TES INC.

TECHNICAL CASE STUDY

SPARTA
NARROW VEIN SCISSOR LIFT

USLNV5000 | UNDERGROUND ELEVATED ACCESS

Custom-built for a distributor serving narrow-vein mining operations in Mexico.

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Illustrative underground setting

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OPERATIONAL BACKGROUND

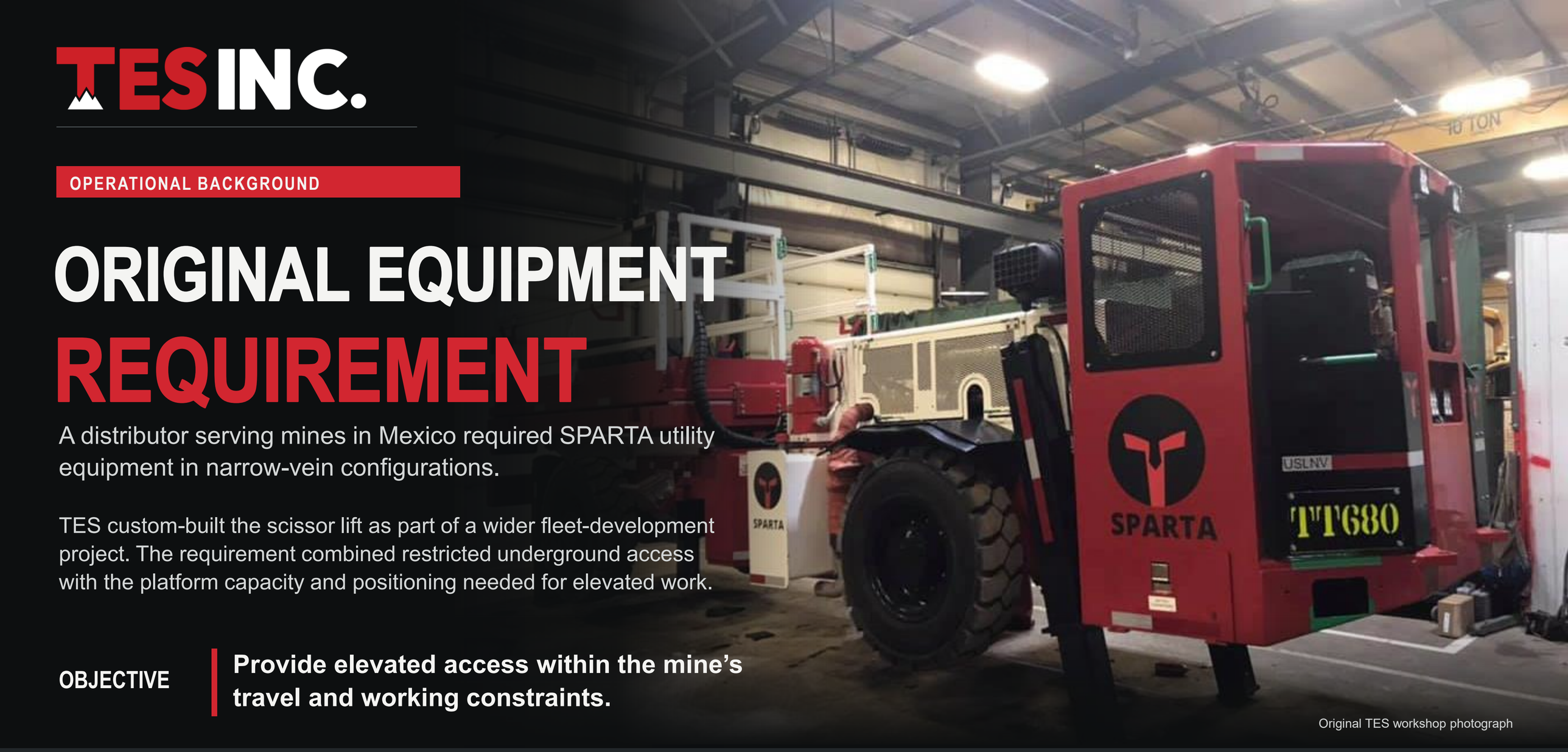
ORIGINAL EQUIPMENT REQUIREMENT

A distributor serving mines in Mexico required SPARTA utility equipment in narrow-vein configurations.

TES custom-built the scissor lift as part of a wider fleet-development project. The requirement combined restricted underground access with the platform capacity and positioning needed for elevated work.

OBJECTIVE

Provide elevated access within the mine's travel and working constraints.



Original TES workshop photograph

MINE REQUIREMENTS | DISTRIBUTOR | TES ENGINEERING & MANUFACTURING

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DESIGN REQUIREMENTS

ACCESS & WORKING REQUIREMENTS

The vehicle needed to reach the work area and provide sufficient space for platform positioning and stabilization.



REQUIREMENT	EQUIPMENT RESPONSE
Restricted travel-way width	Narrow-vein carrier configuration
Cornering and positioning	Articulated steering
Elevated access	Scissor platform with lateral side shift
Lifting setup	Four independent outriggers

Illustrative underground setting

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EQUIPMENT ENGINEERING

SCISSOR LIFT CONFIGURATION

An articulated carrier integrates the scissor assembly, platform side shift and independent outriggers.



Original supplied vehicle photograph

1 ARTICULATED CARRIER

Four-wheel drive with DANA 20000 transmission and DANA 123 SAHR axles.

2 SCISSOR ASSEMBLY

Solid scissor arms with dual lift cylinders and load checks.

3 PLATFORM SIDE SHIFT

Lateral adjustment of the platform position.

4 STABILIZATION

Four independent front and rear outriggers.

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OPERATING CONFIGURATIONS

TRAVEL & ELEVATED WORK POSITIONS

TRAVEL ENVELOPE

The lowered platform, cab, railings and fitted equipment determine the vehicle’s clearance through the route.

WORKING ENVELOPE

Platform elevation, lateral side shift and outrigger deployment determine the space required at the work area.

Assess both configurations against the opening and installed mine services.



PLATFORM LOWERED



PLATFORM RAISED WITH OUTRIGGERS DEPLOYED

Original surface photographs

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TECHNICAL REFERENCE

PLATFORM CAPACITY & POSITIONING



The platform combines vertical lift with lateral adjustment. Load, elevation and side-shift position must be assessed together.



ORIGINAL TES VEHICLE PHOTOGRAPH

AUGUST 2018 SPECIFICATION REFERENCE	VALUE
Deck capacity	2,268 kg (5,000 lb)
Side shift	0.30 M (12 in)
Lift-cylinder arrangement	Dual cylinders with Load checks
Stabilization	Four independent Outriggers

Upper image: illustrative underground setting

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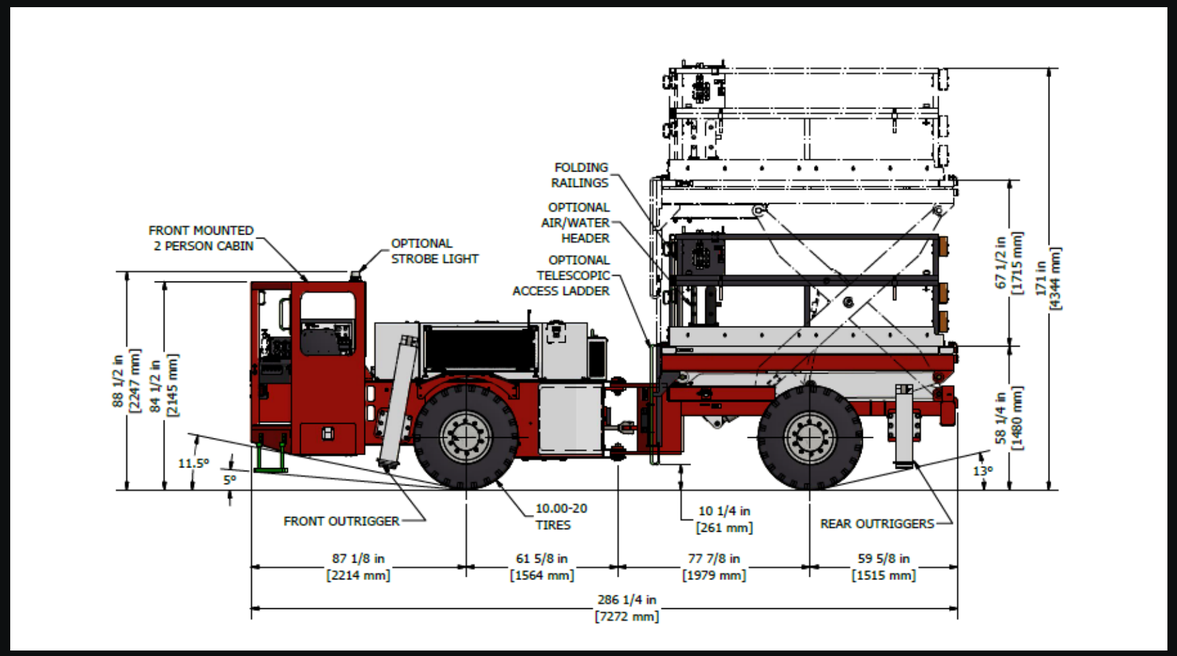
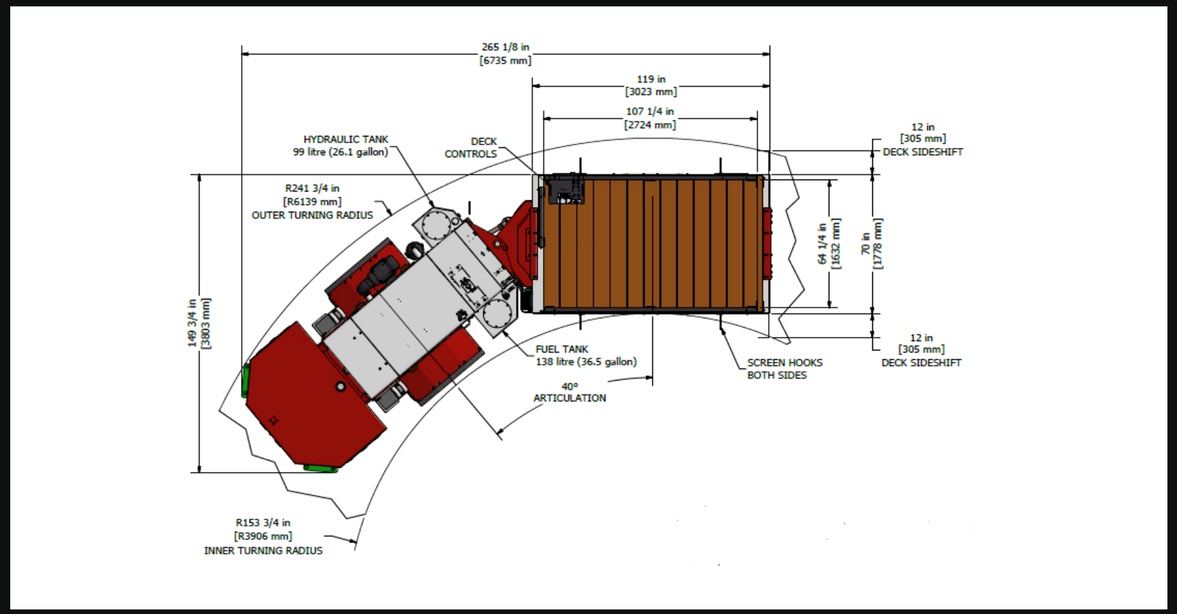
VEHICLE GEOMETRY

ACCESS & TURNING ENVELOPE

AUGUST 2018 DRAWING REFERENCE	VALUE
Width Without Optional Fenders	1.805 m
Width With Optional Fenders	1.924 m
Overall Length	7.272 m
Inside Turning Radius	3.906 m
Outside Turning Radius	6.139 m
Articulation Shown	40°





ORIGINAL TES DIMENSIONAL AND TURNING DRAWINGS

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FLEET DEVELOPMENT

NARROW-VEIN UTILITY FLEET

TES designed a wider range of SPARTA narrow-vein utility vehicles for mines served by the distributor in Mexico. The scissor lift was one configuration within that programme.



Original surface photograph; scissor-lift configuration shown.

COMMON REQUIREMENT

Equipment suited to restricted underground access.

CONFIGURATION-SPECIFIC DESIGN

Vehicle dimensions, load capacity and working space remain specific to each utility application.



Illustrative underground setting

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PROJECT ASSESSMENT

ENGINEERING OUTCOME

PROJECT RESULT

A custom-built scissor lift developed within a wider SPARTA narrow-vein utility-vehicle programme.

APPLICATION BASIS

Carrier dimensions, platform capacity, side shift and stabilization must be considered together. A narrower carrier alone does not establish suitability for the work area.

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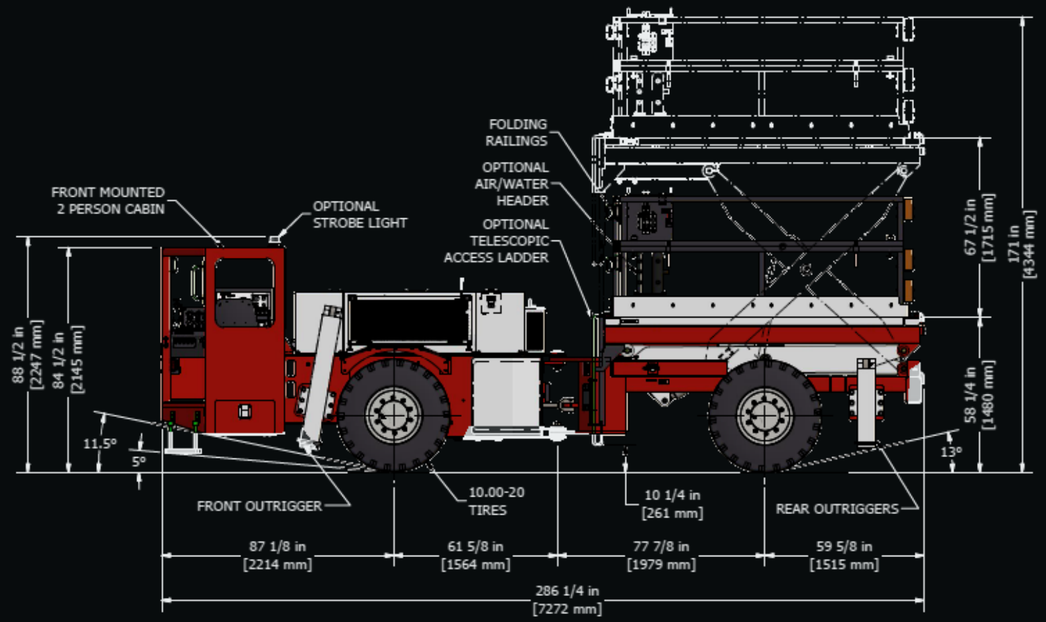
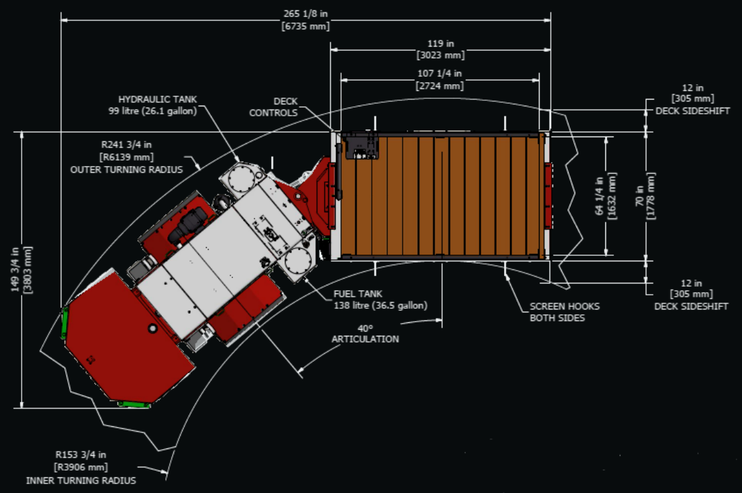
DIMENSIONS & SPECIFICATIONS

SPARTA USLNV5000 Narrow Vein Scissor Lift | Dimensions, platform capacity and major systems.

SIDE ELEVATION / LIFT ENVELOPE



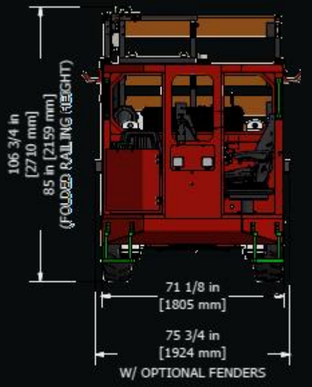
DECK PLAN / TURNING ENVELOPE



40° ARTICULATION

6.139 m OUTER RADIUS

FRONT ELEVATION



CARRIER CONFIGURATION



POWERTRAIN & CHASSIS [S]

Engine options (Tier 3)	Cummins QSB 4.5 (130 hp) Mercedes 904 (148 hp)
Transmission	DANA 20000 series
Axles	DANA 123 SAHR
Drive	4WD; articulated
Tyres	10.00-20

DECK & LIFT [S]

Deck capacity	2,268 kg (5,000 lb)
Deck size*	1.82 × 3.04 m
Max. deck height	3.20 m (126 in)
Side shift	0.30 m (12 in)
Lift cylinders	Dual; load checks
Outriggers	Four independent

VEHICLE GEOMETRY [D]

Width, no fenders	1.805 m
With opt. fenders	1.924 m
Overall length	7.272 m
Railing height*	2.710 m
Folded rail height*	2.159 m

MANOEUVRABILITY [D]

Inside radius	3.906 m
Outside radius	6.139 m
Articulation	40°
Clearance shown	0.261 m

ELECTRICAL & SAFETY [S]

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

S = August 2018 specification table. D = original drawings. Reference data; confirm the delivered configuration.

* Deck dimensions and height descriptions differ across the source document. See slide notes; do not use as a clearance approval.

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CONTACT US

TES

705-855-4254

sales@tesinc.ca

3695 Ford Drive,
Chelmsford, Ontario, Canada



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ISO 9001:2015 CERTIFICATION intertek

CWB CERTIFIED

SPARTA MineReach