Reliability at work

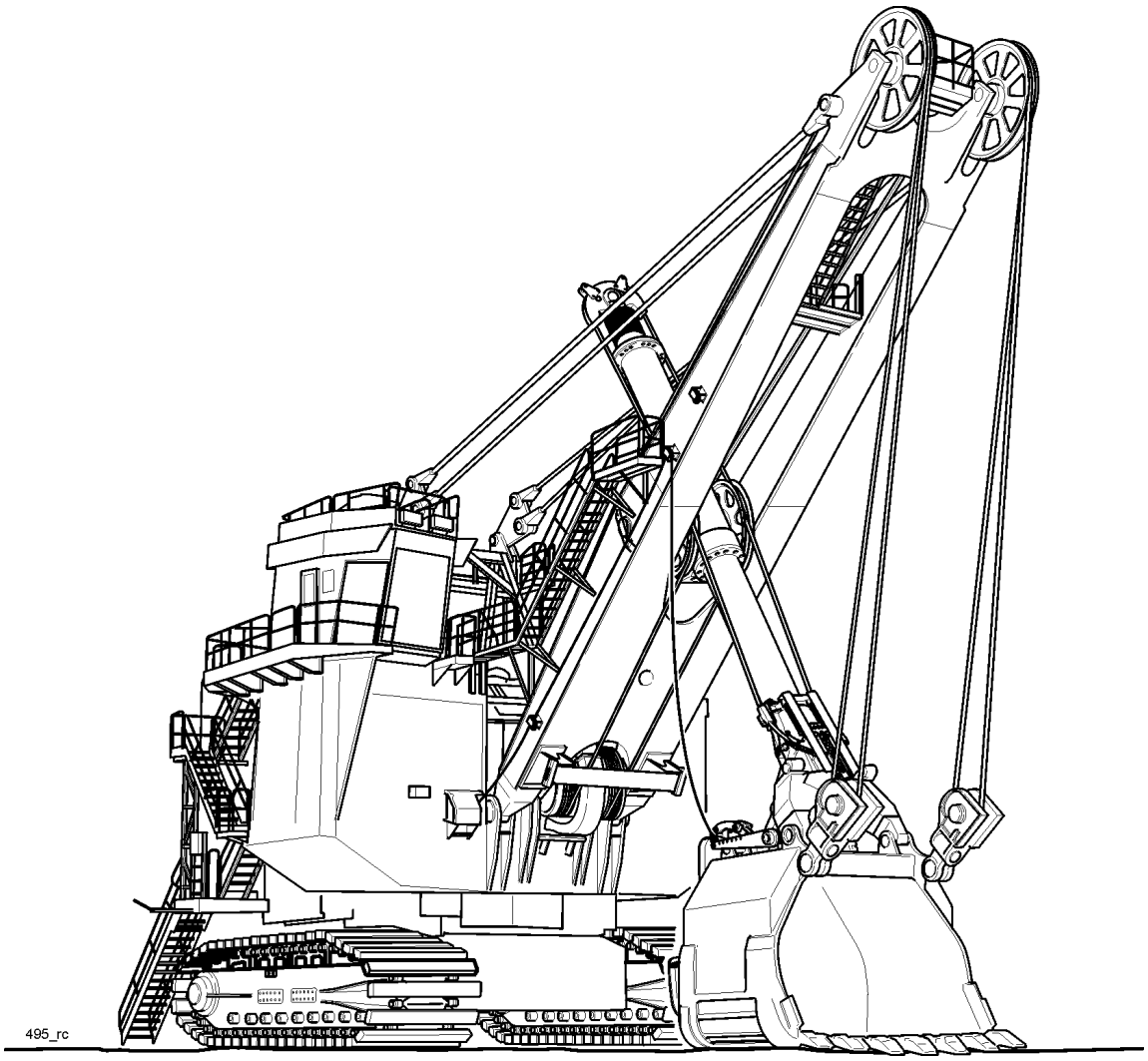
BUCYRUS®

495HD

Mining Shovel

Operator's Manual

Manual No. OM141332-EN



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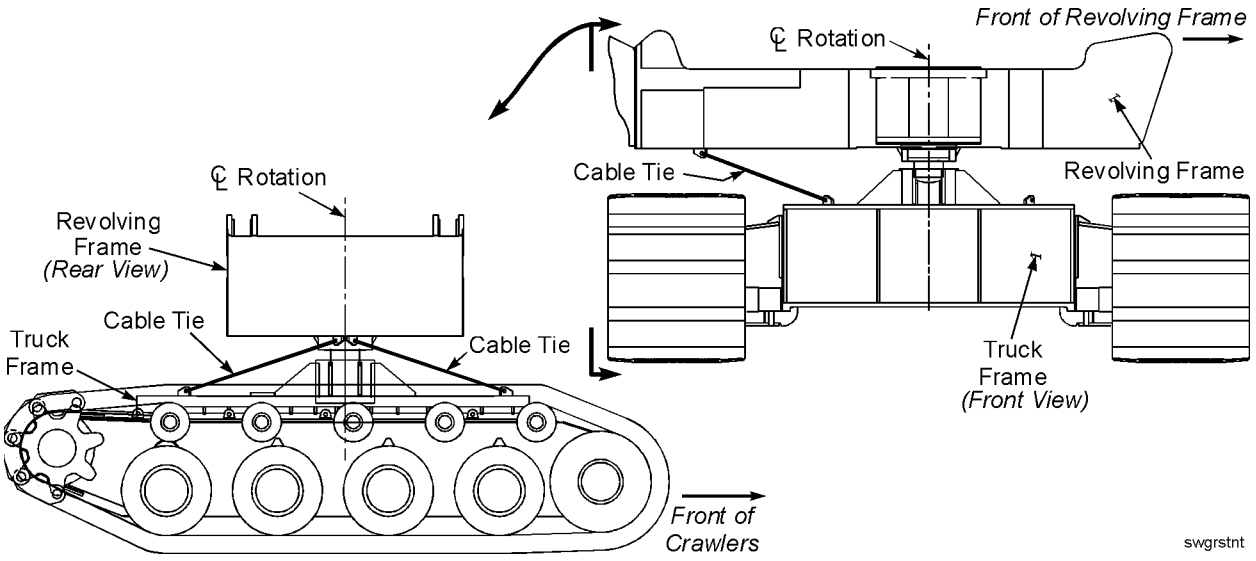
S.2.2 Maintenance Precautions

- **Do not wear rings, wristwatches or loose fitting clothing when working on machinery. They could get caught on moving parts causing serious injury.**
- **Always wear a safety belt or harness when the danger of falling exists.**
- **Always have a second person to monitor the lifeline when working in confined spaces.**
- **Do not start an engine indoors unless adequate exhaust ventilators are provided and in operation.**
- **Never utilize the machine air or hydraulic systems for support when working on the machine. Deactivate or isolate the entire system prior to performing maintenance.**
- **Equipment should be parked on level ground at all times during machine servicing and periods of idleness.**
- **Cranes and hoists must be of sufficient capacity to lift the heavier components (gearcases, etc.) Always work within the limitations of the equipment being utilized.**
- **Be sure heavy items are properly rigged and supported from cranes or hoists before removing supporting members from the machine.**
- **Utilize guide lines or ropes to minimize the swing of suspended heavy components.**
- **Have sufficient service personnel available when removing or installing large heavy items to maintain control at all times.**
- **Always use safety stands in conjunction with hydraulic jacks or hoists. Do not rely on the jack or hoist to carry the load, they could fail.**
- **When disassembling a machine, be sure to use safety stands and adequate cribbing to prevent tipping or rollover of components.**
- **When using an oxy/acetylene torch, always wear welding goggles and gloves. Keep a charged fire extinguisher within reach. Be sure the acetylene and oxygen tanks are separated by a metal shield and are chained to the cart.**
- **Use pullers to remove bearings, bushings, gears, cylinder sleeves, etc. when applicable. Use hammers, punches and chisels only when absolutely necessary. Always be sure to wear safety glasses.**
- **Use extreme caution when using compressed air to dry parts. Use approved air blowguns, do not exceed 30 PSI (207 kPa), wear safety glasses or goggles and use proper shielding to protect everyone in the work area.**

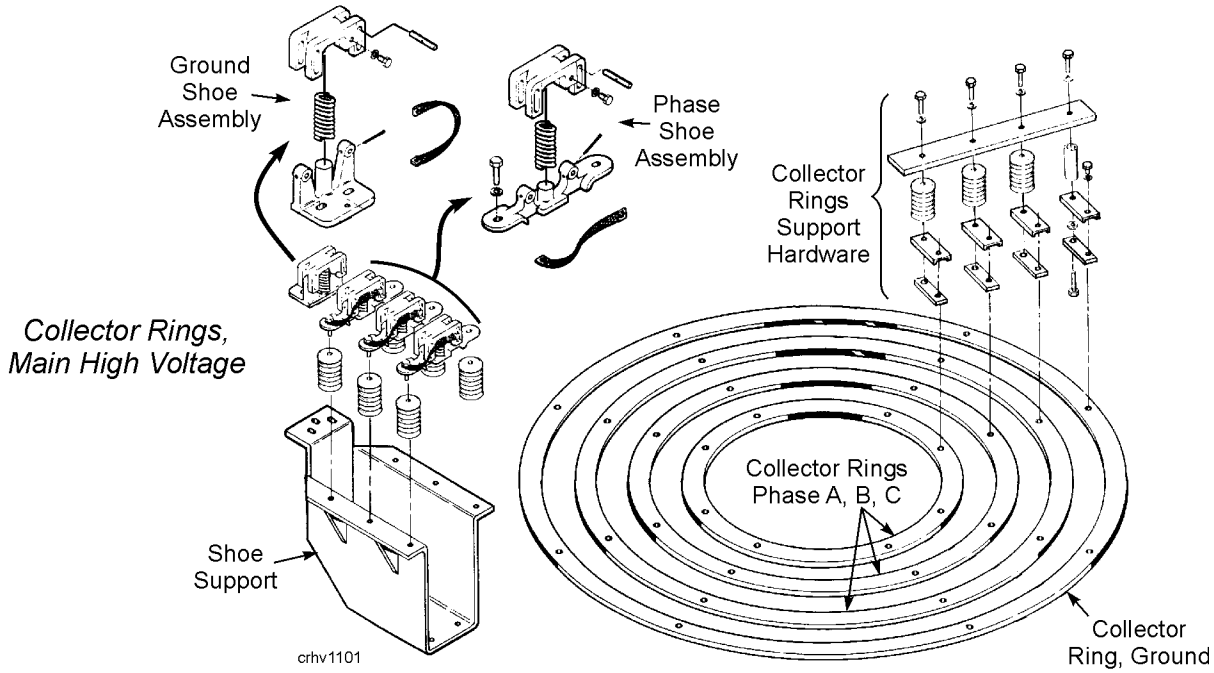
- The motors and geartrain are not fully coupled to the swing pinions, or
- The swing pinions are not engaged to the swing rack

The preferred method to prevent machine rotation is to use a pair of one inch diameter steel cables to tie the upper works to the lower works. Other alternatives such as welded plates etc. can also be used.



To use the steel cables, attach one end of each cable to the bottom surface of the revolving frame. Attach the other end of each cable to the top surface of the truck frame. This arrangement will prevent relative motion between the revolving frame and the truck frame. Installation of these cable restraints should become a part of the lockout procedure if conditions so warrant.

For typical part numbers and locating dimensions, refer to Bucyrus drawing E021447.


Ground
Shoe
Assembly
Phase
Shoe
Assembly
Collector
Rings
Support
Hardware
Collector Rings,
Main High Voltage
Collector Rings
Phase A, B, C
Shoe
Support
Collector
Ring, Ground
crhv1101

1.4.10 Crowd Machinery

The crowd machinery is located at the front, center of the revolving frame. It consists of a motor, spring-set, air-released disc brake, drum and gearing. A crowd rotary encoder prevents overtravel of the dipper handle. With the crowd machinery on the revolving frame instead of the boom, front end weight is substantially reduced - resulting in lower swing inertia and reduced required swing effort. The entire machinery unit can be removed from the machine should maintenance or overhaul become necessary.

The crowd drum drives the crowd and retract rope system. Rope grooves are machined into the drum and flame hardened. The crowd and retract ropes are attached to the drum by ferrule-becket anchors which greatly simplifies rope changes.

A spring set, air released disc type brake is mounted on the electric drive motor.

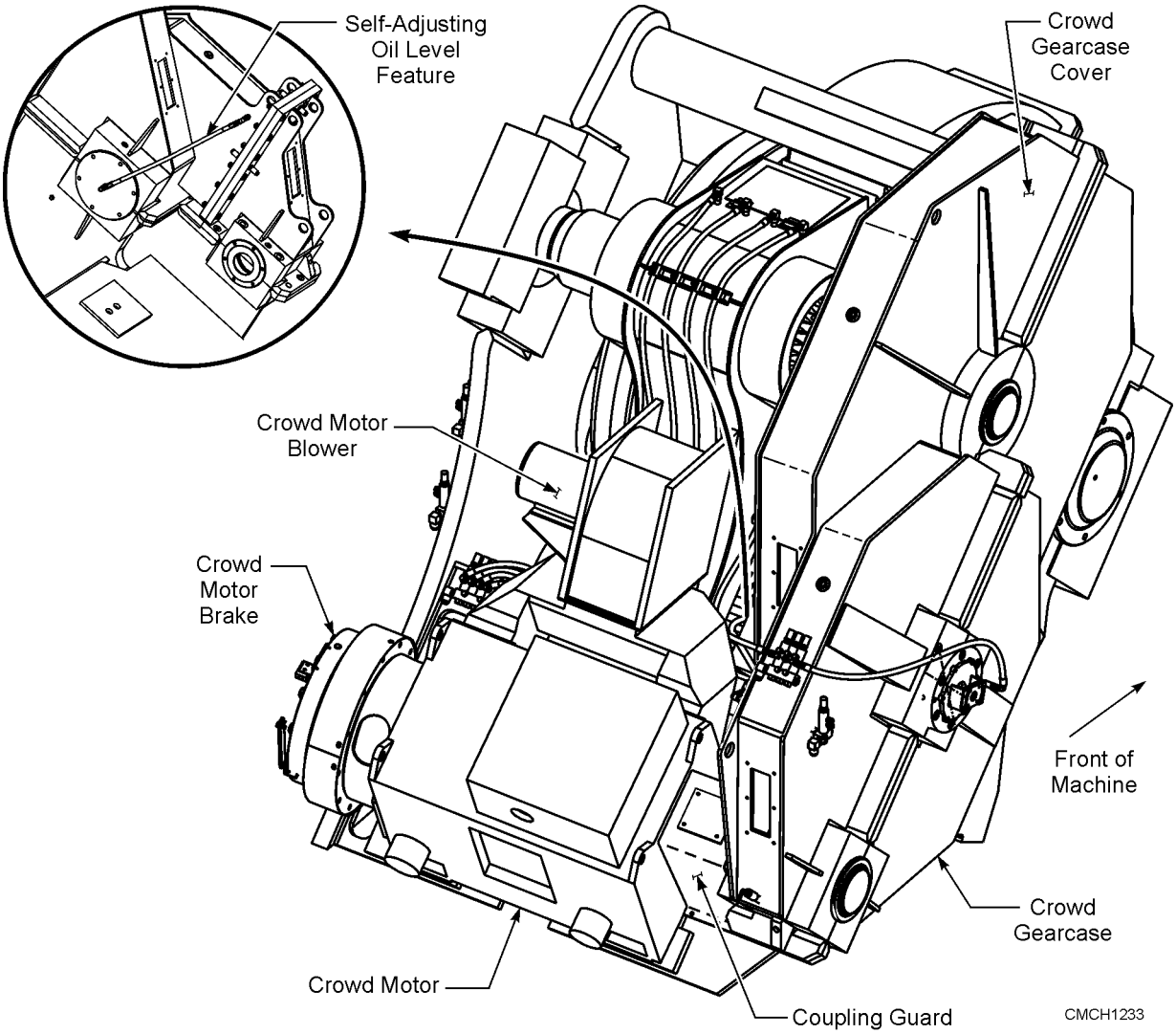


Figure 1-10 Crowd Machinery Components

1.5.6 Dipper

A general purpose dipper is usually constructed as a casting and plate weldment. The dipper lip and lower front are alloy heat treated castings. The dipper body, back, upper sides and door are made of steel plate. Removable tooth adapters and replaceable tooth points are attached to the lip casting to penetrate the bank material.

The door is hinged and latched to the dipper body. A dipper trip mechanism controls the release of the latch bar, allowing the door to swing open. The latch bar holds the door shut during digging. Spring loaded snubbers dampen the door's swinging action.

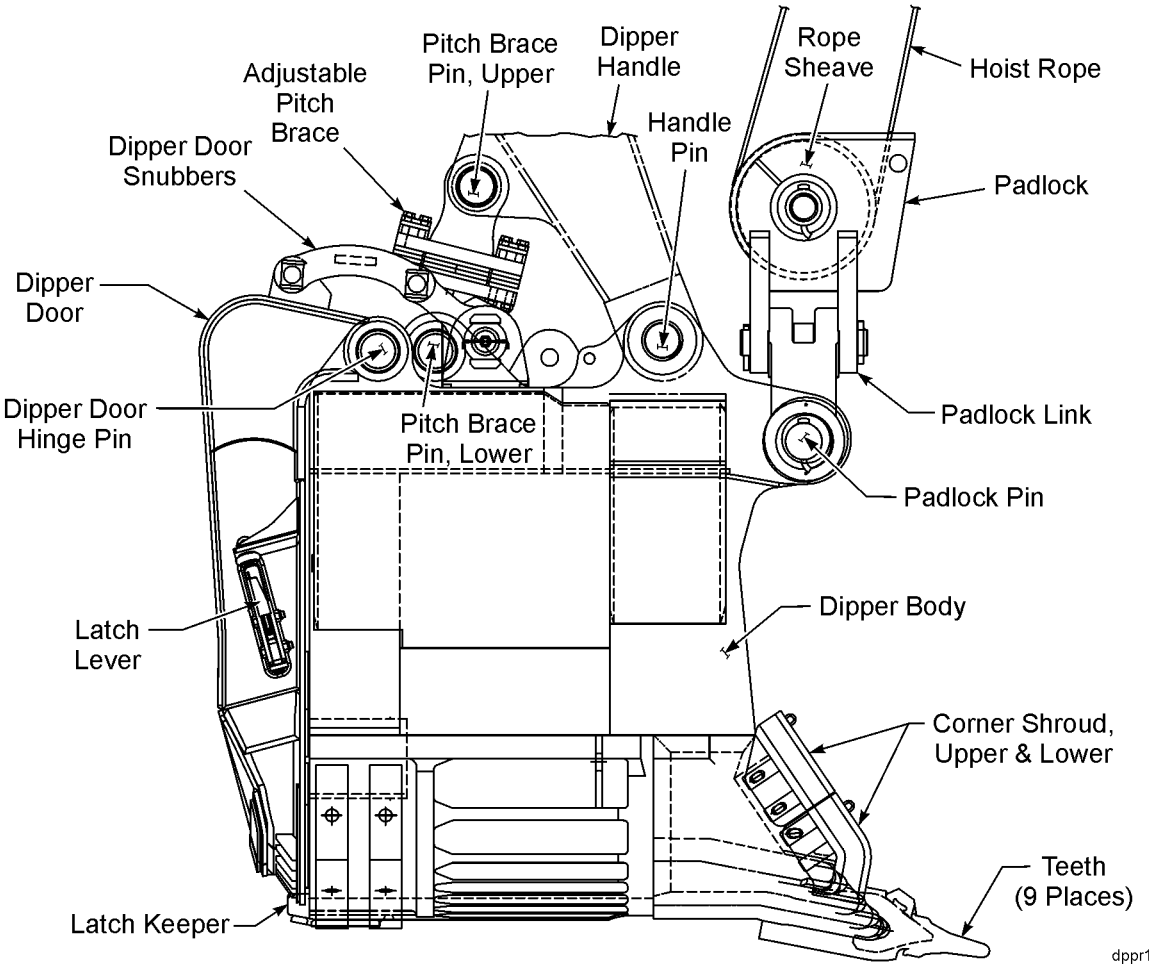


Figure 1-16 : Dipper Assembly

2.2.1.1.5 Hoist Brake

A selector switch used to set or release the hoist brake.

2.2.1.1.6 Crowd Brake

A selector switch used to set or release the crowd brake.

2.2.1.1.7 Swing Brake

A selector switch used to set or release the swing brake.

2.2.1.1.8 Propel Brake

A selector switch used to set or release the propel brake.

2.2.1.1.9 Climate Control Panel

The climate control panel contains a rheostat controller on the top portion of the panel which is used to tailor the temperature of the air delivered to the operator's cab within the selected mode of operation.

The mode switch is provided to set the basic mode of operation for the roof mounted air conditioning/heater unit.

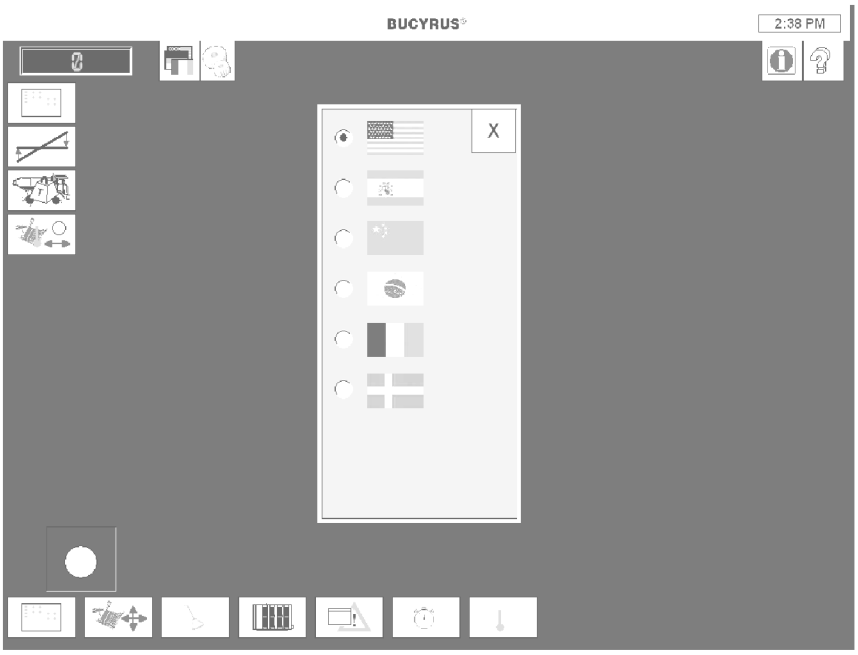
The blower speed switch controls the volume of air being moved by the unit.

2.2.1.1.10 Windshield Wiper Switch

The windshield wiper switch is located on the operator display monitor console at the left of the left operator's console. It controls the speed of the wipers, as well as the starting and stopping of the wipers.

2.2.1.1.11 Windshield Washer Switch

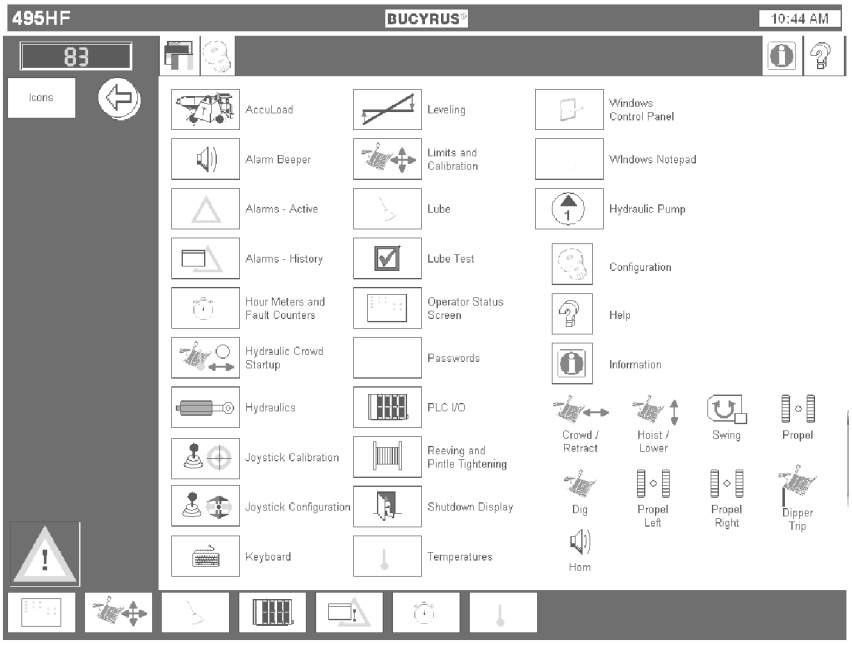
The windshield washer switch is located with the windshield wiper switch on the operator display monitor console. It controls the supply to the washer reservoir which powers the washers.



S-LANG_495HD

Figure 2-8 Language Screen

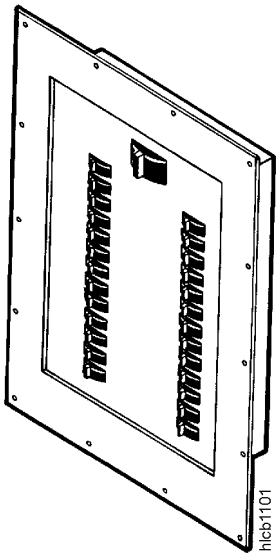
This screen allows the language used on the screens to be reset.



S-HI_495HD

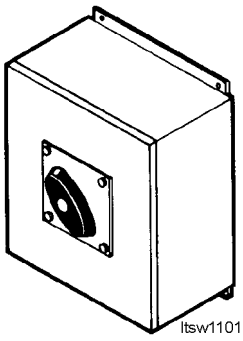
Figure 2-9 Icon Screen

This screen displays the icons used throughout all the screens in the system.



2.5.1.10 Lighting Transfer Switch

The lighting transfer switch is located on the right side wall of the machinery house near the lighting control center. This switch is used to transfer power for lighting from on machine source to off machine source.



3.2.3 Front End

	Quantity	*Weight Each (U.S. Pounds)*
Boom (Bare)	1	148500
Bumper, Boom	4	30
Boom Point Shaft	2	1100
Boom Point Sheave	2	4800
Boom Bumper Assembly	1	6700
Dipper Trip Motor	1	700
Boom Point Sheave Assembly	2	6800
Saddle Block Assembly (w/o Shaft)	1	15600
Saddle Block Assembly (w/Liners)	1	19500
Liner Bushing, Saddle Block	2	1300
Bushing, Saddle Block/Shipper Shaft	2	100
Shipper Shaft Assembly	1	5200
Shipper Shaft	1	4900
Collar, Shipper Shaft	2	120
Crowd / Retract Rope	2	2100
Hoist Rope	1 pair	9000
Pendant Equalizer - R.H.	1	2400
Pendant Equalizer - L.H.	1	2400
Suspension Rope	4	2800
Crowd Sheave	2	2600
Dipper Handle	1	55300
Handle Weldment	1	16900
Handle End	1	5600
Machined Tube	1	29800
Retract Rope Take-Up Support	1	1600
Crowd Take-Up Guide	1	500
Crowd Half Sheave	1	5100
Crowd Drive Pinion, Bearings & Hardware	1	170
Take-up Cylinder	2	150
Take Up Guide	1	500
Retract Spreader and Front Stop	1	2100
Dipper Assembly (55yd)	1	115500
Dipper Body (w/ Liners)	1	87000
Dipper Body (w/o Liners)	1	81700
Dipper Tooth	9	300
Tooth Adapter	9	700
Tooth Wear Cap	9	50

4.2.4.5 Swing Motion

Swing motion is controlled by the operator's right joystick. To swing in either direction, move the joystick lever in the direction of swing. Practice swinging in each direction until a "feel" is developed for start-up and stopping.

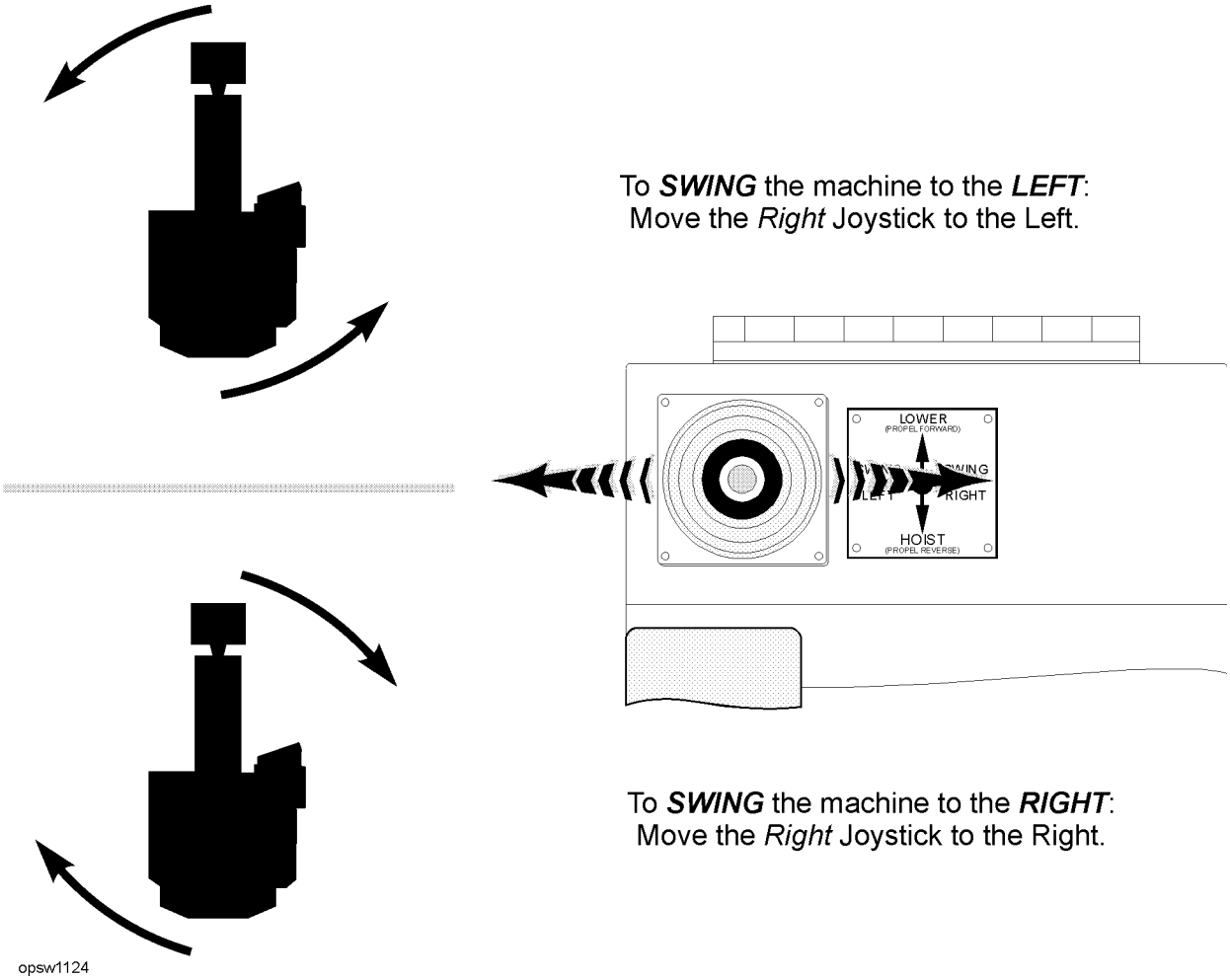
NOTE: The joystick also controls the hoisting and lowering of the dipper through forward and backward motions.

⚠ DANGER

Each motion - hoist or swing - is fully operational throughout the complete movement of the other motion.

NOTES:

- When this joystick is used for propelling the machine, the hoist and swing motions are electrically locked out.
- The following represents the standard configuration.



To ***SWING*** the machine to the ***LEFT***:
Move the *Right* Joystick to the Left.

To ***SWING*** the machine to the ***RIGHT***:
Move the *Right* Joystick to the Right.