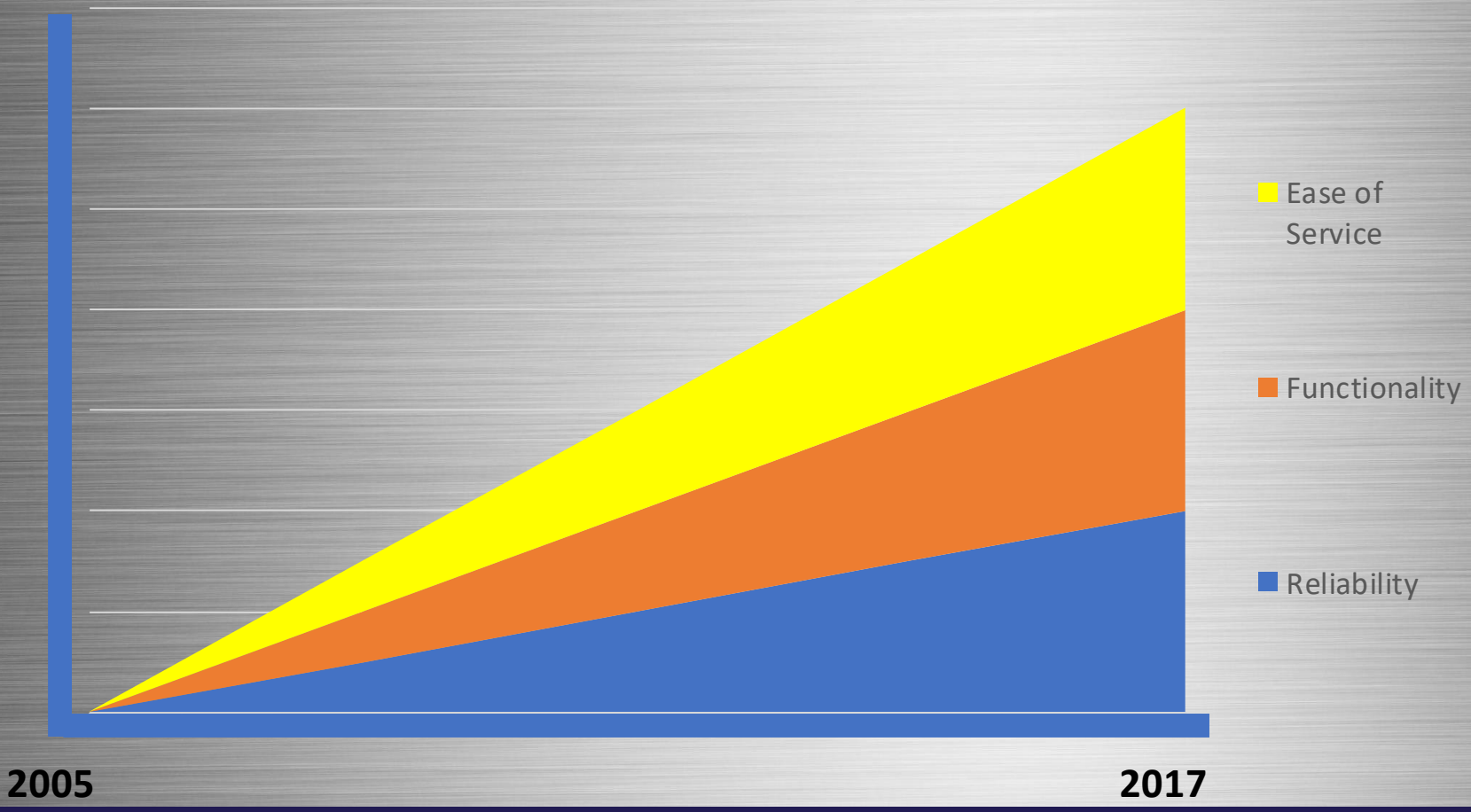
SMARTlift

A load monitoring system delivers a smarter, safer sidelifter

What is SMART*lift?*

- Steelbro SMART*lift* Load Monitoring uses its intelligent software and sensors to monitor and control the sidelifter lifting operation every 50 milliseconds.
- Microcontroller based control system
- Incorporates intelligent safety features
- Predicts and prevents unstable situations
- Optional control system for SB362 and SB450 Steelbro sidelifters
- On board diagnostics for easier fault finding

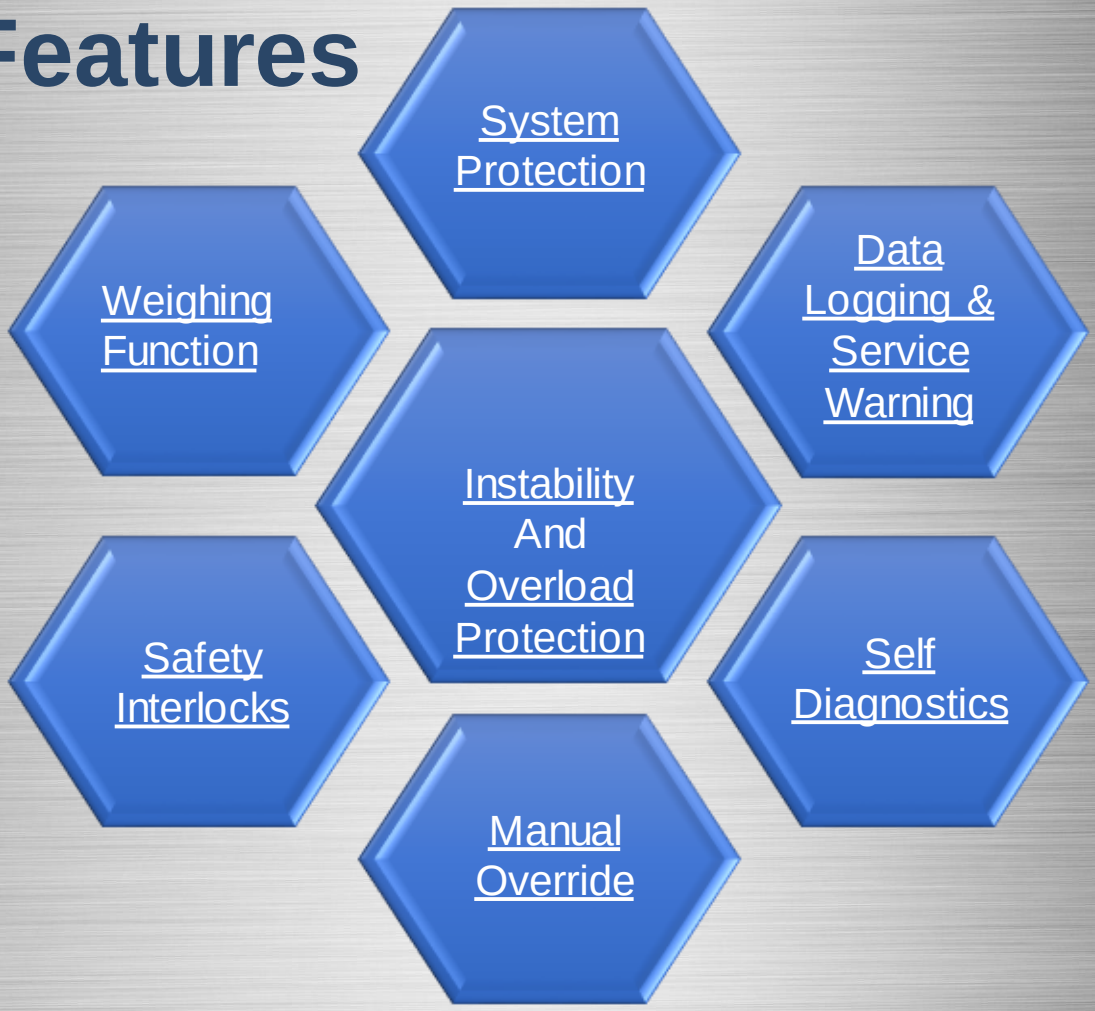
SMART*lift* Evolution



Why Choose SMART*Lift?*

- Maximise the productive life of the sidelifter – undue stress and overloading is prevented
- Maximise the productivity of your sidelifter and gain insight into your business by utilising the feedback and information from data logs and service notifications
- Mitigate risk for employees/ operators

SMART*lift* Features

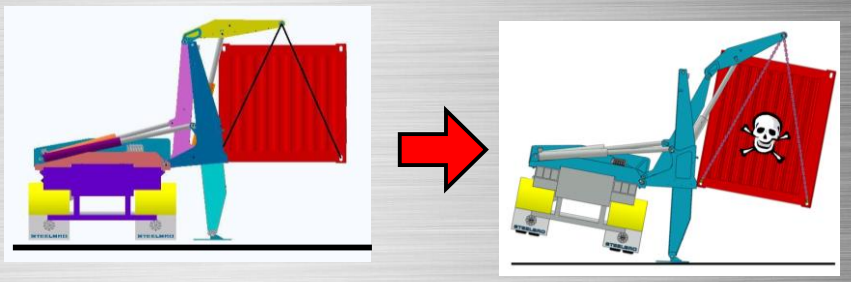


Instability Warnings

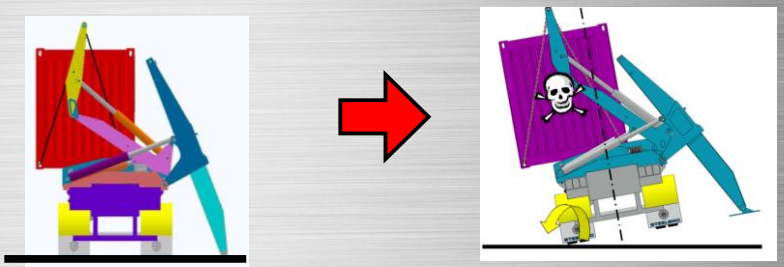
SMARTlift Features Menu

If sidelifter load moves towards a position of instability a warning sound is heard (horn) and screen message is displayed - Continued operation will be prevented.

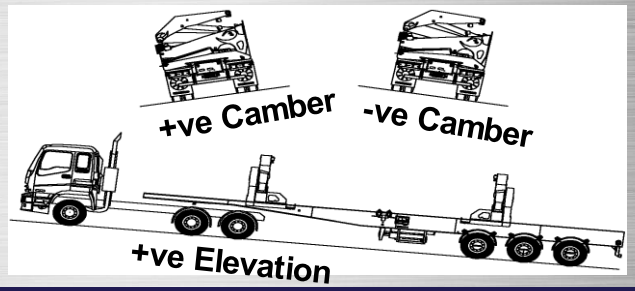
- Lifting Side instability
  - Warning will sound at 80% of the tipping load
  - Outward hydraulic movement is stopped at 90% of the tipping load



- Off Side instability
  - G pin will not be allowed to move across the Sidelifter centre line.



- Prevents lifts on dangerous cambers and elevations



Overload Protection

SMART*lift*
Features
Menu

SMART*lift* provides overload protection by preventing lifts where the weight of the container is greater than the maximum lift capacity of the sidelifter

Data Logging & Service Warnings

SMARTlift
Features
Menu

- Load Profile Data is captured including type of lift and weight giving owners a detailed history of their unit. This helps with service requirements and the resale value.
- Payload measurement displayed
- Records use of override protection
- Logs major alarm occurrences
- System records engine hours
- Service Warning alert displays when service is due

Self Diagnostics

SMART lift
Features Menu

- Automatic Fault Detection
  - The system will detect common electrical faults such as wire breakages and short-circuits in the angle sensors, pressure sensors and the stabiliser.
  - If the system detect a fault then a warning horn sounds and a screen message indicates where the suspect sensor is located.
  - Angle and pressure sensor failures stop the operation of the Sidelifter

Safety Interlocks

SMART lift
Features Menu

- Arm Mode
  - Stabiliser on ground before arms will work
- Stabiliser Mode
  - Disabled if there is any load on the lifting pin and a warning sound (the horn) and screen message is displayed
- Traverse Mode
  - If the stabiliser is extended for any distance, Traverse mode is disabled and a warning sound (the horn) and screen message is displayed.

System Protection

SMARTlift
Features Menu

- Engine Protection
  - Over temp
    - Warning over
    - Engine shut down after 30 Seconds
  - Low Voltage
    - Warning under
    - Engine shut down after 30 Seconds
  - Low oil Pressure
    - Warning
    - Engine shut down after 30 Seconds

Override Protection

SMART lift
Features Menu

- Temporary Override
  - manual override mode safety features of the load monitoring system are disabled and the operation of the arms is extra slow

- Permanent override code
  - This is randomly generated in rare circumstances using a random numbering system. This gives the owner greater certainty that the safety system is turned on.

Container Weighing

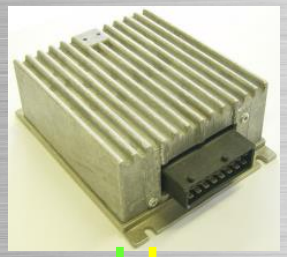
SMART lift
Features Menu

- Provides container weight as part of normal lift
- +/- 100Kg increments
- Calibrated weighing system

SMART*lift* System Overview

ENGINE ECU

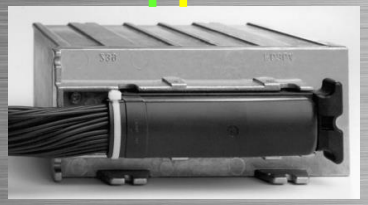
DISPLAY



The CAN bus

CAN HIGH

CAN LOW



FRONT CRANE ECU

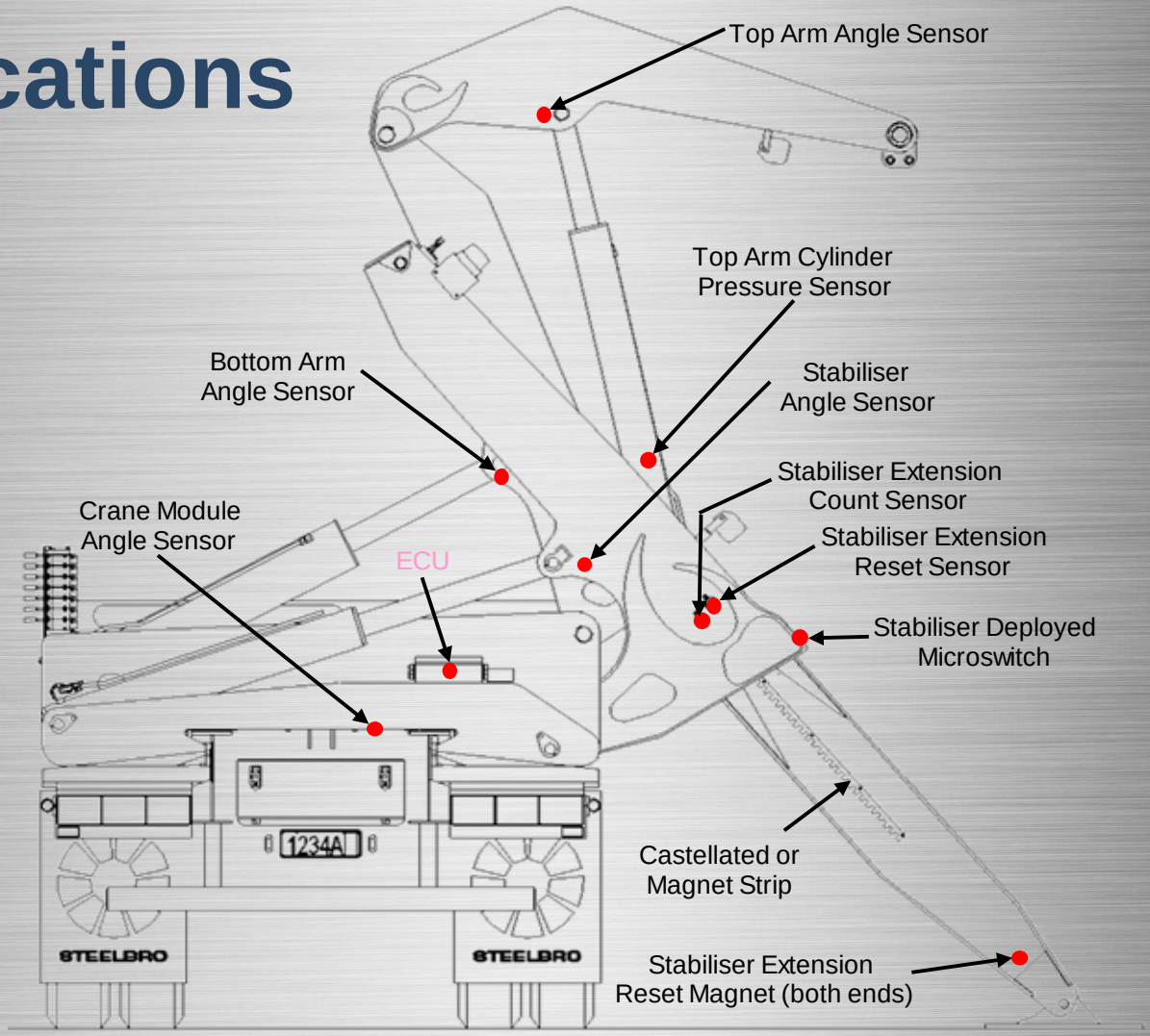
REAR CRANE ECU

RADIO RECEIVER

ECU

- Each crane is equipped with an Electronic Control Unit (ECU) which monitors the following Sidelifter parameters:
  - Stabiliser angle
  - Stabiliser extension
  - Stabiliser foot in contact with ground
  - Bottom lifting arm angle
  - Top lifting arm angle
  - Top lifting arm hydraulic cylinder pressure
  - Trailer camber and elevation

Sensor Locations

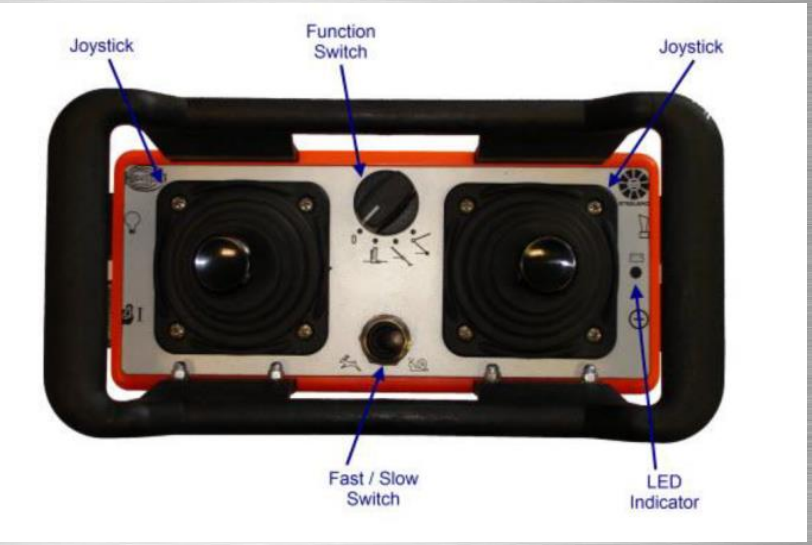


SMART*lift* Display

- Alarms & Warnings
- Estimated Weight
- Sensor Readings
- Service Interface
- Calibrating
- Fault Diagnostics

Remote Control

- E-stop
- Engine Start
- Horn
- Work Lamps
- Mode Selection
- Traverse
- Stabilsers
- Arms
- Special Options
- Proportional Function Control



For More Information

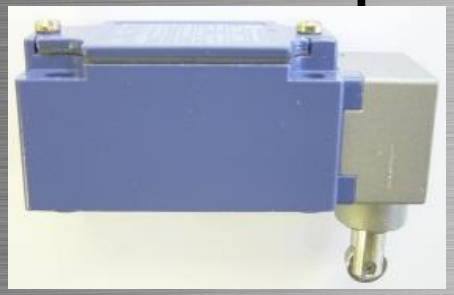
www.steelbro.com

marketing@steelbro.com

Crane Module Overview

ANGLE SENSORS

PRESSURE SENSOR



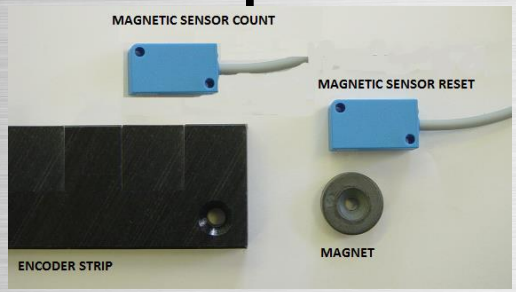
STABILISER MICROSWITCH

CANbus

INPUTS

OUTPUTS

ECU (ELECTRONIC CONTROL UNIT)



STABILISER EXTENSION SENSORS

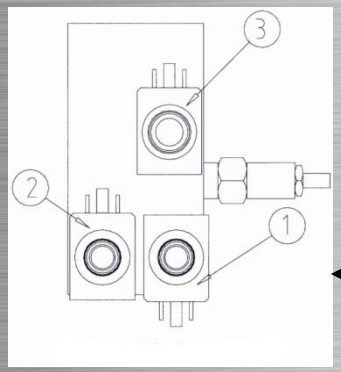
DANFOSS VALVES

WARNING LIGHT

Engine ECU Overview

WORKLAMPS

CANbus



HIGH / LOW SPEED UNLOADER BLOCK

1) LOAD SENSE DUMP
2) LOAD SENSE SHUTOFF
3) HIGH / LOW SPEED

HORN

THROTTLE

STARTER MOTOR