HOLDS &HATCH COVERS MAINTENANCE GUIDANCE NOTE

OCEAN MARITIME SERVICES LTD.

Maintenance and Instruction of hatch cover and appliances

HOLDS &HATCH COVERS MAINTENANCE GUIDANCE NOTE

Guidance note: Maintenance and Instruction of hatch cover and appliances

OCEAN MARITIME

Hold & Hatch Covers and Appliances

This manual prepared for On-board Maintenance and Inspection of Hold & Hatch Covers and Appliances

This information may be used as a basis for the ship's onboard maintenance plan For Hold & Hatch Covers and Appliances

index Page

Source : http://www.macgregor.com & www.swedishclub.com & The Standard Clup Loyd Register & A. Bilbrough & Co. Ltd.

INTRUDUCTION

This booklet contents some of the common causes of damage. Loss and personal injury associated with cargo holds and hatch covers.

This booklet will help you operate and maintain the holds and hatch covers on your vessel safely and cost effectively.

This guide will to provide simple pointers for the safe operation and maintenance of the holds and hatch covers of ships carryingdry cargoes.

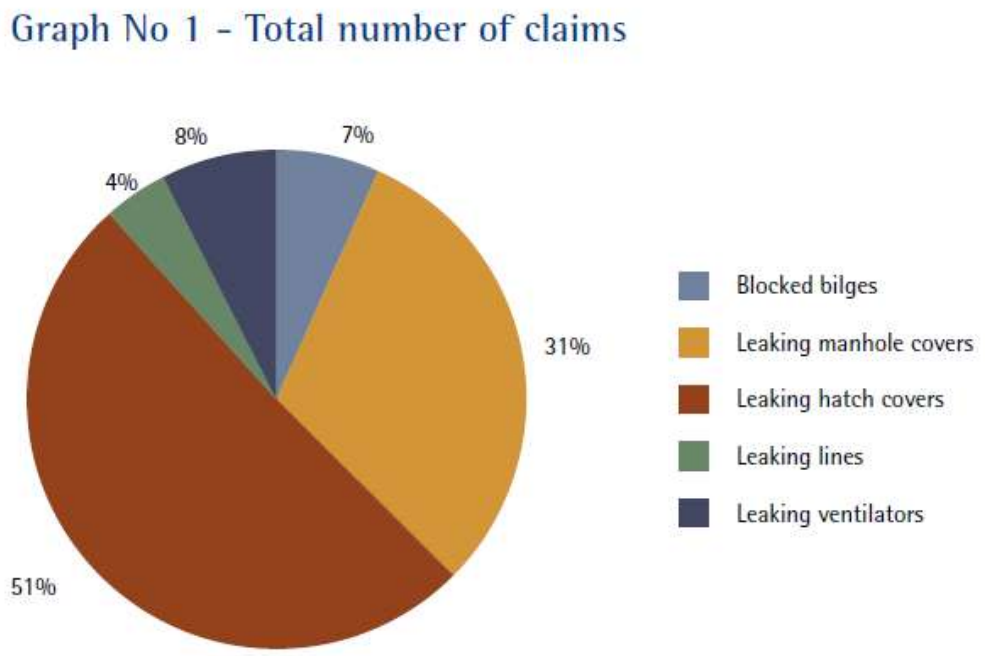


Figure 1 https://www.swedishclub.com/loss-prevention/cargo/bulk-and-general-cargo/#claims

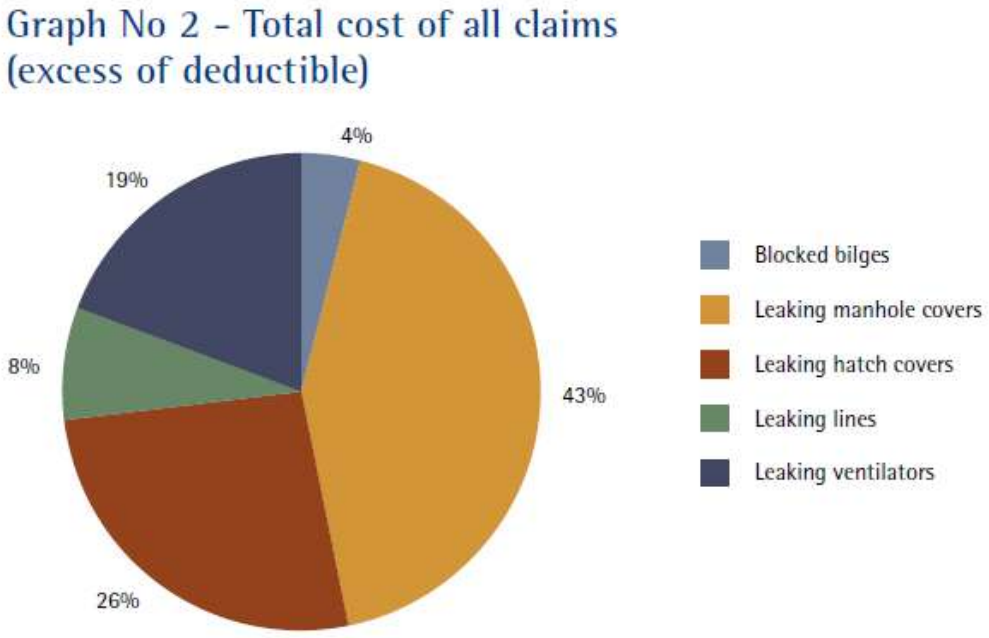


Figure 2 https://www.swedishclub.com/loss-prevention/cargo/bulk-and-general-cargo/#claims

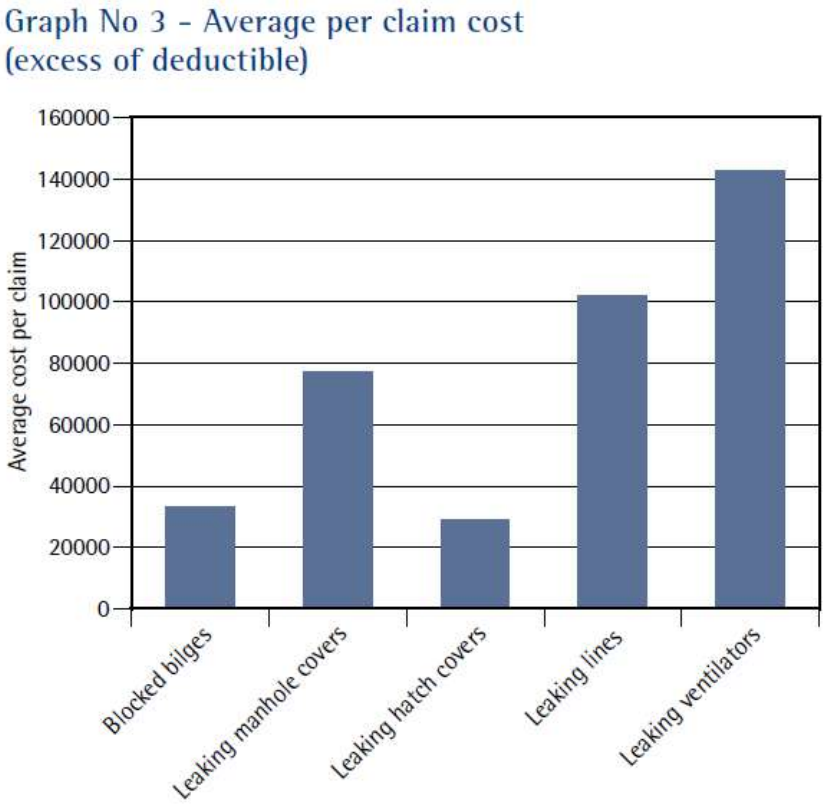


Figure 3 https://www.swedishclub.com/loss-prevention/cargo/bulk-and-general-cargo/#claims

Wet damage - mainly caused by:

• Improper cargo handling shipside

• Improper cargo handling shore-side

• Cargo being wet when loaded

• Leaky cargo hatches

Figure 1 & 2: Shows the Leaking cargo hatch covers are a common immediate cause

to wet damage, which can be expensive for sensitive Cargo like steel products.

Figure 3 Shows the frequency and cost for the Cargo claim categories

It is generally accepted that leaking hatch covers are a principal cause of cargo wetting and claim.

Figure 4 Hydraulic folding hatch covers:

Hydraulic folding hatch covers:

With ever more efficient cargo working in port being the objective, modern dry cargo vessels are tending to develop to a more 'open' trend, i.e. the size of the hatches compared with the deck area is growing. This implies that there is less stowage space available for the hatch covers, which has made the high-stowing hydraulic folding covers very popular.

Hydraulic operation results in smooth and positive control of the big panels during opening and closing of the cover. A major advantage with the hydraulic folding covers is the low number of panels. Fewer big panels are advantageous when designing the covers for container loads. Hydraulic folding hatch covers can be designed in various configurations to fulfil almost any requirements on hatch opening size, uniform loading, container arrangements and operation possibilities.

Weather deck hatch covers can be equipped with special fittings, as required: for example, with stanchion sockets for loading timber, cement/grain feed hatches, and ventilation hatches or water spray arrangements for dangerous cargo.

Figure 5 Lift-away hatch covers

Lift-away hatch covers

As a rule lift-away panels are operated with a spreader using the vessel's cranes or shore side container cranes. The hatch cover panels can be stowed on top of adjacent covers which are placed on the quay or the ship's deck. Non-sequential operation and partial opening possibility enables flexibility in loading and discharging, and is therefore preferred by many ship owners.

Lift-away hatch covers for use on the weatherdeck are divided into two categories: single-panel covers and multi-panel covers.

Single-panel types comprise one cover for each opening, i.e. there are no joints. They are normally specified for bulk carriers in the case of single-opening abreast, and for cellular container ships in the case of multi-opening abreast configurations.

Multi-panel covers comprise several separate panels for each hatch opening, they are used for cellular container ships in the case of longitudinal joints, and for multipurpose cargo ships and heavy cargo tonnage in case of transversal joints.

Lift-away covers can be equipped with special fittings, as required: for example, with stanchion sockets for loading timber, cement/grain feed hatches, and ventilation hatches or water spray arrangements for dangerous cargo.

Figure 5 Piggy-back hatch covers

Piggy-back hatch covers

For open hatch bulk carriers (OHBC's), rolling covers of the Piggy-back type are preferred as the deck allows little or no free space for stowing the covers when the hatches are open.

This system always comprises two panels, with one panel being raised high enough for the other to roll underneath and to support the lifted panel on to its 'back'. Both panels can then be rolled back and forth.

The system can either be applied to a pair of hatches or to the two panels of a single hatch. If the number of panels exceeds two, the system is called 'stacking', and special high lifters are needed.

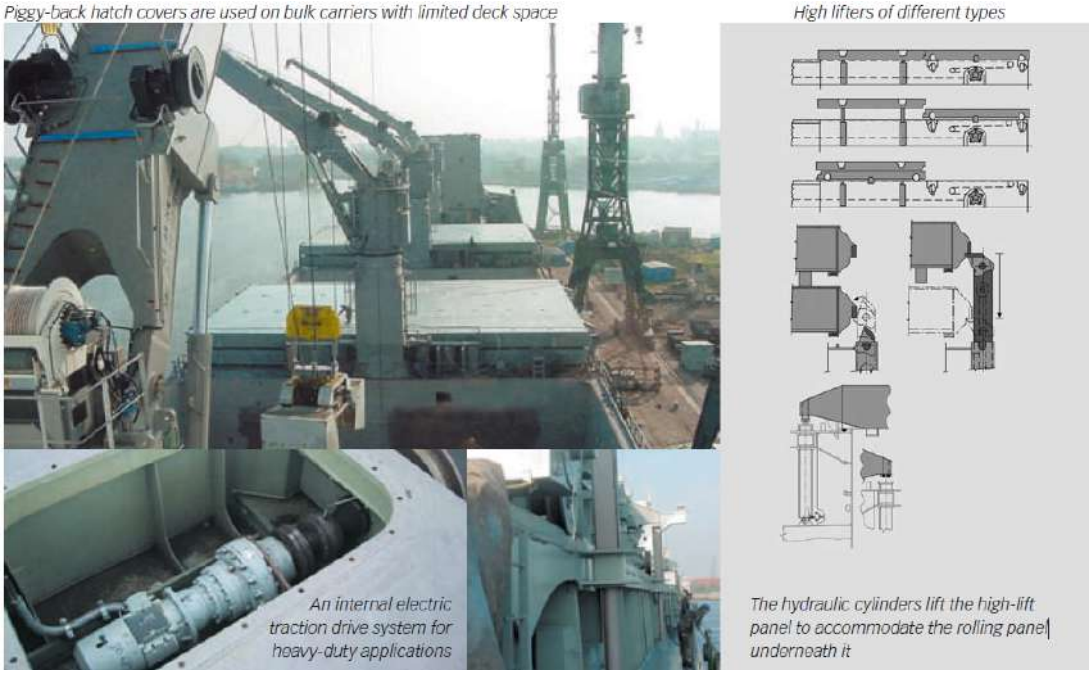


Figure 6 Piggy-back hatch covers

Figure 7 Side-rolling hatch covers

Side-rolling hatch covers

Side-rolling hatch covers are popular for use on the weatherdecks of larger bulk carriers such as Panamax and Capesize types. In the case of ore/bulk/oil (OBO's) and ore/oil carriers, the covers are designed to sustain internal liquid loads.

Side-rolling hatch covers stow in a transverse direction. The traditional side-rolling cover consists of two panels per hatch, each panel rolling sideways on a pair of transverse ramps, thus presenting a minimum obstacle when loading.

Figure 8 Stacking hatch covers

Stacking hatch covers

instead of two panels, several rolling panels are stacked on top of each other.

The chain-driven stacking hatch cover system has the same idea as the piggy back system.

Figure 9 Tweendeck hatch covers

Tweendeck hatch covers

Tweendeck hatch covers can be designed to serve multiple functions:

- as grain bulkheads
- as ballast when filled with water
- as counter weight when lifting heavy loads
- as lifting beams
- as working platforms

Figure 10 Tweendeck lift-away hatch covers

Tweendeck lift-away hatch covers

Lift-away tween deck hatch covers make it possible to improve cargo efficiency for cargo that can not be stacked. The panels are operated by a crane with wire slings or spreaders or panel lifter and placed on consoles.

Lift-away tween deck hatch covers can be flexibly used as bulkheads as well

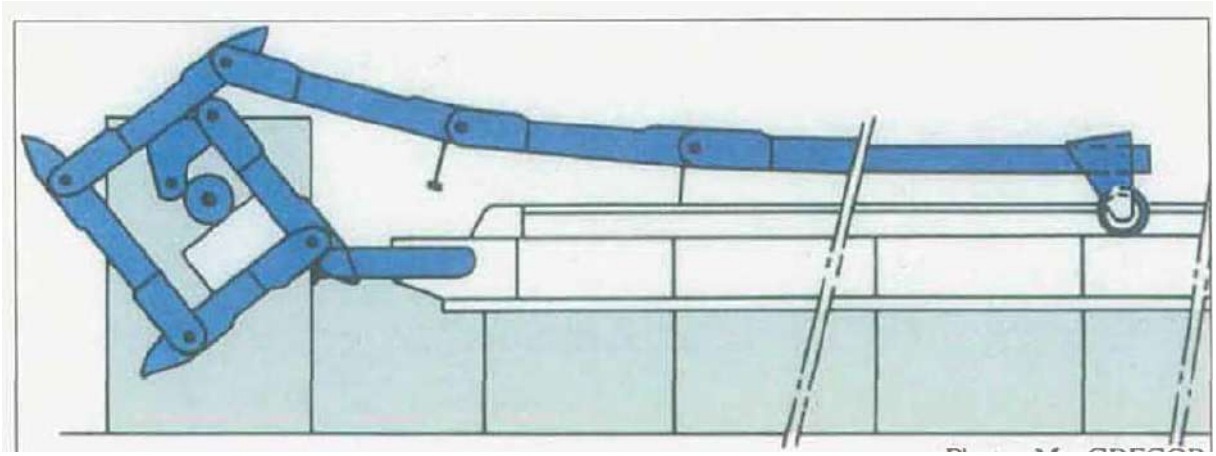


Figure 11 Drurn stowing Rolltite hatch covers

Drurn stowing Rolltite hatch covers

Drurn stowing Rolltite hatch covers were used for ease of handling and to save space.

Figure 12

Single pull wire operated hatch covers

Hatch Cover Components

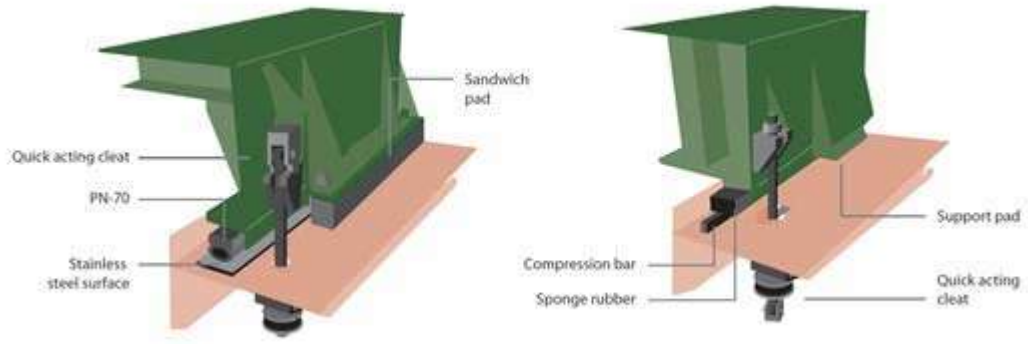


Figure 13 http://www.cargocaresolutions.com/

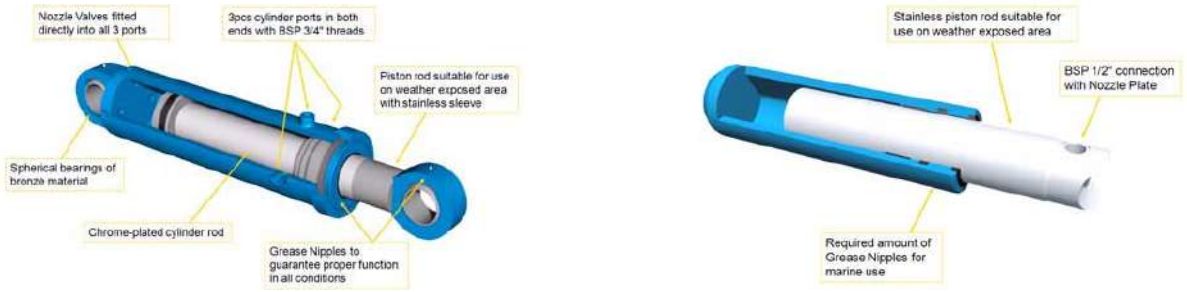
Cleats and Wedges

Securing the hatch covers with the correct type of (quick acting) cleats and wedges is essential for the weather tightness of the hatch cover system. Using the correct types, adjusted according the specifications, ensures long service life time of all parts fitted on both the hatch covers and the coaming.

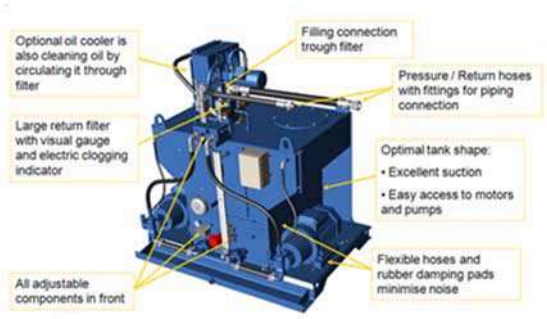
Hydraulics

weather conditions on deck call for specially designed hydraulic components used in the hatch cover operating systems. Also, operational requirements, e.g. smooth accelerating/ braking of the cover, dictate that the use of conventional components does not result in the best hydraulic system.

a) Cylinders:



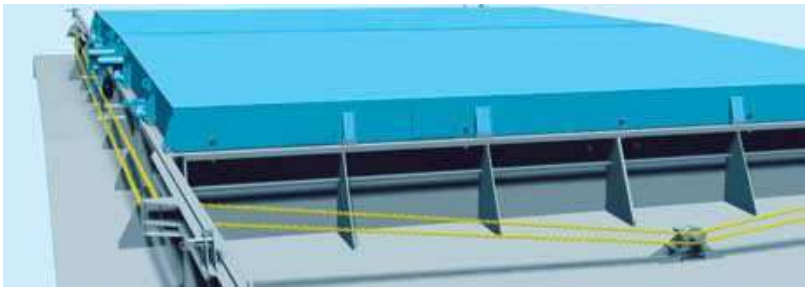
b) Pump units



Pump units come with twin pumps installed below the oil tank for redundancy and easy maintenance. The pump units are fitted with return filters. An air cooler and a

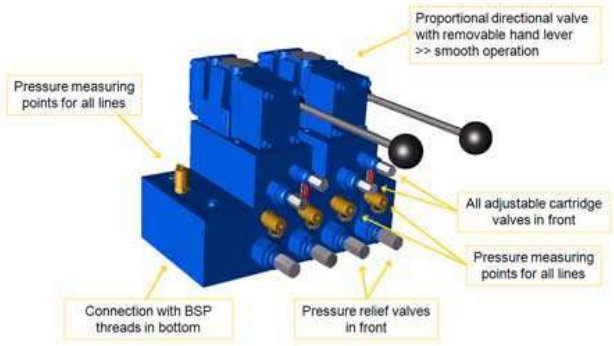
cooling/ filtering pump option is also available as a retrofit. The pump units are designed to keep noise levels down, e.g. the motor/ pump unit is installed on vibration dampers and connected by flexible hoses to the pipelines. There is a range of standard sizes to suit different capacity needs.

c) Motors:



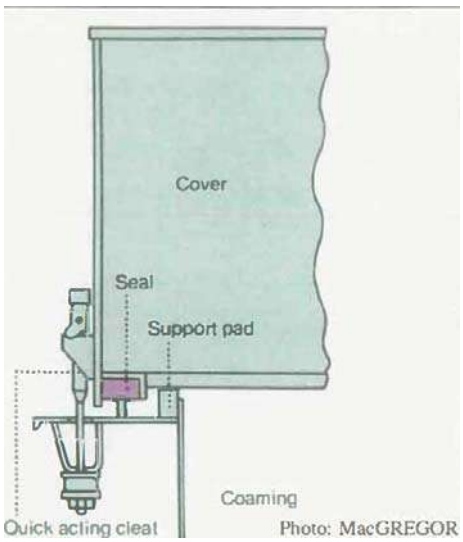
A medium-speed hydraulic motor is used together with a chain drive system. The hatch covers are driven by a medium-speed hydraulic motor with a planetary gear.

d) Valves:



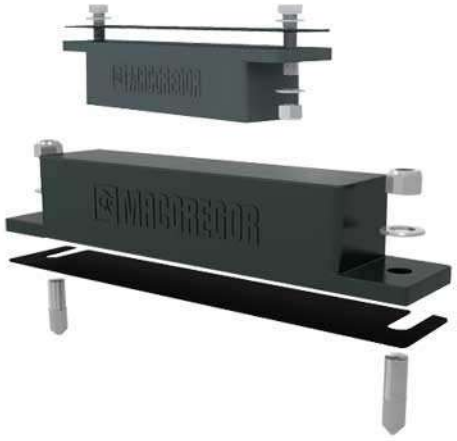
Specially designed and developed hydraulics ensure optimal control, operation and maintenance of the hatch covers, as well as easy installation.

Sealing;



Sealings are manufactured according to exacting specifications to secure the optimum rubber quality for a particular application.

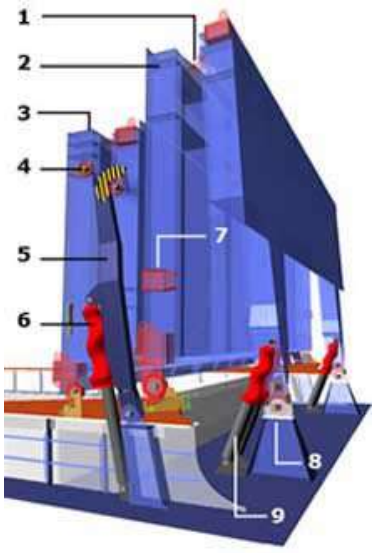
Load transmission:



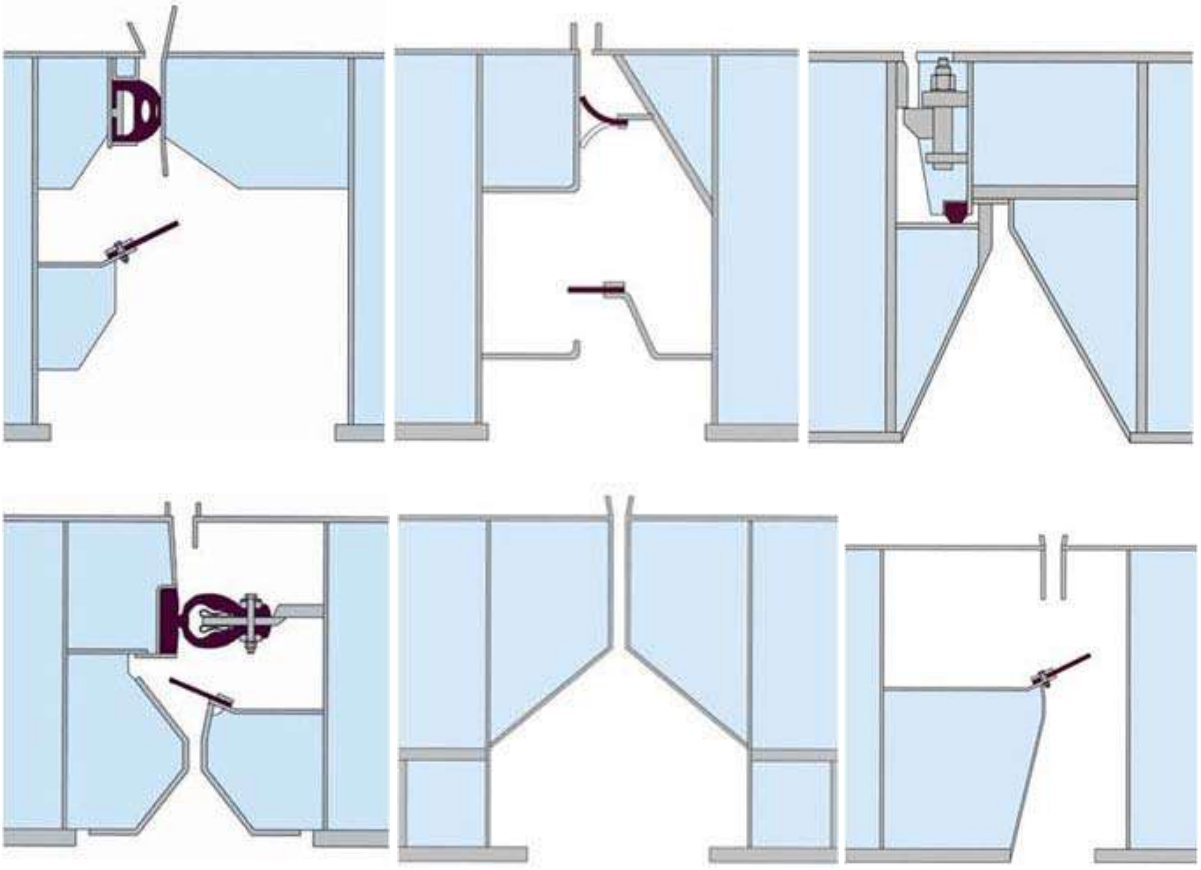
Hatch cover bearing pads transfer the weight of the cover, and any cargo it may be carrying, to the ship's hull while allowing for relative movement between the cover and the hatch coaming caused by hull flexing in a seaway. They must also maintain the correct compression on the hatch cover seal and avoid wearing damage to the coaming/hatch cover interface.
As bearing pads transfer weight, lateral forces are generated that are then transmitted to the ship's coaming and hatch cover structures. These forces are used in fatigue strength analysis at the newbuilding stage, and subsequently, the structures are designed around these calculations

Operating arrangements

1. Intermediate hinge
2. Leading pair
3. Trailing pair
4. Lifting wheel for trailing pair
5. Bell crank
6. External hydraulic cylinder for bell crank
7. Longitudinal stopper
8. Link for end hinge
9. External hydraulic cylinder for leading pair



Hatch cover weathertightness:



Sealing between hatch covers and coaming is generally achieved by sliding rubber packing which is fitted to the panels and tightens against the top of the coaming or against the edge of a compression bar.

Sealings can be fitted for the panel joints, and some of the seals offering non-sequential operation. In the case of non-weathertight hatches, a labyrinth type gasketless seal and an open joint without drainage can be used. Non-weathertightness of covers – or reduced weathertightness for some class requirements – is in all cases to be clarified by classification societies, national authorities and the shipowner based on IACS LL64.

Which seal type to which ship type?

Ship type	Cat Profile	Flex-Seal	Laby-rinth	Double Rubber Lib	Swing Seal	C Gasket	Omega	Omega Lite	Sponge
Container ships									
Feeder container ships < 1,200 TEU	•	•				•	•	•	•
Feeder container ships > 1,200 TEU	•			•		•	•	•	
Panamax container ships	•		•	•		•	•	•	
Post-panamax container ships	•		•	•		•	•	•	
General cargo ships									
General cargo ships	•				•	•	•	•	
Bulk ships									
Mini-bulkers	•	•							•
Handysize/Handymax	•*	•							•
Panamax/Capesize		•							•
VLOC		•							•

* Occasionally for open hatch bulk carriers ■ Further specific information is provided in hatch cover brochures and data sheets

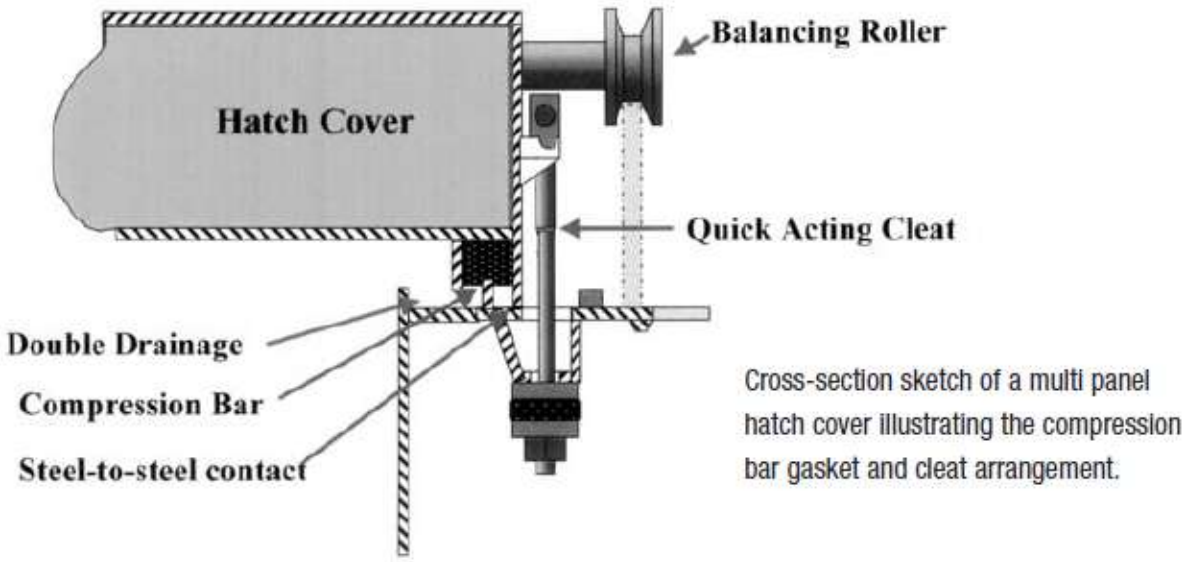


Figure 14

Maintenance and Repair

Poor maintenance of hatch covers causes leakage leading to cargo damage. Although hatch covers are simple and durable, their sealing gaskets are easily damaged. The quality of sealing is affected by lack of alignment and poor gasket compression. When hatch covers are opened at the end of an ocean voyage, look for signs of leakage such as rust staining or drip marks.

Regular hatch adjustment and repair, by ship's staff, will reduce the overall cost of hatch maintenance. Painting double drainage channels will help to prevent corrosion.

Always keep a detailed record of maintenance.

Rubber gaskets

Keep clean and free from paint. If physically damaged, permanently set-in or aged, replace with minimum 1 metre lengths. Always follow the manufacturer's instructions when renewing gaskets.

Gasket channels

If gasket channels are badly corroded, causing the hatch packing to hang loose, the packing should be removed and the channel repaired by welding new metal strips which should be painted before fitting new rubber. Always follow proper fire prevention safety procedures. Make sure that cargo spaces are free of cargo and combustible material. When conducting extensive structural repairs, remove the hatch covers to shore.

Hatch structure

Repair or replace excessively corroded and thinned hatch plating. It is likely that for this type of repair the hatch covers will have to be landed ashore. Consult the ship's classification society before beginning repairs.

Compression bars

Effective sealing is only possible with a straight, undamaged and non-corroded compression bar. Compression bars which are not in this condition should be repaired or replaced, taking care to align the bars properly. Remember to carry out a chalk test to check alignment, both during, and after, repair.

Landing pads

Hatch sealing is arranged by design to give the correct compression of the gasket when there is metal-tometal contact on the hatch landing pad, side plate, or inter-panel block. If landing pads are reduced in height (check with manufacturers' drawings) because of wear, repair is essential.

Hatch wheel trackway

Trackways can corrode. They are weakened by abrasive wear and tear. When weakened, trackways can distort and break, affecting hatch movement and alignment. Deterioration is visible to the naked eye. Repair by replacing the worn or damaged material with sufficient new material to restore strength. Always keep hatch wheel trackways clean and painted.

Hatch coaming

Look for stress cracks at coaming corners. If any are found, consult the ship's classification society before completing repairs in case the coaming needs to be reinforced. Examine coaming support brackets for corrosion where they connect with the ship's deck. Make sure coamings and their support brackets are painted. Coamings can be damaged by cargo equipment during loading or discharge. Look out for damage and repair if found.

Hatch cleats and wedges

It is important for compression washers to be adjusted correctly. A locking nut for adjusting compression is situated at the base of the cleat. The procedure to alter

• Close hatch and secure for sea;
• Place the cam of the cleat in the hatch socket as if to lock it, but leave it unlocked (the cam should move freely and fit snugly in its housing) ;
• Adjust the locking nut until the compression washer touches the underside of the hatch coaming or its steel washer;
• Turn the locking nut one full turn to achieve the desired tension;
• Do not over-tighten;
• Protect the thread on completion.

When closing and securing a hatch for sea passage, check the tension in side cleats. Cleats should never be adjusted in isolation, adjust all cleats along the hatch skirt at the same time.

Hatch cross-joints

It is essential for the cross-joint to be in good condition and properly aligned. Maintenance and repair should focus on;

• Examination of the cross-joint structure for corrosion.
• Examination of joint hinges for pin wear, blade cracking or weld failure. Re-grease the hinge pin bushes making sure grease reaches the hinge pins.
• Examination of the steel-to-steel inter-panel blocks and locators for wear. Check the top plate of hatch panels, they should be level when closed.
• Checking the gap between panels when they are closed. Misalignment could be caused by an incorrectly adjusted cylinder or the wheel tracks could be worn.

Hatch wheels

Hatch wheel spindles and bearings (where fitted) need to be greased regularly. Check the wheel spindle for wear and the wheel housing for physical damage. Repair if the spindle is worn or if the wheels are out of alignment.

Drain channels and non-return valves

Clean coaming tops and cross-joint channels by removing any loose scale or cargo residue by brushing or hosing. Clean coaming drain holes and check that the non-return valve is functioning.

Greasing

Wheel spindles, cleat spindles, hinge pins, hydraulic cylinder protective sheaths, cleat wedges, drive chain sprockets, toothed rack and cylinder spherical bearings need to be kept well greased. Re-grease every month if necessary, and always apply new grease after the ship has passed through heavy weather.

Painting

Corrosion occurs mainly at the panel ends along the cross-joint or where access is difficult, but it can also occur on the underside of a panel, especially along hatch beams. Regular painting will be necessary.

Inert gas

Hatch covers with a double skin, in the form of a closed box, are filled with inert gas. After structural repair, the inner spaces must be re-inerted. This is done by inserting special tablets (available from the hatch cover manufacturer) into the space and welding shut. Never allow water to penetrate the box construction.

Hydraulic systems and components

The cleanliness and viscosity of hydraulic oil must be checked. Samples of the oil should be sent to a chemist for testing (use the same company that checks and tests your fuel and lubricating oil). The hydraulic system is provided with bleed points from which samples can be taken.

Hydraulic oil should be changed every five years or after there have been significant repairs, such as piping or cylinder replacement.

Hydraulic oil filters should be changed every twelve months.

Do not contemplate repairing the hydraulic system without the proper components and skilled fitters. Use of sealing tape and foam fillers

The use of sealing tape and foam fillers should be limited to:

• Emergency use. When hatches are known or thought to be leaking and there is insufficient time to complete permanent repairs;

• Charterers' requirement. Charterers may require owners to apply sealing tape when highly water-sensitive cargoes are carried;

• Fumigation tape is usually applied to hatch covers during fumigation. The tape is not heavy duty and should be removed when fumigation has finished.

Foam fillers can be used to fill the air space which is formed along the cross-joint of two closed panels. In heavy weather foam fillers may be washed away, their use should never be solely relied upon to prevent water ingress.

Heavy Weather Precautions

The following precautions should be taken if rough or heavy weather or when high swells are expected or when it is likely that water will be shipped on deck.

Prior to rough weather:

• Check that hatch cleats are properly secured and adjusted. In rough weather, hulls are subjected to high racking forces, so it is essential that hatches are held in place but allowed to flex.

• Check that all drain valves are operating correctly and that they are open. Drain valves are the last defence against water entering the cargo space. The drainage system will be needed during heavy weather, so it must be fully operational.

• As a precaution, briefly pressurise the hydraulic system to ensure that it is fully charged and that the piping is filled with oil. This has two benefits, first, it prevents the possibility of seawater entering loose couplings or seals, and secondly, it eliminates any creep which may have occurred.

After rough weather:

Inspect all cleats, drain valves, guides and hydraulic components for damage. If hydraulic components

have been damaged, do not attempt to open the covers. The emergency opening procedure should

be followed until the hydraulic components have been checked and tested.

• Check hatch covers for buckling or distortion.

• When opening the hatch covers check for uneven movement

and any unusual noises that may indicate damage.

• Check all grease points and re-grease

Safety When Working With Hatch Covers

The avoidance and prevention of injuries is of paramount importance. Before working on a hatch, a risk assessment should be completed to identify all hazards. Procedures for control and safety procedures should be examined and modified so that hazards are reduced to minimal levels.

The following points should be borne in mind:

• Always wear the correct protective clothing, boots and hard hats;

• Always test the hold atmosphere before entering;

• Never stand on a moving hatch cover;

• Never stand on a hatch coaming when the hatch is open;

• Never work on a hatch cover when the locking pin or hook is not fitted and secure;

• Never open or close a hatch cover without ensuring the coaming is clear of debris and checking that all personnel are clear of the moving hatch and its channels or wires;

• When opening or closing a hatch never attempt to clear an obstruction with your hands;

• When hatches are opened at sea always secure them to the coaming top by lowering the wheels into a guide pocket, or by fixing restraining wires.

Opening procedures

• Check that the hatch cover panel stowage area is clear of people, equipment and dunnage;

• Disengage all cleats;

• Attach towing or hauling wires; switch the power on and ensure the controls are in neutral;

• Ensure that all personnel are clear of the hatch and its tracking. Position crewmembers to observe both sides of the hatch;

• Raise hatch covers to the roll position by jacks or by raising the lifting system. The panels need to clear the hatch guides;

• Check that towing chains are free and do not foul tracks or the coaming top;

• Start to open the hatch, slowly at first, then at normal operating speed until the hatch is almost open and then reduce to slow speed until fully open. Care must be taken when opening hatch covers especially when the speed of opening can be only partially controlled;

• When fully open, secure the hatch with the safety hook or pin before the power is switched off.If applicable, remove the towing and hauling wires;

• Install portable safety rails, if supplied.

Closing Procedures

• Check that the coaming top is clear of cargo or debris;

• Check and clear drain channels and entrances to the drain valves;

• Check that any damaged wheel tracks, compression bars and landing pads have been repaired;

• Ensure that the hold is clear of people and that access hatches or entrance doors are open. Check towing chains are free;

• Attach towing or hauling wires, switch the power on and ensure the controls are in neutral;

• Remove portable handrails;

• Release hatch locking pins or hooks;

• Avoid injuries by ensuring that all personnel are clear of the hatch. Position crewmembers to observe both sides of the hatch;

• Check that towing chains are free and do not foul tracks or the coaming top;

• Start to close the hatches slowly at first with the speed of closure being gradually increased to the normal operating speed. As the hatch reaches the closed position the speed should be gradually reduced. Great care must be taken when closing hatch covers;

• Lower hatch covers into guide pockets using jacks or lifting cylinders. Some hatches are lowered automatically;

• Attach cleats before removing the towing wire or switching power off;

• Finally, check no one is in the hold before closing hold access hatches or other hold entry points.

ANNEX I : Hatch Cover Inspection Report (After Each Cargo Operation)

Vessel :		**Date :**	
Port :		**Voyage No :**	
Inspection completed at		hours, when	
☐Completed discharge	☐ Completed washing	☐ Before loading	

Description of inspection	Cargo hold No			Remarks & notes
	1	2	3	
Clean the coaming topsand remove any debris or equipment.				
Clean the coaming top sand remove any debris or equipment.				
Clear drain line boles and valves of debris				
Drain valve caps should be attacbed by cbain, butnot scfewed on. They must be ready in case of a fire in the hold Of whencarrying out furnigation operations				
Whilst cleaning, check for coaming damage and wear, particularly on compression bars, landing pads, Wheel track and the coaming top for any grooving. Record faults Of urgent or future repair, as appropriate				
Grooves and worn landiog pads can be built up with weld and gfound down, as required, giving a pemıanent repair.				
Check and clean the surface of the seals and take special care if the cargo is dusty or gritty				
After discharge check hold internals, including ladders, sounding pipes, brackets and inner coanung surfaces for mechanical damage.				
Check souinding pipes are clear and undrunaged.				
Check hydraulic system for leaks, especially couplings, valve blocks, pi ping and flexible hoses. Repair as necessary.				
If hydraulic cylinder seals fail, it can require tbe removal of the cy]inder for repair. This can involve the burning out of the heel pin brackets				
The maker's representative should be called in to carry out realignment of hydraulic cylinders, if burned out.				
Check coaming weld seams for damage caused by grabs or cargo and arrange repair. as appropriate				
Check for rust streaks on the inside of the coaming whichwould indicate a leaking hatch cover, then take any necessary remedial action. Clean off the old rust streaks and stains.				

Visual Condition Codes G = Good F = Fair P = Poor

Signed: …… Signed: ……

Master Chf Mate

ANNEX II - Maintenance 1 · After Each Cargo Operation

Vessel :		**Date :**	
Port :		**Voyage No :**	
Inspection completed at		hours, when	
☐Completed discharge	☐ Completed washing	☐ Before loading	

Description of inspection	Cargo hold No			Remarks & notes
	1	2	3	
Clean the coaming tops and remove any debris or equipment.				
Clean drain line holes and valves of debris.				
Drain valve caps should be attached by chain, but not screwed on. They must be ready in case of a fire in the hold or when carrying out fumigation operations.				
Whilst cleaning, check for coaming damage and wear, particularly on compression bars,landing pads, Wheel track and the coaming top for any grooving. Record faults for urgent or future repair, as appropriate.				
Grooves and worn landing pads can be built up with weld and ground down, as required, giving a pemanent repair.				
Check and clean the surface of the seals and take special care if the cargo is dusty or gritty				
After discharge check hold internals, including ladders, sounding pipes, brackets and inner coaming surfaces for mechanical damage.				
Check sounding pipes are clear and undamaged.				
Check hydraulic system for leaks, especially couplings, valve blocks, piping and flexible hoses. Repair as necessary				
If hydraulic cylinder seals fail, it can require the removal of the cylinder for repair. This can involve the burning out of the heel pin brackets				
The maker's representative should be called in to carry out realignment of hydraulic cylinders, if burned out.				
Check coaming weld seams for damage caused by grabs or cargo and arrange repair. as appropriate				
Check for rust streaks on the inside of the coaming which would indicate a leaking hatch cover, then take any necessary remedial action. Clean of the old rust streaks and stains.				

Signed: …… Signed: ……

Master Chf Mate

ANNEX II - Maintenance Three Monthly Intervals

Vessel :		**Date :**	
Port :		**Voyage No :**	
Inspection completed at			

	Description of inspection	Cargo hold No			Remarks & notes
		1	2	3	
Mechanical Items	Grease wheel spindles, cleat spindles, hinge pins and hydraulic cylinder protective sheaths				
	Check hinge pins for wear and repair as necessary. Worn hinge pins can cause slewing of panels and leaking cross joint seals.				
	Grease c]eat wedges. drive chain sprockets, toothed racks and cylinder spherical bearings.				
	Check and adjust drive and towing chain adjustment				
	Ensure batch cover link pin bushes and chains are not worn or out of adjustment				
	Towing chains between panels should be adjusted or renewed in pairs and never twisted to create equal lengths. Either take out links or add links.				
	The maker's instruction manuall will provide accurate length measurements for the chains but, if these are not available, the sag in the chain should be equal to approximately a fist width at the mid point as shown above.				
	Adjust cleats. The correct adjustment is one 360-degree turn on the nut after making contact with the steel washer				
	Further tightening will NOT improve the weathertightness of the hatch cover.				
SEALS	Check rubber seals for elasticity, mechanical damage or permanent deformation.				
	Hatch covers usually maker steel-to-steel contact when a compression bar indents rubber seals by 12-16mm. Check maker's manuals or with the maker for exact compression				
	When the hatch covers are opened the rubber should almost retain its original shape, although new rubber will invariably suffer a 1 or 2-mm pernmanent set after the first operation.				
	once the permanent indentation reaches 70 per cent of its designed compression then the hatch cover is likely to leak.				
	DO NOT grease the rubber packjng or seals, unless proceeding into arclic conditions, when glycerine based grease can be used on the compression bar to prevent sticking of the packing.				
	Ensure seals are free of any paint and, when painting hatch covers, protect seal surfaces from paint adhesion				
	Cross joint seals are the most likely to need renewal, with side panel joints next. Hatch cover end jojnts rarely require renewal unless they have suffered impact damage				
	When renewing rubber it is important to check that all steelwork is in good conditioo and tbat clearances are within tolerances.				
	When renewing rubber it is important to check that all steelwork is in good condition and that clearances are within tolerances.				
	The rubber retaining channels and compression bars should be substantial, straight and rust free.				
	Failure to check the touching cornponents, at the steel-to steel and the rubber-to-steel contact points, can result in				

	over-cornpression, distortion and tearing of newly fitted rubber; leaving it useless within a very short period.				
	Only fitting new rubbers i:s misguided and can be very costly to the ship owner, both in monetary terms and also loss of charters and reputation. Steelwork repairs must be done.				
	When renewing rubber always clean out the rubber retaining channel properly, coat with compatible anti-corrosive paint				
	Always renew the total length at the first opportunity, i.e. entire cross-joint or entire side/end.				
	If short lengths are to be renewed in an emergency, scarf in the new section, never less than 1 metre lengtb, in the approved manner to raise the seal surface ofthe old rubber to that of the new.				
	Renew corner joints and pads before straight lengtbs.				
	If you have no spare rubber seal. the existing rubber can be packed out with a backing rubber 5 or 10 mm thick to assist in recreating rubber compression as a short-term repair.				
	Always repair rubbers rather than using hatch tape. Regular use of hatch tape ultimately leads to localised heavy corrosion and even worse weathertightness problems.				
Hydraulic System	Check header tank oil]evel. Top up as necessary.				
	Take oil sample; allow to stand in a glass bottle and check for water, layering of oils or debris. Renew the oil charge, if necessary.				
	Renew filter unit cartridges, particularly if maintenance has been conducted on the system components				
	Check any hydraulic valves for leakage.				
	Check the balance of hydraulic cylinder valves. Incorrect balance can cause panels to twist and fail into the hold.				
	Flush the hydraulic system every five years or after major maintenance. This should be carried out by specialists.				
	Check hatch cover towing attachment plates, steel structure around container stools, lashing points and cleat crutches for cracking of welds or corrosion.				
	Pay special attention to the bydraulic cylinder brackets, attachments and coaming stools. Check for any signs of under wear, distortion or cracking.				
	Check condition of steel-to-steel lancling surfaces at crossjoints and side panels. Leaking cross-joints are the main cause of water entry into tbe bold, tberefore proper steel-tosteel contact and correct compression maintenance in tbat area are essential.				
	The most common cause of rubber packing failure is badly maintained steel-to-steel contact.				
	Original1y, adjoining panels' top plates will be set level with one another. Any deviattion from this must be remedied by attention to the steel-to-steel contact points.				
	Check ladder and handrail welding.				
	Check ventilators will turn and seals are intact. Check hold access door locking mechanisms. door seal and lock-back mechanism. Check closing				
	Cbeck fire darnpers will operate. Free any seized spindles and grease well .				
	Cbeck hold access door locking mechanisms. door seal and lock-back mechanism.				
	Check closing plates on air pipes and sounding pıpes.				

Signed: …… Signed: ……

Master Chf Mate

ANNEX III - Maintenance Annualy Intervals

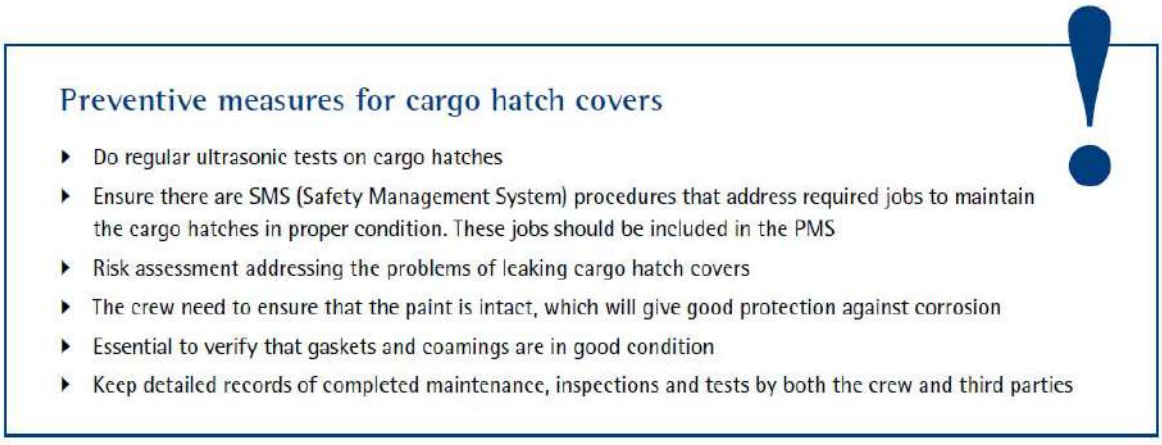
Vessel :		**Date :**	
Port :		**Voyage No :**	
Inspection completed at			

Description of inspection	**Cargo Hold No**			**Remarks & notes**
	1	**2**	**3**	
Check quantity and condition of spares carried on board.				
Note that Rubber packing and rubber adhesive have a limited shelf life and should normally be date stamped wben purchased from the original maker.				
Check condition of the hydraulic oil ın the system by analysis.				
Check safety locking devices and hydraulic system cutouts. Test them in operation				
Check the welding at deck level of all sounding, filling and air pipes.				
Check hold ladder stays. their welded attachments and make good any defects.				
Note any changes from previous reports and any defects requiring attention or permanent repair at the next repair period.				

Signed: …… Signed: ……

Master Chf Mate

- ❖ DO NOT enter a hold with suspect atmosphere.
- ❖ DO NOT apply petroleuın-based grease or paint to rubber packing surfaces.
- ❖ DO NOT remove the rubber ball valve from drain valves.
- ❖ DO NOT allow grooves to forın in coaming tops in way of the side panel edges.
- ❖ DO NOT use anything other than the recommended oil in the hydraulic system.
- ❖ DO NOT leave cleats loose when proceeding to sea.
- ❖ DO NOT attempt to open or close side rolling covers with loads or cargo debris on top.
- ❖ DO NOT screw down c]eats beyond normal tension.



OCEAN MARITIME SERVICES LTD

GüZELYALI MAHALLESI. SAHIL YOLU CADDESI. EVKAF SOKAK. NO 9/ 4

Güzelyalı/Pendik/ISTANBUL

info@oceanmaritime.net

www.oceanmaritime.net