DOWNLOAD PDF 711 FOLDING ROTORS 152

Chapter 1 : Folding Bike Disc Brake Bicycle Front & Rear Sets for sale | eBay

just and idea to make rotors on heli's that have folding rotors in real life fold. this would make heli's and carrier harriers more compatable especially with hangars.

Using the three coaxial rotor pairs , aircraft is capable of performing the maneuvers a typical conventional helicopter is capable of, yet does not require the mechanical complexity of a typical conventional helicopter and all of the coaxial rotor pairs can be used to create lift. Each of the rotor pairs are positioned at the end of an arm connected to a main body of the aircraft In an aspect, the arms are positioned extending at regular intervals around a central axis, CA, with each arm positioning the rotor pair attached to the end of the arm the same distance away from the central axis, CA, as the other rotor pairs and with each arm positioned so the rotor pairs are positioned at the corners of an equilateral triangle, as illustrated in the top view of FIG. The rotor pair has an upper rotor and a lower rotor The upper rotor and lower rotor each have two rotor blades that rotate around a rotor axis, RA. In operation, when the upper rotor and lower rotor are rotated to generate lift, the upper rotor and lower rotor rotate in opposite directions around the shared rotor axis, RA. The rotation of the upper rotor around the rotor axis, RA, causes the rotor pair to want to rotate around the rotor axis, RA. However, the counter-rotation of the lower rotor around the rotor axis, RA, causes the rotor pair to want to rotate in the opposite direction around the rotor axis, RA. By altering the speeds of rotation of the upper rotor and the lower rotor and changing the rotational speed differential between the upper rotor and the lower rotor , the rotational forces created by the rotating upper rotor and lower rotor can be balanced or used to create a torque effect in a desired direction around the rotor axis, RA. Particularly when the aircraft is a small remote control aircraft, such as toys, hobby devices or unmanned drones, each upper rotor and lower rotor can be independently driven by its own electric motor with the upper rotor attached to the output shaft of the electric motor and the lower rotor attached to the output shaft of the electric motor The speed of the upper rotor and lower rotor can be varied independently of the each other by varying the current being directed to the corresponding electric motor First ends of the rotor blades making up the upper rotor and lower rotor are fixedly connected to shafts running along the rotor axis, RA, causing the rotor blade to remain substantially perpendicular to the rotor axis, RA, when the shafts are rotated. When the aircraft is at rest on the ground, the rotor blades are positioned substantially horizontally. When the aircraft is in flight, the upper rotor rotates through a first plane, A that is substantially perpendicular to the rotor axis, RA, and the lower rotor rotates through a second plane, B that is also substantially perpendicular to the rotor axis, RA causing planes A and B defined by the rotating upper rotor and lower rotor , respectively, to remain substantially parallel to each other. In an aspect, a pitch angle PA1 of the rotor blades of the upper rotor and a the pitch angle PA2 of the rotor blades of the lower rotor remain fixed relative to the rotor axis, RA. In an aspect, the rotor blades are sufficiently rigid so that they will not bend or twist when the aircraft is in flight. Referring again to FIGS. Rather than having a number of varying mechanical linkages connecting each of the rotors to vary the pitch angle of the rotor blades or the pitch of the rotors, only the electric motors are moving with the upper rotors and the lower rotors rigidly connected to output shafts of the electric motors The aircraft can increase or decrease altitude by increasing or decreasing the speed of rotation of all of the upper rotors and all of the lower rotors at the same time. By increasing the speed of rotation of all of the upper rotors and all of the lower rotors the lift generated by all of the rotor pairs is increased and the aircraft can be made to rise vertically. Additionally, by decreasing the speed of rotation of all of the upper rotors and all of the lower rotors , the altitude of the aircraft can be decreased. In this manner, all six rotors making up the rotor pairs can be used to generate vertical lift with none of the engine s capacity being directed to horizontal rotors. The aircraft can also be moved horizontally in any direction. To move the aircraft in a desired horizontal direction, the speed of rotation of one or more rotor pairs on a side of the aircraft facing the desired direction are decreased or the speed of rotation of the other rotor pairs can be increased. This will cause the aircraft to tilt towards the desired direction of travel, tilting all of the upper rotors and all of the lower rotors downwards towards the desired direction and creating some horizontal thrust. This horizontal thrust causes the aircraft to move in the desired

direction. The more the one or two rotor pairs are slowed or the more the other rotor pair s speed of rotation is increased, the greater the tilt of the aircraft and the faster the aircraft will travel in the desired direction. The aircraft can be yawed so that it rotates around the central axis, CA, either to the right or to the left by decreasing the speed of rotation of the upper rotors and lower rotors rotating opposite to the desired direction of yaw, increasing the speed of rotation of the upper rotors and lower rotors rotating in the desired direction of yaw or both decreasing the speed of rotation of the upper rotors and lower rotors rotating opposite the desired direction of yaw and increasing the speed of rotation of the upper rotors and lower rotors rotating in the desired direction of yaw. In this manner, the aircraft can be made to rise, descent, travel in any horizontal direction and yaw right or left in the same manner as a conventional helicopter without requiring the complex mechanical linkages required in a conventional helicopter. The aircraft has a body , and a plurality of arms extending laterally from the body , and a rotor pair connected to an outside end of each arm The arms are connected to the body such that the arms can be pivoted from a flying position illustrated in FIG. While the illustrated aircraft uses rotor pairs as illustrated with upper and lower rotor , , it is also contemplated that an aircraft using a rotor assembly with only a single rotor mounted on the arms could also utilize the folding arm feature of the present invention. Aircraft has two arms A, B supporting rotor pairs A, B extending to the sides and slightly forward of the body of the aircraft and arm C supporting rotor pair C extending to the rear of the body The two front arms A, B supporting rotor pairs A, B are pivotally attached to the body of the aircraft and the ends of the arms A, B opposite to the ends supporting the rotor pairs A, B, so that the front arms A, B can be pivoted rearwards of the body of the aircraft so that the arms A, B are positioned adjacent the rear extending arm C, as shown in FIG. The rotor blades can then be rotated so that they run substantially parallel to the arms A, B, and C. The body is shown in phantom lines. A clip bracket is fixed to the inner end of arm C and a resilient clip is mounted on each end of the clip bracket The arms A, B are pivotally attached at their inner ends to opposite ends of a pivot bracket attached to the arm C a short distance from the clip bracket The clips and pivot bracket are configured such that the arms can fold together as illustrated in FIGS. The arms can be pushed into the clips to open the clips and allow the arms to fully engage the clips , which will then close and lock the arms A, B in the position illustrated in FIGS. Although it is contemplated that other clip configurations could be used, the illustrated clips comprise resilient upper and lower clip legs configured such that when the rounded arm contacts the clip , the clip legs are forced correspondingly up and down such that the arm can move into upper and lower grooves in the upper and lower clip legs and such that the legs then move together to maintain the arm in the grooves The clips are oriented on the clip bracket so that when the arms A, B are engaged in their corresponding clips A, B, the rotor pairs will be in their desired positions equally spaced about the central axis CA. In this folded position the aircraft can be launched from a launching mechanism such as a pneumatic cannon, etc. From this initial altitude, the front arms A, B can be rotated forward into their flying position, the rotor pairs engaged so that the upper rotors and lower rotors are rotating, and the aircraft can then be flown starting from this initial altitude the aircraft has been launched to. The front arms A, B could be motor driven so that a small motor pivots the front arms A, B forward into the flying position. Alternatively, in the mechanism illustrated in FIGS. In this manner, the front arms A, B can be held adjacent to the rearward extending arm C in the launching mechanism, and once the front arms A, B are freed from the launching mechanism the bias force would push the front arms A, B forward into engagement with the clips and in their flying position allowing the aircraft to begin to fly using the rotor pairs In this manner, aircraft can be quickly launched to a desired altitude over a desired area and then once in the flying position flown like a helicopter. Alternatively where no launcher is being used, the front arms A, B could still be biased and held in the folded position by a retainer, such that releasing the retainer will cause the front arms A, B to move automatically to the flying position. Each arm is positioned approximately ninety degrees around a central axis CA from an arm supporting an adjacent rotor pair Right and left front arms RF, LF extend forward and to sides of the body and right and left rear arms RR, LR extends rearward and to sides of the body when the aircraft is in a flying position as illustrated in FIGS. In this aircraft with four arms, all arms are pivotally attached to the body such that the right and left rear arms RR, LR can be pivoted rearward to a folded position extending rearward, and then the right and left front arms RF, LF can be pivoted rearward to a folded

position extending rearward with one front arm on each side of the folded rear arms RR, LR and substantially parallel to and adjacent to the rear arms RR, LR as illustrated in FIGS. As can be seen in the bottom view of the body with the bottom plate removed in FIGS. As can be seen in FIG. The front clips F can be fixed to the body however the rear clips R must be moved up into the body so that the front arms can move rearward past the rear clips R as shown in FIG. The clips R can be moved manually, or could also be biased downward so that when the front arm F is folded back it forces the rear clip R up into the body It is contemplated that numerous other clip configurations or like mechanisms could be used as well. Since the aircraft are relatively light, and the forces exerted by the rotors is relatively small, it is also contemplated that the arms could bear against the body and the bottom plate such that friction of the arms between the body and bottom plate prevents movement of the arms during operation but allows manual movement of the arms between the flying and folded positions. Such rotary wing aircraft with pairs of upper and lower rotors connected to the aircraft by a lateral arm can be beneficially used for surveillance. A camera can be mounted to the bottom of the body with images stored or sent by wireless transmission to a receiver. The lower rotor can interfere with the camera view downward and laterally, decreasing the available camera viewing angle. For this reason it is desirable to have the upper and lower rotors , as vertically close together as possible. Since the rotor blades are somewhat flexible, they bend and flex as air and power conditions vary. It is therefore not possible to mount the rotor blades very close to the arm , as the blades must be kept a sufficient distance above and below the arm to avoid contact with the arm In the rotor pair illustrated in FIG. Unlike the rotor pair of FIG. Thus the outer ends of the rotor blades are raised with respect to the arm and are farther away from the arm than in the embodiment shown in FIG. A small tilt angle N can move the blades sufficiently, and the angle N must not be so large that there is a risk the upper and lower blades will touch in the portion of the rotation opposite the arm Since the upper and lower rotor blades are driven in opposite directions by separate motors , it is only required to provide a wedge shaped mounting member between the upper and lower motors to achieve the required tilt. It is contemplated that any helicopter with upper and lower rotor blades mounted on an arm could benefit from the tilted rotor axis arrangement of FIG. The blades are quite light and tend to flex when exerting lifting forces as they rotate through the air. This force causes the blades to flex in response, such that the blades can contact the arm. It is also known to mount the rotor blade to the motor shaft about a horizontal pivot axis oriented perpendicular to the axis of the blade so the blade can rock. This configuration can reduce vibration, but also increases the risk of the blade contacting the arm. Tilting the rotor blades away from the arm as in the present invention reduces the risk of such contact. The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous changes and modifications will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all such suitable changes or modifications in structure or operation which may be resorted to are intended to fall within the scope of the claimed invention. A rotary wing aircraft apparatus comprising: The apparatus of claim 1 comprising a clip configured to releasably engage at least one arm when the at least one arm is in the flying position and wherein the clip is mounted such that the at least one arm is secured in the flying position. The apparatus of claim 2 wherein the clip is mounted on the body or on one of the plurality of arms. The apparatus of claim 3 wherein the clips comprise resilient upper and lower clip legs configured such that when a rounded arm contacts the clip the clip legs are forced correspondingly up and down such that the arm can move into upper and lower grooves in the upper and lower clip legs and such that the legs then move together to maintain the arm in the grooves. The apparatus of claim 1 wherein at least one arm is biased, when in the folded position, towards the flying position and a retainer is used to hold the at least one arm in place in the folded position. The apparatus of claim 1 comprising three rotor assemblies each attached to the body by an arm, each arm positioned so the rotor assemblies are positioned substantially at the corners of an equilateral triangle. The apparatus of claim 6 wherein right and left front arms extend to the sides of the body and a rear arm extends rearward from the body when the apparatus is in a flying position. The apparatus of claim 7 wherein the right and left front arms are pivotally connected to the body such that the right and left front arms can be pivoted rearward to a folded position where the right and left side arms are positioned substantially parallel to and adjacent to the rear arm. The apparatus of claim 8 wherein the right and

left front arms are biased towards the flying position and a retainer is used to hold the right and left arms in place in the folded position. The apparatus of claim 8 comprising a clip bracket extending laterally right and left from a front end of the rear arm, and right and left clips on corresponding right and left ends of the clip bracket, and wherein the clip bracket is configured such that the right and left front arms are releasably engaged in the corresponding right and left clips when in the flying position. The apparatus of claim 10 comprising a pivot bracket extending laterally from the rear arm at a location removed from the rear end of the rear arm, and wherein the right and left front arms are pivotally attached to corresponding right and left portions of the pivot bracket. The apparatus of claim 10 wherein the clips comprise resilient upper and lower clip legs configured such that when a rounded arm contacts the clip the clip legs are forced correspondingly up and down such that the arm can move into upper and lower grooves in the upper and lower clip legs and such that the legs then move together to maintain the arm in the grooves. The apparatus of claim 1 comprising four rotor assemblies, each rotor assembly attached to the body by an arm, each arm positioned approximately ninety degrees around a central axis from an arm supporting an adjacent rotor assembly. The apparatus of claim 13 wherein right and left front arms extend forward and to sides of the body and right and left rear arm extends rearward and to sides of the body when the apparatus is in a flying position. The apparatus of claim 14 wherein the right and left front and rear arms are pivotally connected to the body such that the right and left rear arms can be pivoted rearward to a folded position extending rearward, and the right and left front arms can be pivoted rearward to a folded position extending rearward with one front arm on each side of the folded rear arms and substantially parallel to and adjacent to the rear arms. The apparatus of claim 15 wherein the right and left rear arms are pivotally mounted to the body at rear pivot locations adjacent to each other, and the right and left front arms are pivotally mounted to the body at front pivot locations forward of and laterally spaced from the rear pivot locations.

Chapter 2 : Folding doors - JAMCO CORPORATION

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A folding door comprising: A folding door claimed in Claim 1 further comprising, a forcing means 5 at the connecting portion of the first door panel and the second door panel for restoring the first door panel and the second door panel to a plane state. A folding door claimed in Claim 1 wherein the rotary damper comprising: A folding door claimed in Claim 3 wherein, the orifice groove formed in the damping chamber of the rotary damper is formed so that the damping power increases as the first door panel and the second door panel reverts to a plane state. Description of the Prior Art Folding doors do not use up space when opening and closing the door compared to normal board-type doors, so they are utilized in the lavatory of airplanes, telephone boxes, bath units of houses and the like. The folding doors shown as a whole by reference 1 comprises of a first door panel 2 and a second door panel 3, and the first door panel 2 and the second door panel 3 is connected by a hinge 4. It takes a structure where hinge members 4A, 4B forming a gear portion are set on the end portion of panels 2, 3, and both hinge members are held by a cover member 4D. By the engagement of the gear portion of hinge members 4A, 4B, the two pieces of door panels 2, 3 will fold smoothly, and the sealing ability will improve because hinge members are held by the cover 4D. A coil spring 5 is set in the hinge portion, and forces the door panels 2, 3 to be forming a plane surface to be closed basically. The coil spring 5 positioned between the first door panel 2 and the second door panel 3 forces the folded panels 2, 3 in the direction to return to a position forming a plane surface. A door locking device 8 is set on the second door panel 3. A pin 6 is planted on the end portion of the first door panel 2, and supports the whole folding doors 1 rotatably on the side of the wall of the lavatory unit. A guiding device 7 is set on the upper portion of the second door panel 3, and it enables the second door panel 3 to open and close along the door opening portion of the lavatory unit. The guiding device 7 set on the upper portion of the second door panel 3 includes a slider 7A and a shaft 7B which supports the slider 7A. The slider 7A, for example, has a quadrilateral plane form, and fits in the guide rail 9 formed on the door opening portion. When the second door panel 3 opens or closes, the slider 7A guides the second door panel smoothly by sliding through the guide rail 9. When the plane form of the slider 7A is a quadrilateral, the slider 7A takes a straight line movement and the door panel 3 takes a gyrating movement, so the slider 7A rotates against the shaft 7B. When the spring modulus of the coil spring 5 is increased, the folded two door panels 2, 3 return to a plane form rapidly, making a bumping noise. The lavatory units of airplanes especially are placed near passenger seats, and many people use the unit while other passengers are asleep. Therefore, it is necessary to prevent the bumping noise that the folding doors make when being shut. The present invention aims at offering folding doors that can be opened and closed smoothly, and at the same time prevent the bumping noise that the door makes when being shut. The folding door preferably has a forcing means on the connecting portion of the first door panel and the second door panel to restore the first door panel and the second door panel to a plane state. The folding doors referred to as a whole by the number is set on the opening portion of the front wall 10 of lavatory units and the like. The folding doors has a first door panel and a second door panel , and the first door panel and the second door panel is connected by a hinge 4 shown in Fig. A pin is planted in the upper and lower portion of the end portion of the first door panel , and the folding doors could be supported rotatably by inserting the pin into a hole provided on the opening portion of the wall When the user enters and operates the knob 8 mounted on the inside of the second door panel , the second door panel will be fastened to the wall 10 side, and the indicating window will indicate that the lavatory is occupied. A push board is mounted on the first door panel near the hinge 4. When the user pushes the push board , the folding doors folds inwardly to the hinge 4, and the door could be opened. When the pushing force is removed, the folding doors close automatically by the restoring power of the coil spring mounted on the inner side of hinge 4. In lavatory units of airplanes and the like, the panel material is in a honeycomb structure to reduce weight thereof. The first door panel and the second door panel of the folding doors also takes a honeycomb board structure. Therefore, the surrounding of the door panel is covered with a

cover. A fixing board serving also as a cover is fixed on the upper portion of the second door panel , and a slider and a rotary damper is installed on the fixing board The guiding device referred to by the number as a whole comprises of a fixing board fixed on the upper portion of the second door panel , a rotary damper fixed on the lower portion of the fixing board , and a slider fixed on a shaft of the rotary damper An upper cover is mounted on the upper portion of the second door panel , and a side cover is mounted on the side portion. The fixing board of the guiding device could also serve as the upper cover , but they could also have a different structure. A casing of the rotary damper is held on the lower surface of the fixing board by a fixture , and is fixed onto the upper portion of the second door panel by a screw A hole for inserting the casing of the rotary damper is provided on the upper portion of the second door panel The shaft of the rotary damper goes through the hole formed on the fixing board and extends to the upper direction. The slider is mounted on the shaft The slider has a quadrilateral plane form and is fixed so as not to rotate against the shaft The slider moves linearly through the guide rail 12 of the wall without rotating. When the first door panel and the second door panel is folded inwardly with the hinge 4 in the center, the slider moves linearly toward the fixing pin of the first door panel The slider will not rotate, but the case fixed on the side of the second door panel pivotes as the door panel opens, so the angle formed by the shaft and the casing of the rotary damper ranges from angle B to angle A. When the user lets go of the folding doors, the second door panel and the first door panel moves in the direction of returning to the plane form by the restoring power of the coil spring mounted on the hinge 4 portion. By this movement, the angle formed by the shaft and the casing relatively rotates from angle A to angle B. Therefore, by operating a damping force between the casing and the shaft of the rotary damper , the folding doors could be smoothly and quietly closed. The rotary damper generally shown as reference includes a casing , a damping chamber formed in the casing and a shaft extending through the case for relative rotation. A rotor is mounted on the shaft for slidable rotation in the damping chamber The damping chamber is filled with a silicone oil to produce a resistance against rotation of the rotor The rotor has a tapered hole which contains a ball A pin extends through the rotor across the tapered hole to hold the ball in a portion of the tapered hole having a smaller diameter. In the side wall of the damping chamber is provided an orifice groove which is configured to reduce the cross sectional area of the silicone oil flow path defined between the side wall of the damping chamber and the lateral portion of the rotor to put a brake force to the rotating motion of the rotor With reference to fig. Then, the silicone oil pressurized by the rotor can flow to the back side of the rotor only through the orifice groove Therefore, by designing the orifice groove to vary in effective cross sectional area in response to the rotating angle of the rotor , the damping force braking force to the rotor can be adjusted in response to the rotational position of the rotor As shown in Fig. As a result, the tapered hole is opened and permits the silicone oil to flow through both the tapered hole and the orifice groove Therefore, the resistance applied to the rotor is reduced. The orifice groove , as shown in Fig. If a user attempts to close the door by force, the door and the damper receive an excessive load. When the rotor moves in the arrow R1 direction in the damping chamber , the ball shuts the tapered hole and produced a damping force. When a user tries to close the door with force, the pressure in the silicone oil in the damping chamber will increase too much. In order to adjust the extraordinary pressure in the silicone oil, a bypass is provided to communicate opposite sides of the damping chamber , and a check valve comprising a ball and a spring is provided in the bypass When the pressure in the damping chamber exceeds a predetermined value, the check valve is opened to discharge the excessive pressure. As described above, the folding doors of the invention has a rotary damper mounted on the door panel guided by rails, so the door closing by spring force receives damping force and it closes smoothly. Therefore, occurance of banging noise etc. Because a damper is mounted, the spring force could be reinforced if necessary in order to gain a door having high density.

Chapter 3 : Design of automatic rotor blades folding system using NiTi shape memory alloy actuator - IOPs

This E - Folding Propeller Kit from DJI includes two CW propeller blades and a folding propeller adapter. Each of the blades are 28" in diamater and are made of Ultra Carbon Pro, with a high strength- and stiffness-to-weight ratio.

Westland Helicopters put together a proposal, designated WG. The first prototype flew on 9 October The range and de-icing capability were also seen as vital for North Atlantic operations. Flight tests were suspended for six months following the crash of the second pre-production aircraft on 21 January However the programme encountered significant cost overruns and political opposition, which led to the procurement being scrapped in June Under the terms of this arrangement, early aircraft were to be manufactured by AgustaWestland, while Algeria was to commence the assembly of some AWs later on. Air Force competition to replace the HH Pave Hawk ; however, the bid was dropped three months later. Dual flight controls are provided, though the AW can be flown by a single person. This blade design improves aerodynamic efficiency at the blade tip and reduces the acoustic signature. Optional fourth and fifth tanks can be added to act as a reservoir supply, topping up the main tanks during flight, increasing range or endurance. AgustaWestland has examined the integration of rockets and additional ground-attack weapons. The pilot is able to fly for the majority of a mission in a hands-off mode, enabled by the sophisticated autopilot. All crew members have individual access to management computers and tactical information. The military version of the AW can accommodate up to 24 seated or 45 standing combat troops and their equipment. Alternative loads include a medical team and 16 stretchers, and cargo pallets. An optional cargo winch can be installed near to the rear ramp. The first fully operational Merlin was delivered on 17 May , entering service on 2 June All aircraft were delivered by the end of , and are operated by four Fleet Air Arm squadrons: Merlins have also seen active duty in Iraq, providing support to British and coalition forces based in the region. It was also reported that some of the eight airframes not scheduled to be upgraded for financial reasons may be updated. The type is equipped with extended-range fuel tanks and is capable of air-to-air refuelling. The Merlin is frequently utilised for troop transport duties and for the transport of bulky objects, either internally or underslung , including vehicles and artillery. Italy accepted delivery of the 21st AW, configured for anti-submarine warfare, on 4 August On 19 December , a contract was signed between AgustaWestland and the government, for the purchase of 16 AW helicopters. The agreement came about after fierce competition between different manufacturers to satisfy the Norwegian requirements. The government considered that AgustaWestland AW met the requirements and specifications in the best possible way. The first training course at the centre started prior to delivery of the first rotorcraft. The training center will be used by both Norwegian and foreign AW customers. They are operated by Squadron and are kept on constant alert at three bases: Special features include the automated folding of the rotor and tail. Kawasaki also began licensed production of the RTM engines in On December 16, the Japanese Ministry of Defense the Defense Agency having been upgraded to a ministry in stated that it had not confirmed lobbying efforts but the ministry admonished Tomohisa Takei , the JMSDF chief of staff, for mentioning the MCH by name during the procurement process to his subordinates. Designated VH Kestrel , the variant was heavily customised and equipped with various self-defense systems. Armed with torpedoes or Marte anti-ship missiles. Model Norwegian search and rescue variant, operated by the Air Force. See Indian helicopter bribery scandal. Latterly delivered to Nigerian and Azerbaijani Air Forces.

Chapter 4 : Toro | cm Z MasterÂ® (TE)

The new Z MasterÂ® was designed for the pros and by the pros. This next generation of Toro Z Master mowers features unsurpassed hillside traction and handling and significant advancements in operator comfort.

Folding blades and tail sections are perhaps the most physical attributes of a helicopter, especially in the military, that has been prepared for service at sea, usually for ship-borne operations where hanger space is at a premium. However focusing on just those two elements ignores the accumulation of experience that has been gained in terms of extending the lifetime of aircraft that are continually exposed to the threat of saltwater ingestion. Corrosion in aircraft operating in the maritime environment is a particular problem that manufacturers have worked at reducing. One of the main problems is that where joints in the construction of the airframe are located, each poses a potential access point for water ingestion and therefore corrosion. Advertisement Seawater contains around 3. The different alloys of aluminum used in the construction of helicopters have varying strengths, with A1-clad aluminum being the strongest. Anodizing aluminum will also give it a protective coating. Primers and paints also include chromate coating. The CHK will also benefit from the experience gained by Sikorsky as well as the maintainers within the U. Electrical connector showing corrosion from marine environments. Protection is layered in through the preparations involved in the type of paint and coatings used, to the materials used in construction and how they are manufactured. We can engineer out some of the connecting pieces which can be failure points when it comes to structural integrity. It is about material selection, good access for maintenance, and the use of corrosion inhibitors and sealants. The replacement of sheet metal components by high-speed machined airframe components takes away opportunities for water ingestion. This helps eliminate a number of historic problem areas including mating surfaces, which were prone to crevice corrosion, and holes in the sheet metal, which allowed corrosion and the gradual elimination of dissimilar fasteners prone to galvanic corrosion. The undercarriage is strengthened which allow the helicopter to operate up to Sea State 6. It has anodized protection on internal components. Corrosion inhibiting sealants are also used improve water integrity. The physical differences occur in the design and configuration of the landing gear and its footprint on the deck. The difference in tail structure of the Black Hawk verses Sea Hawk, for example, where the tail wheel on the Army version is at the end of the tail boom and has a heavy duty shock absorber. The use of sealants and polyurethane paint does help in corrosive protection. Deteriorating glass-fiber composites on a helicopter fuel tank. Industry tests have shown that polyester polyurethane paint exhibits better short-term resistance to initiation of overgrowth and surface damage by fungi than lacquer-based paint. Humid environments can cause the growth of fungi, which can have a direct effect on the airframe, or its presence can result in damage through persistent cleaning. But individual users can specify the treatment that they require in addition to the basic aircraft. There is a range of coatings that can be sprayed on the inside of a tail boom or the on the floor of an aircraft and all have different properties optimized for various environments. Calculations are made not only on the weight of the aircraft, but also on the time it needs to stay afloat to allow the crew to escape in a variety of sea conditions. She added that no decision has yet been made on the flotation equipment for the U. GKN conducts computer simulated stability analysis followed by scale model testing before installation. The materials used for the manufacture of flotation devices also need to be light and reliable. Over Water Equipment A representative from Eurocopter provided a few points about preparing helicopters for operating over water: Operating at sea ships, oil rigs, etc. It should have the tie down points so it can be secured to a deck through bad weather or ship rolling. If the aircraft is to operate from the ship, it needs folding rotors and, ideally, wheels rather than skids. A naval aircraft should have a deck lock such as the Harpoon system. Receive the latest rotorcraft news right to your inbox.

Chapter 5 : 26 Full Wheel For Sale - Christmas Decorating Ideas

ATTOP XT-PACK 1 Drone with Wifi HD Camera FPV Live Video Cell Phone Control 4 Rotors Folding Quadcopter G 6

Axis Gyro Fold Remote Control Heli with One Key Take Off Altitude Hold (Bronze).

Chapter 6 : DJI E - Folding Propeller Kit (CW) racedaydvl.com B&H

Pazzo Dual Pivot Folding Levers usher in a new era of motorcycle brake and clutch levers. They're bi-directionally folding and will give you the confidence to snap the lever back into place after a tip over or crash, giving you the ability to ride home or continue the race.

Chapter 7 : DJI E - Folding Propeller Blades racedaydvl.com B&H Photo

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Chapter 9 : AgustaWestland AW - Wikipedia

Enhanced Comfort - from the standard suspension seat, isolated floor pan design, easy access from the front or side of the machine, to the deck step guide and easy to use controls, Toro has the operator in mind.