DEPARTMENT OF LABOUR

No. R. 163 **4 March 2011**

DRIVEN MACHINERY REGULATIONS, 2010

DEPARTMENT OF LABOUR

The Minister of Labour has, under section 43 of the Occupational Health and Safety Act, 1993, (Act No. 85 of 1993), after consultation with the Advisory Council for Occupational Health and Safety, made the regulations in the Schedule.

SCHEDULE

1. Definitions. - In these regulations, "the Act" means the Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended, and any word or expression to which a meaning has been assigned in the Act shall have the meaning so assigned, and, unless the context otherwise indicates -

"anti-repeat device" means a device which incorporates a control system designed to limit the press every time a single stroke even if the control that is actuating the press is held in the operating position, and which requires the actuating controls to be returned to the neutral position before another stroke can be initiated;

"bench saw" means a circular saw working in a bench (including a rack-bench) for the purpose of ripping, deep cutting or cross cutting but does not include a swing-saw or other saw which is moved towards the wood;

"calender" means a series of counter rotating rollers at the end of a rolling process;

"capstan hoist" means a rotating machine used to control or apply force to move or raise heavy loads by traction on a rope or cable;

"man-cage" means a platform enclosed on all sides but open at the top, designed for the purpose of raising and lowering persons by means of a lifting machine;

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulation. GNR. 929 of June 2003;

"thorough examination" means the examination/inspection to determine whether the equipment is safe to use;

"goods hoists" means access goods only lifts as defined in the Lift, Escalator and Passenger Conveyor Regulations 2010;

"lifting machine" means a power-driven machine which is designed and constructed for the purpose of raising or lowering a load or moving it in suspension, includes hoist, crane, lift truck or jib-crane, but does not include an elevator, escalator, goods hoist or builder's hoist;

"Lifting Machinery Entity (LME)" means a legal entity approved and registered by the Department of Labour;

"Lifting Machinery Inspector (LMI)" means a person registered by the Engineering Council of South Africa in terms of the Engineering Profession Act, 2000 (Act 46 of 2000) as amended;

"lifting tackle" means chain slings, wire rope slings, woven webbing slings, master links, hooks, shackles and swivels, eye bolts lifting or spreader beams, tongs, ladles, coil lifters, plate lifting clamps, drum lifting clamps, block and tackle or similar equipment used to attach a load to a lifting machine;

"lift truck" means a mobile lifting machine, but does not include -

(a) a vehicle designed solely for the purpose of lifting or towing another vehicle,
(b) a mobile earth-moving machine or
(c) a vehicle designed solely for the removal of a waste bin;

"point of operation" means the place in a machine where material is positioned and where the actual work is performed;

"press" means a driven machine that shears, punches, forms or assembles metal or other material by means of cutting, shaping or combination dies attached to slides having a controlled reciprocating motion but does not include bending brake presses, hot bending or hot metal presses, forging hammers and riveting machines or similar types of fastener applicators;

"transportation plant" means apparatus used for the transportation of material by means of an elevated conveyance suspended from and travelling along a catenary rope or chain where persons may pass or work below the path of the conveyance, or any such apparatus used for the transportation of persons;

2. Scope of application. - These regulations shall apply to the design, manufacture, operation, repair, modification, maintenance, inspection and testing of driven machinery.

3. Revolving machinery. - Unless moving or revolving components of machinery are in such a position or of such construction that they are as safe as they would be if they were securely fenced or guarded, the user shall cause -

(a) every shaft, pulley, wheel, gear, sprocket, coupling, collar, clutch, friction drum or similar object to be securely fenced or guarded;
(b) every set screw, key or bolt on revolving shafts, couplings, collars, friction drums, clutches, wheels, pulleys, gears and the like to be countersunk, enclosed or otherwise guarded;
(c) every square projecting shaft or spindle end and every other shaft or spindle end which projects for more than a quarter of its diameter to be guarded by a cap or shroud;
(d) every driving belt, rope or chain to be guarded; and

(e) the underside of every overhead driving belt, rope or chain above passages or workplaces to be so guarded as to prevent a broken belt, rope or chain from falling and so injuring persons: Provided that the provisions of this paragraph shall not apply where in the opinion of an inspector no danger exists in the case of light belts due to the nature thereof and the speed of operation.

4. Circular saws. - (1) No user shall require or permit any person to operate a power-driven circular saw -

(a) at a speed in excess of the manufacturer's rated maximum speed for the saw blade; or

(b) the saw blade of which is in any way damaged or which is dull or not regular or not correctly sharpened and set.

(2) The user of a power-driven bench saw shall cause -

(a) the saw blade to be effectively guarded below the table; and

(b) the part of the saw blade above the table to be covered by a substantial guard which shall cover the saw at all times to at least the depth of the teeth and which shall automatically adjust itself to the thickness of and remain in contact with the material being cut: Provided that where such a guard is impracticable, the top of the saw shall be covered by a strong manually adjustable guard which shall be adjusted to extend downwards to a point as near as practicable to the cutting point of the saw: Provided further that in the case of a breakdown saw, the guard shall effectively cover the top of the saw blade.

(3) The user shall cause every power-driven circular saw which is used for ripping wood to be provided with a riving knife which shall -

(a) be placed as close as practicable to the saw blade but not more than 12 mm behind it, and in a direct line with the saw teeth at the level of the bench table;

(b) have the edge nearest the saw in the form of an arc of a circle which shall have a radius not exceeding the radius of the largest saw blade which can be used on the bench by more than 3 mm;

(c) extend to a height above the table to within 5 mm of the top of the saw blade; and

(d) have a smooth surface and which shall be strong, rigid and easily adjustable.

(4) The user shall cause every tilting saw or tilting table saw to be so arranged that the adjustment of the riving knife and the guard remains effective with any position of the saw or table.

(5) The user shall -

(a) cause a suitable push stick to be kept available at every bench saw which is fed by hand, to enable work to be carried out without danger to persons;

(b) provide suitable mechanical means for holding rough timber which is to be slabbed on a bench saw; and

(c) provide an effective guard for the automatic feed rollers of every bench saw equipped with such rollers.

(6) The user shall cause every swing or radial saw which is moved towards the material -

(a) to be guarded so that only the cutting portion of the saw blade is exposed;

(b) to be arranged in such a manner that the saw will automatically move away from the cutting position when it is released; and

(c) to be fitted with a device which will oppose the thrust or tendency of the saw to pick up the timber or to throw the timber back at the operator when such saw is used for ripping timber.

(7) The user of a portable power-driven circular saw shall provide -

(a) a fixed guard above the slide or shoe, which shall cover the saw blade to at least the depth of the teeth; and

(b) a guard which shall automatically cover the portion of the saw blade below the slide or shoe while sawing is not actually being done.

5. Band saws and band knives. - (1) The user shall cause all moving parts, except the working portion of the blade at the point of operation, of every band saw or band knife to be effectively guarded.

(2) The user shall ensure that the machine is operated by a person trained for that particular machine.

6. Wood planing machines. - (1) The user shall cause every wood planing machine which is used for overhand planing and which is not mechanically fed to be fitted with a cylindrical cutter block.

(2) The user shall cause every planing machine used for overhand planing to be provided with a bridge guard which is capable of covering the full length and breadth of the cutting slot in the table and which can easily be adjusted in a vertical and horizontal direction.

(3) No user shall require or permit any planing machine which is not mechanically fed to be used for the overhand planing of any piece of wood which is less than 300 mm long, unless a safe holder is used for such a piece of wood: Provided that this sub regulation shall not apply to the planing of the edges of flat pieces of wood.

(4) The user shall provide an effective guard for the feed roller of every planing machine used for thickness, except in the case of the combined machine for overhand planing and thickness.

7. Wood moulding and mortising machines. - (1) Having regard to the nature of the work which is performed, the user shall cause the cutter or chain of every wood moulding or mortising machine to be effectively guarded.

(2) If work cannot be performed when the cutter of a moulding machine is guarded, the user shall cause the wood being moulded to be held in a jig or holder which is so constructed that it will ensure safe working of the machine: Provided that where a jig or holder cannot be used, the user shall provide a suitable spike or push stick and shall require persons who operate the machine to use it when necessary.

8. Sanding machines. - The user shall cause every -

(a) drum sanding machine to be provided with effective guards so arranged as to completely enclose the revolving drum except such portion as is necessary for the performance of the work;

(b) disc sanding machine to be provided with suitable guards which shall completely enclose the periphery and back of the sanding disc and that portion of the working face of the disc under the table; and

(c) belt sanding machine to be provided with guards at the trap points where the sanding belt runs onto its pulleys and cause any section of the belt not used for sanding to be effectively enclosed.

9. Grinding machines. - (1) The user of a power-driven grinding machine shall cause such machine to be marked in a conspicuous place with the manufacturer's rated speed or speeds of the spindle in revolutions per minute.

(2) No user shall require or permit a grinding wheel of a power-driven grinding machine to be operated at a speed exceeding that of the manufacturer of such wheel: Provided that a grinding wheel larger than 100 mm in diameter shall only be used if the recommended operating speeds therefore is distinctly marked on it.

(3) The user shall cause every grinding wheel of a power-driven grinding machine to be mounted concentrically on the spindle by means of robust metal flanges with annular peripheral bearing surfaces of adequate breadth which shall bear upon the wheel, and a layer of suitable compressible material shall be fitted between the flanges and the wheel: Provided that grinding wheels for specialized application which cannot be fixed by flanges shall be so secured that displacement or rupture of the wheel in motion is eliminated as far as possible.

(4) Having regard to the nature of the work which is performed, the user shall cause every power-driven grinding machine to be provided with a substantial guard which shall enclose the grinding wheel as far as practicable and which shall be of sufficient strength to withstand the force of impact of a rupturing wheel.

(5) Having regard to the nature of the work which is performed, the user shall cause a power-driven grinding machine where the work piece is applied to the wheel by hand, to be provided with a substantial adjustable work rest, which shall be securely fixed in position and adjusted to within 3 mm from the grinding face of the wheel.

(6) The user shall cause every power-driven grinding machine to be provided with a strong transparent shield which shall be kept adjusted to as to protect the operator's eyes: Provided that such shield may be omitted if every operator of the machine is personally issued with suitable eye protection and is obliged to wear it.

(7) The user shall cause a notice to be posted in a conspicuous place at every power-driven grinding machine, prohibiting persons from carrying out, inspecting or observing grinding work without using suitable eye protection.

(8) The user of machinery used for the purpose of grinding, cutting, fettling, polishing or similar applications shall ensure that the operators of such machines are duly trained.

10. Shears, guillotines, presses. - (1) Where the opening at the point of operation of shears, a guillotine or a press is greater than 10 mm, the user shall cause such machine to be provided with -

(a) a fixed guard which prevents hands or fingers reaching through, over, under or around the guard into the point of operation; or

(b) a self-adjusting guard which automatically adjusts itself to the thickness of the material being worked and which prevents hands or fingers reaching through, over, under or around the guard into the point of operation; or

(c) a manually or automatically operated moving guard which completely encloses the point of operation of such machine and which is so arranged that the working stroke cannot be commenced unless the guard is closed and which cannot be opened unless the ram or blade is stationary; or

(d) an automatic sweep-away or push-away which pushes any part of the operator's body out of the danger zone when the working stroke commences; or

(e) an electronic presence-sensing device which prevents or arrests a working stroke if it senses that any part of a person's body or any other foreign object is in the danger zone:
Provided that the guarding provided in terms of this subregulation shall not in itself create any threat to the safety of persons.

(2) The user may use or permit the use of shears, a guillotine or a press without the guarding contemplated in subregulation (1) if the operating controls to set it in motion require the simultaneous engagement of both hands of all the operators involved in the operation of the machine, and such operating controls -

(a) are situated at such distance from the point of operation that none of the operators has enough time to reach the danger zone with any part of his body before the working stroke is completed; or

(b) are so designed that the working stroke will be arrested if any one of the operators removes one of his hands from the controls:

Provided that the operating controls shall be so arranged that they cannot be bypassed.

(3) The user shall cause any full-revolution clutch shear, guillotine or press which is fed by hand to be provided with an anti-repeat device.

11. Slitting machines. - (1) Having regard to the nature of the work which is performed, the user of a slitting machine shall cause the cutting edge of the disc cutter to be effectively guarded.

(2) Fixed guarding or enclosurers must prevent access to the machine.

(3) Access points must be controlled by an interlocked safety device. Such safety device must prevent or arrest the motion of the machine when activated by unauthorised entry.

12. Mixing, agitating and similar machines. - (1) The user shall cause all dangerous moving parts of a mixing, agitating or similar machine to be placed beyond the reach of persons by means of doors, covers, guards or by other means.

(2) The user shall, wherever practicable, cause every mixing, agitating or similar machine to be so arranged that it cannot be set in motion unless the doors, covers, guards or other means referred to in subregulation (1) are in position and that the machine will come to a stop if any one of them is opened, unlocked or removed or if the dangerous moving parts of the machine are exposed for any reason whatsoever: Provided that the provisions of this subregulation shall not apply to doors, covers or guards which are bolted in position or to an inspection hatch which is provided for controlling a process while the machine is in operation.

13. Rolls and calenders. - The user shall, where practicable, cause every power-driven machine consisting of or incorporating two or more rolls rotating in opposite directions, which are less than 75 mm apart, to be guarded for the full length of the in-running side or nip of the rolls where such nip is within the reach of persons, with -

(a) a fixed guard; or

(b) a trip bar, a cable or an electronic sensing device not more than 300 mm from the nip, which will stop or reverse the rotation of the rolls if the bar or cable is touched or if the danger area is invaded by any foreign object:

Provided that where it is not practicable to install any of the specified devices an inspector may require or permit any other means of protection at the intake of the rolls.

14. Washing machines, centrifugal extractors, etc. - The user shall, wherever practicable, cause every power-driven washing machine, centrifugal extractor or similar machine of double cylinder construction in which the inner cylinder, drum or basket rotates, to be provided with a door or lid on the outer cylinder, so interlocked that-

(a) the inner cylinder cannot be put into motion unless the door or lid is closed; and

(b) the door or lid cannot be opened unless the inner cylinder is stationary.

15. Air compressors. - The user of a positive displacement type air compressor which is not provided with automatic means for limiting the operating temperature to a safe level shall provide a fusible plug fitted close to the outlet valves or discharge ports of every stage of compression: Provided that the provisions of this regulation shall not apply to air compressors with a free air delivery of less than 8.5 m3 per minute or in which compression does not take place in the presence of lubricating oil.

16. Refrigeration and air conditioning installations. - No user shall use or permit the use of a refrigeration or an air conditioning installation unless it complies with a safety standard with respect to its construction, installation, operation and inspection incorporated for this purpose into these regulations under section 44 of the Act.

17. Transportation plants. - (1) No user shall use or permit the use of a transportation plant unless -

(a) it complies with a safety standard with respect to the design, construction, installation, operation and inspection thereof incorporated for this purpose into these regulations under section 44 of the Act; and

(b) he is in possession of written authorization for the use thereof from an inspector.

(2) Any person who wishes to use a transportation plant shall apply in writing to the provincial executive manager for permission for such use and shall, together with such application, submit -

(a) a complete set of design calculations and drawings of the proposed installation; and

(b) a certificate issued by a registered professional engineer in which he certifies that he has checked the design of the installation and that such design will ensure the safe operation of the installation under all permitted loadings.

(3) An inspector may, if he is satisfied that the provisions of this regulation have been complied with and that the transportation plant can be safely used, grant permission in writing for the use thereof, subject to such conditions as he may determine.

(4) An inspector may withdraw the permission granted in terms of subregulation (3) if he deems this necessary in the interest of safety.

(5) The user shall cause the whole installation and all working parts of the transportation plant to be thoroughly examined and subjected to a performance test as prescribed by the

standard to which the transportation plant was manufactured, by a person who has knowledge and experience of the erection and maintenance of transportation plants or similar machinery and who shall determine the serviceability of the structures, ropes, machinery and safety devices, before they are put into use following every time they are erected and thereafter at intervals not exceeding 12 months: Provided that in the absence of such prescribed performance test the whole installation of the transportation plant shall be subjected to a load of 120 % of the rated mass load, applied over the complete operation range of such plant and in such a manner that every part of the installation is stressed accordingly.

(6) Notwithstanding the provisions of subregulation (5), the user shall cause every hoisting rope and every hook or other load-attaching device which forms part of the transportation plant to be thoroughly examined by a person contemplated in subregulation (5) at intervals not exceeding six months.

(7) The user shall cause the results of the examinations and tests prescribed in subregulations (5) and (6) to be entered and signed by the person carrying out such examinations and tests, in a record book which shall be kept on the premises at all times.

18. Lifting machines and lifting tackle - (1) No user shall use or permit the use of a lifting machine unless

(a) it has been designed and constructed in accordance with a generally accepted technical standard;

(b) it is conspicuously and clearly marked with the maximum mass load which it is designed to carry with safety: Provided that when this mass load varies with the conditions of use a table showing the maximum mass load with respect to every variable condition shall be posted up by the user in a conspicuous place easily visible to the operator; and

c) it has at all times at least three full turns of rope on the drum of each winch which forms part of such a machine when such a winch has been run to its lowest limit, and which is controlled by automatic cut-out device. This subregulation(19.1.C) does not apply to Capstan type winches.

(2) The user shall, ensure that every power-driven lifting machine is fitted with -

(a) a brake or other device capable of holding the maximum mass load should the power supply fail, or

which is such that it will automatically prevent the uncontrolled downward movement of the load when the raising or lowering effort is interrupted; and

(b) a limiting device that it will cause the driving effort to be automatically arrested when -

(i) the hook or load attachment point of the power-driven lifting machine reaches its highest and lowest safe position; and

(ii) the load condition is greater than the rated load condition of such machine.

(3) the user shall cause every chain or rope in the load path of a lifting machine to have a factor of safety as prescribed by the standard to which such machine was manufactured: Provided that in the absence of such prescribed factor of safety, chains, steel-wire ropes and fibre ropes shall have a factor of safety of at least four, five and ten respectively, with respect to the rated carrying capacity of the lifting machine.

(4) The user shall cause every hook or any other load-attaching device which is the load path of a lifting machine to prevent accidental disconnection of the load under working conditions cannot take place.

(5) (a) The user shall cause the whole installation and all working parts of every lifting machine as well as ancillary lifting equipment used with the machine, excluding lifting tackle, to be thoroughly examined and subjected to a performance test, as prescribed by the standard to which the lifting machine was manufactured, by a registered Lifting Machinery Inspector appointed by a registered Lifting Machinery Entity who has knowledge of the erection and maintenance of the type of lifting machine involved or similar machinery and who shall determine the serviceability of the structures, ropes, machinery and safety devices, before they are put into use following every time they are dismantled and re-erected, and thereafter at intervals not exceeding 12 months: Provided that in the absence of such prescribed performance test the whole installation of the lifting machine shall be tested with 110 percent of the rated mass load, applied over the complete lifting range of such machine and in such a manner that every part of the installation is stressed accordingly.

(b) Notwithstanding the provisions of sub regulation 5 (a), mobile cranes are excluded from the performance test after each re-deployment.

(c) No user shall use or permit the use of temporary suspended access platform installation unless it complies with a safety standard with respect to its construction, installation, operation and inspection incorporated for this purpose into these regulations under section 44 of the Act.

(6) Notwithstanding the provisions of sub regulation (5), the user shall cause all ropes, chains, hooks or other attaching devices, sheaves, brakes and safety devices forming an integral part of a lifting machine to be thoroughly examined by a person who has a knowledge and experience of the erection and maintenance of the type of lifting machine involved or similar machinery at intervals not exceeding six months.

(7) Every user of a lifting machine shall at all times keep on his premises a register for a period of ten years in which he shall record or cause to be recorded full particulars of any performance test and examination prescribed by sub regulations (5) and (6) and any modification or repair to the lifting machine, and shall ensure that the register is available on request for inspection by an inspector.

(8) No user of machinery shall require or permit any person to be moved or supported by means of a lifting machine, unless such machine is fitted with a man-cage designed and fabricated according to an approved SANS standard and a risk assessment has been done.

(9) No user shall use or permit any person to use any power driven lifting machine unless it is provided with -

(a) a load indicator which will indicate to the operator of the power driven lifting machine, with a lifting capacity of greater than 5000kg of the mass of the load being lifted: Provided that such a device shall not require manual adjustment, from application of the load to the power driven lifting machine until the release of that load, using any motion or combination of motions permitted by the crane manufacturer to ensure safe lifting; power driven lifting machines manufactured or refurbished prior to the publication of these regulations shall be deemed to comply with these regulations and or

(b) a load limiting device which will automatically arrest the driving effort whenever the load being lifted is greater than the rated mass load of the power driven lifting machine, at that particular radius, using any motion or combination of motions permitted by the crane manufacturer to ensure safe lifting: Provided that such a device

shall not arrest the driving effort when the power driven lifting machine is being operated into a safer condition.

(10) No user shall use or allow the use of any lifting tackle or lifting device unless the following conditions are complied with, namely that -

(a) every item of lifting tackle is well constructed of sound material, is strong enough and is free from latent defects and is in general constructed in accordance with a generally accepted technical standard;

(b) every lifting assembly consisting of different items of lifting tackle is conspicuously and clearly marked with identification particulars and the maximum mass load which it is designed to lift with safety;

(c) lifting tackle have a factor of safety with respect to the maximum mass load they are designed to lift with safety according to the incorporated SANS standards;

(d) steel-wire ropes are discarded and not used again for lifting purposes if the rope shows signs of excessive wear, too many broken wires, corrosion or other defects that have made its use in any way dangerous, as per incorporated SANS standard;

(e) such lifting tackle is examined at intervals not exceeding three months by a person, appointed for this purpose, who by virtue of his training and experience of lifting tackle, shall record and sign results of such examination;

(f) such lifting tackle is stored or protected so as to prevent damage or deterioration when not in use.

(11) The user shall ensure that every lifting machine as listed in the National Code of Practice is operated by an operator specifically trained for a particular type of lifting machine. The user shall not require or permit any person to operate such a lifting machine unless the operator is in possession of a certificate of training, issued by a person or organization approved for this purpose by the Chief Inspector, this includes the commissioning of the lifting machine.

19. Offences and penalties. - Any person who contravenes or fails to comply with a provision of regulation 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15,16, 17(1), 17(2), 17(5), 17(6), 17(7) or 18 shall be guilty of an offence and liable on conviction to a fine not exceeding R1 000 or to imprisonment for a period not exceeding six months and, in the case of a continuous offence, to an additional fine of R5 for each day on which the offence continues or to additional imprisonment of one day for each day on which the offence continues: Provided that the period of such additional imprisonment shall in no case exceed 90 days.

21. Withdrawal of regulations. - The following regulations are hereby repealed:
Withdrawal of GNR 1010 of 18 July 2003

22. Short title – These regulations shall be called the Driven Machinery Regulations 2010.

SANS 19 The inspection, testing and examination of mobile cranes

SANS 71 Inspection and testing of vehicle hoists

SANS 94-1 Textile slings - safety. Flat woven webing slings made from man made-fibres, for general purpose use.

SANS 94-2 Textile slings - safety. Round slings made from man made-fibres, for general purpose use.

SANS 500	Inspection, examination and testing of manually operated chain blocks and chain lever hoists in use
SANS 522	The inspection, testing and examination of tower cranes
SANS 4308 part 1 &2	Cranes and lifting appliances - selection of steel wire ropes.
SANS 4309	Cranes - wire ropes - care, maintenance, installation, examination and discard.
SANS 10375	The inspection, testing and examination of overhead cranes
SANS 10388	The inspection, examination and testing of lift trucks
SANS 10295	Suspended Acsess Equipment.
SANS 16368	Mobile Elevating Work Platforms.
SANS 18893	Mobile Elevating Work Platforms.
SANS 50818-4	Chain slings grade 8
SANS 50818-6	Short link chain - Chain slings grade 8
SANS 7531	Wire rope sligs for general purpose charactistics and specifications.
SANS 687	

Schedule

1. Regulation 16.

South African Bureau of Standards, code of practice SANS 10147: Refrigeration and air-conditioning installations.

2. Regulation 17 (1)(a).

South African Bureau of Standards, code of practice SANS 10148: The installation and operation of cable cranes and aerial rope-ways.

3. Regulation 18

SANS 10295; Suspended Access Equipment

SANS 10375; The inspection, testing and examination of overhead cranes

SANS 10388;The inspection, examination and testing of lift trucks

SANS 19: The inspection, test & examination of mobile cranes

SANS 522:The inspection, testing and examination of tower cranes

SANS 500; Inspection, examination and testing of manually operated chain block and chain lever hoists

SANS 4308: Cranes and lifting appliances-Selection of wire ropes

SANS 4309: Cranes-Wire ropes-Care, maintenance, installation, examination and discard

SANS 94: Flat and round woven webbing slings made of man-made fibres

SANS 50818: Chain slings-save use and maintenance provided by the manufacturer

National code of practice for training providers of lifting machine operators

SANS 7531: Wire rope slings for general purpose characteristics and specifications

BS EN 14502-1: Crane Equipment for lifting persons, Part 1 Suspended basket