TES INC.

TECHNICAL CASE STUDY

SPARTA
DOUBLE SCISSOR LIFT

UNDERGROUND ACCESS & COMPONENT POSITIONING

Custom-built to combine an elevated work deck with a secondary lift for installation tasks.



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OPERATIONAL BACKGROUND

ORIGINAL MINE REQUIREMENT

The mine needed elevated access and a means of raising components such as fans and pipes into position.

TES developed the Double Scissor with a second lift mounted on the main work deck.



OBJECTIVE

Provide crew access and component lifting within one equipment configuration.

ELEVATED ACCESS | COMPONENT SUPPORT | INSTALLATION WORK

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DESIGN REQUIREMENTS

INSTALLATION REQUIREMENTS

The equipment needed to provide access to the work and a supported means of positioning the component.



INSTALLATION NEED	EQUIPMENT RESPONSE
Crew access at elevation	Main scissor work platform
Component lift above the deck	Secondary scissor lift table
Lateral platform positioning	Deck side shift
Stabilized lifting setup	Front and rear outriggers

Work-deck elevation and component positioning serve different functions.

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EQUIPMENT ENGINEERING

DOUBLE SCISSOR CONFIGURATION

A smaller load-positioning scissor is mounted on the main elevating work deck.



1 MAIN SCISSOR

Raises the primary work platform.

2 SECONDARY LIFTER

Raises the supported load above the work deck.

3 ARTICULATED CARRIER

Four-wheel drive with articulated steering.

4 STABILIZATION

Front and rear outriggers support the lifting setup.

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OPERATING CONFIGURATIONS

WORK DECK & COMPONENT LIFT

MAIN WORK DECK

The primary scissor establishes the crew’s working elevation and access to the installation area.

SECONDARY LIFT

The deck-mounted table provides additional vertical movement of the supported component relative to the work deck.

The load moves relative to the work deck.



MAIN WORK DECK LOWERED



MAIN WORK DECK RAISED

Original surface photographs

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TECHNICAL REFERENCE

DECK LOAD & LIFT CAPACITY

The secondary lifter and its supported component load the main platform. Personnel, tools and other materials also contribute to total deck loading.

2,268 kg

5,000 lb

MAIN DECK CAPACITY



SECONDARY LIFTER / ORIGINAL REAR DETAIL

SECONDARY LIFTER

Its separate rating does not increase the main deck’s allowable load.

COMBINED CONFIGURATION

Load position, attachment weight and stabilization must be assessed together.

Lift ratings are not additive.

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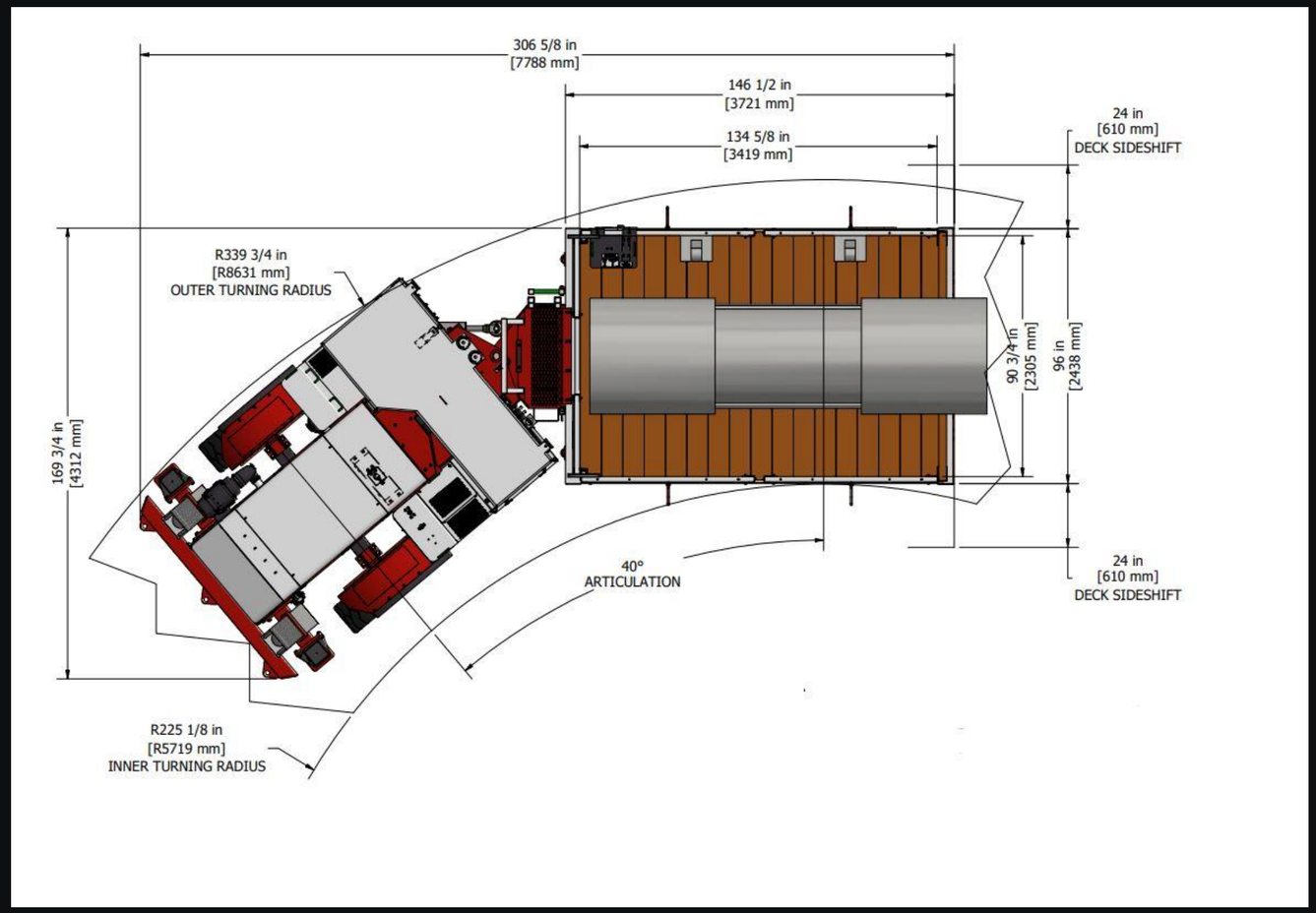
VEHICLE GEOMETRY

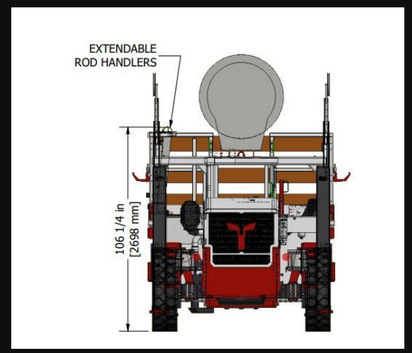
ACCESS & SETUP ENVELOPE

The installed lifter and carried component form part of the vehicle envelope. Setup also requires clearance for the raised deck and supported load.

TURNING-DRAWING REFERENCE	VALUE
Outside turning radius	8.631 m
Inside turning radius	5.719 m
Articulation shown	40°

Assess loaded travel clearance separately from installation clearance.





ORIGINAL TES DRAWINGS

Illustrated components and fitted equipment form part of the access assessment.

Original drawing images retained

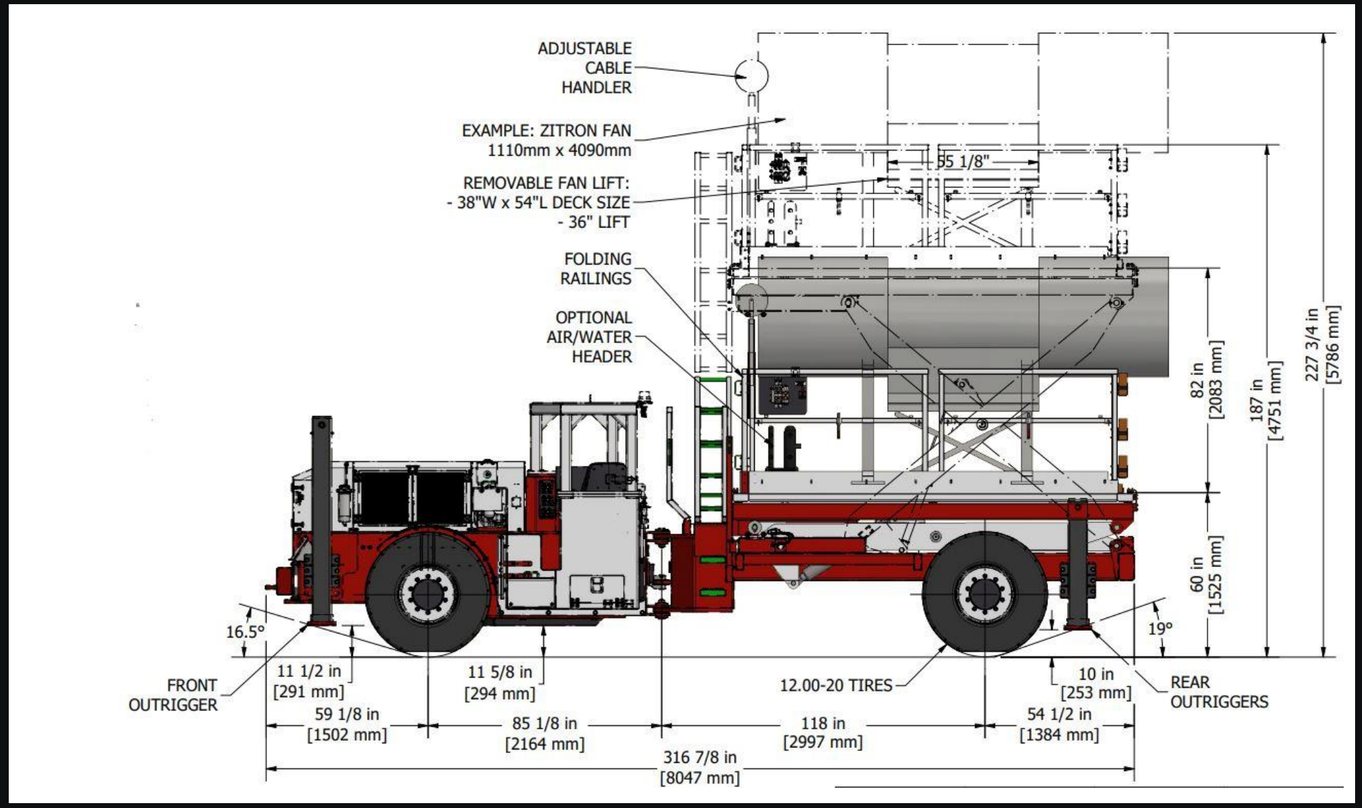
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INSTALLATION APPLICATIONS

FAN & PIPE INSTALLATION

The fan-handling drawing illustrates the intended support arrangement. Pipe-handling equipment is also identified in the specification.

> **Both applications require component support and access to installation connections.**



TES FAN-HANDLING DESIGN REFERENCE

The drawing illustrates the supported component above the main deck..

FAN INSTALLATION

Match support to the fan housing while preserving access to mountings and connections.

PIPE INSTALLATION

Assess pipe length, support spacing and centre of gravity when establishing the handling arrangement.



Original surface photograph

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PROJECT ASSESSMENT

ENGINEERING OUTCOME

PROJECT RESULT

A custom-built SPARTA scissor lift combining elevated access and secondary component lifting.

DESIGN SIGNIFICANCE

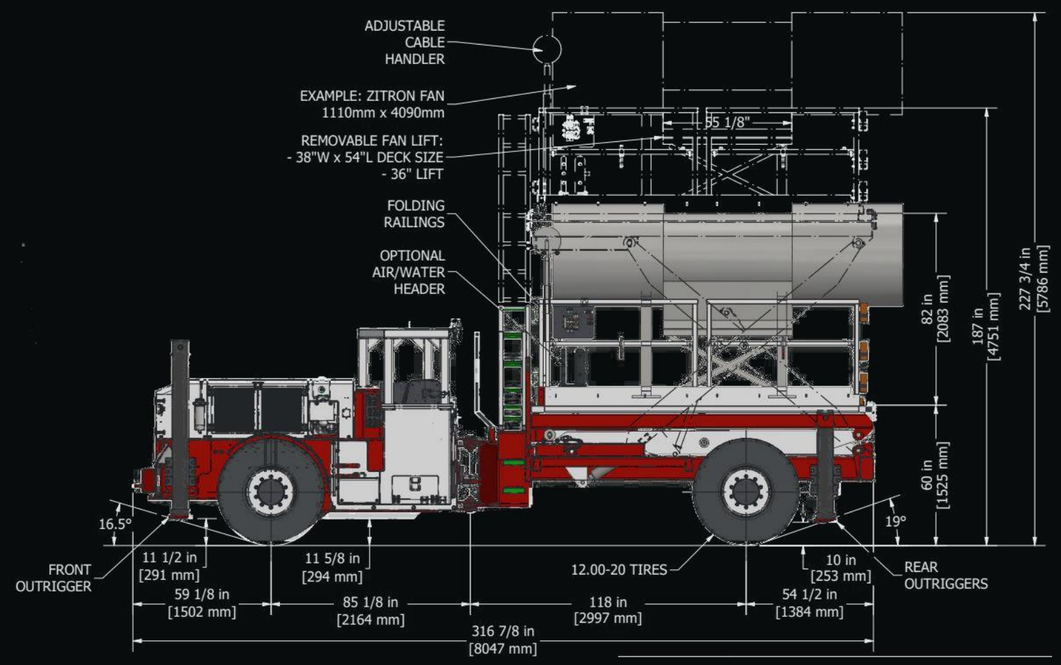
The configuration addresses the relationship between the crew’s working level and the component’s installation position.

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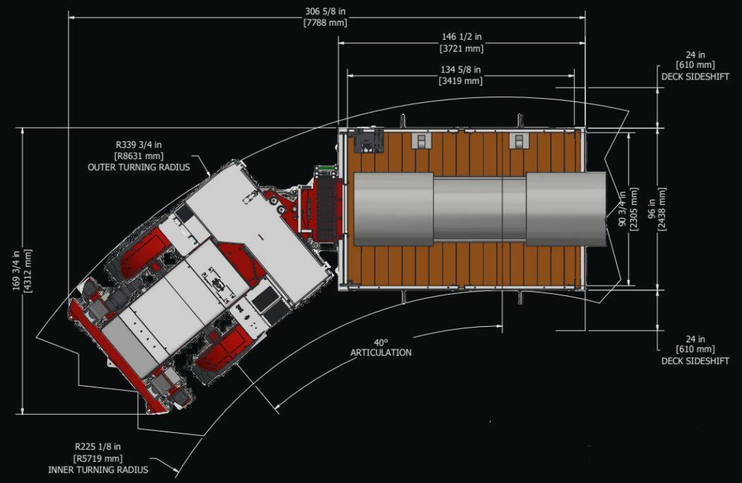
DIMENSIONS & SPECIFICATIONS

SPARTA Double Scissor Lift | Main work deck with a secondary component-positioning lift.

SIDE ELEVATION / FAN-LIFT ARRANGEMENT



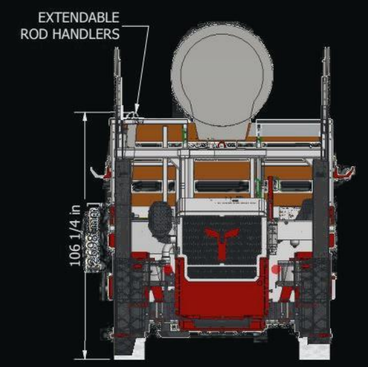
DECK PLAN / TURNING ENVELOPE



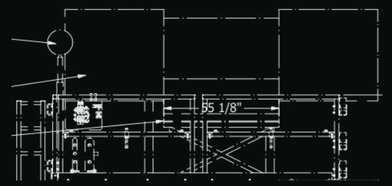
40° ARTICULATION

8.631 m OUTER RADIUS

FRONT ELEVATION



SECONDARY LIFT DETAIL



POWERTRAIN & CHASSIS [S]

Engine	**Cummins QSB 4.5**
Emissions	Tier 3
Transmission	DANA 20000 series
Axles	DANA 113 SAHR
Drive	4WD; articulated

DECK & LIFT ARRANGEMENT

Deck capacity [S]	**2,268 kg (5,000 lb)**
Main lift	Elevating work deck
Secondary lift	Deck-mounted table
Stabilization [D]	Front / rear outriggers
Lift ratings	Not additive

SECONDARY FAN LIFT [D]

Table size	**0.965 × 1.372 m (38 × 54 in)**
Lift travel	0.914 m (36 in)
Fan shown	1,110 × 4,090 mm
Lifter	Removable assembly

MOBILITY [D]

Overall length	**8.047 m**
Inside radius	5.719 m
Outside radius	8.631 m
Articulation	40°

ELECTRICAL & SAFETY [S]

Electrical	**24 V system**
Braking	ABA brake system
Canopy	ROPS / FOPS
Fire system	ANSUL, 4-nozzle liquid
Visibility	LEDs; back-up alarm

S = specification sheet. D = supplied fan-handling drawings. Reference values are not a single verified as-built specification.
Side shift, lift dimensions and tyre fitment differ between sources. Confirm the delivered configuration and approved lift limits.

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ISO 9001:2015 CERTIFICATION intertek

CWB CERTIFIED

SPARTA MineReach