

GUIDELINES FOR APPROVAL OF HOISTING MACHINE DESIGN

1.0 Preamble

Every hoisting machine which is power driven by electricity, diesel, pneumatic and other means for lifting, raising or lowering load except manual hoist and material handling equipment shall possess a valid Certificate of Fitness. The design of every hoisting machine must be appraised by Design Section of the Department of Occupational Safety and Health before the machine is been fabricated, installed and used.

2.0 Hoisting Machine Categories

There are four categories of hoisting machine under this guideline:

Category	Description
A	Hoisting machine which is designed, customized and fabricated according to the user's needs and specification
B	Mass produced hoisting machine
C	Amusement park ride and other type of hoisting machine which is not under category A, B & D
D	Hoisting machine usually used at offshore and construction site

The list of type of hoisting machine in each of those categories can be found in Appendix 2

3.0 Fabrication and Submission for Design Approval of Malaysian Made Hoisting Machine

All hoisting machine made in Malaysia must be fabricated by a Competent Firm registered with the Department of Occupational Safety and Health.

The local competent firm which fabricates those hoisting machine should be responsible to submit for the design approval.

4.0 Model Re-Approval for Mobile Crane, Crawler Crane, Truck Mounted Crane, Injection Type Piling Machine, Auger Crane and Mobile Elevating Work Platform

The approval of these type of machine is based on model. Applicant shall apply online through SKUD system for inquiry on whether the said model had been approved and attach the relevant documents.

5.0 Change of Hoist of the Same Model (for Jib Crane, Gantry Crane, OTC and Monorail only)

When there is a change of new unit of hoist of the same maker and model of the existing approved jib crane, gantry crane, OTC and monorail design, there is no requirement to resubmit another design approval. Owner is to notify the change of the said hoist to DOSH State Office.

6.0 Change of Hoist of Different Model or Capacity (for Jib Crane, Gantry Crane, OTC and Monorail only)

When there is a change of new unit of hoist of same or lower safe working load (regardless of the model and manufacturer of the hoist) than the existing approved assigned safe working load for the crane system, a new submission for design approval is not required with the condition the approved safe working load also been lowered to the hoist capacity. Owner is to notify the change of the said hoist to DOSH State Office.

7.0 Change of Hoist of Different Model (Goods Hoist Only)

When there is a change of new unit of hoist of the same maker and model of the existing approved goods hoist design, there is no requirement to resubmit another design approval. Owner is to notify the change of the said hoist to DOSH State Office.

However, when there is a change of the hoist of different model and maker of the existing approved design, a new design approval submission is required.

8.0 Hoist More Than 5 Years (for Jib Crane, Gantry Crane, Goods Hoist, OTC and Monorail only)

If the hoist intended to be used is more than 5 years after its fabrication date, the competent firm should carry out an integrity test and re-certify the hoist before submitting the design approval.

9.0 Exemption

Design approval is not required for monorail crane with safe working load of 4 tons and below only, provided that the girder is of I or H beam of standard properties. However, this type of monorail crane still requires a basic engineering drawing and calculation which are endorsed by a local Professional Engineer before registering with DOSH State office.

Monorail crane is a hoisting machine comprising of a fixed/static girder supported by more than one column or bracket and has only cross travel which is the motion of the hoist (crab) along the girder. It has no long travel which is the motion of the whole crane along the track.

In addition, the following hoisting machines are exempted from obtaining design approval and certificate of fitness:-

- a) Boring rig
- b) Drilling rig
- c) Piling machine mounted on crawler track only
- d) Winch for towing vehicle only
- e) Dock leveler
- f) Manipulator
- g) Gangway tower
- h) Vertical conveyor
- i) Tail lift
- j) Automatic Storage and Retrieval System (ASRS)
- k) Monkey hoist with maximum lifting load of 80kg and maximum lifting height of 9m only
- l) Air or pneumatic hoist with safe working load of 500kg and below only

10.0 Re-Engineering

All re-engineered machine must be re-evaluated, re-drawn and re-calculate by a competent firm registered with the Department of Occupational Safety and Health in the scope of the said hoisting machine. Applicant is to clearly state in the official application letter for design approval that it is a re-engineered hoisting machine.

11.0 Modification

Any modification to the existing approved design will cause the current Certificate of Fitness to be revoked and the modified design shall be re-submitted for appraisal. Modification can only be carried out by registered competent firm in the scope of the said hoisting machine or the original manufacturer. Applicant is to clearly state in the official application letter for design approval that the said hoisting machine has been modified.

12.0 Special Assessment Report

No crane can be designed and built for infinite usage. In order to prevent aging cranes from failing due to fatigue stresses as a result of prolonged years of services, mobile and crawler crane which are more than 10 years old, a special assessment is to be carried out by appropriate parties.

13.0 Erection, Maintenance and Dismantling

Certain machinery such as tower crane, passenger hoist, mast climbing work platform and gondola (suspended platform) required to be erected by a competent firm registered with the Department of Occupational Safety and Health.

Such appointment letter shall be attached with the submission should the applicant is other than the competent firm.

14.0 Crane/Hoist Lifted Work Platform

Hoisting machine which is not designed to carry worker/human is not allowed to suspend the worker/human on a working platform from a crane/hoist to perform any work. Unless there is a strong justification for it, please contact the hoisting machine unit officer for more details on the application.

15.0 Client Charter

All applications submitted online will be processed within 30 days from the date of submission.

16.0 System Requirements

The online application system, SKUD (<http://skud.dosh.gov.my:88/default.aspx>) is best viewed with Internet Explorer 7 & 8. Other internet browsers (e.g. Firefox, Chrome, Safari) are not compatible with the system. If using Internet Explorer 9 and above, please adjust the compatibility view setting (under “tools” at the menu bar) in order to access the system.

DETAILS OF DOCUMENTS FOR DESIGN APPROVAL OF HOISTING MACHINE

1. Official Application Letter

- ❖ The letter should have a company letterhead complete with its contact details
- ❖ The letter should include type of hoisting machine, model, serial number (if any), manufacturer, country of origin and installation location.

2. Design Drawing

- ❖ Ideally be A1 size
- ❖ Detail assembly drawing with dimensions
- ❖ Complete with title and drawing number
- ❖ Details of the material grade and specification
- ❖ Electrical/Hydraulic diagram, as applicable

3. Design Calculation

- ❖ Design calculation based on the design code the machine is designed

4. Catalogue/Technical Specification

- ❖ Manufacturer's catalogue with detailed technical specification of the machinery

5. Load Chart

- ❖ Chart with details of SWL at the corresponding work radius and boom length

6. Manufacturer's Certificate/Certificate of Origin/Declaration of Conformity

- ❖ **Manufacturer's certificate:** confirmation document from the manufacturer that the said machinery (complete with model and serial number) is fabricated by them and passed the inspection
- ❖ **Certificate of Origin:** Certificate issued by the country of origin which should include the model and serial number of the machinery
- ❖ **Declaration of Conformity:** Document either by the manufacturer or third party which certify the machinery conform to a specified standard or Machinery Directive.

7. Manufacturing License From State Authority (Manufacturer License)

- ❖ Permission to fabricate the said machinery from the state authority (as applicable)

8. Operational, Installation and Maintenance Manual

- ❖ Latest version of the manual to illustrate clearly on procedure to operate, install and maintain the said machinery

- ❖ Electrical/Hydraulic diagram, as applicable

9. Hoist/Winch/Drive Motor/Strand Jack Certificate or Inspection Report

- ❖ Certificate from the manufacturer complete with model, serial number and capacity
- ❖ Inspection report from CNAS accredited bodies if the machinery is from China

10. Wire Rope/Chain Certificate/Specification

- ❖ Test certificate with details such construction, lays, diameter, breaking load, core and etc.
- ❖ The specification shall be the same as outlined in manufacturer's manual

11. List of Safety Features and Description of Their Functions

- ❖ A summary/table of the safety features fitted and description of their functions

12. Safety Devices Certificate/Test Report

- ❖ Certificate from manufacturer or test report by an independent body

13. Import License (AP) From Ministry of Trade and Industry (MITI)

- ❖ JK69 form approved by MITI
- ❖ Endorsement by Custom if possible
- ❖ Actual year built to be indicated

14. Load and Function Test Procedure

- ❖ Proposed procedure for overload or function test on the machinery

15. Type Test Report

- ❖ Model prototype test report by bodies accredited by CNAS (China National Accreditation Service) for machine designed according to GB Code

16. Integrity Inspection/Special Assessment Report

- ❖ Assessment inspection report by Competent Firm registered with DOSH in the scope of the said hoisting machinery or appropriate parties for other used or re-engineering machinery

17. Appendix for Goods Hoist

- ❖ Relevant information for goods hoist

18. Appendix for Scissor Lift

- ❖ Relevant information for customized or re-engineering scissor lift

19. Latest Model Approval Letter

- ❖ For model re-approval application for tower crane and passenger hoist only

20. Competent Firm Appointment Letter

- ❖ For machinery which required to be erected by a competent firm registered with DOSH (if the application is submitted other than the competent firm)

21. QA/QC Certification/Inspection Report From Manufacturer

- ❖ Report/Certification which certified/detailing each unit (with serial number) has been inspected by the overseas manufacturer's QA/QC department and built in accordance to the relevant standard and code.
- ❖ Manufacturing Data Records (MDR), as applicable

22. Sheave/Pulley Details & Analysis

- ❖ Certification/drawing/specification/information on the sheave/pulley such as pulley material, dimension, groove details, pitch diameter, outside diameter, bore diameter and etc. Analysis of the suitability of the MC nylon sheave/pulley to be included.

23. Certificate of Accreditation of the Manufacturer's Quality Assurance System

- ❖ ISO 9001 is the international standards that specifies requirements for a quality management system. Manufacturers adopt this standard to demonstrate the ability to consistently provide products and services that meet customer and regulatory requirements.
- ❖ Applicable for overseas manufacturers only.

NOTE

- Only new unit of tower crane, passenger hoist, mast climbing work platform, derrick crane and self climbing scaffold/platform are allowed.
- Application using fraud documents will be rejected.
- Each soft copy of the documents must be legible and in pdf format only.
- All documents must be in the language of English or Bahasa Malaysia or translated to those languages. The content must be grammatically correct and easily understood.
- The Department may request additional information/documentation for verification purpose when reviewing the application.
- Avoid any security setting in the pdf files.
- Each of the files must be labeled appropriately without any foreign symbols such as "?", "*" and etc.
- Maximum allowable size for each file is 20MB
- Total allocated space for each submission is 297.20MB
- All relevant details inside the checklist must be filled up accordingly

APPENDIX 2

DOCUMENTS BY CATEGORY AND TYPE OF HOISTING MACHINE

CATEGORY	TYPE	DOCUMENT NO.
A	Overhead Travelling Crane/Monorail Crane/Gantry Crane (locally fabricated)	1,2 3,4,9,10,11
	Overhead Travelling Crane/Monorail Crane/Gantry Crane (imported)	1,2,3,4,7,9,10,11
	Overhead Travelling Crane/Monorail Crane/Gantry Crane (used/re-engineering)	1,2,3,4,9,10,11,16
	Goods Hoist	1,2,3,4,9,10,11, 16 (for re-engineering),17
	Gondola/Maintenance Cage	1,2,3,4,8,9,10,11,12,20
	Suspension Jib Material Hoist System	1,2,3,4,8,9,10,11,12,20
	Jib Crane	1,2,3,4,9,10,11,14
	Mechanical Car Park System	1,2,4,6,7,8,11,14
	Rubber Tired Gantry (RTG) Crane	1,2,3,4,6,7,8,9,10,11,14
	Straddle Carrier Crane	1,2,3,4,6,7,8,9,10,11,14
	Cable Car	1,2,3,4,6,8,9,10,11,14
	Quayside Container Crane	1,2,3,4,6,7,8,9,10,11,14
	Grab Ship Unloader	1,2,3,4,6,7,8,9,10,11,14
	Launching Gantry	1,2,3,4,6,7,8,9,10,11,14,21
	False Car	1,2,4,6,9,10,11,14
	Stair Lift	1,2,4,6,8,11,14
	Car Body Lifter	1,2,3,4,6,8,9,10,11,14
	Strand Jack with Gantry System	1,2,3,4,6,7,8,9,10,11,14
	Scissor Lift/Table Lifter (Customized)	1,2,3,6,11,18
Scissor Lift/Table Lifter (Re-Engineering)	1,2,3,11,16,18	
B	Crawler/Mobile/Auger/Truck Mounted Crane/ Injection Type Piling Machine (New Model)	1,4,5,6,8,11, 13(for mobile only), 16 (if applicable)
	Crawler/Mobile/Auger/Truck Mounted Crane/ Injection Type Piling Machine (Model Re-Approval)	1,5,8
	Mobile Elevating Work Platform	1,4,5,6,8,11
	Lifting Jack/Column Lifter/Mobile Lifter	1,4,6,8,11
	Post Lift	1,4,6,8,11
	Scissor Lift/Table Lifter (Mass Produced)	1,4,6,8,11
	Vehicle Scissor Lift (Mass Produced)	1,4,6,8,11
C	Amusement Park Rides (Category I)	1,2,3,4,6,7,8,9,10,11,12,14,15,16 (if applicable),23
	Other Hoisting Machine not Specified in Category A, B & D	1,2,3,4,6,7,8,9,10,11,14
D	Tower Crane (New Model)	1,2,3,4,5,6,7,8,9,10,11,12,13,15,20,21,22,23
	Tower Crane (Re-Approval)	1,2,3,4,5,6,7,8,9,10,11,12,13,15,19,20,21,22,23
	Passenger/Material Hoist (New Model)	1,2,3,4,5,6,7,8,9,11,12,15,20,21,23
	Passenger/Material Hoist (Re-Approval)	1,2,3,4,6,7,8,9,11,12,15,19, 20,21,23
	Pedestal Crane	1,2,3,4,5,6,8,9,10,11
	Mast Climbing Work Platform	1,2,3,4,6,7,8,9,11,12,14,20,21
	Derrick Crane	1,2,3,4,5,6,7,8,9,10,11,13,15,20,21,23
	Self Climbing Scaffolding/Platform	1,2,3,4,6,7,8,9,10,11,14,21

SAFETY DEVICES / FEATURES ON TOWER CRANES

All new application of tower crane shall be equipped with the following safety features/devices but not limited to:-

- a. Trolley traveling limiter, hoisting limiter, lowering limiter (if applicable), luffing limiter (for luffing crane), slewing limiter, maximum load limiter, A Frame Position limiter (if applicable) and load moment limiter;
- b. Jib angle indicator (for luffing crane);
- c. Effective braking system(s) that is fail-safe with the brake automatically applied whenever there is power failure, or when there is free falling of the luffing jib or the hoisted load;
- d. An efficient or locking mechanism installed directly onto the luffing drum to prevent the free-falling of luffing jib (for luffing crane);
- e. A radius and safe working load indicator that shows at all times the working radius and the corresponding safe working load and gives an audible alarm and visual warning signal when the radius or the working load is unsafe;
- f. Safe access (ladder with hoop guards or equivalent) to the operators's cabin with rest platforms at every interval not exceeding 9 meters of the climbing mast. For vertical climbing mast without rest platforms, adequate safety line(s) with fall-arresting device(s) for the attachment of the safety lanyards shall be provided and maintained;
- g. A basket fixed to the trolley or walkway fitted along the jib. A handrail or guard/safety line, to which a worker's safety harness can be attached, shall be fitted all along the length of the walkway;
- h. A device that will prevent automatic restarting of motors at the resumption of power during power interruption;
- i. Adequate aircraft warning lights;
- j. Anemometer
- k. Lighting arrestor

APPENDIX FOR GOODS HOIST

Goods Hoist Particular

1.	OWNER Name & Address :	
2.	GENERAL Rated Load: Total Travel: No. of Stops/Openings Control: Drawing No.	REMARKS Maximum of 2 tons Maximum of 12 m
3.	HOIST Model: Manufacturer: Serial No.: Speed (m/min): Capacity (kg): Power (KW): Year Built: Hoist Supporting Beam Specification:	1.25 x (SWL + Dead Load)
4.	SUSPENSION Rope or Chain: Type of Roping/Chain: Rope Diameter and Construction: Terminal Connections: Safety Factor:	Minimum 7
5.	CAGE Size (W x D x L): Area (m ²): Construction: Type of Door: Warning Sign: Overload Switch:	Maximum 3.5m ² (internal cage area, without any cladding)

6.	<p>VERTICAL PASSAGEWAY AND LANDINGS</p> <p>Vertical Passageway Enclosure: Cage and Vertical Passageway Clearance (mm): Clearance Between Edge of Landing Threshold and Cage Platform Nosing (mm): Type of Landing Door: Openings in Gate or Grille: Landing Door Height: Landing Door Interlock: Guide rail rest:</p>	<p>Maximum opening 12.7 mm Minimum of 100 mm 20 (min) - 40 (max) mm</p> <p>Maximum of 51 mm Minimum of 1676 mm</p>
7.	<p>SAFETY FEATURES</p> <p>Governor: Type of Safety Gear: Type of Buffer: Upper & Lower Final Termination Stops: Cage and Hoist Tower Electrically Grounded: Phase Failure or Reverse Phase Safety Device:</p>	
8.	<p>OTHERS:</p>	

APPENDIX FOR SCISSOR LIFT

Scissors Lift Particular

1.	OWNER Name & Address:
2.	MACHINE DETAILS Manufacturer: Serial No.: Model No.: Safe Working Load (SWL): Number of Stages: Elevating Speed: Descending Speed: Electric Motor (Type/KW): Year Built:
3.	LIFTING SYSTEM Hydraulic or Mechanical System: Cylinder/Connecting Link Material: Plunger Size: Relief Valve Setting Pressure: Design Pressure (Static Pressure): Maximum Working Pressure:
4.	Platform Dimensions Platform Size: Base Size: Vertical Travel: Max. Raised Height Above Floor:
5.	Clearance between outer edge of underside of platform and base frame/floor when scissors lift is in collapsed (lowest) position (as seen from the side view): a) Vertical Clearance: b) Horizontal Clearance:
6.	Clearance between adjacent scissors arms:
7.	Clearance between scissors arm and outer edge of platform or base frame (as seen from the front/rear view):

8.	Minimum safety factor for all parts: a) Structure: b) Hydraulic:
9.	Device in case of hydraulic/driving system failure while operating at full load:
10.	Locking device while in raised position at full load for maintenance purpose:
11.	Type of arrangement for foot protection
12.	Provisions of 'Dead Mans' type controls:
13.	Provision of emergency stop control:
14.	Indoor or outdoor use:
15.	Weather – proofing of motor controls and switches (outdoor use):
16.	Electrical earthing of exposed metal parts:
17.	Other features:
18.	Drawing No.:
19.	Manufacture's test certificate:
20.	Design Code:
21.	Remarks: