

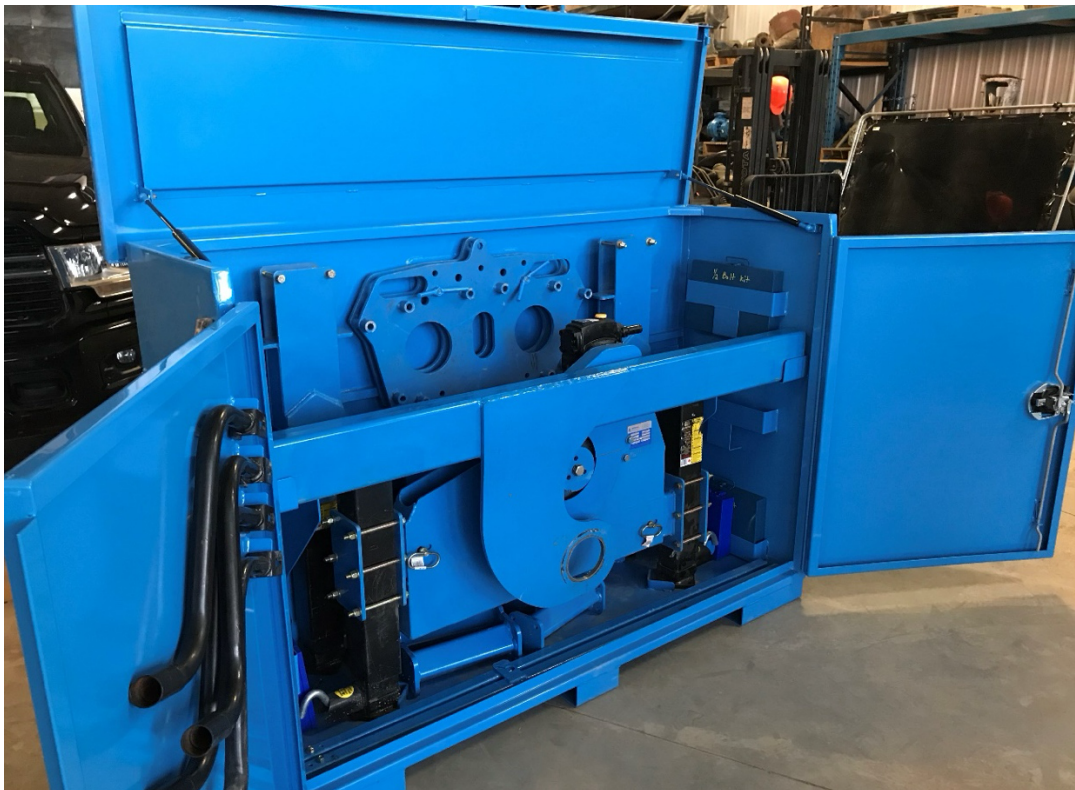
## Big Block Inverting Operation Procedure: BILT

Before use of this equipment, complete a thorough inspection for any defects or damage. Do not use if any cracks, bending, twists, deformation or any other concerns are noticed. This equipment has been designed to easily lift and rotate natural gas engine blocks with crankshaft installed, all other engine components must be removed prior to use to maintain equipment balance. Failure to do so can result in personal harm and damage to equipment. Use of this equipment outside of its engineered and designed intent is solely the responsibility of the operator. This equipment is to be used only by trained and authorized personal.

WEIGHT: 306 kg (675 lbs)

WORKING LOAD LIMIT: 7257 kg (16000 lbs)

ROTATING HOLDING TORQUE: 1818 kg (4000 lbs)



## Procedure:

1. Remove components from travel box and inspect for defects. Place inside work area in orderly fashion.
2. Inspect work area floor for proper supporting structure where equipment legs will be placed, move any loose items and ensure area is oil and dirt free.
3. Use tap to chase bolt holes on both front and rear of engine block where mounting plate will attach, blow dust and debris out of holes.
4. Ensure jack legs are in the fully retracted position.
5. Lift rotating frame and adaptor plate assembly into place with crane at flywheel end of the engine block, align boltholes in block to plate and fasten with supplied bolts. Use studs to assist in alignment if required.
6. Adjust jack leg width at flywheel end by removing pins and sliding legs outward to secure location. Do not over-extend leg extensions or crank handle connection. Reinsert pins and secure.
7. Using the quick adjust handles on each jack, allow the jack leg extensions to fully extend until they reach a solid surface. Failure to fully extend these legs may result in not being able to fully lift the engine block to the height required to rotate. If necessary, bolt on extensions to jack leg. Use wood shims if necessary under the feet.
8. Attach front-end lifting plate to engine block boltholes with bolts supplied.
9. Inspect pivot shaft on front plate, wipe clean and apply a generous amount of grease to the pivot stub shaft surface.
10. Inspect bushing bore of spreader bar, wipe clean.
11. Install spreader bar onto front plate pivot shaft taking note of orientation of spreader bar arm for rotation of engine block/crankshaft stub on Waukesha engines. Secure with 3 supplied bolts.
12. Install supplied jacks under spreader bar, clamp jacks to spreader bar with bolts supplied positioning the legs over a solid surface. Ensure the jack legs are fully retracted. Use quick adjust handles to extend jack legs until they come in contact with lifting surface. **Note\*\*Keep spreader bar beam as level as possible at all times.\*\***
13. When final checks have been made and block is free from bed, carefully in unison with front and back working together begin lifting block. The block will need to be raised the full extension of the jacks (13"-14") to allow full rotation of the engine block.
14. Once block is fully lifted, carefully begin rotating the engine block using the gearbox mounted on the rotation frame. This may be done with the ½" drill supplied, or by hand with a ratchet. Avoid using impact wrenches as this is hard on the gearbox. **\*\*Note. Check direction of rotation prior to beginning the rotation of the block. The crankshaft stub on VHP engines will only allow the block to be rotated in one direction. Failure to rotate in the proper direction can/will cause damage to the crankshaft.\*\***
15. Rotate block until it is fully inverted.
16. Use dunnage across the bed frame to allow the block to be lowered and secured for crankshaft removal.

17. Remove crankshaft, install new.
18. Raise the block off the dunnage and remove.
19. Reverse rotation of the block into its upright position.
20. In unison, crank the jacks down to lower block back onto the bed.
21. Remove components in reverse order, clean and inspect and re-store in travel box.

## **Big Block Inversion Support**

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