



**GUIDELINES FOR MACHINERY SPECIAL SURVEY
CARRIED OUT ON CONTINUOUS SURVEY BASIS**

機器特別檢驗以連續檢驗方式實施準則

CR CLASSIFICATION SOCIETY

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GUIDELINES FOR MACHINERY SPECIAL SURVEY CARRIED OUT ON CONTINUOUS SURVEY BASIS

機器特別檢驗以連續檢驗方式實施準則

1 General 通則

1.1 Machinery Continuous Survey is to be performed in accordance with the Rules for Construction and Classification of Steel Ships published by the CR Classification Society (hereinafter referred to as the Society).
機器連續檢驗係根據財團法人驗船中心（以下簡稱本中心）鋼船建造與入級規範之規定辦理。

1.2 Machinery Continuous Survey is to be performed upon application of the Owner. The survey schedule is to be fixed after examining the information and proposed arrangement submitted by the Owner and the classification status of the vessel concerned.

機器連續檢驗依船東之申請辦理。檢驗實施時間將依照船東所提供之資料與計畫，以及船級現況而定。

1.3 If a Machinery Special Survey is performed on a continuous basis, each item of the Machinery Special Survey requirements is to be completed within a 5-year cycle.

如機器特別檢驗以連續檢驗實施時，則機器特別檢驗規定之每一檢驗項目應在 5 年之週期內完成。

1.4 A list of the survey status listing all the items that are overdue or will become due within 6 months is to be sent to the Owner of the ships for which Machinery Continuous Survey(s) is applicable.

凡採用機器連續檢驗之船舶，本中心依檢驗情況列表通知船東，內容包含已過期未受檢之項目及將在 6 個月內到期之項目。

2 Application 適用

The Machinery Continuous Survey system applies to those items of machinery and equipment of well experienced type.
機器連續檢驗系統適用於成熟型式的機器及設備項目。

The following machinery and equipment are applicable to Machinery Continuous Survey system.
以下機器設備適用於機器連續檢驗系統。

2.1 Main propulsion machinery 主推進機器

2.1.1 Steam turbines 蒸汽渦輪機

- Turbine rotors accompanied with bearings casings 渦輪機轉子連同軸承外殼
- Couplings between turbine and reduction gears 渦輪機與減速齒輪之間的聯結器
- Nozzle valves 噴嘴閥
- Maneuvering valves 操縱閥

2.1.2 Reciprocating internal combustion engines 往復式內燃機

- Cylinder covers 氣缸蓋
- Cylinder liners 缸套

- Pistons (piston pins and piston rods to be accompanied) 活塞 (連同活塞銷與活塞桿)
- Crosshead pins and their bearings 十字頭銷及其軸承
- Connecting rods 連桿
- Crank pins and their bearings 曲柄銷及其軸承
- Crank journals and their bearings 曲柄軸頸與其軸承
- Camshafts and their driving gears 凸輪軸及其傳動齒輪
- Turbochargers 渦輪增壓機
- Auxiliary blowers 輔助鼓風機
- Air inter-coolers 空氣中間冷卻器
- Attached essential pumps and coolers (e.g. bilge pumps / Lubricating oil (L.O.) pumps / Fuel oil (F.O.) pumps/ cooling water pumps / L.O. cooler / central fresh water (C.F.W.) cooler / hydraulic oil pumps for electric control system)
附屬主要泵與冷卻器 (例如艙底水泵 / 滑油泵 / 燃油泵 / 冷卻水泵 / 滑油冷卻器 / 中央淡水冷卻器 / 電控系統的液壓油泵)

2.2 Power transmission system and main shafting 動力傳動系統與主軸系

- Reduction / reversing gears 減速 / 倒俚齒輪
- Flexible couplings 撓性聯結器
- Clutch 離合器
- Thrust shafts and bearings 推力軸及其軸承
- Intermediate shafts and bearings 中間軸及其軸承

2.3 Auxiliary engines 輔助發動機

- Main and auxiliary generator engines including port-use generator engine
主輔發電機引擎包含港內使用的發電機引擎
- Emergency generator engines 應急發電機引擎
- Other engines used for essential auxiliaries 其他用於主要輔機的發動機

2.4 Water jet propulsion systems 噴水推進系統

- Hydraulic pumps for steering actuating systems 轉向致動系統的液壓泵
- Lubricating oil pumps 滑油泵
- Coolers 冷卻器
- Other items considered to be necessary by the Society 本中心認為必要的其他項目

2.5 Azimuth thrusters 全向推進器

- Gear, gear shafts, shaft coupling, bearings and clutches for propulsion
推進用的齒輪、齒輪軸、軸聯結器、軸承及離合器
- Gear, gear shafts, shaft coupling and bearings for steering
轉向用的齒輪、齒輪軸、軸聯結器及軸承
- Hydraulic pumps and hydraulic motors for azimuth steering gears
全向轉向裝置的液壓泵與液壓馬達
- Lubricating oil pumps 滑油泵
- Coolers 冷卻器
- Other items considered to be necessary by the Society 本中心認為必要的其他項目

2 Application 適用

2.6 Air compressors and blowers 空氣壓縮機與鼓風機

- Main and auxiliary starting air compressors 主輔啟動空氣壓縮機
- Air compressors for control system 控制系統用空氣壓縮機
- Boiler fans 鍋爐風機
- Scavenging pumps, blowers, exhaust gas turbochargers 掃氣泵、鼓風機、排氣渦輪增壓機
- Fans for machinery spaces and serving hazardous spaces 用於機艙和危險空間的風扇
- Gland exhaust fans 衛帶排風機
- Machineries and equipment of venting, purging, gas freeing and ventilation systems (for tankers) 排氣、驅氣、清除油氣及通風系統的機器與裝備（油輪用）

2.7 Cooling water pumps 冷卻水泵

- Circulating pumps for main steam turbine 主蒸汽渦輪機用循環泵
- Jacket C.F.W. pumps 缸套中央淡水泵
- Piston C.F.W. / oil pumps 活塞中央淡水/滑油泵
- Fuel valve (F.V.) C.F.W. / oil pumps 燃油閥中央淡水/滑油泵
- Turbocharger pumps 渦輪增壓機泵
- Main central sea water(C.S.W.) pumps 主中央海水泵
- C.S.W. pumps for L.O. coolers 滑油冷卻器用中央海水泵
- C.F.W. pumps for generator 發電機用中央淡水泵
- Sea water(S.W.) service pumps 海水常用泵
- Air coolers C.F.W. pumps 空氣冷卻器中央淡水泵

2.8 F.O. pumps 燃油泵

- F.O. supply pumps 滑油供應泵
- F.O. service pumps 滑油常用泵
- F.O. transfer pumps 燃油輸送泵
- F.O. circulating pumps 燃油循環泵
- boiler burning pumps 鍋爐燃燒泵

2.9 Lubricating oil pumps 滑油泵

- L.O. pumps for main engine 主機用滑油泵
- L.O. pumps for camshaft 凸輪軸用滑油泵
- L.O. pumps for reduction gear 減速裝置用滑油泵
- L.O. pumps for controllable pitch propeller (C.P.P.) 可控螺距螺槳用滑油泵
- Stern tube L.O. pumps 艙軸管滑油泵
- Thermal oil circulating pumps 熱油循環泵
- Exhaust valve operation oil pumps 排氣閥操作油泵
- Rocker arm L.O. pumps 搖臂滑油泵
- Crosshead L.O. pumps 十字頭滑油泵
- System oil pumps (pumps for feeding oil to hydraulic systems for control and adjustment of essential auxiliaries for propulsion) 系統油泵（液壓系統用供油泵，用以控制與調整推進用主要輔機）

- 2.10 Feed water pumps, condensate pumps and drain pumps 給水泵、冷凝泵及疏水泵
- Feed water pumps 給水泵
 - Boiler water circulating pumps 鍋爐水循環泵
 - Condensate pumps (for main turbines, generator turbines, cargo oil pump turbines and ballast pump turbines)
冷凝泵（用於主渦輪機、發電機渦輪機、貨油泵渦輪機及壓艙水泵渦輪機）
 - drain pumps 疏水泵
- 2.11 Bilge pumps, ballast pumps and fire pumps 艙底水泵、壓艙水泵及消防泵
- Bilge pumps(excluding those for oily bilge & oily water separators)
艙底水泵（不包括含油艙底水及油水分離器）
 - Ballast pumps 壓艙水泵
 - General service (G.S.) pumps 雜用水泵
 - Fire pumps (excluding emergency fire pump) 消防泵（不含應急消防泵）
- 2.12 Condensers and feed water heaters 冷凝器及給水加熱器
- Main condensers 主冷凝器
 - Aux. condensers 輔冷凝器
 - Gland condensers 填函蓋冷凝器
 - Atmospheric condensers 空氣冷凝器
 - Dirty steam condensers 髒汙蒸汽冷凝器
 - Vent condensers 通風口冷凝器
 - Drain coolers 疏水冷卻器
 - Feed water heaters 給水加熱器
 - Deaerators 除氧器
- 2.13 Coolers 冷卻器
- Main fresh water (F.W.) coolers (for cylinder jackets and pistons)
主淡水冷卻器（缸套與活塞用）
 - F.V. C.F.W./ oil coolers 燃油閥 中央淡水 / 油冷卻器
 - F.W. coolers for turbochargers 渦輪增壓機用淡水冷卻器
 - F.W. coolers for generator engines 發電機用淡水冷卻器
 - Main L.O. coolers 主滑油冷卻器
 - Turbocharger L.O. coolers 渦輪增壓機滑油冷卻器
 - Camshaft L.O. coolers 凸輪軸滑油冷卻器
 - Reduction gear L.O. coolers 減速齒輪滑油冷卻器
 - Control oil coolers 控制油冷卻器
 - L.O. coolers for C.P.P. 可控螺距螺槳用滑油冷卻器
 - Stern tube L.O. coolers 艙軸管滑油冷卻器
 - L.O. coolers for generator turbines 發電機渦輪機用滑油冷卻器
 - Air coolers 空氣冷卻器
 - C.F.W. coolers 中央淡水冷卻器
 - F.O. coolers 燃油冷卻器

3 Kind of Machinery Continuous Survey Required for Credit 註記所需的機器連續檢驗的種類

- 2.14 Oil heaters 油加熱器
- F.O. heaters and L.O. heaters 燃油加熱器及滑油加熱器
- 2.15 F.O. tanks 燃油櫃
- F.O. settling tanks and service tanks (for main and auxiliary engines) and F.O. tanks for boilers 燃油沉澱櫃及日用櫃（主機及輔機用）以及鍋爐用燃油櫃
- 2.16 Air vessels (for main, auxiliary, control and emergency) 空氣櫃（主輔機控制及緊急用）
- 2.17 Cargo oil pumping installation 貨油泵送裝置
- Cargo oil pumps (including chemical, liquid gas pumps) 貨油泵（包含化學、液化氣體泵）
 - Stripping pumps 收艙泵
 - Tank cleaning pumps 洗艙泵
 - Tank cleaning heaters and drain coolers 洗艙加熱器與疏水冷卻器
 - Drain coolers for cargo oil heaters 貨油加熱器用疏水冷卻器
- 2.18 Deck machinery 甲板機械
- Steering gears 舵機
 - Windlass 錨機
 - Mooring winches (including their hydraulic oil pumps) 繫泊絞車（包含其液壓油泵）
- 2.19 Fresh water generator (for main boiler water to use for driving steam turbines) 淡水製造機（用於驅動蒸汽渦輪機的主鍋爐水）
- 2.20 Cargo refrigerating installation 貨物冷凍設備
- Compressors 壓縮機
 - Condenser cooling water (C.W.) pumps 冷凝器冷卻水泵
 - Primary refrigerant Pumps 主冷凍劑泵
 - Brine pumps 鹽水泵
 - Condensers 冷凝器
 - Evaporators 蒸發器
- 2.21 Other items of machinery, equipment and refrigerating installations which the society considers to be covered by MCS.
本中心認為機器連續檢驗應涵蓋的其他機器、裝置及冷凍設備項目。

3 Kind of Machinery Continuous Survey Required for Credit 註記所需的機器連續檢驗的種類

- 3.1 Overhaul inspection under surveyor's attendance (Survey mark in record "S")
驗船師在場的拆開檢查（在紀錄中標註檢驗記號"S"）

3.1.1 Following items are to be required surveyor's attendance. 下列項目須驗船師在場。

3 Kind of Machinery Continuous Survey Required for Credit 註記所需的機器連續檢驗的種類

- (a) At least 50% of the cylinder units, turbochargers and air coolers of each engine of the main propulsion machinery, and at least 50% of the auxiliary engines for electrical installations are to be surveyed by the Surveyor during the 5 years interval.

在 5 年的間隔期間，主推進機器的每部發動機至少 50% 之氣缸組、渦輪增壓機及空氣冷卻器，以及至少 50% 的電機設備的輔助發動機應由驗船師進行檢驗。

The cylinder unit may contain:

氣缸組得包括：

- (i) cylinder cover;
缸蓋；
- (ii) cylinder liner, piston & rod;
缸套、活塞及桿；
- (iii) crosshead, guide, connecting rod & bearings;
十字頭、導板、連桿及其軸承；
- (iv) crank pin & bearings;
曲柄銷及其軸承；
- (v) crank case explosion relief valve; and
曲軸箱防爆洩壓閥；及
- (vi) valve and valve gear.
閥及閥動裝置。

However, main journals and bearings are to be surveyed only by the Surveyor.

但是，主軸頸和軸承只能由驗船師進行檢驗。

- (b) Main air vessels, main reduction gears and line shafting are to be surveyed by the Surveyor.
主空氣櫃、主減速齒輪及傳動軸系應由驗船師進行檢驗。
- (c) Damages or repairs to the machinery which affect the classification of the ship concerned must be surveyed by the Surveyor.
凡影響有關船舶入級之機器損傷或修理必須由驗船師進行檢驗。

3.2 Confirmatory survey based on the Chief Engineer's inspection report (Survey mark in record "E")
確認檢驗基於輪機長的檢查報告（在紀錄中標註檢驗記號"E"）

3.2.1 Items applicable for confirmatory survey are excluding 3.1 of this guidelines.
確認檢驗的適用項目不包含本準則 3.1 內容。

3.2.2 The Chief Engineer holds a valid licence issued by a government authority acceptable to the Society.
該輪機長持有由政府主管機構簽發並經本中心接受之有效執照。

3.2.3 The Society is to accept only those items overhauled for survey as a routine check at sea or in a port where there is no surveyor of the Society.
本中心僅接受那些在海上或港口無本中心驗船師之例行檢查拆驗之項目。

3.2.4 The replaced parts are to be kept aboard until they have been surveyed by the Surveyor.
經拆換之組件應保存在船上，直到驗船師檢驗完成。

3.2.5 Within 5 months after being surveyed by the Chief Engineer, the items of the machinery are to be subjected to a visual inspection or running test by the Surveyor according to a report submitted by the Chief Engineer showing the items that have been inspected by him. When deemed necessary by the Surveyor, the inspected items may be subjected to a resurvey.
機器項目經輪機長檢查後五個月內，須由驗船師根據該輪機長就其檢查之項目所提出之報告做目視檢查或操作試驗。如驗船師認為必要時，業經檢查之項目得再受檢。

3 Kind of Machinery Continuous Survey Required for Credit 註記所需的機器連續檢驗的種類

3.2.6 The survey carried out by the Chief Engineer is to be recorded in the engine log book, and the record is to be shown to the Surveyor.

輪機長檢查之項目應記錄在輪機日誌上，該紀錄應出示給驗船師。

3.2.7 The report of the Chief Engineer is to contain the following items:

輪機長之報告包括下列項目：

- (a) name of Chief Engineer;
輪機長的姓名；
- (b) licence No. & issuing authority;
執照號碼及簽發機構；
- (c) place and date of survey;
檢驗之地點及日期；
- (d) report on findings; and
報告檢查之結果；及
- (e) signature of the Chief Engineer.
輪機長之簽名。

3.3 Confirm Machinery Continuous Survey items with the master of the ship on board

在船上與船長確認機器連續檢驗項目

After completion of Machinery Continuous Survey items, the Surveyor submits report of Form No. KGR6(including Machinery Continuous Survey items) to the master of the ship on board and the Head Office of the Society for update record of survey status.

機器連續檢驗項目完成後，驗船師將 KGR6（包含機器連續檢驗項目）的報告提交給船長及本中心總部，以更新檢驗狀態紀錄。