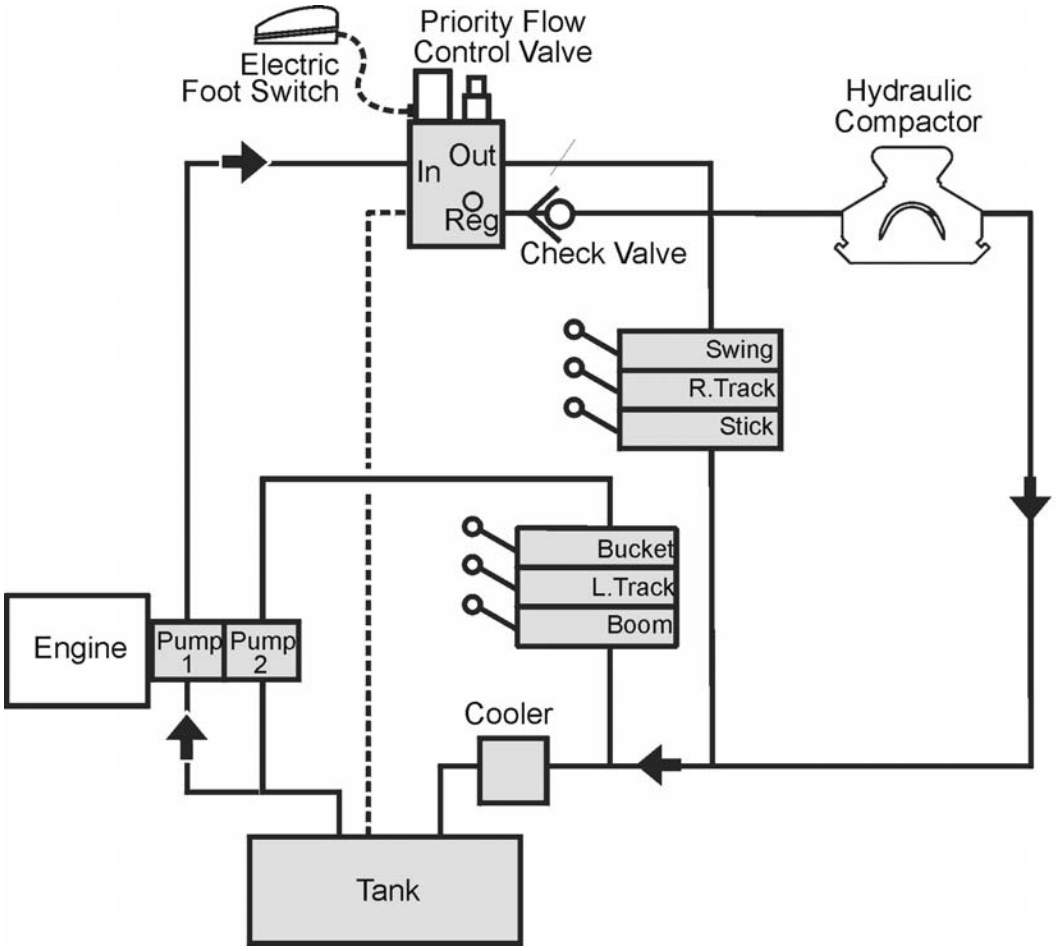


Carrier without Auxiliary Circuit

If the carrier does not have an auxiliary control valve (see Figure 2), a priority flow control valve must be installed to direct oil flow from the normal circuit to the compactor. The priority flow control valve is usually equipped with a flow adjustment and pressure relief.

These auxiliary control valves often need a check valve on the regulated port to completely close the flow. If too much flow is divided, excess heat is generated in which case the oil needs to be cooled.

Figure 2, Carrier without Auxiliary Circuit



There is no separate pressure adjustment on the compactor.

The compactor's supply oil should be directed out the left side of the boom and the return line back on the boom's right side. A combination of hoses and steel tubing is recommended to keep the installation neat and cost effective.

Hoses and tubes should be secured to the carrier boom with steel clamps. Attaching mounting clamps or bulkhead fittings to the ends of the tubes will prevent the tubes from sliding. Check the hoses to ensure they are not being rubbed or pinched by other components.

BTI recommends the use of high-pressure ball valves at the outer end of the stick where the hydraulic lines are disconnected to attach the compactor. This allows the line to be disconnected without losing too much oil. BTI does not recommend hydraulic quick disconnects. However, if they are installed, ensure the flush face style is used and then only on the TC91S or smaller models.

Mounting the Compactor

Compactors are easily mounted by doing the following:

Orient the compactor with its hose connections pointed towards the carrier.

Remove the pins and bushings from the compactor top mount bracket (Note: the compactor mounting pins and bushings are custom made to match the carrier stick).

Insert the bushings into the boom and link of the carrier. (If Required).

Place the carrier boom into the compactor top mount bracket.

Push the pins through the bracket and boom (do not force the pins, if they do not enter easily, try realigning).

Insert the pin retainers.

If the carrier is equipped with a Quick Attach system, ensure the device is securely locking in position before operation.

For a compactor to operate properly it requires a specific oil flow and sufficient oil pressure.

Oil Flow & Oil Pressure

TC51L/FC: 1400 psi @ 7.2-12 USgpm (97 bar) @ (27.2-45.4 l/min)
TC51H/FC: 1200 psi @ 10.7-18 USgpm (83 bar) @ (40.4-68 l/min)
TC71: 1400 psi @ 11.7-16.3 USgpm (97 bar) @ (44.2-61.6 l/min)
TC71FC: 1600 psi @ 11.7-22 USgpm (110 bar) @ (44.2-83.2 l/min)
TC92: 1500 psi @ 20.6-25.2 USgpm (103 bar) @ (77.9-95.3 l/min)
TC152L: 2200 psi @ 26.7-32.7 USgpm (152 bar) @ (100.9-123.6 l/min)
TC152H: 1800 psi @ 37.4-45.7 USgpm (125 bar) @ (141.4-172.7 l/min)
TC301: 2100 psi @ 37.4-45.7 USgpm (145 bar) @ (141.4-172.7 l/min)
TC301H: 1600 psi @ 53.5-65.3 USgpm (110 bar) @ (202.2-246.8 l/min)

Working Pressure Range

To begin, connect a flow meter into the circuit in place of the compactor. Measure the 'no-load' flow by pressing the compactor fire, which activates the control valve and simulates the compactor working. While still activating the 'compactor' fire, adjust the flow meter putting a load on the circuit. Adjust the flow meter pressure until it falls within the working pressure range:

Carrier Oil Pressure

TC51L/FC: 920-1135 psi (63-78 bar) **TC51H/FC:** 700-860 psi (48-59 bar)
TC71: 820-1130 psi (57-78 bar) **TC71FC:** 920-1230 psi (63-85 bar)
TC92: 970-1200 psi (67-83 bar)
TC152L: 1600-1964 psi (110-135 bar) **TC152H:** 1190-1460 psi (82-101 bar)
TC301: 1480-1820 psi (102-126 bar) **TC301H:** 1080-1330 psi (74-92 bar)

Now adjust the oil flow on the carrier, so the flow meter reads:

TC51L/FC: 8-12 USgpm (30-45 l/min) **TC51H/FC:** 12-18 gpm (44-68 l/min)

TC71: 13-17 USgpm (49-63 l/min) **TC71FC:** 13-22 gpm (49-83 l/min)

TC92: 18-24 USgpm (68-91 l/min)

TC152L: 25-31 USgpm (95-117 l/min) **TC152H:** 35-43 gpm (132-163 l/min)

TC301: 35-43 USgpm (132-163 l/min) **TC301H:** 50-61 gpm (189-231 l/min)

Note:
Better compaction rates occur at higher flows.

To ensure the carrier's pressure relief valve does not activate while the compactor is working, the pressure relief must be set at least 350 psi above the maximum working pressure of the compactor. Continue to load the circuit pressure by adjusting the flow meter. Eventually the carrier's relief valve will activate and the oil flow will drop to zero. The pressure at which the oil goes over relief will be displayed on the flow meter. If this pressure setting is at least 350 psi or greater than the maximum working pressure of the compactor, your machine is ready. If not, you need to adjust the carrier's pressure relief setting.

Adjust Carrier's Pressure Relief

TC51 2200 + 350 psi = 2550 psi (176 + 24 = 200 bar) relief

TC71 2000 + 350 psi = 2350 psi (136 + 24 = 160 bar) relief

TC92 2000 + 350 psi = 2350 psi (136 + 24 = 160 bar) relief

TC152L: 2000 + 350 psi = 2350 psi (136 + 24 = 160 bar) relief

TC152H: 1600 + 350 psi = 1950 psi (109 + 24 = 133 bar) relief

TC301: 2000 + 350 psi = 2350 psi (136 + 24 = 160 bar) relief

TC301H: 1600 + 350 psi = 1950 psi (109 + 24 = 133 bar) relief

If more than one attachment with different flow requirements is to be connected to this carrier, you will need to measure the flow and note the adjustments of each. Mark these two locations directly on the flow control valve.

Record the oil flow and relief pressure settings when filling out the BTI Compactor Installation Notice form.

If you are unable to obtain the proper flow when installing or adjusting the hydraulic circuit, contact your BTI dealer for technical support.

BTI Service Centers

Thornbury, Ontario . . .(800) 567-8267
Riverside, California . .(951) 369-0878
Solon, Ohio . . . . . .(440) 248-7168

Carrier oil should be clean and in accordance with the manufacturer's recommendations.

After mounting the compactor on the boom and connecting the lines, bleed all air from the hydraulic system.

Initially pump grease to the pins in the bracket until it oozes out around the pins. Then grease with 10-15 shots daily.

Check torque of bolts and fasteners at installation and again after the first 10 hours of operation.

Operate all boom functions to ensure clearances are good and they allow the compactor to swivel.

Compaction of Materials

BTI compactors achieve material compaction by using centrifical force and vibration to displace air and water pockets in the material. Compaction performance depends on 3 items:

- Type and size of material being compacted
- Moisture content of the material
- Depths of lifts being compacted

Test the Compactor First

Use a short trial of the compactor to determine the optimum depth of lift and speed of boom travel to achieve the required density. This value will vary depending on the material's composition and size. For example, marbles being a uniform shape do not pack as well as gravel, which has uneven shapes allowing the stones to interlock with each other.

You can reach nearly 100% of the maximum material density with a BTI compactor by using smaller lifts, and increasing the holding time in each spot. Typical hourly production rates to compact soil to over 95% its proctor density are;

Hourly Production Rates

TC51L/FC / TC51H/FC: 14-22 cu yds (11-17 cu M) per hour
TC71 / TC71FC: 18-27 cu yds (14-21 cu M) per hour
TC92: 25-35 cu yds (19-27 cu M) per hour
TC152L / TC152H: 65-75 cu yds (50-57 cu M) per hour
TC301 / TC301H: 110-130 cu yds (84-99 cu M) per hour

Operate Carrier at Minimum Speed

Always operate the carrier engine at the minimum speed required to achieve the desired result. This allows the hydraulic system to run cooler. Excess flow beyond recommended levels can damage the compactor motor.

Compactor Base Must Contact Soil

Ensure the compactor base plate is in contact with the soil before operating.

Use Proper Boom Down-Force

When using a BTI compactor it is the amplitude (up and down motion) of the plate, which does the compaction and not the compactor weight or the carrier boom down-force. As you apply down-force to the compactor, the carrier will lift slightly giving you an indication that the compactor is properly pressed onto the material. Too much boom down-force inhibits the up and down motion, reducing the compactor's impact force. (Improper operation of the compactor can result in premature failure of the rubber isolators.)

Shut off the compactor and lift it into the air to a new position, or using minimum boom down-force slide the compactor along the ground. Avoid dragging the compactor's plate across the material surface ('ironing') while the motor is running. Forces exerted on the compactor by 'ironing' can cause premature failure.

Working in Wet Soil or Tight Trench

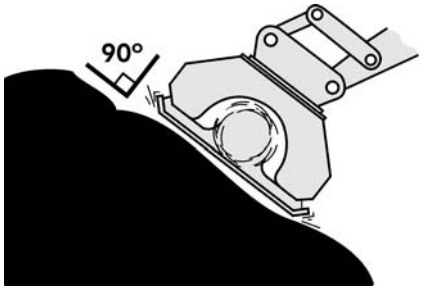
Another cause of premature mount failure occurs when working in very wet soil and/or a very tight trench. Suction or drag when the compactor is lifted can cause the mounts to tear. In these situations fasten a chain between the compactor's upper and lower sections to relieve the lifting strain on the rubber isolators.

Do Not Grade with Compactor

Never grade the trench or level backfill with the compactor. Extreme side forces can damage the rubber isolators.

Keep Compactor Parallel with Material

Always keep the plate of the compactor parallel with the material being compacted. Compactors can operate on an angle if you keep the carrier



boom down-force at 90^{o} to the compactor base.

Initial Compacting

Start by operating the compactor in one position. Release the down force and lift the unit to a new spot. Re-apply down-force and start compacting. Two passes are usually required. During the initial pass the compactor should be held in each position for 8-10 seconds or as long as compaction is apparent. The second-pass should be with greater boom down-force, focusing on areas missed during the first pass.

Compact in lift depths of:

Lift Depths

TC51: .5-1 ft (0.15-0.3 M)
TC71: .5-1 ft (0.15-0.3 M)
TC92: 1-2 ft (0.3-0.6 M)
TC152L / TC152H: 2-3 ft (0.6-0.9 M)
TC301 / TC301H: 2-4 ft (0.6-1.2 M)

Note: using a higher material lift depth may give less than 95% soil compaction. Materials with 5% moisture give better compaction. Narrow excavations can use higher lifts.

Shut-off Compactor Before Lifting

When compaction is complete, shut off compactor before lifting it from the ground.

Do not pound the ground with the compactor.

Do not start in the middle of an un-compacted area. Always start at the edge, near a solid wall, bank, or a previously compacted area.

Compacting Clay Materials

Clay type materials have a different composition and will not transmit vibration as well as granular materials; therefore, it is necessary to decrease the lift height and hold the compactor position for 15 seconds in each spot. Two passes are usually sufficient.

Sheet or Pile Driving

Compactors are effective in driving timber sheeting, steel sheet piles, 'H' or 'I' beams, and they drive into most soils including fine sand and rocky material. Best results are achieved by keeping the compactor base 90^{o} to the pile and use down-force and vibration to hammer the material. If you come across excessive resistance, lift the compactor slightly and let it 'bounce' on the pile for a hammering effect. Do not use the compactor to extract pilings.

Cold Weather Operation

Oils for use in cold weather operation should have a viscosity not exceeding 7500 SSU at the minimum start up temperature. And the ambient temperature should be at least 20^{o} F above the pour point of the oil. Start with a gradual warm-up until the oil reaches a reasonably fluid state.

Daily Inspection

At the end of each shift check the following:

Check rubber isolators for cracks. Replace as necessary.

Check the mounting pins and bushings for proper fit to the carrier. Check that the pin locks are in place and secure.

Check that all hose connections are tight and there are no leaks.

If your compactor is equipped with a swivel mount, grease this connection with 5 shots dependent on the amount of compactor use.

Always use standard EP2 grease.

Bolt Loctite Requirements

Check that all bolts are tight. If necessary, remove the bolt and install using Loctite and tighten to the specified torque.

- Red Loctite: motor and eccentric housing bolts
- Blue Loctite: rubber isolator bolts and all others

Maintenance- Every 40 Hours of Operation

Check hoses for wear and leaks, replace and tighten as required.

The eccentric housing is filled with gear oil. This oil must be changed after the initial 50 hours. Then change oil every year. Use 80W90 gear oil.

⚠CAUTION

Do not overfill the oil reservoir.

Check the rubber isolators for cracks or fatigue. Clean away any soil and material that has built up in this area.

Check that mounting pins and bushings are receiving lubrication.

Removal and Storage

Disconnect the pressure and return lines. Cap the lines on the machine and on the compactor to prevent dirt from entering.

Remove pins to disconnect compactor from boom. Spread grease on pins and bushings after removal to prevent corrosion.

1. BREAKER TECHNOLOGY INC. Company (hereinafter referred to as "BTI") warrants this product against defects in materials and workmanship for a period of twelve (12) months or 2000 hours from the date of installation, or 18 months from the date of shipment, whichever comes first. This warranty does not cover o-rings, seals, fittings, hoses, or other items considered normal wear items. These are covered by the LimitedWarranty period of thirty (30) days. Warranty for propriety items such as valves, filters, installation kits, and componentry that are not manufactured by BTI, will be governed by the warranty terms of their manufacturer. This warranty is void if BTI's standard installation specifications and procedures are not adhered to.

2. BTI will authorize return of any defective components or sufficient evidence of such defect to a BTI warehouse. Such components or such evidence must clearly show that the defect was caused by faulty material or poor workmanship.Warranty claim will be accepted only if it is submitted on a proper claims form with proof of purchase and received within sixty (60) days from the date of discovery of the defect.Warranty claims will be considered only if the "Installation Notice" has been duly filled in and returned to BTI within thirty (30) days from the date of installation.

3. BTI will at it's option, repair or refurbish the defective part(s) without charge to the initial user or may elect to issue full or partial credit toward the purchase of a new part(s). The extent of credit issued, which will be in the form of a "Credit Memo", will be determined by pro-rating against the normal life of the part(s) in question.

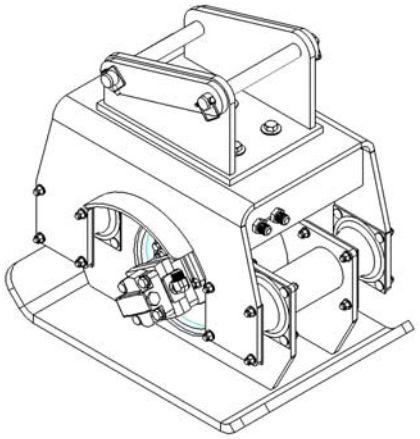
4. BTI is not responsible for mileage, travel time, travel expenses, overtime labor, and any freight expenses required to facilitate the repair.

5. This warranty does not apply if the product has been damaged by accident, abuse, misuse, misapplication or neglect, or as a result of service, disassembly or modification, without BTI's express authorization.

6. BTI assumes no liability beyond the replacement of defective parts or materials and/or the correction of such defective parts or materials.

7. BTI neither assumes nor authorizes any other person to assume for it any liability in connection with the sale of its products other than that specifically stated herein.

8. THISWARRANTY IS EXPRESSLY IN LIEU OF ANYAND ALL OTHERWARRANTIES. EXCEPT AS EXPRESSLY SET FORTH HEREIN, BTI MAKES NO REPRESENTATION ORWARRANTY, STATUTORY, EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS MANUFACTURED AND/OR SUPPLIED BY BTI, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER MATTER. IN NO EVENT, INCLUDING IN THE CASE OF A CLAIM OF NEGLIGENCE, SHALL BTI BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES..

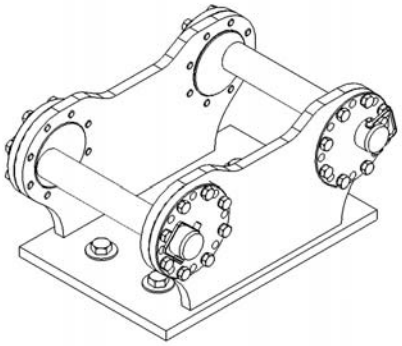


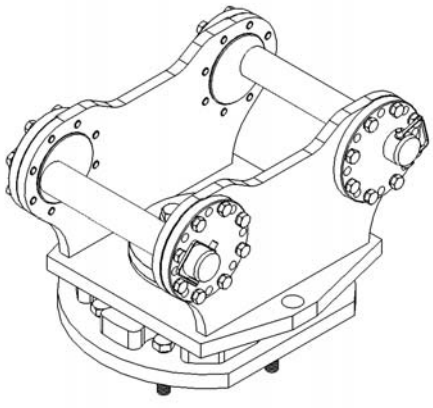
Bolt-On Rigid Top Mount:

Standard equipment on TC51, TC71, & TC301

Bolt-On QA Non-Swivel Top Mount:

Available as an option on the TC71





QA Swivel Top Mount:

Standard equipment on TC92 & TC152. Optional Bolt-On on the TC71.

COMPACTORS	BTI Compactors	2
TC51L	Compactor Low Flow	4
TC51H	Compactor High Flow	6
TC71FC	Compactor Flow Control	8
TC71H	Compactor High Flow	10
TC92	Compactor	12
TC152L	Compactor Low Flow	14
TC152H	Compactor High Flow	16
TC301L	Compactor Low Flow	18
TC301H	Compactor High Flow	20

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An ASTEC COMPANY

BTI Compactors

BTI Compactors

ITEM	PART No.	DESCRIPTION	QTY.
1	TC51L	Compactor Low Flow (Page 4)	1
3	TC51H	Compactor High Flow (Page 6)	1
4	TC71FC	Compactor Flow Control (Page 8)	1
6	TC71H	Compactor High Flow (Page 10)	1
7	TC92	Compactor (Page 12)	1
8	TC152L	Compactor Low Flow (Page 14)	1
9	TC152H	Compactor High Flow (Page 16)	1
10	TC301L	Compactor Low Flow (Page 18)	1
11	TC301H	Compactor High Flow (Page 20)	1

TC51L

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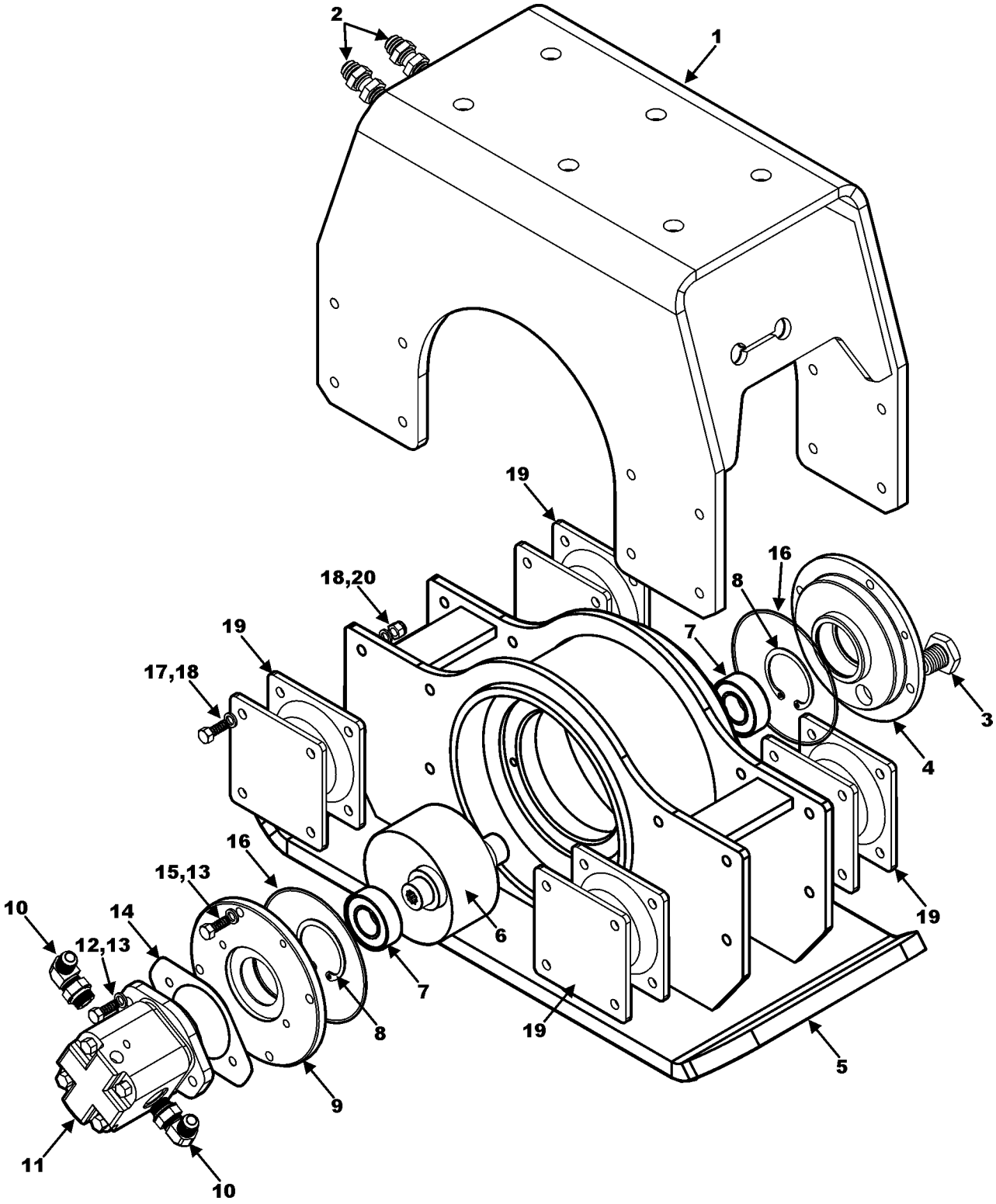
Compactor Low Flow

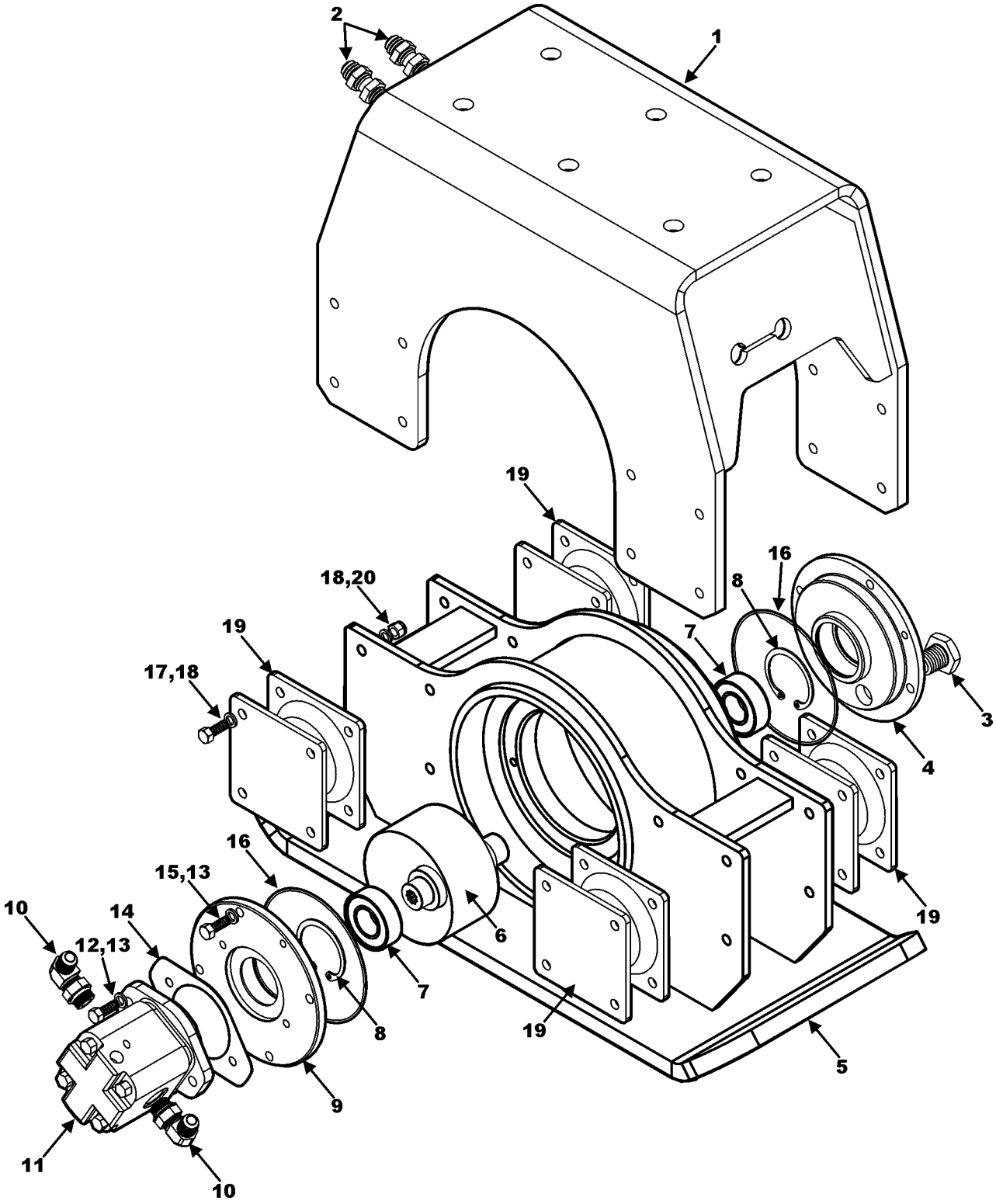


Compactor Low Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	350-0007	Upper Weldment	1
2	1800424	Cap (not shown) 210292-8 JIC Cap	2
3	1801470	Pipe Plug 0.75 NPT SOC. HD	1
4	650-8780	Bearing Housing	1
5	350-0002	Lower Weldment	1
6	650-8795	Eccentric Assembly	1
7	1008414	Bearing	2
8	1008453	Retaining Ring	2
9	650-8796	Bearing Housing	1
10	1800301	Fitting (2062-10-8)	2
11	1009497	Hydraulic Motor	1
12	1912007	Bolt 3/8" NF X 1" GR.8	2
13	1001856	Nordlock Washer Set	2
14	1008798	Gasket	1
15	1912296	Bolt Gr 8 .375 nc x 1.0 Hex Hd.	8
16	1802063	O-Ring	8
17	1912132	Bolt .375 NC X 1.250" Gr 8	32
18	1941002	.375" Flat Washer	64
19	1009487	Isolator	4
20	1932008	Locknut .375NC ESNA	32
21	H405-HHH-020	Hose Assembly	2

TC51H

Compactor High Flow

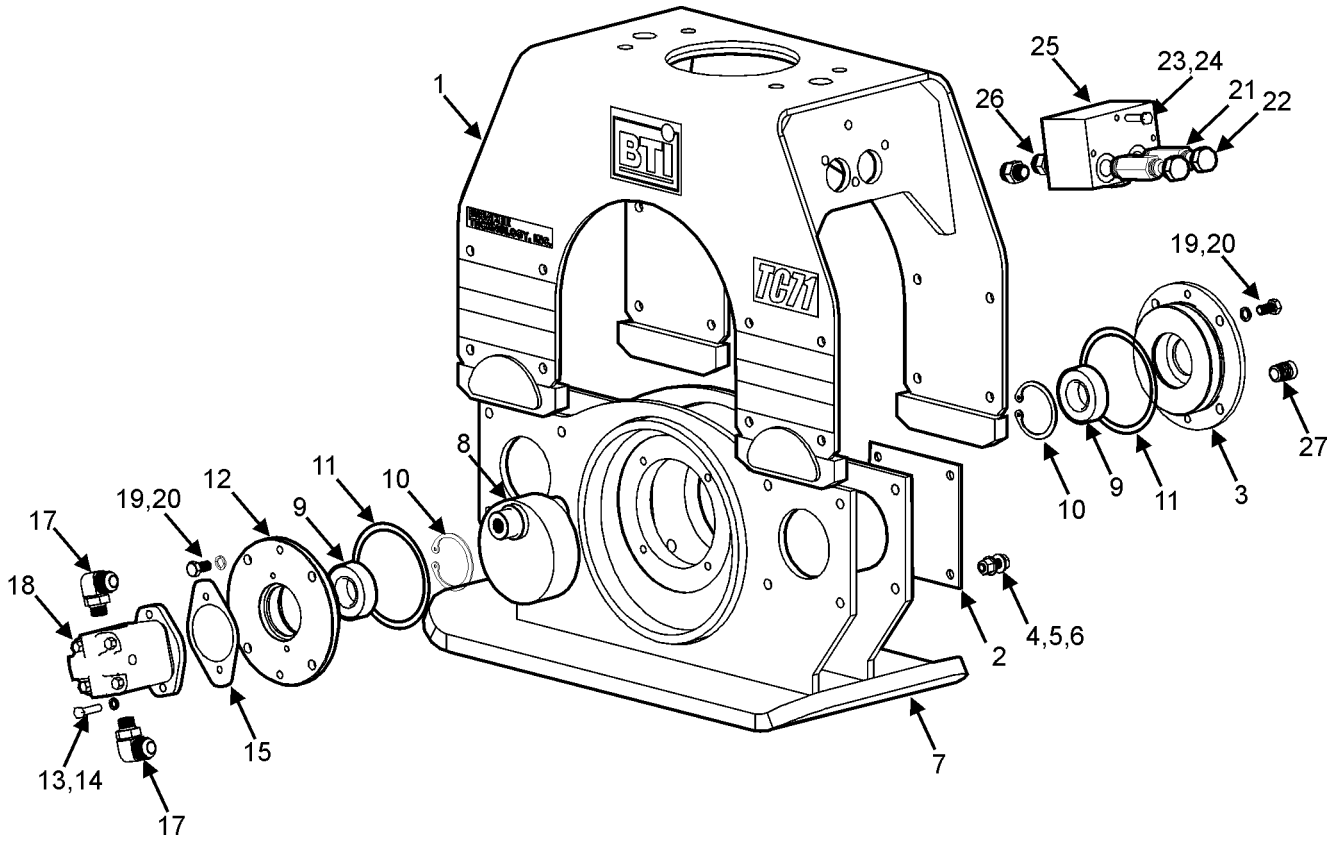


Compactor High Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	350-0007	Upper Weldment	1
2	1800424	Cap (not shown) 210292-8 JIC Cap	2
3	1801470	Pipe Plug 0.75 NPT SOC. HD	1
4	650-8780	Bearing Housing	1
5	350-0002	Lower Weldment	1
6	650-8795	Eccentric Assembly	1
7	1008414	Bearing	2
8	1008453	Retaining Ring	2
9	650-8796	Bearing Housing	1
10	1800301	Fitting (2062-10-8)	2
11	1009488	Hydraulic Motor	1
12	1912007	Bolt 3/8" NF X 1" GR.8	2
13	1001856	Nordlock Washer Set	2
14	1008798	Gasket	1
15	1912296	Bolt Gr 8 .375 nc x 1.0 Hex Hd.	8
16	1802063	O-Ring	8
17	1912132	Bolt .375 NC X 1.250" Gr 8	32
18	1941002	.375" Flat Washer	64
19	1009487	Isolator	4
20	1932008	Locknut .375NC ESNA	32
21	H405-HHH-020	Hose Assembly	2

TC71FC

Compactor Flow Control



Compactor Flow Control

ITEM	PART No.	DESCRIPTION	QTY.
1	360-0002	Upper Body	1
2	1008925	Isolator	4
3	220-2708	Bearing Housing	1
4	1912020	0.50NC X 1.5 HHCS Bolt GR.8	32
5	1932014	.50 NC ESNA Locknut	32
6	1941004	Flat Washer .50	34
7	360-0003	Lower Housing	1
8	220-2713	Eccentric Assembly	1
9	1008936	Bearing	2
10	1008935	Retaining Ring	2
11	1800849	0-Ring	2
12	220-2707	Motor Side Housing Bearing	1
13	1912009	Bolt 3/8" NC X 1 1/2" GR.8	2
14	1001856	Nordlock Washer Set	2
15	1008798	Gasket	1
16	1800571	Fitting 900598-6	1
17	1800288	Fitting 2062-10-8	2
18	1009505	Hydraulic Motor	1
19	1912128	Bolt 1/2" NC X 1" GR.8	8
20	1001857	Nordlock Washer Set M12	8
21	1802251	Fitting	2
22	1800418	Fitting 210292-12	2
23	1912009	Bolt 3/8" NC X 1 1/2" GR.8	4
24	1001856	Nordlock Washer Set	4
25	1009520	Flow Control Unit	1
26	1800175	Fitting 202702-10-12	2
27	1801470	Pipe Plug 0.75 NPT SOC. HD	1
28	H409-KKK-025	Hose Assembly	1
29	H410-KKK-023	Hose Assembly	1
30	360-0110	Motor Repair Kit	REF

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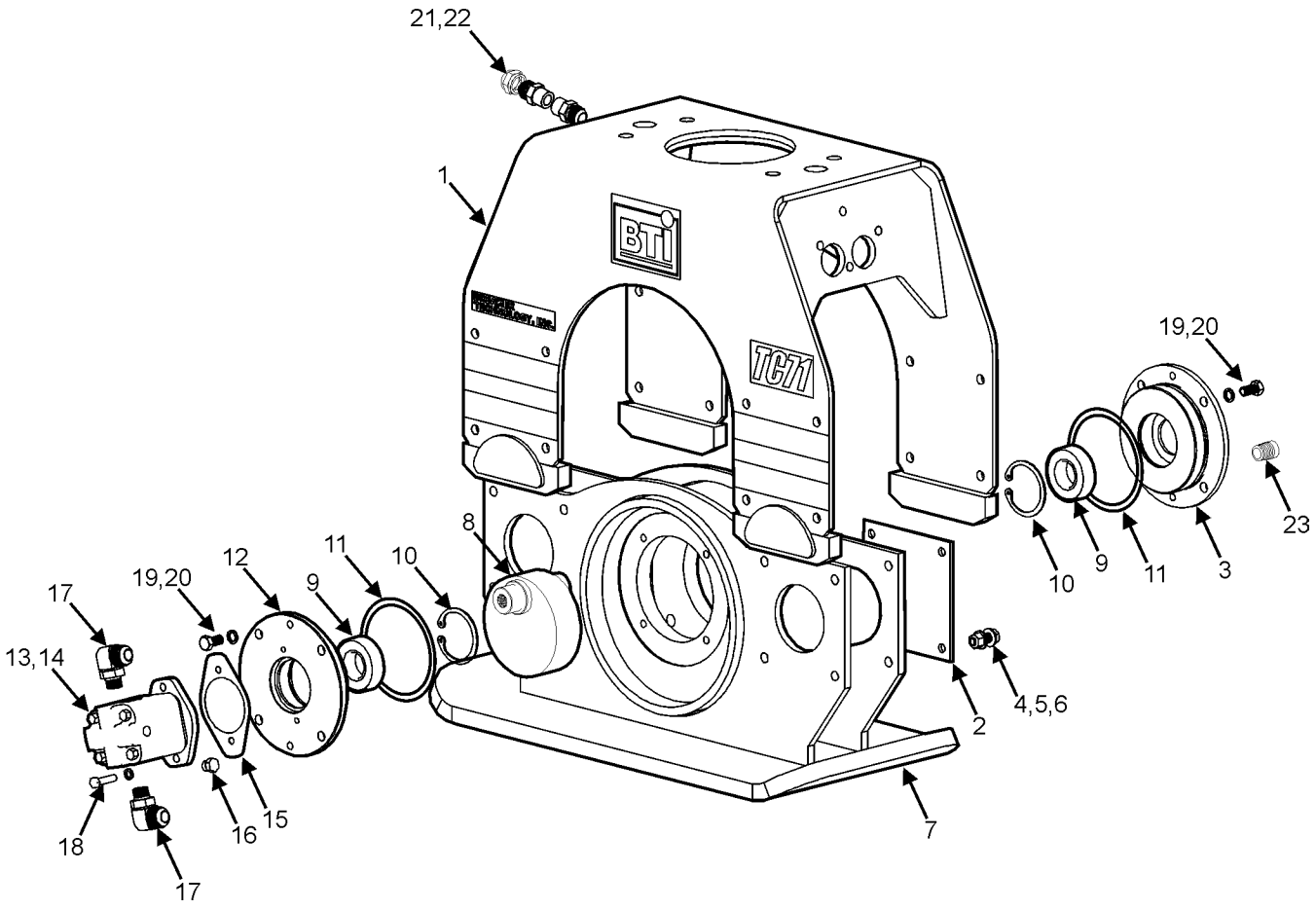
Compactor High Flow



Compactor High Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	360-0002	Upper Body	1
2	1008925	Isolator	4
3	220-2708	Bearing Housing	1
4	1912271	Grade 8 Bolt	32
5	1932014	.50 NC ESNA Locknut	32
6	1941004	Flat Washer .50	34
7	360-0003	Lower Housing	1
8	220-2713	Eccentric Assembly	1
9	1008936	Bearing	2
10	1008935	Retaining Ring	2
11	1800849	0-Ring	2
12	220-2707	Motor Side Housing Bearing	1
13	1912009	Bolt 3/8" NC X 1 1/2" GR.8	2
14	1001856	Nordlock Washer Set	2
15	1008798	Gasket	1
16	1800571	Fitting 900598-6	1
17	1800288	Fitting 2062-10-8	2
18	1009505	Hydraulic Motor	1
19	1912128	Bolt 1/2" NC X 1" GR.8	4
20	1001857	Nordlock Washer Set M12	4
21	1800080	Fitting 2021-12-12	4
22	1800418	Fitting 210292-12	2
23	1801470	Pipe Plug 0.75 NPT SOC. HD	1
24	H409-KKK-025	Hose Assembly	1
25	H410-KKK-023	Hose Assembly	1
26	360-0110	Motor Repair Kit	REF

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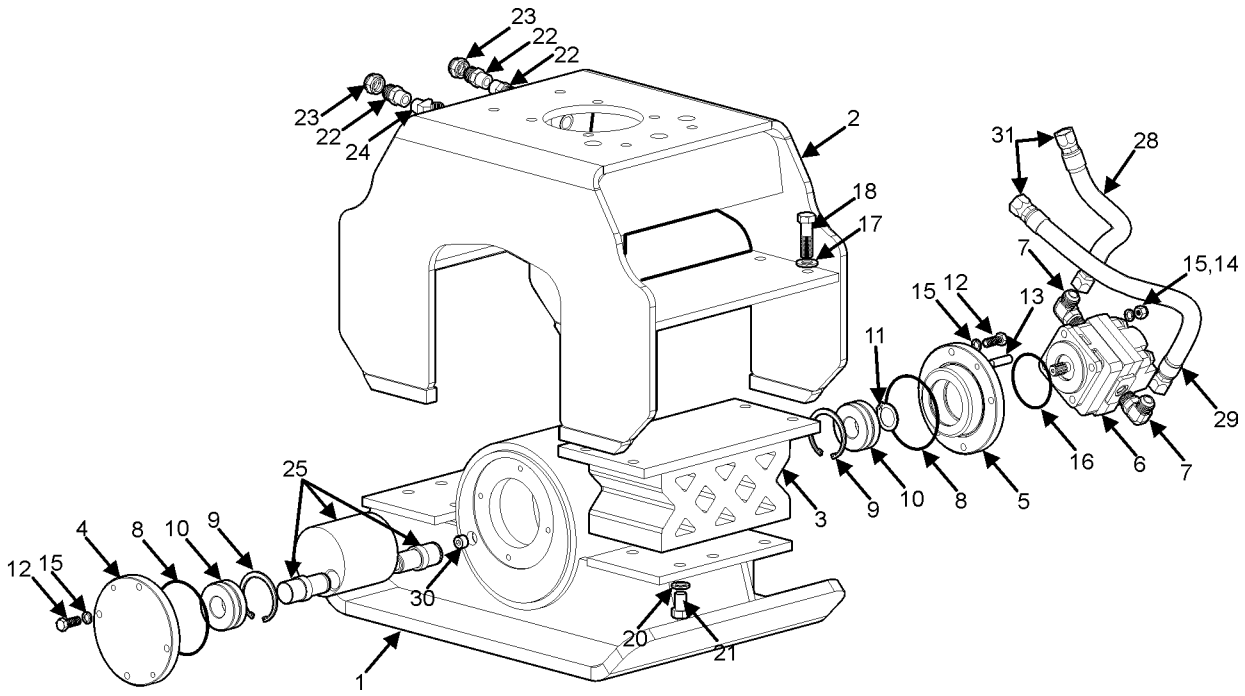
Compactor



Compactor

ITEM	PART No.	DESCRIPTION	QTY.
1	370-0023	Lower Frame	1
2	370-0030	Upper Frame	1
3	650-8659	Lattice Mount	2
4	650-8620	Bearing Housing	1
5	650-8619	Bearing Housing	1
6	1009833	Hydraulic Motor	1
7	1800289	Fitting 2062-12-12	2
8	1801982	O-Ring	2
9	1007793	Retaining Ring	2
10	1001531	Bearing	2
11	1007794	Retaining Ring External	1
12	1912020	0.50NC X 1.5 HHCS Bolt GR.8	8
13	650-8641	Stud	4
14	1932015	Locknut 1/2"-20UNF	4
15	1001857	Nordlock Washer Set M12	12
16	1801983	O-Ring	1
17	1941015	.75 Hardened Washer	8
18	1912048	Bolt	8
19	1932020	Locknut 3/4"-0.750 NC NT-8419	8
20	1001858	Nordlock Washer Set M20	20
21	1912290	Bolt	12
22	1800080	Fitting 2021-12-12	4
23	1800418	Fitting 210292-12	2
24	1800115	Fitting	1
25	650-8618	Eccentric Assembly	1
28	H405-KKK-014	Hose Assembly	1
29	H408-KKK-022	Hose Assembly	1
30	1800676	Pipe Plug .5 NPT SOC HD	1
31	1801292	Fitting 2070-12-12	2

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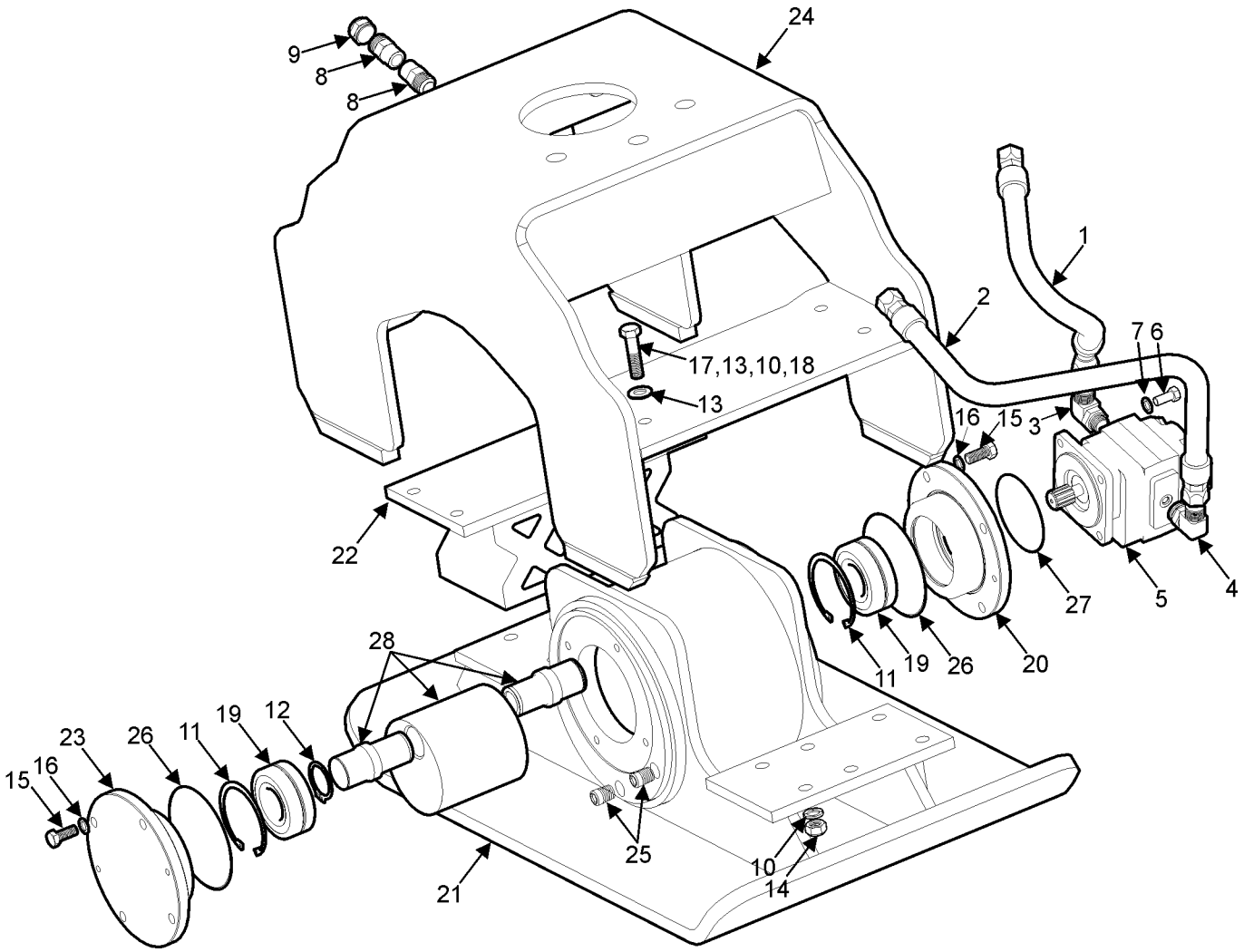
Compactor Low Flow



Compactor Low Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	H408-LLL-021	Hose Assembly	1
2	H408-LLL-026	Hose Assembly	1
4	1800943	Fitting 2062-12-16	2
5	1010709	Motor c/w Check Valve	1
6	1912097	Bolt 1/2" NF X 1 1/4" GR.8	4
7	1001857	Nordlock Washer Set M12	4
8	1800086	Fitting 2021-16-16	4
9	1800419	Fitting 210292-16	2
10	1001858	Nordlock Washer Set M20	20
11	1007783	Retaining Ring Internal	2
12	1007784	Retaining Ring	1
13	1941015	.75 Hardened Washer	8
14	1912290	Bolt	12
15	1912138	Bolt 0.625" NC X 1.5" GR.8	8
16	1001768	Nordlock Washer Set	8
17	1912086	Bolt 3/4" NC X 3" LG. GR.8	8
18	1932020	Locknut 3/4"-0.750 NC NT-8419	8
19	1002182	Bearing	2
20	650-8593	Bearing Housing Motor Side	1
21	380-0021	Lower Housing	1
22	650-8659	Lattice Mount	2
23	650-8592	Bearing Housing	1
24	380-0027	Top Frame	1
25	1801470	Pipe Plug 0.75 NPT SOC. HD	2
26	1801980	O-Ring	2
27	1800947	O-Ring	1
28	650-8589	Eccentric Assembly	1

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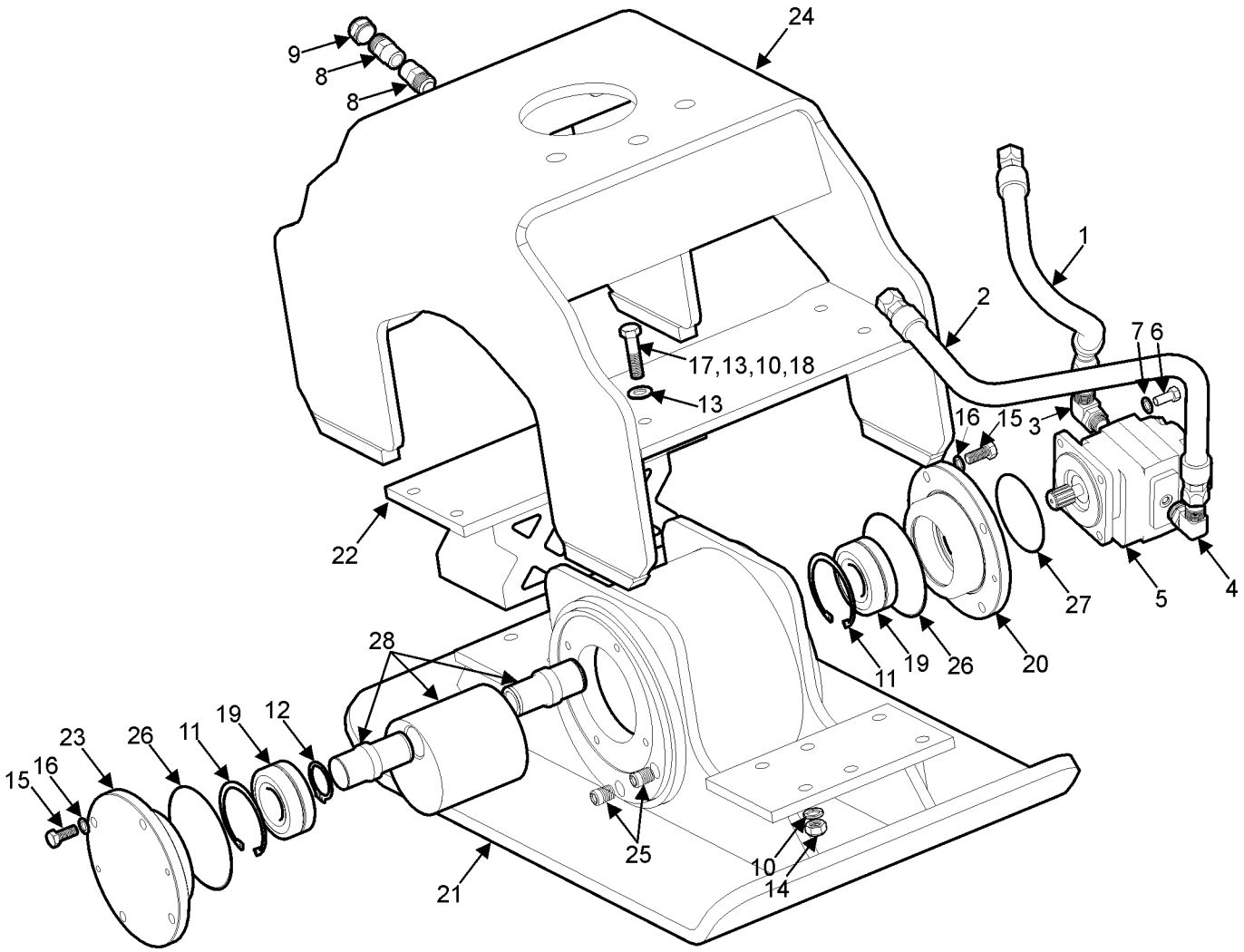
Compactor High Flow



Compactor High Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	H408-LLL-021	Hose Assembly	1
2	H408-LLL-026	Hose Assembly	1
3	1800292	Fitting 2062-16-16	1
4	1800943	Fitting 2062-12-16	1
5	1010710	Motor c/w Check Valve	1
6	1912097	Bolt 1/2" NF X 1 1/4" GR.8	4
7	1001857	Nordlock Washer Set M12	4
8	1800086	Fitting 2021-16-16	4
9	1800419	Fitting 210292-16	2
10	1001858	Nordlock Washer Set M20	20
11	1007783	Retaining Ring Internal	2
12	1007784	Retaining Ring	1
13	1941015	.75 Hardened Washer	8
14	1912290	Bolt	12
15	1912138	Bolt 0.625" NC X 1.5" GR.8	8
16	1001768	Nordlock Washer Set	8
17	1912086	Bolt 3/4" NC X 3" LG. GR.8	8
18	1932020	Locknut 3/4"-0.750 NC NT-8419	8
19	1002182	Bearing	2
20	650-8593	Bearing Housing Motor Side	1
21	380-0021	Lower Housing	1
22	650-8659	Lattice Mount	2
23	650-8592	Bearing Housing	1
24	380-0027	Top Frame	1
25	1801470	Pipe Plug 0.75 NPT SOC. HD	2
26	1801980	O-Ring	2
27	1800947	O-Ring	1
28	650-8589	Eccentric Assembly	1

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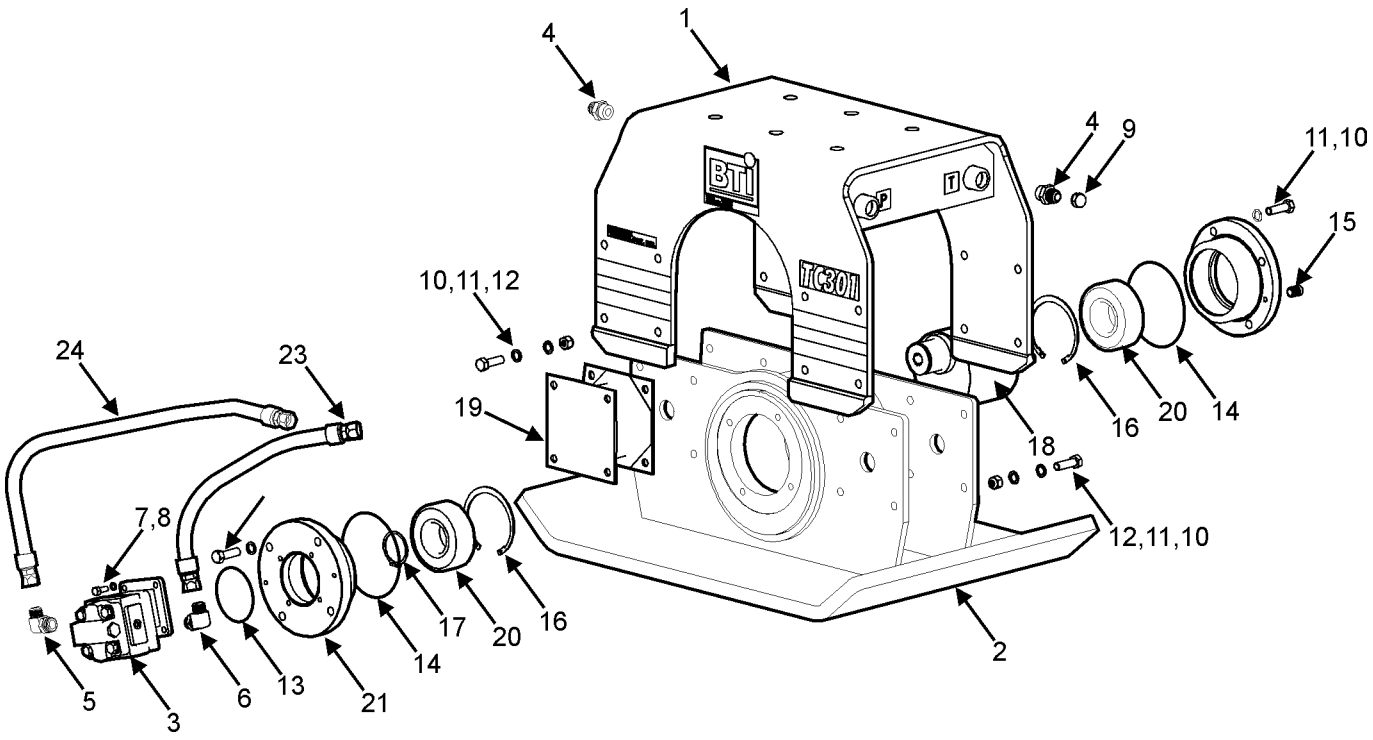
Compactor Low Flow



Compactor Low Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	390-0002	Saddle Weldment	1
2	390-0015	Eccentric Housing	1
3	1010710	Motor c/w Check Valve	1
4	1800087	Fitting 2021-20-16	4
5	1800292	Fitting 2062-16-16	1
6	1800943	Fitting 2062-12-16	1
7	1912097	Bolt 1/2" NF X 1 1/4" GR.8	4
8	1001857	Nordlock Washer Set M12	4
9	1800419	Fitting 210292-16	2
10	1912046	.75NC X 2.5 HH Bolt GR.8	40
11	1001858	Nordlock Washer Set M20	72
12	1932052	Lock Nut .750 NC ESNA	32
13	1800947	O-Ring	1
14	1801855	O-ring	2
15	1801470	Pipe Plug 0.75 NPT SOC. HD	2
16	1006919	Retaining Ring	2
17	1006920	Retaining Ring	1
18	650-8527	Eccentric Assembly	1
19	1007828	Rubber Mount	4
20	1006886	Spherical Roller Bearing	2
21	650-8525	Bearing Housing	1
22	650-8526	Bearing Housing	1
23	H405-LLL-023	Hose Assembly	1
24	H405-LLL-033	Hose Assembly	1

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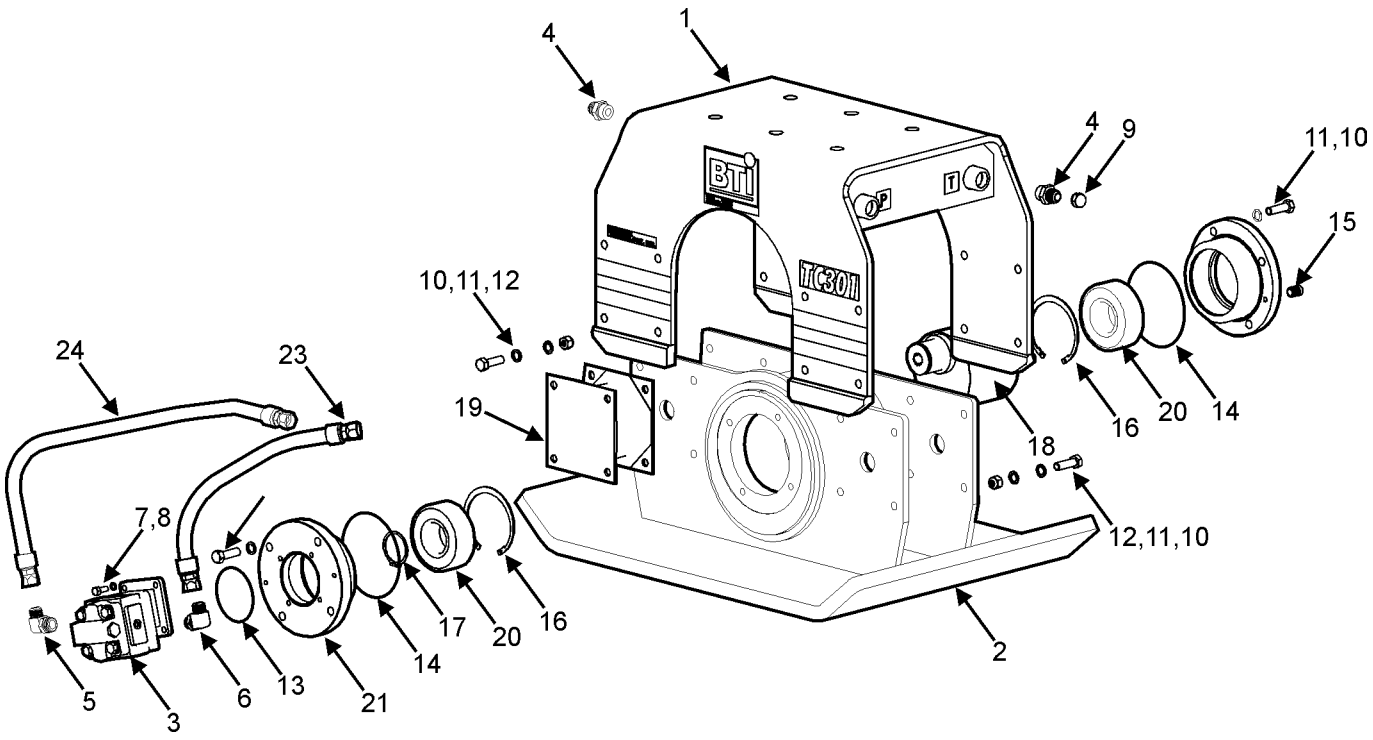
Compactor High Flow



Compactor High Flow

ITEM	PART No.	DESCRIPTION	QTY.
1	390-0002	Saddle Weldment	1
2	390-0015	Eccentric Housing	1
3	1010711	Motor c/w check valve	1
4	1800090	Fitting 2021-20-20 2021-20-20	4
5	1800292	Fitting 2062-16-16	1
6	1800943	Fitting 2062-12-16	1
7	1912097	Bolt 1/2" NF X 1 1/4" GR.8	4
8	1001857	Nordlock Washer Set M12	4
9	1800419	Fitting 210292-16	2
10	1912046	.75NC X 2.5 HH Bolt GR.8	40
11	1001858	Nordlock Washer Set M20	72
12	1932052	Lock Nut .750 NC ESNA	32
13	1800947	O-Ring	1
14	1801855	O-ring	2
15	1801470	Pipe Plug 0.75 NPT SOC. HD	2
16	1006919	Retaining Ring	2
17	1006920	Retaining Ring	1
18	650-8527	Eccentric Assembly	1
19	1007828	Rubber Mount	4
20	1006886	Spherical Roller Bearing	2
21	650-8525	Bearing Housing	1
22	650-8526	Bearing Housing	1
23	H405-LLL-023	Hose Assembly	1
24	H405-LLL-033	Hose Assembly	1

NUMERICAL INDEX

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1001768	Nordlock Washer Set	15,17
1001856	Nordlock Washer Set	5,7,9,11
1001857	Nordlock Washer Set	9,11,13,15,17,19 21
1001858	Nordlock Washer Set	13,15,17,19,21
1002182	Bearing	15,17
1006886	Spherical Roller Bearing	19,21
1006919	Retaining Ring	19,21
1006920	Retaining Ring	19,21
1007783	Retaining Ring	15,17
1007784	Retaining Ring	15,17
1007793	Retaining Ring	13
1007794	Retaining Ring	13
1007828	Rubber Mount	19,21
1008414	Bearing	5,7
1008453	Retaining Ring	5,7
1008798	Gasket	5,7,9,11
1008925	Isolator	9,11
1008935	Retaining Ring	9,11
1008936	Bearing	9,11
1009487	Isolator	5,7
1009488	Hydraulic Motor	7
1009497	Hydraulic Motor	5
1009505	Hydraulic Motor	9,11
1009520	Flow Control Unit	9
1009833	Hydraulic Motor	13
1010709	Motor	15
1010710	Motor	17,19
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1800080	Fitting	11,13
1800086	Fitting	15,17
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1800289	Fitting 2062-12-12	13
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1801982	O-Ring	13
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1802063	O-Ring	5,7
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1912097	Bolt	15,17,19,21
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Nordlock Washer Set M20	1001858	13,15,17,19,21
O-Ring	1800947	15,17,19,21
O-ring	1801855	19,21
O-Ring	1801980	15,17
O-Ring	1801982	13
O-Ring	1801983	13
O-Ring	1802063	5,7
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