STAR events group

INVESTORS IN PEOPLE

Health & Safety Document Series

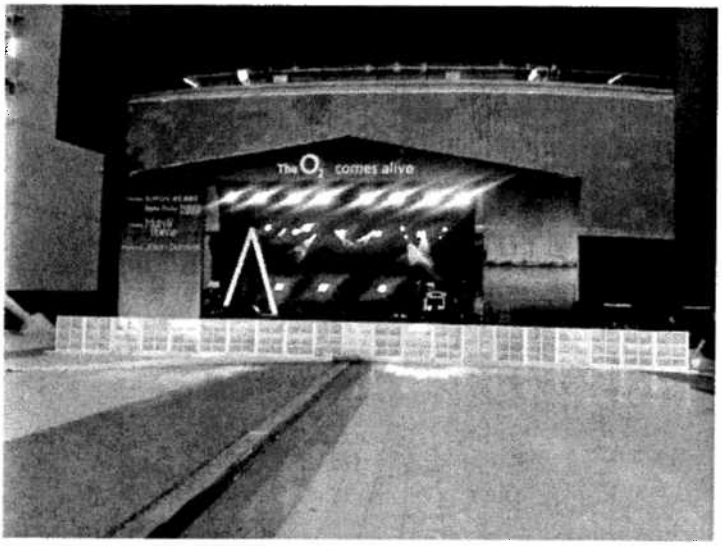
Technical & Safety Information

Level 3

STAGE LINE®

Stageline Inc

SL200 Mobile Stage



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CONTENTS

DOCUMENT PROCESS

The principal activities of the company are the provision of rigging, stages, other temporary structures and design services to indoor and outdoor events.

This requires the supply and operation of a significant number of different products, in sometimes challenging environments across the world.

To ensure that Health and Safety documentation remains focussed, relevant and up to date the company has developed a hierarchical approach that cascades down through four levels:

Level 1 **Group Health and Safety Policy**
This sets out the company's over-arching strategies and is intended for use by directors and senior managers

Level 2 **Operational Health & Safety Policies**
Provided by operational divisions (such as Transport, Warehousing, Yard Operations etc)
These are intended for use by Senior Managers, Project Managers and Crew Chiefs.

Level 3 **Product Specific Technical & Safety Packs**
These include Risk Assessments and Method Statements. The creation of this tier of documents is based on our view that it is not possible or desirable to separate product specific technical and safety information.
These are intended for use by on-site Project Managers, Crew Chiefs and (critically) by outside organisations who have to work along side us at events.

Level 4 **Crew Information Sheets**
These are deliberately written in plain English and are the final part of our policy to 'cascade' information down to all staff, regardless of the length or status of their work for/with us.

Information Gathering

Our management of Health & Safety generates data from a combination of:

- Safety audits
- Inspections
- Tours of work premises
- Crew Chief reports and crew feedback

This is collated and assessed by our Health & Safety Committee and used to modify documents in all four levels.

This is a Level 3 document.

UPDATES AND REVIEWS

All of our working practices are under a process of continuing review by our Health & Safety Committee. Action points are recorded when updates are required to any document in this series. If no updates are required in a two year period the document is reviewed to ensure it is still current.

All updates and reviews are recorded below. This continuous recording of any updates replaces our previous annual review. The latest version of each document is always posted on our website – please ensure you are using the most up to date copy.

This updating and reviewing process commenced in 2011.

Revision	Date	Reason	By	Change
a	03/11	Review	RB	Insertion of this page. Review

INTRODUCTION

Commercial Confidentiality

As a company we believe that secrecy has no place in public safety. However the provision of advanced technology to public events is the lifeblood of Star Events Group and our technology is a valuable commercial asset. Consequently you are requested to treat our technical submission as confidential. Please note that this document remains the property of Star Events Group at all times and must be returned to Star Events Group on request. Copyright exists in all information given in this data pack and the recipient is only authorised to use it as follows:

Event Organisers may pass it on to a Local Authority with regulatory powers over the event or may retain it to form part of an event safety manual.

Local Authorities must not pass it on or copy it to any third party (specifically including external consultants) outside the local authority represented by the recipient without our express written consent.

Target Readership

Those persons called upon to verify the suitability of a temporary structure for use at events to which members of the public are admitted, and those who assess the potential risks for workers engaged in the erection of such structures. We expect this readership to include

- Building Control Officers
- District Surveyors
- Structural Engineers
- Health & Safety Officers
- Fire Officers
- Electrical Engineers
- Local Authority Licensing Officers.

Temporary Demountable Structures (TDS)

"Temporary Demountable Structures, Guidance on design, procurement and use" (2nd edition) (TDS2) was published by the Institution of Structural Engineers in 1999. The task group responsible was then renamed AGOTS (Advisory Group On Temporary Structures). Roger Barrett, a director of Star Events Group, chaired AGOTS from 1999 until the publication of the 3rd Edition (TDS3) in 2007.

A key section of TDS3 is the list of documents that have to be supplied with any temporary structure and the table giving these is reproduced on the following page.

All of our technical information packs are now being supplied to follow the TDS3 requirements.

Although mobile stage units are not strictly 'demountable', they have been designed or modified to comply with all relevant safety requirements of 'TDS3'. The Stageline SL200 product is a proprietary item and the technical details supplied by the manufacturer are included in this document.

DOCUMENT CHECKLIST

✓	DOCUMENT	PREPARED BY	SECTION
CLIENT'S REQUIREMENTS			
	Statement of what the structure is required to do (the concept)	Client	5.1.2
	Statutory requirements, permissions and licenses	Client	4, 5.1.3
	Other technical requirements (including loading)	Client	5.1.2
SITE, LOCATION AND EVENT			
	Assumed or measured ground bearing capacity	Client	5.1.2, 6.2
	Statement of allowable loading for indoor floor on which temporary demountable structure is to be erected	Client	5.1.2
	Statement of required superimposed loading on temporary structure	Client	5.1.2
	Fire risk assessment for the event	Designer/Contractor	3.5, 4.8, 12.3
	Fire certificates	Client	5.2.5
	Safety plan	Client/Contractor	3.6
	Contingency plan	Client	5.2.4
DESIGN			
	Evidence of competence	Designer	5.1.1, 5.1.4
	Detailed design drawings and contact details and calculations, and statement of what structure can do and any limitations	Designer	5.1.4
	Relevant information on standards and codes, and analysis or design software used in the design	Designer	5.1.4
	Design risk assessment	Designer	3.2
	Maximum leg load on foundations	Designer	5.1.4, 6.6
	Slope on which structure can safely be built	Designer	6.8
	For stages, ability of stage surface to meet given criteria	Designer	10.2.2
	Ability of the design to resist anticipated wind load	Designer	8.2, 8.3
	Ability of superstructure to support suspended equipment, including details of permissible support methods	Designer	10.2.2, 10.3.1
	Confirmation of independent design check	Contractor	5.1.4
ERECTION AND DISMANTLING			
	Evidence of competence	Contractor	5.1.2, 12.4
	Details of components to be checked at each erection	Contractor	5.1.5, 5.2.6, 7.1.2, 7.1.3, 7.3.3
	Records of inspection of structural components	Contractor	7.3
	Evidence that all lifting equipment is inspected and maintained in accordance with LOLER	Contractor	10.6
	Risk assessment(s) for erection and dismantling of structure	Contractor	5.2.2, 5.2.3
	Erection and dismantling method statements	Contractor	5.2.3
	Confirmation of independent erection check	Contractor	5.2.6, 7.1.2, 7.1.3, 12.4.2
USE			
	Details of methods for assessing wind speeds	Designer/Contractor	8.2, 8.3
	Details of action required at given wind speeds	Designer/Contractor	7.2, 8.2, 8.3
	Completion certificate	Contractor	5.2.6, 12.4.2

Reproduced from *Temporary Demountable Structures. Guidance on procurement, design and use (third edition)* with the permission of The Institution of Structural Engineers.

DESIGN – EVIDENCE OF COMPETENCE

It is particularly difficult to prove competence in the niche sector of large scale stage design. Individual components can be analysed by any competent structural engineer but the integration of such components is outside all forms of main stream structural engineering. It is notable that no current syllabus for trainee engineers covers temporary structures. The Institution of Structural Engineers has only been able to identify a handful of members who consider themselves to have competence in this specialised area.

Consequently at Star Events Group we take a team based approach.

Key members of the team are:

- Scott White & Hookins, Consulting Structural Engineers, who have worked with us for over 15 years in analysing our components, both individually and in combination.

- Steve Horton – our Design Manager. Steve joined us after 25 years with the UK's largest scaffolding supplier, SGB, where his last job title was National Formwork Design Manager. Steve's CV is available on request.

- Mark Constant – our Design Office Supervisor. Mark joined us after 20 years at Tyco Unistrut where he was Product Development Manager.

- Kieren Falvey – our senior design technician, who has an HND in engineering and some 20 years experience of design and drawing of temporary structures.

- Roger Barrett – founder of the company and originally a user of stage structures as a touring sound engineer. Dissatisfied with the structures available in the early 1980's, he switched his energies to researching temporary structures. He spent the period from 1999 to 2007 as chairman of AGOTS (Advisory Group On Temporary Structures) which was responsible for the 3rd Edition of *Temporary Demountable Structures* and published by the Institution of Structural Engineers in 2007.

  Roger is also the course director of the only UK recognised training course on temporary structures, which takes place annually at the Cabinet Office's Emergency Planning College. Roger's CV is available on request.

  Roger is a registered Engineering Technician with the Engineering Council UK and a Technician Member of the Institution of Structural Engineers.

- Several of our Crew Chiefs, who have operated our fleet of mobile stages around the world over the last 20 years (from Argentina to China). Their constant feed-back, innovation and practical common sense have played a large part in the success and development of the whole mobile stage fleet.

Stageline Inc in Montreal, Canada is the largest specialist manufacturer of mobile stage in the world. All their calculations have been checked by Star Events Group Ltd. Several Star Events Group staff have received factory product training in Montreal. A number of modifications to the units in the UK have been designed by Star Events Group Ltd.

DESIGN – DRAWINGS, CALCULATIONS, CONTACT AND STATEMENT OF USE

DRAWINGS

See Stageline document on following pages

CONTACT

Queries relating to the design of this product should initially be addressed to:

Steve Horton
Design Manager
Star Events Group Ltd
Milton Road
Thurleigh
Bedford
MK44 2DF

+44 (0)1234 772233
Steve.Horton@StarEventsGroup.com

STATEMENT OF USE

This product is specifically designed as a stage for entertainment use. As such it offers:

- A structural raised floor
- Weather proofing
- Suspension facilities for sound, lights and similar equipment, compliant with the requirements of LOLER (Lifting Operations & Lifting Equipment Regulations).
- A safe place of work

The equipment is designed for installation by trained crew only and is not available for 'Do-It-Yourself' assembly.

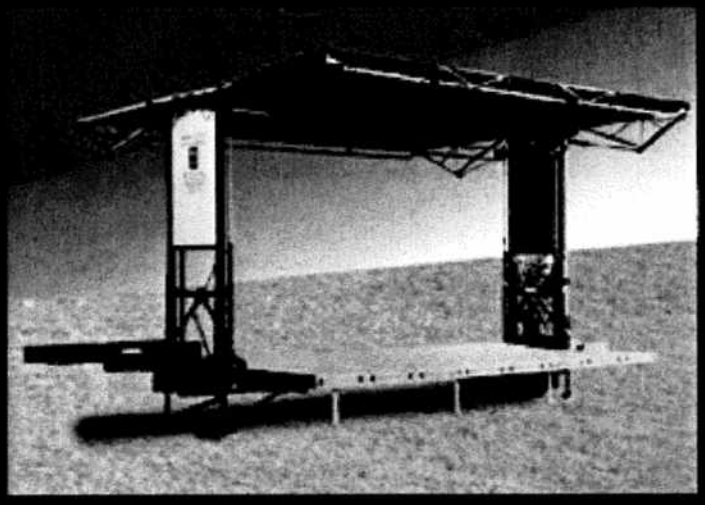
STAGELINE OPERATING MANUAL

STAGE LINE®

Operating Manual 2001

SL 200

STAGELINE® SL SERIES



STAGE LINE®

Operating Manual

 Stageline® products are designed and built by Stageline® Mobile Stage Inc., an international leader in mobile staging. For information call toll free in North America only at 1-800-267-8243 or dial 1-450-589-1063, fax: 1-450-589-1711.

BUREAU VERITAS ISO 9001 CE

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Table of Contents

Read all instructions carefully before set-up

The Stageline® SL 200 is designed to give safe and reliable service if operated according to instructions. This stage unit must be properly maintained and correctly operated for total efficiency throughout the years. **Follow instructions in sequence** and **respect cautionary notes.** For your safety and the safety of others, always exercise basic safety precautions.

- The SL 200 stage unit must be operated by trained personnel certified by Stageline®.
- This stage unit should be installed on a relatively smooth and levelled surface. The ground must be firm enough to support wheels and stabilizers without sinking.
- Levelling the stage unit is a very important step. To avoid difficulties, make sure the SL 200 is properly levelled before proceeding any further with set-up.
- The load capacity of floor stabilizers (or legs) is limited by length. Distance from ground to top of floor must not exceed 5'3" (1.6 m). In situations where this regulation cannot be met, you are advised to contact Stageline® engineers for alternative measures.
- Operate hydraulic system with care and caution at all times.
  - Never overtax the hydraulic system by running engine at full throttle for a long period of time or by jerking levers.
  - Never let the gas engine idle unnecessarily. This causes oil to foam in tank.
- Every pin has a purpose. Always pin and secure designated components and structure.
- During each event, a visual and structural inspection is your priority. During set-up, the structure must be checked and double checked repeatedly.
- Keep in mind that hydraulics are much stronger than the human body.
- When walking on roof, proceed delicately and shift weight on metal structure only. Avoid unsupported fibre. Wear skid resistant footwear. Certain regulations require you to wear a safety harness.
- Do not attempt to customize the SL 200 stage unit or make any structural changes without first consulting Stageline®.
- When replacing hardware or accessories, use same type as supplied by Stageline®. Pins and bolts which are frequently lost must be replaced with same grade and calibre.

*** A complete structural and mechanical inspection of stage unit is mandatory and should be performed annually.**

1.2 Customer Service

The technological cutting-edge mobile stage unit you operate has been carefully designed, engineered and manufactured under Stageline® precise quality standards to give you complete satisfaction and dependable operation throughout the years.

Over the years, your SL 200 mobile stage unit may require some adjustments, maintenance or replacement parts. Should you need technical assistance or parts, please contact us.

Toll free in North America only **1-800-267-8243,** or dial **1 (450) 589-1063.**

fax: 1 (450) 589-1711
e-mail: info@stageline.com
Web Sit : www.stageline.com

Or write to: Stageline® Mobile Stage Inc.
Customer Service
700 Marsolais
L'Assomption, (Quebec)
J5W 2G9
Canada

Replacement parts will be made available at current prices. Upon request, prices may be quoted in advance. Transportation charges will be applied from shipping point.

You can now contact our customer support am directly by email at custser@stageline.com.

	Metric	Imperial
Trailer*		
Length	12.9 m	42'4"
Width	2.5 m	8'2"
Height	4.0 m	13'2"
Cargo space	8.4 x 1.7 x 2.2 m	27'6" x 5'10" x 7'4"
Steel storage compartment	0.3 x 0.3 x 1.1 m	10" x 13" x 3'7"
Cargo capacity	5 900 kg	13 000 lbs
Weight	11 500 kg	25 000 lbs
Stage Floor*		
Type of surface '	Plywood on steel	Plywood on steel
Length x depth	9 x 7.32 m	30' x 24'
Height from ground	1.1 to 1.6 m	3'6" to 5'3"
Capacity'	500 kg/m²	100 lbs/sq ft
Roof*		
Type of surface'	Fiberglass bonded on steel	Fiberglass bonded on steel
Length x depth	9.7 x 8.2 m	32' x 27'
Clearance (inclined roof)	4.6 to 5.6 m	15' to 18'6"
Overall height from ground (adjustable)	Up to 7.2 m	Up to 23'6"
Maximum load bearing capacity	5 500 kg	12 000 lbs
8 Rated rigging points	500 kg each	1 000 lbs each
2 Front overhang extensions	250 kg at 1.5 m each	500 lbs at 3' each
2 Side overhang extensions' (sound wings)	500 kg at 0.9 m each	1 000 lbs at 5' each
2 Rear overhang extensions	-	-

Technical specifications are subject to change without notice. Figures are within inch or cm to actual size.

* Specifications can be modified to suit particular country and highway regulations.

' Can be changed according to customer requirements.

Due to Stageline® product improvement policy, technical specifications may change without notice.

1.4 Standard Features

Item	Standard Features	Metric	Imperial
2001	8 Built-in rigging points	500 kg each	1 000 lbs each
	2 Trusses 12" x 34' (0.3 x 10.4 m)	500 kg each	1 000 lbs each
	2 Trusses 24" x 31' (0.6 x 9.4 m)	1 000 kg each	2 000 lbs each
2002	2 Front overhang extensions 5' (1.5 m)	250 kg each	500 lbs each
2003	2 Side overhang rigging bars 3' (0.9 m)	500 kg each	1 000 lbs each
2004	2 Side overhang extensions for banners	3.7 m	12'
2005	4 Steel corner posts		
2006	Fiber glass roof	9.7 x 8.2 m	32' x 27'
	Total roof load bearing capacity	5 500 kg	12 000 lbs
2007	Heavy-duty, high power, integrated hydraulic system		
2008	Gas engine / hydraulic pump		
2009	Stage deck / quick-levelling legs	9 x 7.3 m	30' x 24'
2010	Retractable hydraulic gooseneck		
2011	Air-ride suspension / cargo capacity / tires	0.45 m	17'5"
2012	ABS braking system		
2013	Trailer end fiber panels, upper section		
2014	Steel storage compartment and keys	0.25 x 0.33 x 1.1 m	10" x 13" x 43"
2015	1 Spare wheel / integrated storage		
2016	Cargo tie-down		
2017	500 Watt quartz work light kit		

Technical specifications are subject to change without notice. Figures are within inch or cm to actual size.

	Item	Optional Features	Metric	Imperial
1	2025	4 Hydraulic stabilizers for self-levelling and variable heights	Up to 1.6 m	5'2"
	2026	Additional steel storage compartment		
	2027	Extension platforms / alum. legs & accessories incl.	1.2 x 2.4 m	4' x 8'
	2028	Loading ramp / aluminum	1 x 3.7 m	3' x 12'
	2029	Aluminum stairway with handrail		
1	2030	Self-levelling aluminum stairway with handrail		
1	2031	Guardrails / galvanized steel / 3 sides		
	2032	Guardrails / aluminum / 3 sides		
1	2033	Banner hardware		
1	2034	Upstage fire-retardant wind walls		
	2035	Downstage fire-retardant wind walls		
1	2036	Skirting for front and side of stage		
	2037	Trailer end fibre panels, lower section		
	2038	Electric motor for dual power		
1	2039	Additional axle / extra cargo capacity		
	2040	Custom load-bearing sound wings		
1	2041	Two sound wing platforms / alum. legs & accessories incl.	2.4 x 2.4 m	8' x 8'
			3 x 3 m	10' x 10'
	2042	Monitor mix platform / alum. legs & accessories incl.	2.4 x 2.4 m	8' x 8'
			3 x 3 m	10' x 10'
	2043	Quick shelter - vinyl roof and walls	2.4 x 2.4 m	8' x 8'
			3 x 3 m	10' x 10'
	2044	Soft goods and stage dressing		
	2045	Customized paint and lettering package		

Technical specifications are subject to change without notice. Figures are within inch or cm to actual size.

1.6 Supplied and Recommend Tools

The following tools and parts are supplied with your mobile stage.

Supplied Tools

1	Tool box
1	Level 0.6 m (2')
1	Adjustable spanner
1	Key 13 mm ($^1/_2$")
1	Key 14 mm ($^{33}/_{64}$")
1	Allen key 4 mm ($^5/_{32}$")
12	Black cap (plastic) for extension platform
1	Honda motor rope
1	Spark plug & socket
2	Pins S-2 (spare)
4	Pins S-3 (spare)
4	Pina S-7 (spare)
4	Pins S-8 (spare)
10	R-Clips
10	0-1 pins
2	Yellow strap ratchets
4	Black strap ratchets
2	Snap hooks
2	Spare lights for trailer

We recommend that you equip your stage with the following tools which we find might be handy during staging operations.

Recommend Tools

1	Ladder or step ladder 6.1 m (20')
1	Structure punch
1	Vise-grip pliers
1	Multi-bit screwdriver

2. Operation of the Hydraulic System

Fully understand this section before proceeding with stage set-up.

To identify the hydraulic control panels, refer to page 10 fig. n°1: Front hydraulic control panel and fig. n°2: Rear hydraulic control panel.

CAUTION 	For stages equipped with both gas engine and electric motor, use one power unit at a time. Do not use both power units simultaneously. When engine is running, leave compartment doors opened. For electric motor, use a grade n°12 protective resistance supply cord or higher.

IMPORTANT	Levers are spring-loaded. In case of problems, release levers. System will stop.

This stage model is equipped with an electric starter, a crank-cord handle, an emergency switch to stop the engine at any time and a hazard warning device.

2.1 Gas Engine

- Turn hazard warning device on.
- Check emergency switch at front of stage. For engine to start, emergency switch must be deactivated.
- Turn engine on.
- Turn choke on.
- Turn key for ignition or pull on crank-cord handle.

Sliding controls are on the right-hand side. Arrow points to on position.

Throttle ←

Choke ←

Gas line →

- Turn choke off. In cold weather, it may be necessary to keep choke at mid-position for approximately three (3) to four (4) minutes to let engine warm up. Then turn choke off.
- Do not leave engine idling. Keep throttle slightly engaged.
- The hydraulic system requires a different RPM for different operations.
  Example: Floor cylinders require more revolutions.

2.2 Electric Motor (option)

- Switch gas engine off.
- Connect motor to electrical power source. On / off switch is located near engine.
- Make sure that your country's power source is compatible with the motor voltage requirements. Have a certified electrician check all electrical connexions.

2.3 Switch Valve

CAUTION 	Always open roof panels first before proceeding with any other opening maneuvers.

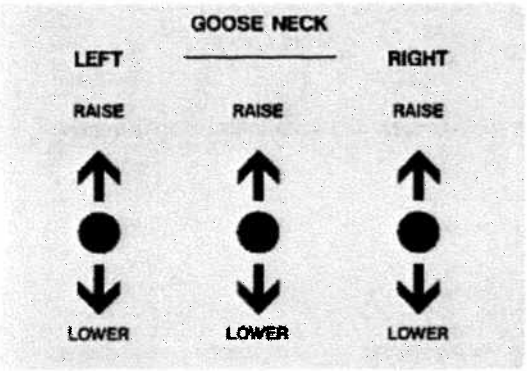
- To activate hydraulic stabilizers and gooseneck, push on switch valve knob located in rear control panel.
- Each stabilizer has its own lever for a better control of levelling operations.
- To activate hydraulic roof and stage cylinders, pull on "switch valve" knob.
- Roof is raised with two (2) levers: one each for the front and the rear telescopic cylinder. Both levers can be operated simultaneously with caution.
- Floor panels have one control lever each to activate their own cylinders simultaneously.

2.4 Gooseneck

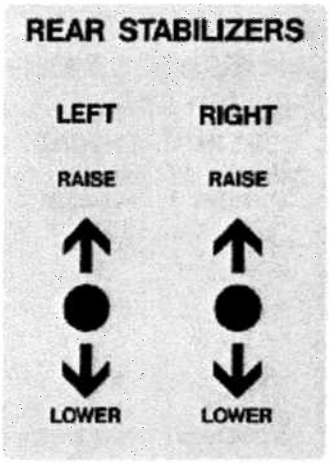
- Gooseneck is raised and lowered with one lever only. You will find this lever in the front control panel, located directly under the gooseneck. Before operating gooseneck, remove pins. It might be necessary to pry gooseneck to free pins by activating gooseneck hydraulic lever with engine running at a low RPM. Once gooseneck is positioned reinstall, reinstall pins.

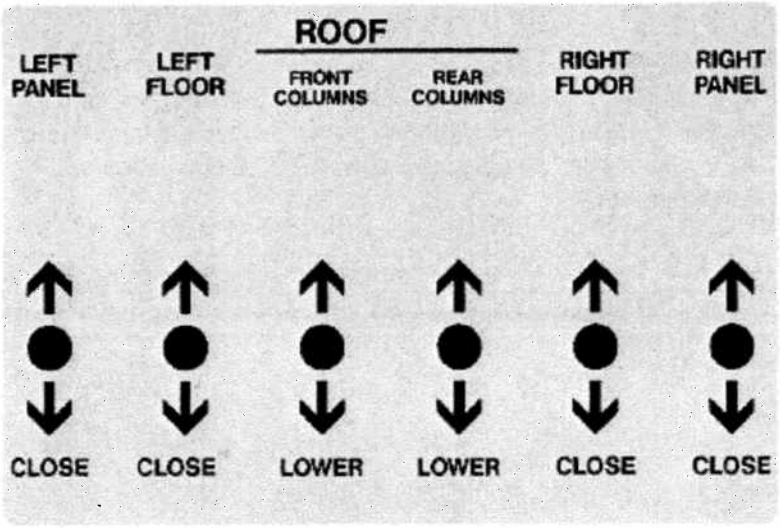
CAUTION 	Unload equipment and release tractor before raising gooseneck.

Front / Gooseneck Control Panel: Fig. n°1

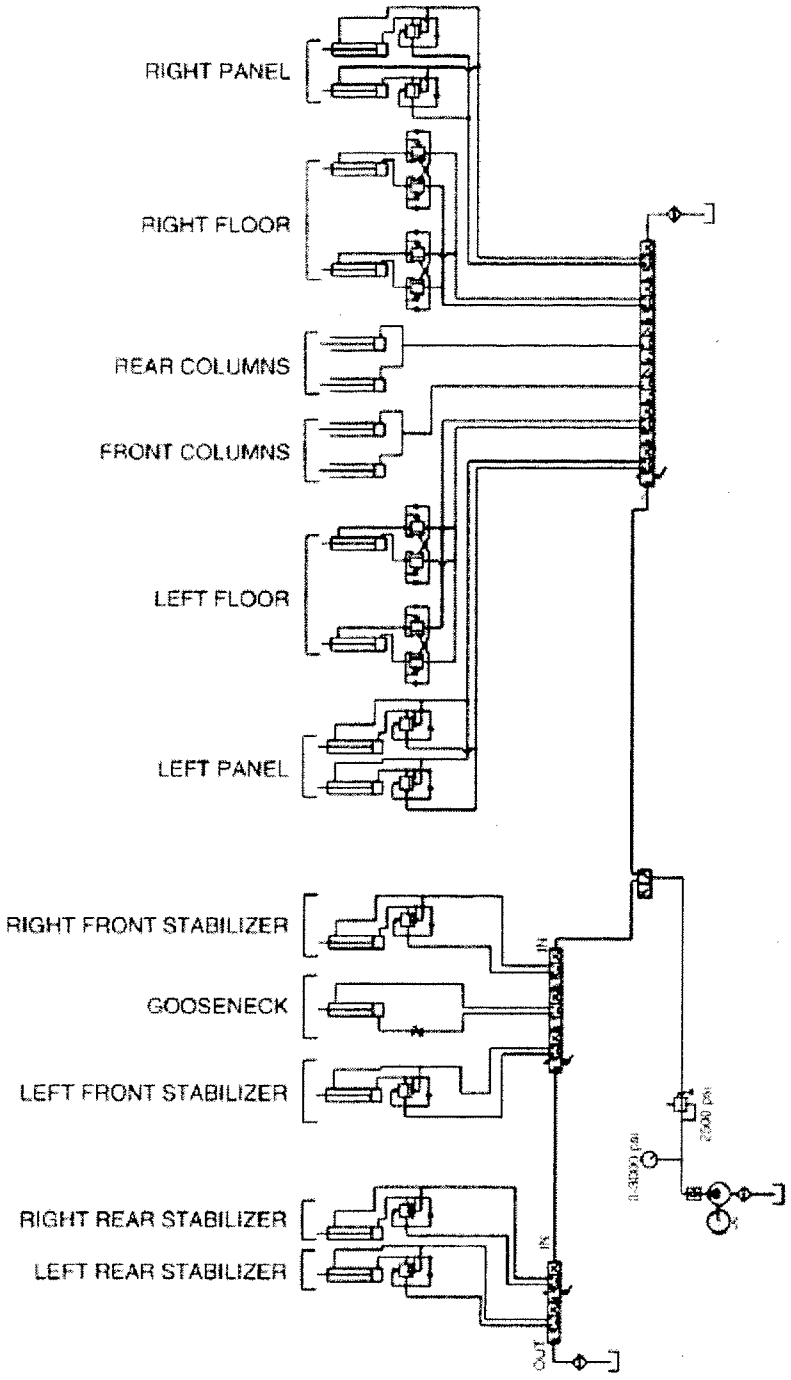


Rear / Main Control Panel: Fig. n°2





2.6 Hydraulic System Diagram



3. Stage Set-up

32' x 24' x 17' (9.8 x 7.3 x 5.2 m)

When parking trailer on site, remember that downstage is located on driver's side. Make sure area where the SL 200 will be installed is clear of aerial cables, tree limbs, street lamps and other hazards. Remember that trailer size is not the stage ultimate configuration.

FOLLOW INSTRUCTIONS IN SEQUENCE. RESPECT CAUTIONARY NOTES.

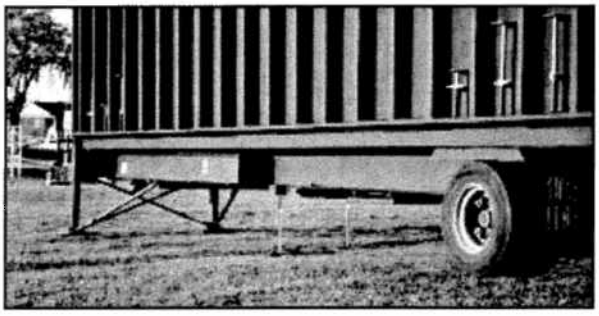
3.1 Levelling Trailer Unit

CAUTION	Levelling the stage unit is a very important step. To avoid difficulties, make sure the stage unit is properly levelled before set-up.

- Place a wooden strut under each hydraulic stabilizer, or more if needed.
- Push switch valve knob to engage hydraulic stabilizers. Turn hazard warning device on, start engine and let it warm up.
- Lower all four (4) hydraulic stabilizers, level trailer width then length. During this operation the trailer must remain relatively levelled. Raise in small increments, maximum of 6" (15 cm) at a time.

  For a greater stability on softer grounds, it is preferable to leave stage unit on wheels at ground level.

- Once trailer is levelled, secure hydraulic stabilizers with the four (4) locking pins.
- Insert all six (6) locking pins in cross-braces.
- Slightly tighten bolt to apply **tension** on cross-braces, using wrench if needed.



- Release central unit supports from trailer chassis. Insert screw jacks and tighten. If your stage is not equipped with this type of support, install removable supports provided with stage. Install screw jacks under trailer chassis.

- Install cross-braces on all hydraulic stabilizers. Pin and secure.

CAUTION 	Make sure hydraulic stabilizers are properly secured with locking pins and cross-braces before proceeding any further.

3.2 Set-up

3.2.1 Opening Roof Panels

- Remove strap ratchets locking roof panels (trailer sides) at front and rear of unit.

- Pull switch valve knob to engage hydraulic roof and floor levers. Turn hazard warning device on and start engine.

- Open roof panels, one at a time, at working height.

CAUTION

Always begin by unfolding the roof panels. As a security measure, make sure surroundings of stage unit are clear. Do not operate more than one control lever at a time.

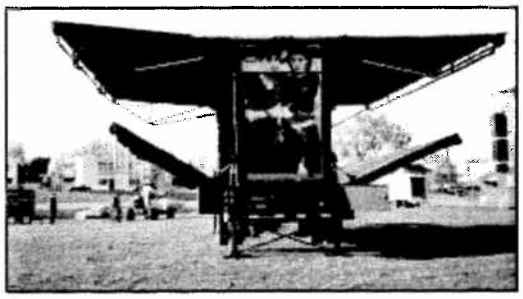
- If applicable, release sound and light extensions. Pin and secure. Note: For 1 ton sound extensions option, install extra hardware such as cabling system.

- Install banner and supports.

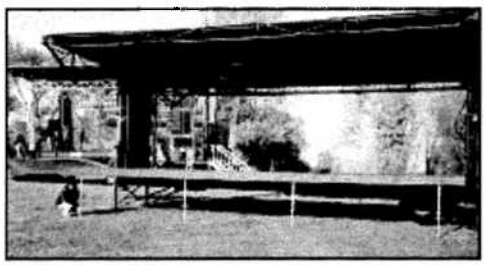
CAUTION 	Do not hang any load other than banners from roof structure. Wait until corner posts and telescopic columns have been locked in with all locking pins. Hydraulic cylinders are not rated to lift any other load than roof structure.

3.2.2 Opening Floor Panels

- Raise roof panels in an horizontal position before proceeding with floor opening. Handle gently, one lever at a time.
- Distribute levelling jacks.
- Open floor panels to working height. Handle gently, one lever at a time.



- Release stabilizers from floor panel.
- Open floor panels until horizontal. Insert levelling jacks in stabilizers. Pin and secure.
- Place a wooden strut under each floor stabilizer.
- Level stage floor with hydraulics then with leveling jacks.
- Repeat same operations for opposite floor panel.



- **Only after the installation of all stabilizers will floor capacity be rated for 100 lbs / sq ft.** The length of stabilizers limits the load capacity of floor. Distance from ground to top of floor must not exceed 5' (1.5 m)
- Once floor panels are fully opened, install cover plates over hinges.
- If sound extensions or downstage side walls are used to fly P.A. system or FOH, install removable brackets in slots of both downstage floor corners.
- For optional 1 ton sound extensions, add the extra steel supports under downstage corners.
- Shut off engine.

3.2 Set-up

Upstage (optional)

- Lay out floor extensions. Put aside the four (4) aluminum legs with side slots. When installing the floor extensions, one (1) will be used at each corners and one in the middle of the second and the third extension. One at a time, install extensions to main floor. Use aluminum legs for support and levelling jack.

- Insert the threaded end of tie down through in special receptacle (4) found under floor. Then insert the other extremity in openings of floor extension. Secure threaded end with wing nut. These tie downs will keep floor extensions anchored in windy conditions;

- Insert strap ratchets hook at each end of vertical cables running through wind wall into slot found in aluminum legs. Manually reposition slot, if necessary. Tighten cable.

- Attach bottom of wind wall using "s" hooks all along extension edges.

If step 3.2.3, "Optional Roof Height", is not applicable, disregard and proceed to step 3.2.4, "Installing Wind Walls".

32' x 16' (9 x 5.2 m)

3.2.3 Optional Roof Height

CAUTION	**For 9' (2.7 m) set-up only**. Do not close roof structure with corner posts pinned on downstage corner brackets. This can cause severe damage to structure.

A) Optional Roof Height with Upstage Floor and Roof Panels Opened

- Assemble corner posts. Pin and secure female components (the upper section of corner post column) to all four (4) corners of roof panels.

- After assembling female components, pin and secure male components to lower brackets (lower section of corner post column) located at floor level.

- All other steps for set-up and dismantling remain the same with the exception that roof will be raised to 9' (2.7 m).

Wind walls cannot be installed with upstage floor and roof panels closed.

B) Optional Roof Height with Upstage Floor and Roof Panels Closed

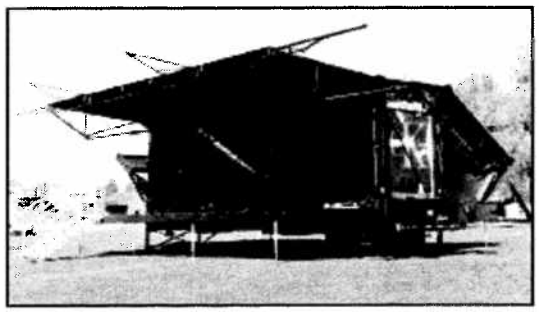
- Assemble corner posts. Pin and secure female components (the upper section of corner post column) at both downstage corners of roof panels.
- After assembling female components, pin and secure male components to lower brackets (lower section of corner post column) located at floor level.
- Upstage floor and roof panels remain closed.
- All other steps for set-up and dismantling remain the same with the exception that roof will be raised to 9' (2.7 m).

If step 3.2.4, "Installing Wind Walls", is not applicable, proceed to step 3.2.5, "Installing Corner Posts".

CAUTION	Do not fasten lower end of vertical straps until roof structure is fully pinned and secured.

3.2.4 Installing Wind Walls

The Stageline® SL 200 wind walls include five sections, one rear and four side sections.



Rear Wind Wall

- Lower roof panels to working height.
- Attach upper horizontal straps to upstage roof panel. For security purposes, attach, but do not fasten, vertical straps from roof to floor panels to avoid injuries from whipping wind wall caused by wind factors. Also, keep roof panel slightly angled downward to allow roof structure to raise without damaging wind walls.
- Attach upper end of vertical straps.

Side Wind Walls

- Attach side wind wall upper horizontal straps to matching hooks located on roof panel trusses. Follow same security procedures as for rear wind wall set-up.

3.2.5 Installing Corner Posts

- Install first section of corner posts (female components) to corners of roof panels. Pin and secure.
- Open roof panels until horizontal and tighten upper horizontal sections of side wind walls.

CAUTION 	Check wind walls when raising roof structure. Make sure they do not get stuck between telescopic cylinders or other equipment. Serious damage to wind walls could occur.

3.2.6 Raising Roof Structure

CAUTION 	Do not hang any load other than banners from roof structure. Wait until corner posts and telescopic columns have been locked in with all locking pins. Hydraulic cylinders are not rated to lift any other load than roof structure.

CAUTION 	Never attempt raising roof structure unless panels are in horizontal position. Severe damage could occur.

- Make sure wind walls and steel cables are free so as not to become wedged or jammed while raising roof structure.

For 17' (5.2 m) roof height

- Roof structure may be raised using both control levers simultaneously. Some alternating may be required. Front cylinders tend to raise more slowly than rear cylinders. Handle levers accordingly.

CAUTION 	Always raise roof structure slowly and evenly.

- Start engine and let warm up.
- Open roof structure at approximately 4' (1.2 m) high.
- Slide in second section (male component) of corner post and attach either to:

  a) Upper brackets of roof columns. **Sound extensions and FOH are not to be used.**

  b) Removable brackets on both (2) corners of downstage. **Sound extensions and FOH are to be used.**

- Resume raising roof structure.
- Once roof structure is fully raised, pin and secure telescopic columns with the four (4) square pins.
- Ease hydraulics to settle weight on pins.

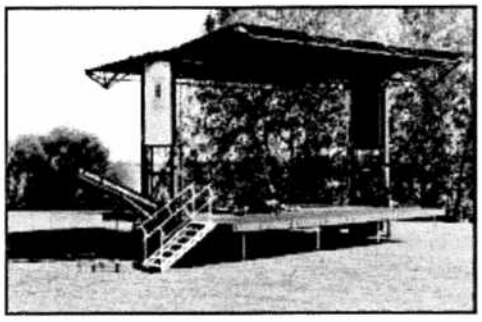
3.2.7 Final Positioning of Roof Structure

- Pin and secure the four (4) corner posts. If holes are not aligned, operate hydraulic system at low RPM in order to adjust roof panels until holes are matched. Wind Walls
- Attach and tighten all sections completely.

3.3 Final Set-up Procedures

3.3.1 Raising Gooseneck

CAUTION ⚠	Do not raise gooseneck until stage set-up is completed.



- Push switch valve knob to activate hydraulic gooseneck levers.
- Remove retractable fencing form gooseneck.
- Remove locking pins (2) lock from telescopic braces found on each sides of gooseneck.
- Operate hydraulic system to raise gooseneck until vertical. Pin and secure.
- Shut off engine.
- Deactivate hazard warning device when stopping engine.

3.3.2 Final Positioning of Roof

- Install sound wing platforms, skirting, staircases and handrail.
- Position staircases. Maximum allowable load on staircase is 660 lbs (300 kg).

3.3 Finale Set-up Procedures

- Install guardrails.

CAUTION 	Raise sound and lighting equipment slowly and evenly. Do not jig or jerk while raising load. This can cause excess stress on structure.

IMPORTANT	During set-up, inspect the stage structure regularly. At the end of set-up make a final inspection of all stabilizers and cross-braces.

4. Trailer Set-up

Trailer set-up begins once all sound and lighting equipment, set and accessories have been removed.

4.1 Lowering Gooseneck

- Push switch valve knob, turn hazard warning device on and start engine. Lower gooseneck slowly and carefully to a horizontal position.
- Remove locking pins (2) from telescopic braces on gooseneck.
- Replace locking pins in braces. Pin and secure.

4.2 Lowering Roof Structure

- Pull on switch valve knob. Keep engine running to activate hydraulic roof and stage levers.
- Unfasten wind walls lower vertical and horizontal straps.
- Remove locking pins from corner posts and remove bottom sections.

CAUTION 	Locking pins have minimal clearance in holes. Do not persist in freeing pins from constraint with excessive use of hydraulic system.

- Slightly raise roof in order to remove all four (4) locking pins from telescopic columns.

CAUTION 	If gooseneck is still in horizontal position when lowering roof structure, make sure there is enough space between both components to avoid any jamming. Severe damage could occur.

- Lower roof structure slowly and evenly all the way down. It is not necessary to use gas engine for this operation.

CAUTION 	Lower roof structure before folding roof panels.

- Lower roof panels to working height.

4.3 Closing Floor and Roof Panels

- Remove remaining corner post sections.

CAUTION ⚠	Clear upstage area to fold wind walls.

- Remove and fold wind walls.
- Remove all banners, skirting, rigging mechanisms and other accessories.
- Open roof panels back to horizontal position.
- Remove sound wing and extension platforms.

4.3 Closing Floor and Roof Panels

- Remove cover plates from floor hinges.

CAUTION ⚠	Omission to remove cover plates can cause damage to deck and floor structure.

- Load all equipment to be transported in trailer unit.
- Operate hydraulic system to close floor panels to working height.
    a) Fold built-in floor stabilizers within floor structure. Pin and secure.
    b) Close floor panels completely.
    c) Store levelling jacks and struts inside floor structure.
- Fold roof panels to working height.
- Fold sound extensions and front overhang extensions.
- Close roof panels, one at a time.

CAUTION ⚠	Make sure there are no obstructions between closed floor panels and closing roof panels.

4.4 Lowering Stage Unit to Ground Level

- Remove all locking pins from stabilizer (6) cross-braces.
- Remove all four (4) locking pins from hydraulic stabilizer.
- Push switch valve knob to activate hydraulic stabilizer levers.
- Lower stage slowly and steadily until it rests on wheels. **Trailer must remain relatively levelled. Lower in small increments of approximately 6" (15 cm) at a time.**

IMPORTANT	Make sure air ride suspension sets evenly in sockets. Do not drop stage onto its wheels during dismantling. Ensure that air bags do not become wedged while inflating. During this operation, trailer must remain relatively levelled. Lower stage in small increments, maximum of 6" (15 cm) at a time.

- Hitch trailer to tractor.
- Operate hydraulic system to raise all four (4) stabilizers completely.

CAUTION 	Make sure locking pins are inserted into gooseneck braces before hitching tractor to trailer. Do not move trailer until air ride suspension is fully functional. Suspension should fill automatically.

- Deactivate hazard warning device and shut off engine.

Strap Ratchets

- Fasten strap ratchets to secure roof panels at front and rear of trailer unit.
- **Make sure trailer is ready for transport. All retractable equipment and components must be fastened and secured. All cargo properly secured: storage, spare tire and engine compartments closed and locked; the suspension system fully functional, etc.**
- Before moving trailer, check Wabco brake system. Black button must be pushed in to release brakes from tractor cab.

CAUTION 	Never move trailer until gooseneck is secured with locking pins.

5. Warning and Special Measures

5.1 Special Loads and Overload

5.1.1 Dynamic Loads

All loading criteria used for the design of the mobile stages Stageline® equal or exceed the requirements of the American and European standards. Moreover, when designing our products, dynamic loads generated by a normal operation of a stage were taken into account, such as: lighting and sound equipment movement, winch operation as well as dance or acrobatic performances.

However, some unusual dynamic load, like a motorcyclist performing stunts on the stage floor or trapeze artists securing themselves to the structure could be dangerous for the users and the equipment. When special dynamic load are anticipated, please communicate with our technical department.

CAUTION 	Certain dynamic loads may provoke sudden and excessive movements of floor and roof structures. This could jeopardize the stage stability and the safety of its users.

5.1.2 Additional Load from Peripheral

Standard binding points are provided around the floor sides to hang floor extensions. The stages are not designed to support additional vertical and horizontal loads brought on by this peripheral equipment.

It is therefore necessary to plan the position of peripheral equipment in such a way as to not add significant loads to the stage structure. **If in doubt, contact our Technical Department.**

5.1.3 Prevention of Floor Overload

All mobile stages manufactured by Stageline® are designed to support a uniformly distributed load of 5 kN/m² (100 PSF). To support this weight, the stage must be in good condition and set up in accordance with the procedure found in this manual.

Taking into account the floor surface, its total capacity is substantial when all the equipment is equally distributed. However, a significantly smaller load applied on a small surface area could damage the floor.

A local curvature of the floor structure exceeding 10 mm (3/8") or a curvature in the plywood between its support girders exceeding 3 mm (1/8") means that there is an overload.
If the floor structure is overloaded, it can be supported locally by adding legs. These must be placed underneath the structure girders. They must also be solidly secured as to not fall if the stage were to move.

If the plywood floor covering is overloaded, the load must be moved or redistributed on the girders using beams or platforms.

CAUTION 	Even if the floor seems to support an overload, this does not necessarily mean that the load is acceptable and safe. Vibrations or a slight weight addition could cause a sudden rupture.

5.1.4 Rigging Load Management

All mobile stages manufactured by Stageline® are designed with rigging points. The positioning and the load capacity of these points have been studied so as to allow the highest number of lights and sounds layouts.

The operator will find in the section entitled "Rigging plan" a presentation of all rigging points, their maximum capacity as well as the load combinations authorized.

CAUTION 	Under no circumstances can other loads than those shown be used without a prior written approval by Stageline®.

In the case of a unusual layout, the stage users are to communicate with the Stageline® technical department and submit a proposed rigging plan before any light and sound system can be installed.

5.1.5 Anticipation of Extreme Wind

All mobile stages are designed to resist winds up to 80 km/h (50 mph) and gusts of 115 km/h (72 mph). However, this wind resistance is conditional to a proper installation of all support equipment and cross-braces. If such wind conditions are forecasted, the user must inspect the stage and ensure that all its components are well secured.

In extremely windy conditions, the wind walls are the elements most at risk. It is therefore essential to fasten them tightly to prevent any flapping and rigging point overloads. Winds exceeding 80 km/h (50 mph) are rare but possible. Winds this strong will cause damages: trees will be uprooted, windows broken, etc. In such situations, it is important to take emergency measures to protect the public, the sound and lighting equipment as well as the stage.

5.1 Loads and Overload Management

1. The public and all personnel present have to evacuate the premises and remain at least 30 m (100 ft) from the stage.

2. When possible, all sound and lighting equipment will be lowered, secured or stored away.

3. Wind wall doors will be opened and flaps will be fastened tightly.

4. Roof structure will be lowered to reduce exposed surface, only if strong winds have not yet begun. The stage is more vulnerable during lowering and raising operations. **Never lower or raise roof structure with rigged sound and lighting equipment.**

5. When the storm intensifies and the stage starts to be moved or partially raised, openings should be slashed in wind walls. It is better to sacrifice a wind wall than to possibly damage the stage as well as sound and lighting equipment.

CAUTION	The most probable scenario during a violent rainstorm is that wind walls will be torn away. This is why it is so important to keep the crowd at a safe distance.

5.1.6 Set-up and Dismantling of Wind Walls in Windy Conditions

Installation of wind walls during strong winds is problematic. It is preferable to wait until the winds have subsided before installing wind walls. If this is impossible, fasten wind walls to stage floor and roof structure before raised them so as to not lash and hurt some one. We also suggest the installation team be increased in number to have this operation done faster and more safely.

It is not recommended to install wind walls if wind flurries exceed 30 km/h (20 mph). In windy conditions, wind wall installation can become dangerous. If the stage must be set up, do not install wind walls.

CAUTION	Any component attached to a wind wall, such as snap hooks and strap ratchets can be moved or lifted suddenly by the wind. To prevent any injuries, these components must always be secured.

5.2 Damaged Components

Stage components can get damaged for different reasons. When you find a damaged component, it is important to identify the reasons of its breakage. A damaged component can be the result of a failure of another component.
In this case, stop using the component at once. Evaluate the damage to see if it can be repaired or replace the component.

CAUTION 	A small breakage can conceal a major problem, such as microscopic cracks in metal or in the weld.

5.3 Ground and Geographic Status

Stage stability is ensured by stabilizers and legs set down on the ground. The ground has to be firm enough to support the concentrated load applied by these support points.

The trailer tires sinking in is a sign of a weak capacity of the ground. If tires sink more than three (3) to four (4) cm (1" to 1½"), install struts to reinforce ground support capacity. If in doubt, contact a soil engineer to design a certified strut system.

CAUTION 	Supporting properties of certain soils is highly dependent of its humidity level. A site that seems quite firm may lose all its support capacity due to a rainstorm.

Before setting up a stage, it is important to check the ground support capacity. If the stage is being positioned on a slope or atop a bulkhead, make sure there is no risk of landslide. It may be necessary to refer to a soil engineer.

The following table indicates the maximum loads applied for each on the stabilizers and the legs.

5.4 Trailer Transportation Hazards

A Stageline® mobile stage is a combination of different panels that can be deployed and closed down using hydraulic cylinders. These panels are joined to a trailer frame. Once closed, this assembly looks like any other trailer.

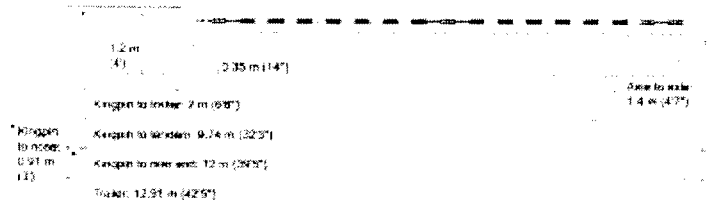
However, because of its design, the stage has a slightly higher centre of gravity on the vertical axis than a standard trailer. Therefore, the unit could tend to overturn more easily when forced into a sharp turn or as a result of a driver's mistake.

5.5 Freight Capacity and Loading Methods

Stageline® mobile stages can transport a certain quantity of freight.

CAUTION 	The maximum freight capacity set by Stageline® is a nominal value which varies depending of loading configuration and local road regulations.

To optimize a load, it is recommended to spread the weight between the king pin and the axles.



The table below indicates how the weight will be distributed between the kingpin and the centre of the axles according to load positioning.

Load Positioning (From gooseneck)	Load Distribution	
	Gooseneck / front stage	Axles / rear stage
0 x D	100 %	0 %
0.25 x D	75 %	25 %
0.5 x D	50 %	50 %
0.75 x D	25 %	75 %
1.0 x D	0 %	100 %
1.25 x D	- 25 %	125 %

D: Distance between the kingpin and the centre of the axles.

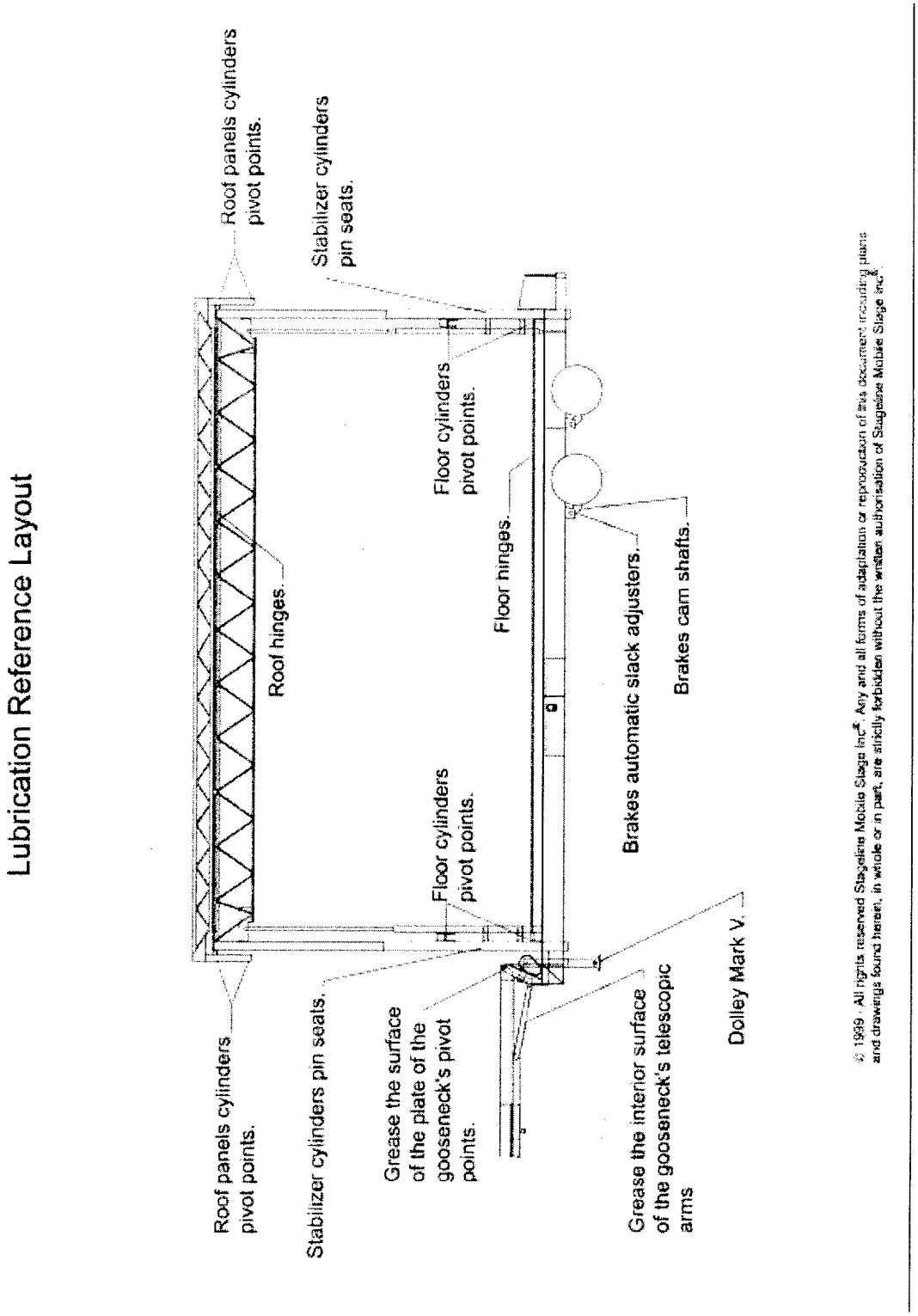
Because of the axles position, the weight of the stage is for the most part set on the axles. It is therefore worthwhile to put heavy equipment in the front part of the trailer. For the SL series, load can be placed on the gooseneck.

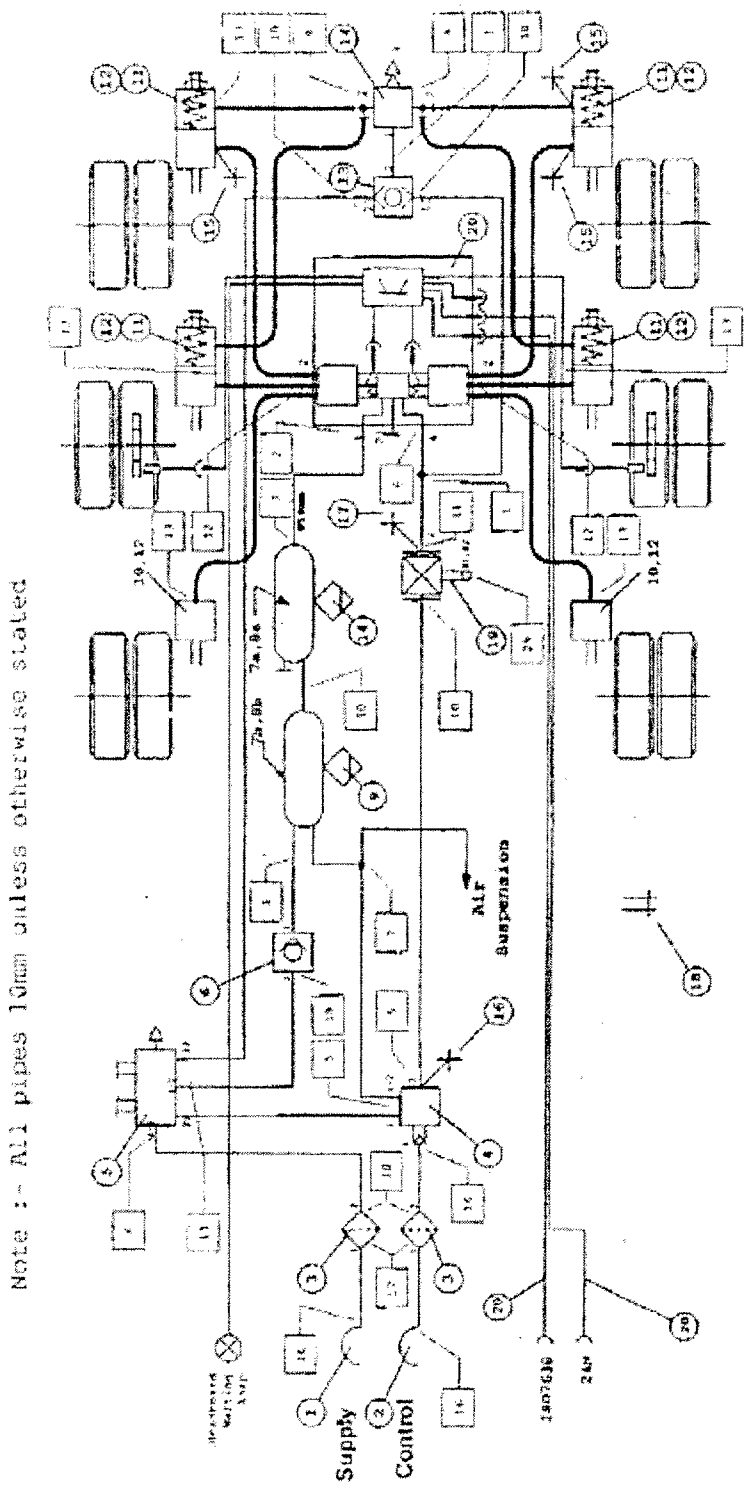
Loading your stage efficiently will allow you to transport an impressive quantity of scenic accessories and equipment while respecting local axle load regulations.

6 Troubleshooting

Situations	Check Points
Gas engine will not start	• Check fuel level. • Open fuel valve (located under gas reservoir). • Check spark plug connection. • Check oil level (has safety is off). • Check emergency switch on gooseneck.
Gas engine will not idle properly	• Check to see if choke is on; turn it off (lever is located under gas reservoir). • Clean or replace spark plug. • Clean air filter.
Electrical motor stopped running	• Check electrical circuit supplies. • Open compartment doors of electrical motor for ventilation. • Check if motor casing is hot. Let motor cool down for 30 to 60 minutes.
Floor panel will not close	• Remove any material (extra weight) from floor panel.
Air ride suspension will not inflate	• The air reservoir is empty. Hook the red hose of tractor parking brakes to the stage and release parking brakes. Air reservoir will inflate.
Hydraulic system will not work	• Check all pins. • Check tank main valve. • Check pump and engine coupling. • Check oil level. • Check for leaks.
Trailer brakes will not release	• Push on red button (Wabco brake system).

7.1 Stage Lubrication Diagram





System check:

1) Connect control gladhands and charge system.
2) Check for leaks.
3) Apply control line pressure, brakes should engage. Release pressure.
4) Operate red button on release valve 5, spring brakes should engage. Release spring brakes.
5) Disconnect supply gladhand. Brakes should automatically engage.
6) Operate black button on release valve 5. Brakes should disengage.
7) Reconnect supply gladhand. Black button should "pop" out.

7.3 Stage Maintenance Records

Items	Required Service Interval	Lubricator or Fluid Required	Date	Date	Date	Date	Notes
Brake Adjustment	Self-adjusting. Test before each use. Thorough inspection once a year.						
Brake Cam Shaft Lubrication	Grease once a year.	Synth. based lub w/teflon Permatex #82328 or equiv.					
Axle Lubrication	Check and fill up before each use.	SAE-80W90					
Electric System	Check before each use. Thorough inspection once a year.						
Air System	Check before each use. Thorough inspection once a year.						
Hydraulic System	General inspection after each use for leaks, breakages, cuts. Thorough inspection once a year.						
Hydraulic Filter	Change once a year.						
Cylindres and Hinges	Grease once a year or prior to a long period storage.	Synth. based lube w/teflon Permatex #82328 or equiv.					
Steel and aluminium Structures	General inspection of stress and welded points before each use. Thorough inspection once a year.						
Hydraulic Fluid	Check for contamination once a year. If necessary flush system and fill up, leaving 1" from top of tank for air.	Dextron III or equivalent approx.					Hydraulic fluid can last for years if uncontaminated. Oil should be a clear red colour, not a cloudy pink colour.

Note : The frequency of inspection for the trailer and Stage components set by Stageline Modular Stage Inc.® is a minimum safety requirement and does not prevail over the laws and regulations of the country, state, province or town where it is operated.

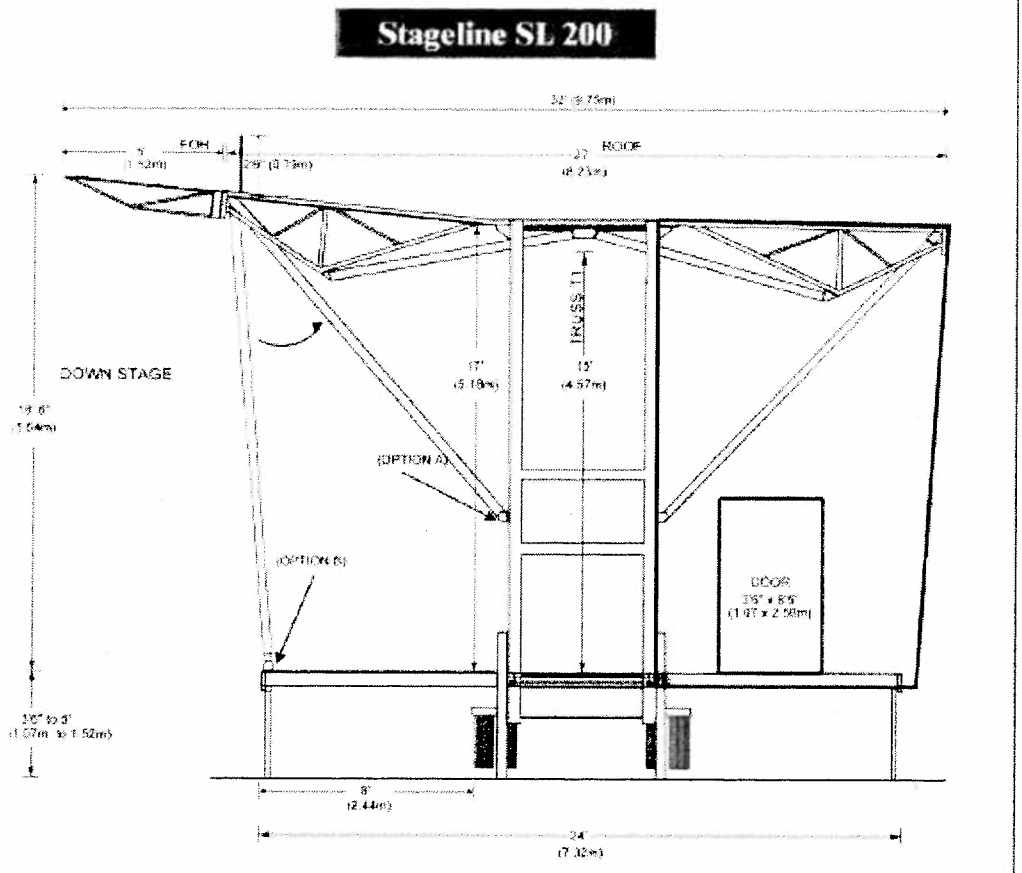
Important : During each event a visual structural inspection must be your priority. Structure must be inspected repeatedly during set up and full inspections must be done frequently. As metal tends to rust easily, all parts subjected to friction should be sanded and repainted as necessary.

Items	Required service interval	Date	Date	Date	Date	Date	Notes
		Check / Change	Check / Change	Check / Change	Check / Change	Check / Change	
Motor Oil 10W-30 (-30°C to 40°C) 5W-30 (-5°C to 30°C)	Check before each use. Change every 6 months / 100 hrs or less.						
Air Filter	Check before each use. Clean every 3 months / 50 hrs or less.						
Spark Plug	Check, clean or change every 6 months / 100 hrs or less.						
Sediment Cup	Clean every 6 months / 100 hrs or less.						
Fuel Line	Check every 2 years and replace when necessary.						

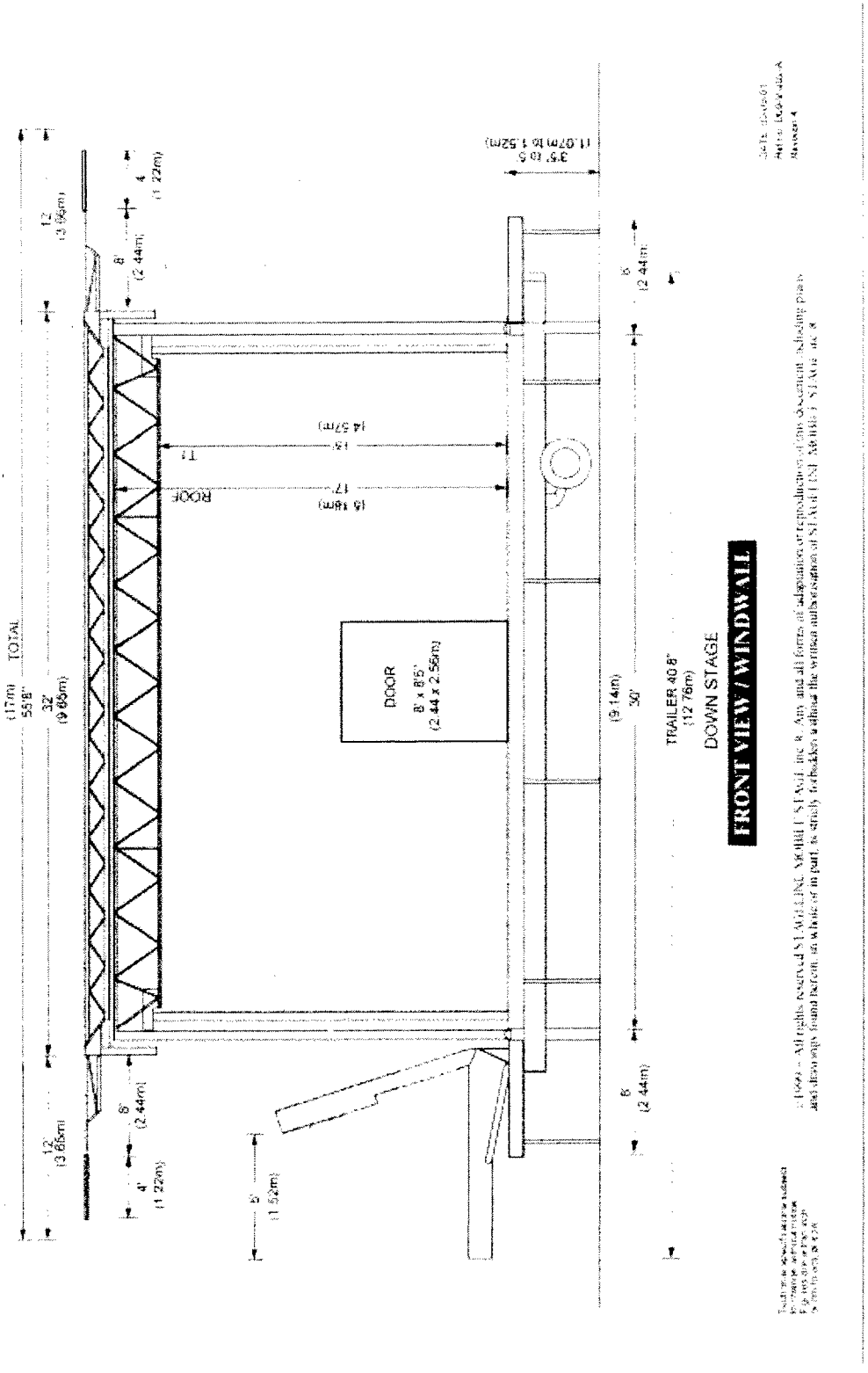
Note : Refer to Honda owner manual for other maintenance tips, i.e. valve clearance, etc.

Important : During each event, a visual structural inspection must be your priority. Structure must be inspected repeatedly during set up and full inspections must be done frequently. As metal tends to rust easily, all parts subjected to friction should be sanded and repainted as necessary.

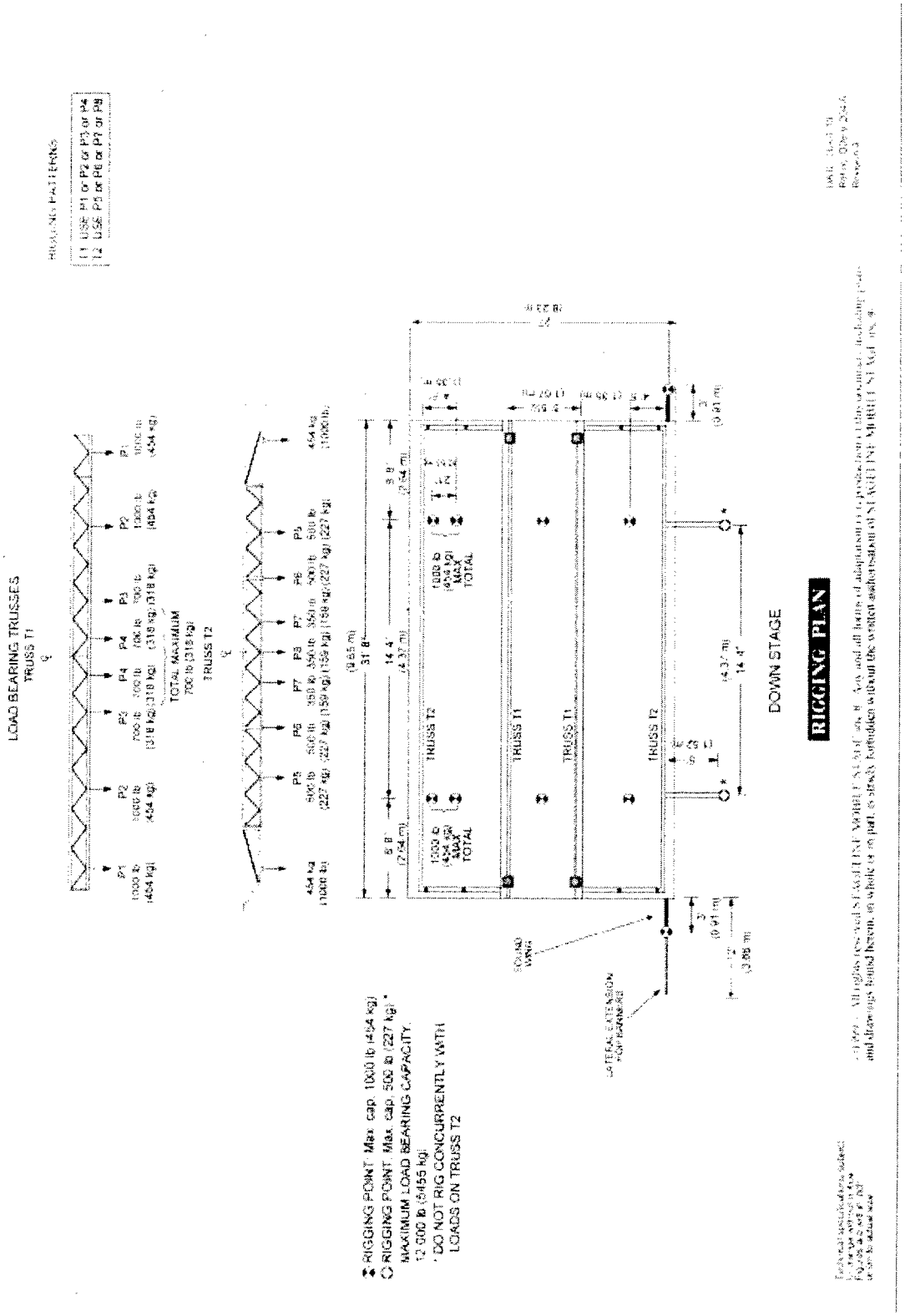
8.1 Stage Dimensions (side)



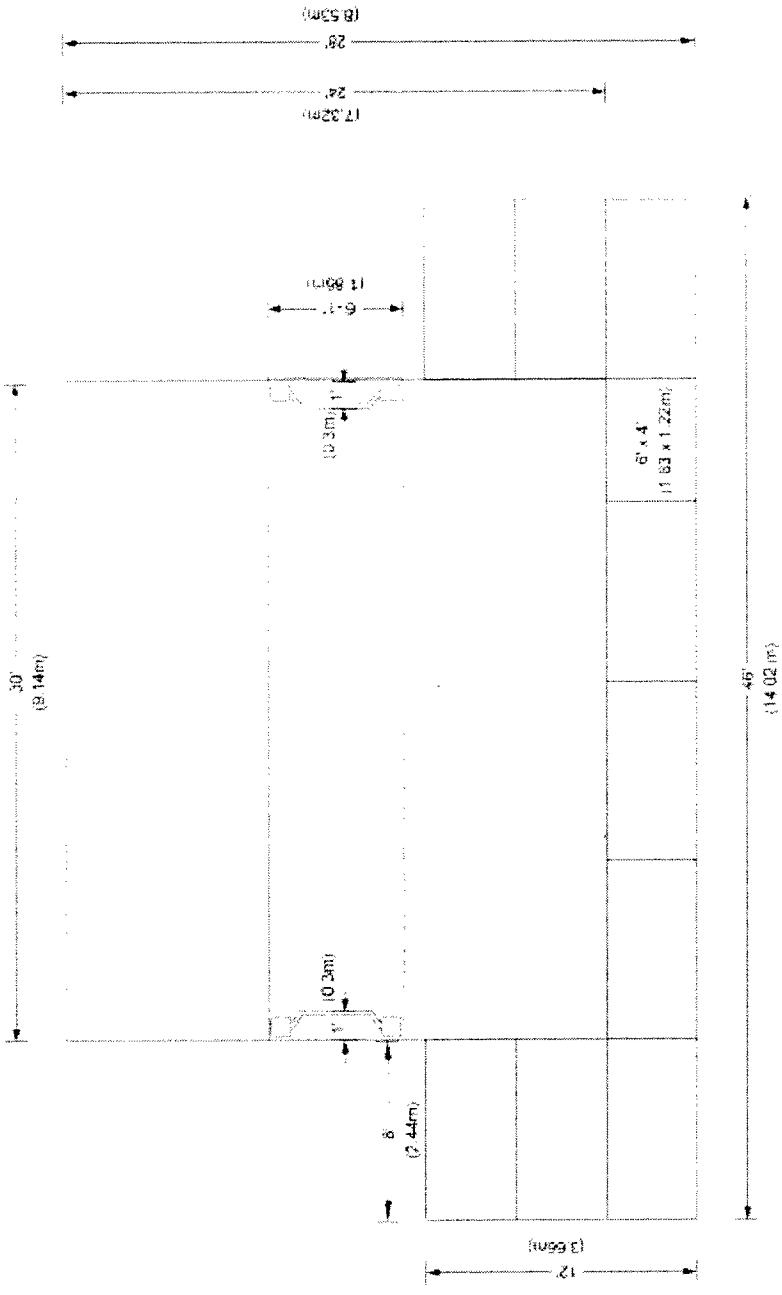
8.2 Stage Dimensions (front)



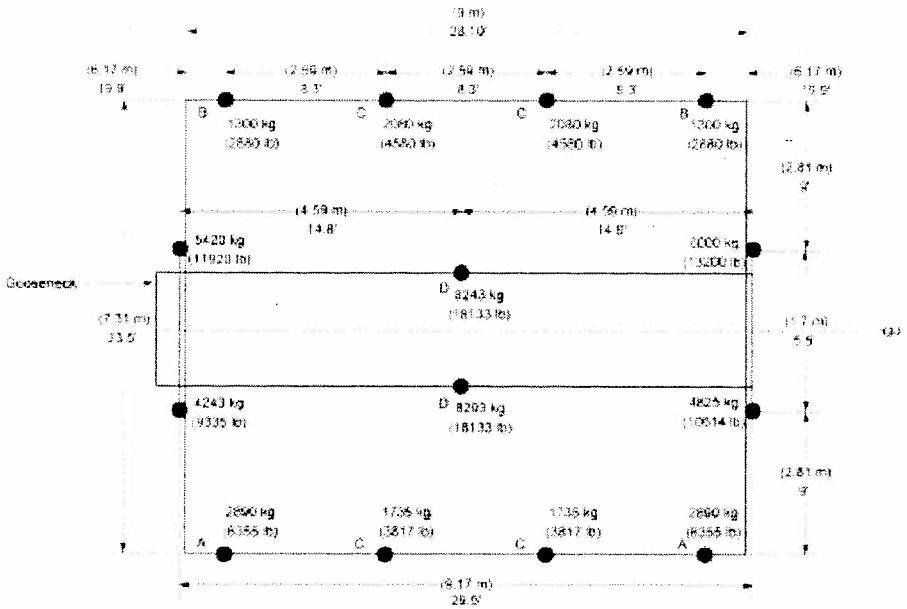
8.3 Rigging Diagram



8.4 Floor Dimensions



8.5 Load Distribution to Ground Diagram



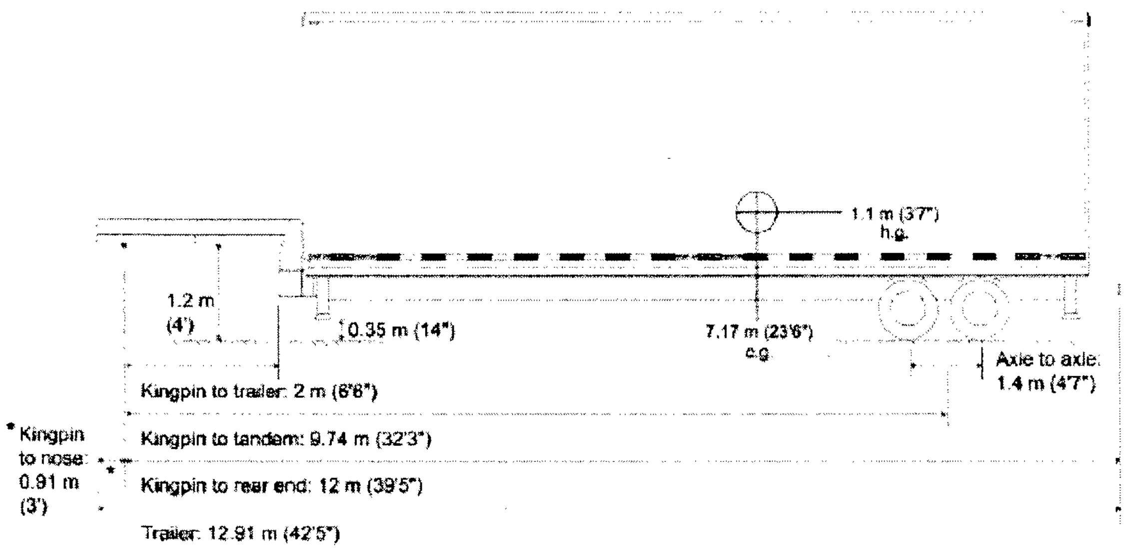
DOWN STAGE

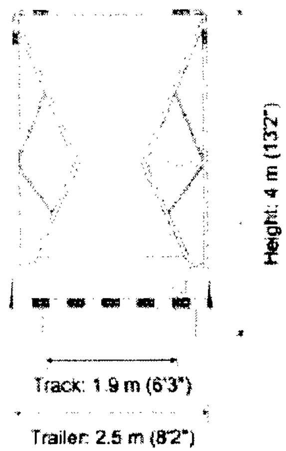
Load support maximum capacity kg (lb)

LOAD SUPPORT TO GROUND

*Stage specifications subject to change without notice. Figures are within inch or cm to actual size.

8.6 Trailer Mass and Dimensions Diagram





Mass	Kg	Lb
Total mass	11 000	24 200
Mass on tandem	8 100	17 800
Allowable load of axle	9 000	19 800

Standard : 2 axles

1. Mass may vary depending on options.
2. Technical specifications may change without notice.
3. Drawings are not to scale.

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Revision 5

STAR stages STAR structures

STAR events group

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