SCC In-Cab Controller

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SCC Operating Instructions 1
Start-up
Start the truck, the SCC system will initialize. The Schwing logo will appear briefly on the SCC screen. When finished, the Machine Status screen will appear, with the Drive Mode icon displayed. Release the parking brake. The “Please confirm the remote is stowed properly” message will appear and an audible ‘beep’ will sound. Press the ok button to clear the message.

*If you haven’t placed the machine into Pumping mode the “Please confirm remote is properly stowed” message will not appear.*

Pumping Mode
With the concrete pump in position, put the transmission into neutral and engage the parking brake. Press and hold the (F2) button \[PUMP\] until the PTO has shifted. (If you release the (F2) button \[PUMP\], before the PTO has shifted, a warning message will appear on the SCC screen.) For automatic transmission, hold brake and select Drive gear. For manual transmissions, hold clutch and shift into displayed gear. With the PTO in Pump Mode, you can begin pumping concrete.

Driving Mode
When finished pumping concrete, place the truck into neutral and wait for the drive-shaft to stop spinning. For manual transmissions, hold clutch, then press and hold the (F1) button \[DRIVE\] until the PTO has shifted. For automatic transmissions, press the brake, then press and hold the (F1) button \[DRIVE\] until the PTO has shifted. When you release the parking brake, the “Please confirm the remote is stowed properly” message will appear and an audible ‘beep’ will sound. Press the ok button to clear the message.

If the boom is out of the cradle, the Boom Out of Cradle warning icon will appear on the SCC screen. When the parking brake is disengaged a continuous alarm will sound. Place the boom in the cradle to clear the fault icon and stop the alarm.

Outrigger Lights
Press the (F4) button \[\] to enable the outrigger work lights. Press again to disable the lights. Note: The outrigger lights will automatically shut-off when the truck reaches 10 mph.

Beacon Light
If one beacon light is installed, press the (F3) button \[\] to enable the beacon, a red bar will appear above the beacon icon. Press again to shut the beacon off, the red bar above the symbol will disappear. With two beacon lights installed, press the (F3) button \[\] to enable the front beacon only - a red bar will appear above the beacon icon. Press again to enable the rear beacon only, a red bar will appear below the icon. Pressing the (F3) button \[\] a fourth time will shut both beacon lights off and the red bar will disappear.
SCC In-Cab Controller

The SCC (Schwing Cab Controller) allows the operator to electronically switch the PTO from Drive mode to Pump mode. The SCC displays PTO hours, PLC I/O Status and auxiliary fuel tank levels (if installed). The operator can also adjust PTO related settings along with raising/lowering pusher axles (if equipped).

Functions:
- Place unit in Drive or Pumping mode
- Directs auto transmission to lockup into 1:1 gear
- Turns on the Vector controller
- Manual control of truck throttle in Pump mode
- Outrigger lights on/off
- Displays and controls optional lift axle pressures
- Displays PTO hours
- Beacon light controls

Safety:
- Will not allow the transfercase to shift if any of the following are true:
  - Driveshaft turning over 20 RPM’s
  - Truck in Drive gear (automatic-transmissions)
  - Parking brake not set
  - Clutch not depressed (manual transmissions)
- Under speed and over speed warnings if the gear ratio isn’t what it’s suppose to be (lower gear than what is required)
- Pump RPM exceeded warning - if the machine over speeds the drive shaft, SCC will reduce RPM’s back to idle and flash outrigger lights

Components
- HMI (2.8” Display)
- Converter 12/28V 40A
- Primary PLC/IO
- Expansion PLC/IO
- PDM
- Maintenance Keyswitch/Light

28X - 47SX, 65SXF panel shown. Other models may vary, but components are the same
HMI (Human Machine Interface)
The HMI is the interface between the operator and SCC In-Cab Controller. From the HMI, operators can view and set machine parameters.

The HMI contains the following:

A. LCD Screen
B. (F1) Function Button
C. (F2) Function Button
D. (F3) Function Button
E. (F4) Function Button
F. OK Button
G. Navigation Arrows Button

Navigation Pane
The Navigation Pane displays the available functions and menu actions for each screen. If a function symbol appears on the Navigation Pane, the operator can push the corresponding function button below that symbol to execute a menu action.

Example: The Worklight symbol appears above the (F4) Function Button. Pressing this button will enable the worklights. A red bar will appear above the Worklight symbol indicating it’s on. Pressing the (F4) Function Button a second time will shut the worklights off.

Arrows in the center of the Navigation Pane, represent which direction you can push the Function Arrows button. The Function Arrows button can be pushed in four directions. Not all directions are available on every screen. This button is used to navigate to other screens, scroll through menu items or adjust screen brightness.

To assist the reader, we will represent the symbols as follows:

= OK

= Function Arrows Left/Right

= Function Arrows Up/Down
LCD Screens

Machine Status Screen
When the ignition switch is engaged, power will be supplied to the SCC In-Cab Controller. The Machine Status screen will appear on the HMI LCD display.

Displays:
A. Drive/Pump Mode Indicator
B. Status Message Display
C. PTO Hours
D. Auxiliary Fuel Tank Level (If equipped)
E. Drive Mode Function Symbol
F. Pump Mode Function Symbol
G. Work Light Function Symbol

Functions:
- Press \text{\textcolor{red}{ok}} to go to the Menu screen.
- Press the \text{\textcolor{red}{\uparrow}} to go to the Axle Control Screen (if equipped)
- Use the \text{\textcolor{red}{\uparrow}} to adjust screen brightness
- Press and Hold (F1) button \text{\textcolor{red}{\uparrow}} to engage Drive mode
- Press and Hold (F2) button \text{\textcolor{red}{\uparrow}} to engage PTO
- Press (F4) button \text{\textcolor{red}{\uparrow}} to turn worklights On/Off

Menu Screen
The Menu Screen displays additional status, parameter settings screens and software version:
- PLC I/O Status
- Maintenance
- Configuration
- HMI Software Version
- PLC Software Version

A small Schwing logo indicates which menu item is currently selected. Use the \text{\textcolor{red}{\uparrow}} to scroll up and down the menu items. When you have moved the \text{\textcolor{red}{\uparrow}} to the screen you would like to access, press the \text{\textcolor{red}{\uparrow}} button.

Software versions for the HMI and PLC are displayed in the lower corners of the screen. This information is useful for troubleshooting.
Module and PLC I/O Screens
Displays the electronic input and output signals. Active input or output signals will be indicated with a red circle. Supply voltage indicators and PLC temperature are displayed below the input/outputs.

This screen can be used to assist in troubleshooting electrical issues.

Maintenance Screen - Password Prompt
When the Maintenance Screen is selected, the operator will be prompted to supply a password. Use the \( \text{Esc} \) to navigate to the password input. A red arrow will appear under the number selected. Use the \( \text{Esc} \) to scroll through a list of single digit numbers. When the number you want is displayed, use the \( \text{Esc} \) to navigate to the next value. When all values are filled in, press the \( \text{Esc} \) button. If the password is correct, the Maintenance Menu screen will be displayed. If incorrect, the red arrow will disappear and you will not be taken to the Maintenance Screen. Press the \( \text{Esc} \) to display the red arrow. Re-enter the password and press \( \text{Esc} \) button.

Functions:
- Press (F4) button \( \text{Esc} \) to return to Menu Screen.
- Press (F3) button \( \text{Esc} \) to go to Module I/O Screen.

INPUTS | OUTPUTS
---|---
PTO Ball Sw(NC) | 00 Control Power
Drive Shaft Prox | 01 PTO SV:
Throttle Up | 02 Cab Buzzer
Override Sw | 03 --
Drive Ball Sw(NC) | 04 Alt D+
-- | 05 Drive SV:
Throttle Down | 06 PTO2
Boom Cradle Sw | 07 Outtrigger Lights

Functions:
- Use the \( \text{Esc} \) to select password value.
- Use the \( \text{Esc} \) to change the selected values
- Press \( \text{Esc} \) to accept password.
- Press \( \text{Esc} \) to exit the Maintenance screen.
Maintenance Screen
The Maintenance Screen displays the following parameters:

- Fuel used in Pump Mode (Resettable)
- Frost Law Axle Enable (Enable/Disable)
- Transmission Gear (auto)
- Drive Shaft Speed
- Parking Brake Indicator Icon
- Brake Indicator Icon
- Clutch Indicator Icon

"Fuel used in Pump Mode" and "Frost Law Axle Enable" can be selected and parameters changed on this screen. A small Schwing logo indicates which menu item is currently selected. Use the \( \uparrow \) to change which menu item is selected. If "Fuel used in Pump Mode" is selected, press the Reset (F1) button \( \odot \) to change the value back to 0. If "Frost Law Axle Enable" is selected, press \( \odot \) to enable or disable.

Reset Password Screen
The password reset screen allows you to change your maintenance screen access password.

The red arrow indicates which value is selected. Use the \( \uparrow \) to change the selected value. Use \( \odot \) to select the next password value. If you make a mistake, you can press CLEAR to erase all the values and start over. When finished entering the new password, press \( \odot \) button.

Pressing the (F4) button \( \odot \) will exit the password screen without accepting the new values. The password will not be changed.

Functions:
- Use the \( \uparrow \) to select password value.
- Use the \( \odot \) to change the selected values
- Press \( \odot \) to accept new password.
- Press \( \odot \) to return to the Maintenance screen, without changing the password.
Axle Screen
If your truck is equipped with optional pusher axles, they can be raised and lowered via the Axle Screen. From the Machine Status screen, press the \( \text{Axle} \) to go to the Axle Control Screen.

Each axle will be represented with \( \text{Axle} \) icon. Press the function button below the \( \text{Axle} \) icon to raise or lower the axle. An indicator arrow will be displayed showing the direction of the pusher axle. The green arrow indicates the axle is moving up, the red arrow indicates the axle is moving down. The pressure rating for each axle is also displayed.

Axle Screen - Frost Law Enabled
If the “Frost Law Axle Enable” is activated in the Maintenance screen, the first and last pusher axle will be paired together. Pressing (F1) button will lower or raise booster axle 1 and 4.

Functions:
- Press the \( \text{Axle} \) to go to the Machine Status screen
- Press \( \text{Axle} \) to raise or lower pusher axle.
Engine RPM Control Screen

The Engine RPM Control screen allows you to set the truck engine throttle from inside the cab. From this screen you adjust the truck RPM without having to access the rear operator control panel.

You can only access the Engine RPM Control screen in PUMP Mode, not DRIVE Mode. When in PUMP mode, press the left arrow key.

The following parameters are displayed:

- RPM Requested
- RPM Actual

Pressing the function buttons below the “-” and “+” symbols will increase or decrease engine RPM. If you adjust the RPM from the rear control panel, that value will be displayed next to the RPM Requested row.

The Engine RPM Control screen can also be used for troubleshooting. If the requested and actual RPM’s do not match - but the actual RPM matches the tachometer, the truck is not allowing TSC1 to control the RPM. Contact your truck OEM service center.

Functions:

- Press function button below the “-” symbol to decrease engine RPM.
- Press function button below the “+” symbol to increase engine RPM.
- Use the to exit the Engine RPM Control screen.

Status Messages

Status messages will appear on top of the Machine Status screen. A status message will display for 5 seconds or will go away when the fault is corrected.

See chart on next page
Message | Solution
--- | ---
In Pump Mode use xx gear | Normal message for manual transmission. This is simply a reminder of which gear to choose.
RPM Slow-Verify selected gear | The ratio between the engine RPM and the driveshaft is not correct. Make sure you’re in the correct gear then check your driveshaft prox to make sure it is picking up on all bolts.
RPM Fast-Verify selected gear | The ratio between the engine RPM and the driveshaft is not correct. Make sure you’re in the correct gear.
Shift to Neutral | (Auto Transmission only) The unit must be shifted to Neutral before going into Pump or Drive. This signal is received by CAN message from the automatic transmission.
Set Park Brake | The unit must have the Park Brake set before going into Pump or Drive. You may view this input on the Maintenance screen. It comes directly from the truck CAN comms. Check trucks Park Brake.
Wait for driveshaft to stop | Driveshaft must be stopped before going into Pump or Drive. This is received by a prox sensor on the driveshaft.
Depress Clutch Pedal | (Manuals only) Clutch pedal must be pushed before going into Drive. If you have an automatic transmission and are seeing this message, then there is a problem with the truck comms.
Timed out-Possible Low Air | Check to see if air pressure is above 100 psi.
Pusher Axle#-Low Pressure | This is caused by low air pressure to the axle. Check the sensor to make sure it is reading right, if not, go to problem “Axle pressure readings are wrong”
Hold until shift has completed | Normal message to get while going into Pump or Drive.
Vector Shutting Down | Normal message while the Vector system shuts down when the truck is shutoff in PTO mode
No Driveshaft Speed Detected | Check prox sensor on drive shaft. Make sure the pickup bolts are 2-4mm away from the sensor. Then replace sensor.
Maintenance Switch Active | The maintenance switch is activated. MOST functions of SCC are disabled.
Hydraulic Pump Reversed | Some units can tell when the pump is put into reverse. Take the vehicle to neutral immediately and check your gears.
Volts Low on VBB2-Check Fuse | There is no voltage on the VBB2 power input on the PLC. Open the PDM and check the VBB2 circuit breakers. Most features will not work when you get this error because it does not have full power.
Front ball switch fault | Ball switch stuck or broken wire
Rear ball switch fault | Ball switch stuck or broken wire
Loss of comms to PLC | Check PLC. Check wires from display to PLC. Check Power connector on PLC
PLC processor temp exceeded | The PLC is overheating. Open cabinet door and turn system off until cooled.
PTO Valve Short Circuit | Problem detected with solenoid - check PTO valve
PTO Valve Open Circuit | Problem detected with solenoid - check PTO valve
Drive Valve Short Circuit | Problem detected with solenoid - check PTO valve
Drive Valve Open Circuit | Problem detected with solenoid - check PTO valve
No Comms to Axle Module | Check wires and power connector
Axle Mod VBB2 low-Check Fuse | Check fuses and breakers - Check power connector X1 on expansion module
No Comms to Truck ECU | Make sure vehicle is on. Check PLC and power connector X1
Backup Control Enabled at PLC | Normal message when the PLC has been controlled manually. Reset power to the system or disable backup mode at the PLC to return to normal.
In PTO truck throttle not allowed | Truck throttle (either cruise control switches or foot pedal) is not allowed in Pump mode. If throttle is over 1000 for 3 seconds or over 1550 at all then the PLC will take over and bring back down to idle.
Troubleshooting / Overrides
Pump / Drive Mode Solenoid Override
When you press either the Pump or Drive mode button, the corresponding solenoid on the 2-way air valve is activated, placing the gearbox in either pump (PTO) or drive (DRIVE) mode. If the gearbox fails to shift between Pump / Drive mode and no warning messages are displayed, the corresponding solenoid can be bypassed at the air valve.

The solenoids are labeled “PTO” and “DRIVE”. Below the solenoid is a yellow bypass switch. Turn the corresponding bypass switch to the “1” position. With proper air pressure applied, the air valve will switch to the bypassed function.

Using a multimeter, determine if the solenoid is bad or if there is a short in the harness. On units with solenoid plugs with built-in LED’s, have someone activate either the Pump/Drive function on the SCC panel, while watching the corresponding solenoid plug. If the solenoid plug LED illuminates when the function is active, the solenoid coil may be bad and should be replaced. If the solenoid plug LED does not illuminate, there may be a short in the harness, or the fuse needs to be replaced.

When the problem is corrected, turn the solenoid bypass switch back to the “0” position.
Manual override via PLC - Display Failure
If the 2.8” in cab displays ever fails, you can enter Drive or Pump mode using the PLC.

How to enter Pump mode:
1. Hold the “Enter” button until the display turns red.
2. Press and hold the DOWN arrow until the unit fully shifts. ALL normal safeties must be met before it will shift. (The unit will display “P” for Pump) (“E” indicates error at ballswitch) (“o” indicates shift in progress)

How to enter Drive mode:
1. Hold the “Enter” button until the display turns red.
2. Press and hold the UP arrow until the unit fully shifts. ALL normal safeties must be met before it will shift. (The unit will display “D” for Drive) (“E” indicates error at ballswitch) (“o” indicates shift in progress)

On manual transmissions, the CLUTCH pedal must be pushed at the same time.

How to control pusher/lift axles (If equipped):
1. Hold the “Enter” button until the display turns red.
2. Press the “Enter” button until you reach the axle you want to control.
   - “A1” is the front most axle then A2... A3... A4... as the axles go to the rear.
3. Press the UP or DOWN arrow to indicate which position you want the axle to go to.

Maintenance Switch - SCC System Failure
If the SCC system has failed and is preventing normal operation, turning the Maintenance Switch will place the system into bypass mode. Bypass mode provides direct power to all SCC components via the truck battery (this will drain the battery when the truck is not running). The switch is only intended as backup, unit should be fixed immediately to prevent damage to equipment and personnel.

<table>
<thead>
<tr>
<th>Display Screen and Icons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default view shows the Node ID.</td>
</tr>
<tr>
<td>Holding the up button will display the PLC version.</td>
</tr>
<tr>
<td>PWR</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>M</td>
</tr>
</tbody>
</table>

WARNING In Maintenance mode, all SCC safety features will be disabled