OPERATION, PREVENTIVE MAINTENANCE AND TROUBLESHOOTING MANUAL

MODEL VT620-36
SERIES
LONGWALL MOVER

NOTICE

THIS GUIDE CONTAINS IMPORTANT OPERATION AND SAFETY INFORMATION AND SHOULD BE KEPT AVAILABLE TO THOSE PERSONNEL INSTALLING AND OPERATING THIS EQUIPMENT.

VERSATRAC T.M.

BUCYRUS®

A6474X153

MAJOR HAZARDS

AREA WHERE HAZARD CAN OCCUR	HAZARD WHAT CAN HAPPEN IF PRECAUTIONS AND SAFEGUARDS ARE NOT OBEYED	SAFEGUARDS HOW TO AVOID THE HAZARD
BATTERY	The battery produces lethal amounts of power whether connected to the machine or not. Battery covers could fall crushing hands or arms. Batteries produce explosive gases that could be ignited causing burns or explosions. Batteries contain strong acid that could cause severe burns if spilled or splashed on body parts or in the eyes.	The battery should be maintained by qualified personnel. Be sure cover supports are in place when working on battery. Batteries should be well vented before servicing particulary if welding or burning on the battery. Batteries should be maintained by qualified personnel. Protective clothing, gloves, and eyeware must be worn when working on batteries. Batteries should be maintained by qualified personnel.
HYDRAULIC	If part of a hydraulic circuit is removed while there is a load on a cylinder in the circuit, the cylinder could drop the load.	Securely block or remove any load from the cylinder before disconnecting the hose or circuit.

CAUTION

IF THE HYDRAULIC "SYSTEMS PRESSURE" GAUGE (FIGURE 3 PAGE 9) SHOWS MORE THAN 2250 PSI, SHUTDOWN THE MODEL VT636 AND CALL A MAINTENANCE PERSON (SEE SHUTDOWN PROCEDURE PAGE 27).

"STEERING" CONTROL LEVER - The left control lever, (Figure 2 page 8), which is also the highest control lever, is used to control the steering of the Model VT620. To steer left, push the steering control lever slowly away from the operator. To steer right, pull the steering control lever slowly toward the operator. If the steering control lever is jerked or moved too fast, the Model VT620 will jerk and move too fast to the turning limit. This fast movement is dangerous in a crowded area or a narrow space. The steering control is designed for slow movement by opening the control valve a small amount (moving the steering control lever a short distance) and for fast movement by opening the valve all the way (moving the steering control lever all the way to the limit of its travel). This steering arrangement is considered to be normal for the Model VT620.

WARNING

DO NOT MOVE THE "TILT" OR "LIFT" ATTACHMENT CONTROL LEVER IF ANYONE IS NEAR ENOUGH TO THE LIFT ATTACHMENT TO HAVE ANY PART OF THE BODY UNDERNEATH.

"TILT" LIFT FORK AND ATTACHMENT CONTROL LEVER - The first control lever from the top (Figure 5 page 14) controls the forks and attachments (or optional bucket, if the Model VT620 is equipped with a bucket) in the tilting mode. The forks or lift attachment is hinged at the bottom and moved by two (2) hydraulic cylinders attached near the top. The "TILT" lift attachment control lever allows the operator to tilt the lift attachment up (back) or down (forward). The lift attachment control lever has three (3) positions: "DOWN," "UP," and "NEUTRAL."

To **tilt** the lift attachment **forward**, **push** the lever to the **"DOWN"** position.

WARNING

IF THE LIFT ATTACHMENT CONTROL LEVER IS HELD IN THE "DOWN" POSITION, THE LIFT ATTACHMENT OR BUCKET WILL CONTINUE TO LOWER UNTIL IT RAISES THE FRONT WHEELS OF THE MODEL VT636 OFF THE SURFACE.

To **tilt** the lift attachment **backward**, **pull** the lever to the **"UP"** position.

NOTICE

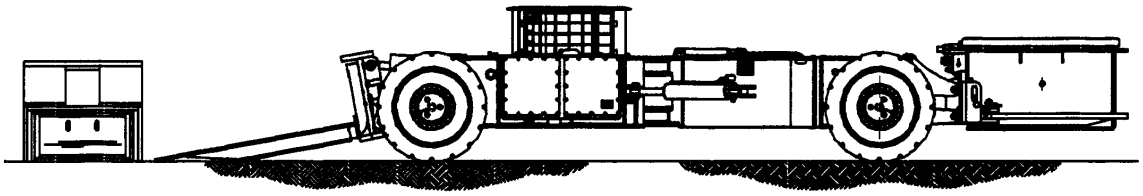
THE LIFT ATTACHMENT LEVER WILL ALWAYS RETURN TO THE NEUTRAL POSITION WHEN RELEASED. COUNTER BALANCE VALVES ON THE CYLINDERS TRAPS FLUID IN THE CYLINDERS, HOLDING THE LIFT ATTACHMENT IN ANY DESIRED POSITION.

NOTICE

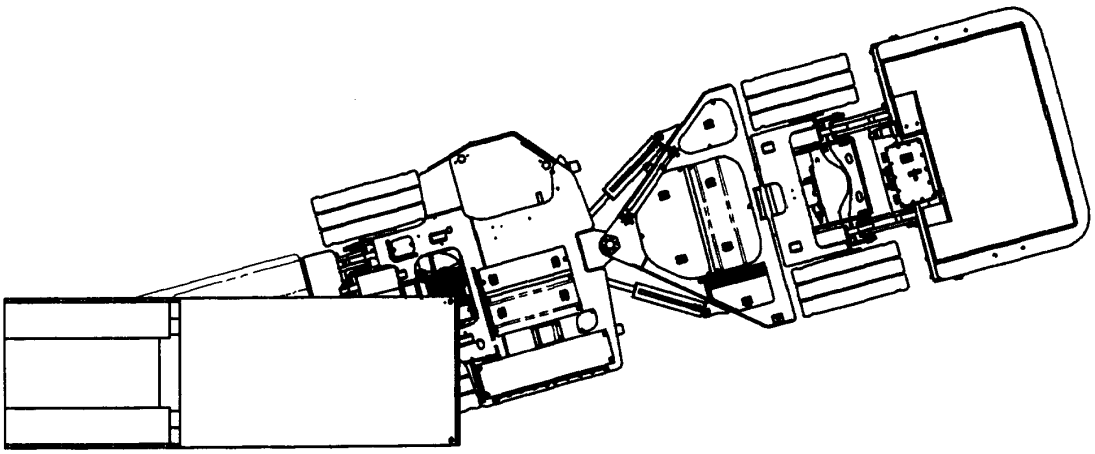
IF THE SHIELD IS NOT BEING PLACED ON BLOCKS, IT MAY BE NECESSARY TO LOWER THE LIFT ATTACHMENT SLIGHTLY BELOW GRADE BEFORE THE SHIELD WILL BEGIN TO SLIDE AWAY FROM IT.

NOTICE

IF THE SHIELD MUST BE MOVED A LONG DISTANCE, IT SHOULD BE RESTING AGAINST THE BACKSTOP OF THE LIFT. IF IT IS NOT (SEE SECTION ABOVE), IT CAN BE PULLED BACK AGAINST THE BACKSTOP WITH THE WINCH.



APPROACHING SHIELD FROM THE SIDE
FIGURE 12



LOADED CHOCK
FIGURE 13

UNLOADING FROM THE SIDE OF THE SHIELD:

1. Lower the lift attachment until the shield touches the surface or the chocks.

2. Back the Model VT620 away from the shield until the lift attachment is completely clear of the shield.

THIS COMPLETES THE PROCEDURES FOR LOADING AND UNLOADING THE LONGWALL SHIELD.

MAINTENANCE CAPACITIES AND SPECIFICATIONS

Drive System

Drive Motor:
Totally-enclosed, explosion-proof 128-volt, dual field, series wound, DC electric motor, coupled to a speed-reducing gear box.
Rating: 30 horsepower continuous
50 horsepower 1-hour rating

Motor Controller:
Solid state, stepless, SCR speed control.
Rating: 1200 amps
Current Limit is factory set at 1200 amps and should be adjusted periodically or any time a drive motor, SCR, or SCR Panel is changed.

Drive Axles:
Rigidly mounted planetary axles equipped with hydraulically power-applied, shaft speed, wet-disc brakes and optional operator selected differential lock.
Weight: 2085 lbs dry
2157 lbs wet

Drivelines:
72N Series

Hydraulic System

Pump Motor:
128-volt, totally-enclosed, fan-cooled, explosion-proof motor.
Rating: 10 horsepower continuous
15.8 horsepower 1 - hour rating

Hydraulic Pump:
Single section gear pump 1 1/2" gear width
Rating: 20 GPM
Maximum System Pressure: 2500 PSI

Filtration:
Suction to Pump: 100-mesh strainer inside hydraulic oil tank.
Pressure Filter (Between pump and relief valve) 25 micron cartridge-type.
Return Line Filter (Located in top of oil tank) 25 micron cartridge-type.
Strainer screens inside brake solenoid valve and accumulator charging valve.

Hydraulic System Pressures:

Main Hydrauiic System Relief	2250 PSI (Max)
Steering Relief (dual, each direction)	1600 PSI (Max)

EVERY THREE MONTHS

1. Lubricate the points marked on the lubrication chart (Figure 41 page 51) (For Lubricant Specifications see page 37).

2. Inspect the drive motor (Figure 36 below).

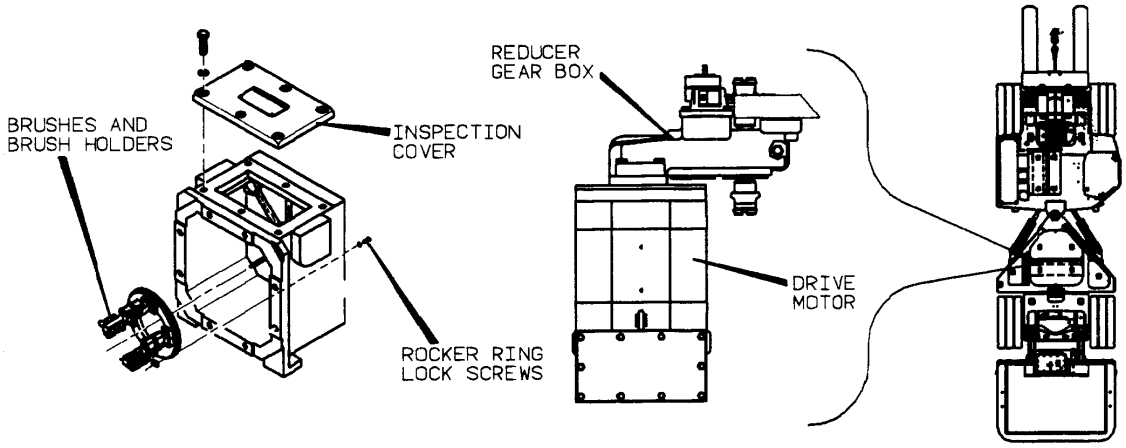
   A. Be sure that the circuit breaker lever is in the "OFF" position.
   B. Remove the cover from the front section of the Model VT620.
   C. Remove the inspection cover from the motor.
   D. Inspect the windings, commutator, brushes, armature, and terminal leads.

      (1) Windings should be dry and free of dust, grease, oil, and dirt.
      (2) The commutator should be clean and smooth with a medium polish and a light brown color.
      (3) Brushes and brush holders should be clean so that the brushes are free to move in the holders. Brushes should be replaced before wear permits the rivets to score the commutator.
      (4) The armature and field leads should be undamaged.
      (5) Terminal leads should be tight.

   E. Check that the assembly screws, bolts, and nuts are tight.
   F. Replace the inspection cover being sure that the flanges are clean.
   G. Replace the cover on the front section of the Model VT620.

NOTICE

THE DRIVE MOTOR OF THE MODEL VT636 DOES NOT REQUIRE PERIODIC LUBRICATION. THE BEARING IN THE SPEED REDUCER (GEAR BOX) END IS LUBRICATED BY OIL FROM THE SPEED REDUCER AND THE BEARING ON THE OPPOSITE END IS SEALED.



DRIVE MOTOR INSPECTION
FIGURE 36

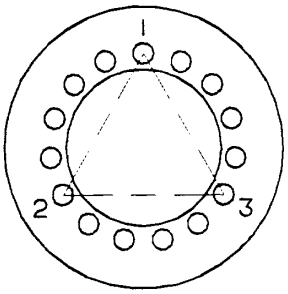
some examples of conditions that produce damaging high stresses in wheel assemblies. Also, the effects of corrosing or poorly fitted mating parts can produce surface irregularities that result in cracks and ultimate failure of a wheel.

A most common problem with tire/wheel installations is the incorrect tightening of wheel bolts or studs. Threaded fasteners perform there function of holding things together better when torque control is used in their tightening. Using an accurate torque wrench correctly is the best and most practical way of securing fasteners, Although torque value charts are available as a reference guide to proper tightening, OEM specifications should always be followed when tightening fasteners. However, proper torque values are of little benefit if certain other factors are not considered.

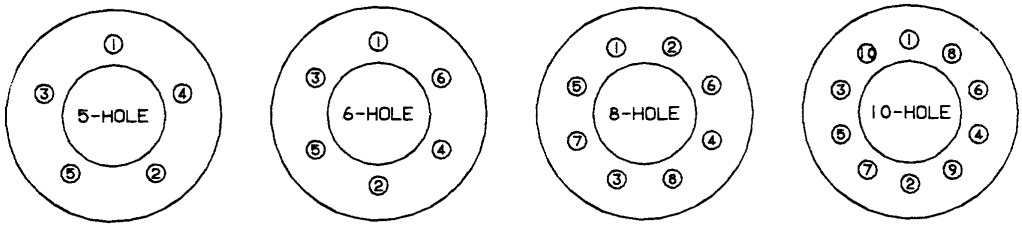
WHEEL MOUNTING TIPS: All fasteners should be examined before use. Any fastener that is worn, bent or has damaged threads should be replaced. Fastener threads should also be lightly coated with a protective substance, such as residual oils, wax or loctite, because any oxidation or rust will upset the torque-to-tension relationship.

Mating surface conditions should also be considered. The tightening surface under the bolt or nut should be carefully inspected. A fastener, when tightened against a softer material, will gall under these conditions, and much of the applied torque may be lost through head friction. It is very important when using higher strength fasteners to have a smooth, even surface under the bolt head. In some cases, hard flat washers and most lockwashers will provide a good tightening surface.

An other area of concern is cleanliness. All mating surfaces should be free of rust, dirt, oil, paint, etc. Also no paint of any kind should exist between a fastener and wheel disc surface. Any form of contamination between these surfaces will most likely lead to serious wheel problems.



WHEN TORQUING ANY WHEEL BOLT PATTERN, ALWAYS TORQUE IN A TRIANGULAR PATTERN.



TORQUE PATTERNS

TROUBLE, SYMPTOM OR CONDITION	PROBABLE CAUSE	TEST, CHECK AND/OR REMEDY
	4. Pump shaft turning too slowly. 5. Oil viscosity too high. 6. Wrong shaft rotation. 7. Pump shaft or parts broken. 8. Dirt in pump.	4. Gears are worn and need replacing. 5. Replace with recommended oil. 6. Check pump motor wiring. 7. Replace shaft or broken parts. 8. Clean pump.
OIL LEAKAGE AROUND PUMP	1. Shaft seal worn. 2. Head of oil on suction hose connection leaking. 3. Pump housing bolts loose or improperly torqued.	1. Replace seals. 2. Tighten bolts. Tighten or replace connections. 3. Tighten bolts.
EXCESSIVE PUMP WEAR	1. Abrasive dirt in hydraulic oil being circulated through the system. 2. Oil viscosity too low. 3. System pressure exceeding pump rating. 4. Pump misalignment.	1. Replace oil with clean hydraulic oil. 2. Replace with recommended oil. 3. Relief valve out of adjustment. 4. Realign pump.
PUMP PARTS INSIDE THE HOUSING ARE BROKEN	1. Seizure due to lack of oil. 2. Excessive system pressure above maximum pump rating. 3. Excessive torquing to housing bolts. 4. Solid matter being drawn in from reservoir and wedged in pump.	1. Check oil level. 2. Relief valve out of adjustment. 3. Loosen bolts and then retorque. 4. Remove and clean clogged area.
THE OPERATING PRESSURE CANNOT BE CHANGED	1. Valve spring broken. 2. Open valve in the system.	1. Replace the spring. 2. Find and close open valve.