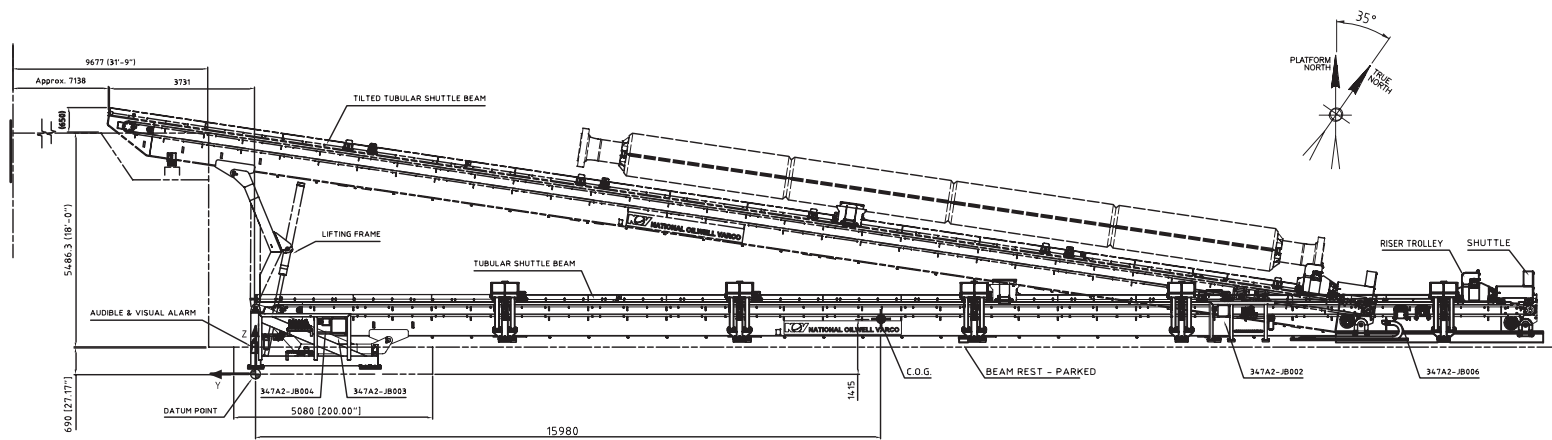


TS-PR



The Tubular Shuttle Machine (TS) is designed to transfer tubular between the pipe-deck and the drill-floor. Tubular can be removed from or landed onto the Tubular Beam using the elevator in combination with the front mounted Pipe Tail-in Arm. The design of the machine is basically very simple and utilises tried and tested solutions.

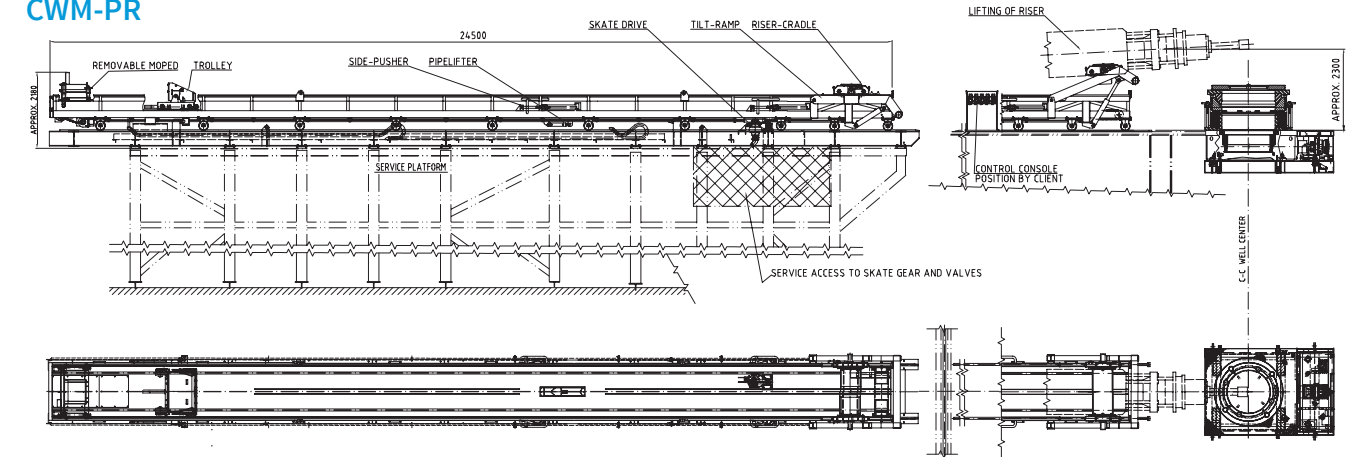
The design philosophy is intended to achieve the following:

- Minimum complexity
- Safe and reliable operation
- Simple maintenance
- Modularity for simple installation and replacement of components
- Generous installation tolerances and a simple interface

Service	Pipe, Casing & Riser Handling Single and Stands
Tubular Range	2 7/8" - 20"
Design code/ standard	F.E.M. / NS 3472
Area classification	Safe area
Design temperature	-20°C to + 45°C
Operating Temperature	-20°C to + 45°C
SWL (kg)	20500

Max. hydr. flow rate (l/min)	220
Min. working pressure (barg.)	180
Max. operating pressure (barg.)	210
Weight, dry (kg)	33000
Skate traveling speed (m/s)	0 - 0.5
Skate driving force (N)	70000
Equipment shipment size (LxWxH) (mm)	32800 x 3760 x 2800

CWM-PR



The Catwalk Machine (CWM) is a horizontal pipe and Marine riser handling system for safely transport of tubulars, risers, slip-joint and miscellaneous equipment in and out of the Drill-floor. On the pipe and riser deck the operation is to be co-ordinated with a pipe and riser handling unit.

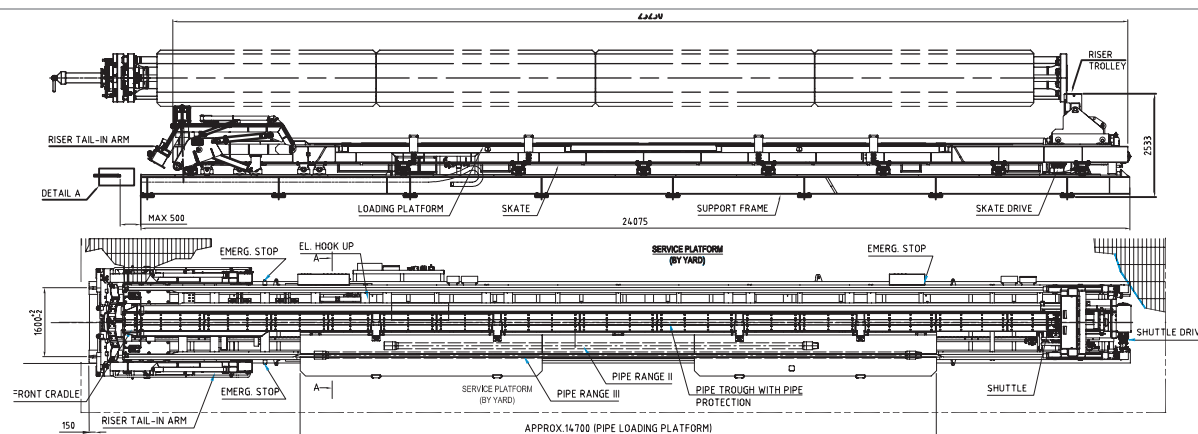
On the drillfloor the operation is to be coordinated with a horizontal to vertical pipe and /riser handling system. The tubular, typically drill-pipe, drill-collar or casing tubular is transported in or out of the drillfloor resting horizontally in a skate - part of the Catwalk machine. This secures the tubular in a steady state, when transported with the CWM.

All the functions are remotely controlled from a Control stand placed close to the V-door, typically on the drill-floor. In case of a remote control failure, local operation of the functions is handled directly on the control valves, located on the support structure of the CWM.

Service	Pipe- and Riser handling
Tubular Range	2 7/8" - 36"
Design code/ standard	FEM/NS4372/EC3
Area classification	Zone 2
Design temperature	-20 - +45°C
Operating Temperature	-20 - +45°C
SWL (kg)	40000

Max. hydr. flow rate (l/min)	150
Min. working pressure (barg.)	180
Max. operating pressure (barg.)	210
Weight, dry (kg)	27000 (incl. structure)
Skate traveling speed (m/s)	0 - 0.33
Skate driving force (N)	75000
Equipment shipment size (LxWxH) (mm)	26000 x 3700 x 2130

CWS-PR



The Catwalk Shuttle (CWS) is a Riser & Pipe Handling System designed for the rapid handling of tubular and risers both running in- and out of hole and to ensure maximum safety for operating personnel. The CWS gives an almost "hands-free" operation of the tubular. The CWS is designed for rough handling, easy maintenance and a long trouble free operation time.

The CWS has two distinct modes of operation:

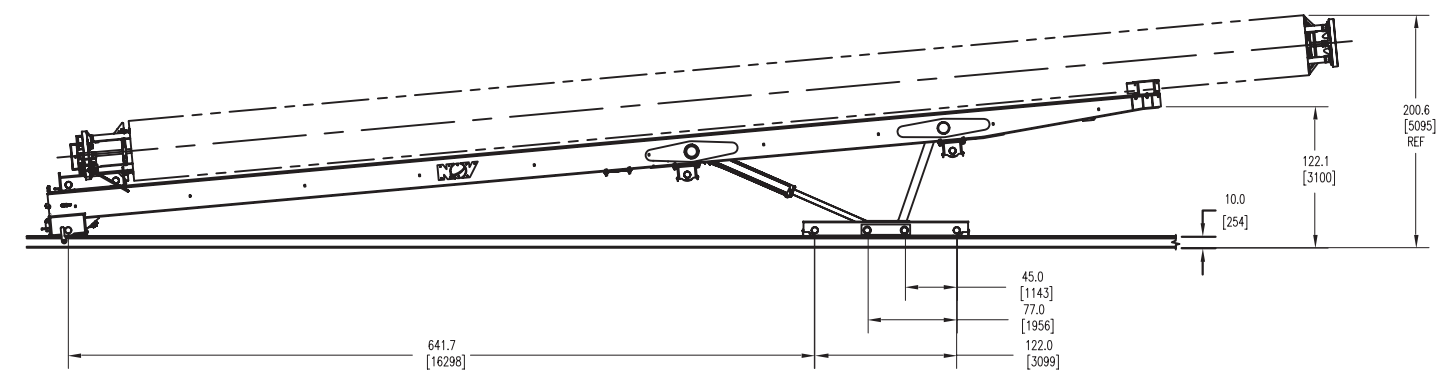
- When handling tubular less than 20" diameter, the CWS utilize a "loading platform" with its associated feeding system. This allows either automatic, semi-automatic, or manual control to be used.
- Risers, casings etc., of 20" and greater in diameter are handled by use of the trolley and cradle operating under manual control. The CWS can be run between pipe deck and drill floor under semi-automatic or manual control.

On the riser-/pipe-deck, operation of the CWS is to be co-ordinated with the riser-/pipe-handling crane and on the Drill-floor the operation is to be co-ordinated with the horizontal to vertical riser-/pipe-handler system. The CWS is designed for operation together with either gripper or riser yokes. Tubular less than 20" diameter are handled using the loading platform, which is essentially a storage area on the CWS. The tubular, typically drill-pipes, drill-collars and casings are individually transferred from loading platform to pipe trough by a feeding mechanism. The tubular are supported in a stable, horizontal position when transported with the CWS. The CWS can run or remove the capacity of the loading platform before returning to the pipe deck for loading/unloading by the pipe handling crane.

Service	Pipe- and Riser handling
Tubular Range	3 1/2" - 30"
Design code/ standard	"F.E.M. "Rules for the design of Hoisting Appliances" + NS 3472"
Area classification	Zone 1
Design temperature	-20°C to + 45°C
Operating Temperature	-10°C to + 45°C
SWL (kg)	40000

Max. hydr. flow rate (l/min)	160
Min. working pressure (barg.)	180
Max. operating pressure (barg.)	207
Weight, dry (kg)	40500
Skate traveling speed (m/s)	0 - 0.4
Skate driving force (N)	90000
Equipment shipment size (LxWxH) (mm)	31735 x 2660 x 2400

RHS-2



The Riser Handling System (RHS) uses a hydraulically powered trolley-on-a-trolley to accomplish the following rig tasks:

- Transporting horizontal riser joints to well center
- Tailing the riser section while it is hoisted by the draw works

The system can accommodate various requirements of riser length, diameter, and riser spider/gimbal height. Basic RHS-2 configuration accommodates 90 ft (27,432 mm) riser length.

Service	Riser Handling Skate - Generation 2
Riser length capacity	90'-0"
Riser DIA capacity	52"
Riser weight capacity(lbs)	100000
Hydraulic requirements (psi)	2500
Weight of trolley (lbs)	60000
Trolley speed (ft/sec)	104