**BAE Type 45 Class Destroyer**

From Wikipedia, the free encyclopedia

*Not to be confused with* [*Daring class destroyer (1949)*](http://en.wikipedia.org/wiki/Daring_class_destroyer_(1949))*.*

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| HMS *Daring* departing [Portsmouth Naval Base](http://en.wikipedia.org/wiki/Portsmouth_Naval_Base), 1 March 2010. | |
| **Class overview** | |
| Builders: | [BAE Systems Surface Ships](http://en.wikipedia.org/wiki/BAE_Systems_Surface_Ships) |
| Operators: | [Royal Navy](http://en.wikipedia.org/wiki/Royal_Navy) |
| Preceded by: | [Type 42](http://en.wikipedia.org/wiki/Type_42_destroyer) |
| Building: | 1 |
| Planned: | 6 |
| Completed: | 5 |
| Active: | 4 |
| **General characteristics** | |
| Type: | [Guided missile destroyer](http://en.wikipedia.org/wiki/Guided_missile_destroyer) |
| Displacement: | 8,000 [tons](http://en.wikipedia.org/wiki/Tonne), full |
| Length: | 152.4 m (500 ft 0 in) |
| Beam: | 21.2 m (69 ft 7 in) |
| Draught: | 7.4 m (24 ft 3 in) |
| Propulsion: | 2 shafts [Integrated electric propulsion](http://en.wikipedia.org/wiki/Combined_diesel-electric_and_gas#Integrated_electric_propulsion)(IEP);   * 2× [Rolls-Royce WR-21](http://en.wikipedia.org/wiki/Rolls-Royce_WR-21) [gas turbines](http://en.wikipedia.org/wiki/Gas_turbine), 21.5 [MW](http://en.wikipedia.org/wiki/Megawatt) (28,800 [shp](http://en.wikipedia.org/wiki/Horsepower#Shaft_horsepower)) each * 2× [Wärtsilä](http://en.wikipedia.org/wiki/W%C3%A4rtsil%C3%A4) 12V200 diesel generators, 2 MW (2,700 shp) each * 2× [Converteam](http://en.wikipedia.org/wiki/Converteam) [electric motors](http://en.wikipedia.org/wiki/Electric_motor), 20 MW (27,000 shp) each |
| Speed: | In excess of 29 [kn](http://en.wikipedia.org/wiki/Knot_(unit)) (54 km/h; 33 mph) |
| Range: | 7,000 [nautical miles](http://en.wikipedia.org/wiki/Nautical_mile) (13,000 km) at 18 kn (33 km/h) |
| Complement: | 190 (accommodation for up to 235) |
| Sensors and processing systems: | * [SAMPSON](http://en.wikipedia.org/wiki/SAMPSON) multi-function air tracking radar (Type 1045) * [S1850M](http://en.wikipedia.org/wiki/S1850M) 3-D air surveillance radar (Type 1046) * 2× Raytheon [I-band](http://en.wikipedia.org/wiki/I_band) Radar (Type 1047) * 1× Raytheon [E](http://en.wikipedia.org/wiki/E_band)/[F-band](http://en.wikipedia.org/wiki/F_band) Radar (Type 1048) * [Ultra Electronics](http://en.wikipedia.org/wiki/Ultra_Electronics) Series 2500 Electro-Optical Gun Control System (EOGCS) * [Ultra Electronics](http://en.wikipedia.org/wiki/Ultra_Electronics) SML Technologies radar tracking system * [Ultra Electronics](http://en.wikipedia.org/wiki/Ultra_Electronics)/[EDO](http://en.wikipedia.org/wiki/EDO_Corporation) MFS-7000 sonar |
| Electronic warfare and decoys: | * UAT16 * [Surface ship torpedo defense (SSTD)](http://en.wikipedia.org/wiki/SSTD) |
| Armament: | *Anti-air missiles;* [Sea Viper](http://en.wikipedia.org/wiki/PAAMS) air defense system. 48 cell [SYLVER A50 VLS](http://en.wikipedia.org/wiki/SYLVER), for a combination of 48; [Aster 15](http://en.wikipedia.org/wiki/MBDA_Aster) missiles (range 2-30 km) [Aster 30](http://en.wikipedia.org/wiki/MBDA_Aster) missiles (range 3-120 km)  *Guns;* 1× [BAE](http://en.wikipedia.org/wiki/BAE_Systems) [4.5 inch Mk8 Mod. 1 gun](http://en.wikipedia.org/wiki/4.5_inch_Mark_8_naval_gun) 2× [30 mm guns](http://en.wikipedia.org/wiki/30mm_DS30M_Mark_2_Automated_Small_Calibre_Gun) 2× [Phalanx CIWS](http://en.wikipedia.org/wiki/Phalanx_CIWS) 2× [Miniguns](http://en.wikipedia.org/wiki/Minigun) 6× [General-purpose machine guns](http://en.wikipedia.org/wiki/General-purpose_machine_gun)  *Provision for but not fitted with;* 2× Quad [Boeing AGM-84 Harpoon](http://en.wikipedia.org/wiki/Boeing_AGM-84_Harpoon) launchers (8 anti-ship missiles) [BGM-109 Tomahawk](http://en.wikipedia.org/wiki/BGM-109_Tomahawk) land attack cruise missiles |
| Aircraft carried: | 1-2× [Lynx HMA8](http://en.wikipedia.org/wiki/Westland_Lynx), armed with;   * 4× [Sea Skua](http://en.wikipedia.org/wiki/Sea_Skua) anti-ship missiles, *or* * 2× anti-submarine torpedoes   *or* 1×[Westland Merlin HM1](http://en.wikipedia.org/wiki/AgustaWestland_AW101), armed with;   * 4× anti-submarine torpedoes |
| Aviation facilities: | * Large flight deck * Enclosed [hangar](http://en.wikipedia.org/wiki/Hangar) |

The **Type 45 destroyer**, also known as the **D** or ***Daring* class**, is a class of [air defense](http://en.wikipedia.org/wiki/Anti-aircraft_warfare) [destroyers](http://en.wikipedia.org/wiki/Destroyer) built for the [United Kingdom](http://en.wikipedia.org/wiki/United_Kingdom)'s [Royal Navy](http://en.wikipedia.org/wiki/Royal_Navy). The *Daring* class were built to replace the [Type 42 destroyers](http://en.wikipedia.org/wiki/Type_42_destroyer), the last of which is due to be decommissioned by 2013. The first ship in the *Daring* class, [HMS *Daring*](http://en.wikipedia.org/wiki/HMS_Daring_(D32)), was launched on 1 February 2006 and commissioned on 23 July 2009. The ships are now built by [BAE Systems Surface Ships](http://en.wikipedia.org/wiki/BAE_Systems_Surface_Ships). The first three ships were assembled by [BAE Systems Surface Fleet Solutions](http://en.wikipedia.org/wiki/BAE_Systems_Surface_Fleet_Solutions) from partially prefabricated "blocks" built at different shipyards.

The UK originally sought to procure air defense ships as part of the eight-nation [NFR-90](http://en.wikipedia.org/wiki/NFR-90) project and later the [Horizon Common New Generation Frigate](http://en.wikipedia.org/wiki/Horizon_class_frigate) program with [France](http://en.wikipedia.org/wiki/France) and [Italy](http://en.wikipedia.org/wiki/Italy). The Type 45s take advantage of some Horizon development work and utilize the [Sea Viper](http://en.wikipedia.org/wiki/Sea_Viper) missile system (the [SAMPSON radar](http://en.wikipedia.org/wiki/SAMPSON) variant of the Principal Anti-Air Missile System). In 2009, delivery of the ships' [Aster](http://en.wikipedia.org/wiki/MBDA_Aster) missiles was delayed due to a failure during testing. A subsequent investigation revealed a manufacturing fault with a single batch of missiles and delivery of the Aster 30 is back on schedule.

In an "intensive attack" a single Type 45 could simultaneously track, engage and destroy more targets than five Type 42 destroyers operating together. The *Daring* class are the largest escorts ever built for the Royal Navy in terms of displacement. After *Daring'*s launch on 1 February 2006 former [First Sea Lord](http://en.wikipedia.org/wiki/First_Sea_Lord), [Admiral Sir Alan West](http://en.wikipedia.org/wiki/Alan_West,_Baron_West_of_Spithead) stated that it would be the Royal Navy's most capable destroyer ever, as well as the world's best air-defense ship. The reduction in the number to be procured from twelve eventually down to six (in 2008) was controversial.

**Design**

**Background**

Main articles: [NFR-90](http://en.wikipedia.org/wiki/NFR-90) and [Horizon class frigate](http://en.wikipedia.org/wiki/Horizon_class_frigate)

The UK had sought to procure the ships in collaboration with seven other NATO nations under the [NFR-90](http://en.wikipedia.org/wiki/NFR-90) project which later collapsed. The UK then joined [France](http://en.wikipedia.org/wiki/France) and [Italy](http://en.wikipedia.org/wiki/Italy) in the [Horizon CNGF](http://en.wikipedia.org/wiki/Horizon_CNGF) program; however, differing national requirements, workshare arguments and delays led to the UK withdrawing on 26 April 1999 and starting its own national project. On 23 November 1999 [Marconi Electronic Systems](http://en.wikipedia.org/wiki/Marconi_Electronic_Systems) or MES was confirmed as [prime contractor](http://en.wikipedia.org/wiki/General_contractor) for the Type 45 project. Seven days later MES and [British Aerospace](http://en.wikipedia.org/wiki/British_Aerospace) merged to form [BAE Systems](http://en.wikipedia.org/wiki/BAE_Systems), making the latter the prime contractor.

The Type 45 project has been criticized for rising costs and delays, with the ships costing £6.46 billion, an increase of £1.5 billion (29%) on the original budget. The first ship entered service in 2010, rather than 2007 as initially planned. In 2007 the [Defense Select Committee](http://en.wikipedia.org/wiki/Defence_Select_Committee) expressed its disappointment that the [MoD](http://en.wikipedia.org/wiki/Ministry_of_Defence_(United_Kingdom)) and BAE had failed to control rising costs.

**General characteristics**

The Type 45 destroyers are 152.4 m in length, with a beam of 21.2 m and a draught of 7.4 m. This makes them significantly larger than the [Type 42](http://en.wikipedia.org/wiki/Type_42_destroyer) they replace, displacing about 8,000 [tons](http://en.wikipedia.org/wiki/Tonne) compared to 5,200 tons of the Type 42. The Type 45 destroyers are the first British warships built to meet the hull requirements of [Lloyd's Register](http://en.wikipedia.org/wiki/Lloyd%27s_Register)'s Naval Rules. BAE Systems is the Design Authority for the Type 45, a role traditionally held by the [UK Ministry of Defense](http://en.wikipedia.org/wiki/Ministry_of_Defence_(United_Kingdom)).

**Stealth features**

The design of the Type 45 brings new levels of [radar signature reduction](http://en.wikipedia.org/wiki/Radar_cross_section) to the Royal Navy. Deck equipment and life rafts are concealed behind the ship's [superstructure](http://en.wikipedia.org/wiki/Superstructure) panels, producing a very "clean" superstructure somewhat similar to the French [*La Fayette* class](http://en.wikipedia.org/wiki/La_Fayette_class_frigate) frigates. The mast is also sparingly equipped externally.

**Advanced air defense**

The Type 45 design uses the Principal Anti-Air Missile System, now known in Royal Navy service as [Sea Viper](http://en.wikipedia.org/wiki/PAAMS). It is a joint British, French and Italian design. PAAMS consists of a [SAMPSON](http://en.wikipedia.org/wiki/SAMPSON) fire control and tracking radar, [MBDA Aster](http://en.wikipedia.org/wiki/MBDA_Aster) 15 and 30 missile systems and a 48-cell [SYLVER](http://en.wikipedia.org/wiki/SYLVER) vertical missile launcher, giving both short-range and long-range anti-air capability. The PAAMS system is able to control and coordinate several missiles in the air at once, allowing several tracks to be intercepted. The SYLVER VLS missile launcher can be upgraded to accommodate other weapons if necessary. The *Daring* class have often been considered to be the most powerful air-defense warships in the world. It has been suggested that the SAMPSON radar is capable of tracking an object the size of a [cricket ball](http://en.wikipedia.org/wiki/Cricket_ball) travelling at three times the speed of sound. Admiral Sir Mark Stanhope has talked of the RN's pride in a Type 45 being asked to switch off PAAMS because it was "constraining the training" in exercises with US forces.

Although the Type 45 represents a significant improvement to air defenses, her anti-ship capability is currently limited to the single [medium caliber gun](http://en.wikipedia.org/wiki/4.5_inch_(114_mm)_Mark_8_naval_gun) and helicopter-borne [Sea Skua](http://en.wikipedia.org/wiki/Sea_Skua) missiles.

**Armament and sensors**



*Daring* embarking on sea trials in 2007

Anti-air

[Sea Viper](http://en.wikipedia.org/wiki/PAAMS) missile system.

* [SAMPSON](http://en.wikipedia.org/wiki/SAMPSON) multi-function air tracking radar. (range 400 km)
* [S1850M](http://en.wikipedia.org/wiki/S1850M) [3D](http://en.wikipedia.org/wiki/Three-dimensional_space) air surveillance radar, capable of tracking up-to 1,000 targets. (range 400 km)
* 48 cell [SYLVER A-50](http://en.wikipedia.org/wiki/SYLVER_launcher) [VLS](http://en.wikipedia.org/wiki/Vertical_launching_system) for accommodation of up to 48× [MBDA Aster](http://en.wikipedia.org/wiki/MBDA_Aster) [missiles](http://en.wikipedia.org/wiki/Missile). A mix of;
  + [Aster 15](http://en.wikipedia.org/wiki/MBDA_Aster) - anti-air missiles (range 2–30 km)
  + [Aster 30](http://en.wikipedia.org/wiki/MBDA_Aster) - anti-air missiles (also anti-[ballistic missile](http://en.wikipedia.org/wiki/Ballistic_missile) capable) (range 3–120 km)

Guns

* 1× BAE Systems [4.5 inch Mk 8 mod 1 gun](http://en.wikipedia.org/wiki/4.5_inch_Mark_8_naval_gun). The *Darings* are designed to accommodate a more powerful 155 mm gun upgrade that was studied by the RN in 2008. This 155 TMF program would have allowed the Navy to share ammunition R&D and logistics with the [Army 155 mm guns](http://en.wikipedia.org/wiki/AS-90) but was cancelled in the SDSR of 2010. The Type 45 gun will now be upgraded under the Maritime Indirect Fire System program which will also cover the Type 26 frigate; a decision is due in mid-2012.
* 2× [Oerlikon](http://en.wikipedia.org/wiki/Oerlikon_Contraves) 30 mm KCB guns on single DS-30B mounts.
* 2× [Miniguns](http://en.wikipedia.org/wiki/Minigun) and up to 6× [General Purpose Machine Guns](http://en.wikipedia.org/wiki/FN_MAG).
* 2× [Phalanx](http://en.wikipedia.org/wiki/Phalanx_CIWS) [20 mm](http://en.wikipedia.org/wiki/20_mm_caliber) [close-in weapons systems](http://en.wikipedia.org/wiki/Close-in_weapons_system) (from 2011).

Anti-ship

* Fitted '[for but not with](http://en.wikipedia.org/wiki/For_but_not_with)' 2× quadruple [RGM-84 Harpoon](http://en.wikipedia.org/wiki/RGM-84_Harpoon) [anti-ship missile](http://en.wikipedia.org/wiki/Anti-ship_missile) launchers.
* The embarked [Lynx HMA 8 helicopter(s)](http://en.wikipedia.org/wiki/Westland_Lynx) is capable of carrying [Sea Skua](http://en.wikipedia.org/wiki/Sea_Skua) anti-ship missiles.
* The [4.5 inch Mark 8 naval gun](http://en.wikipedia.org/wiki/4.5_inch_Mark_8_naval_gun) has an anti-ship role.

Anti-submarine

* MFS 7000 sonar
* The embarked [Lynx HMA 8 helicopter(s)](http://en.wikipedia.org/wiki/Westland_Lynx) or [Merlin HM1 helicopter](http://en.wikipedia.org/wiki/AgustaWestland_EH101) is capable of carrying [Sting Ray torpedoes](http://en.wikipedia.org/wiki/Sting_Ray_torpedo). The Merlin HM1 helicopter is fitted with its own dipping [sonar](http://en.wikipedia.org/wiki/Sonar) and carries [sonobuoys](http://en.wikipedia.org/wiki/Sonobuoys).

Land attack

* The Type 45 as it stands has no land-attack missile capability and the SYLVER A50 launcher currently has no capability to fire such a missile. However, should the need arise, it would be possible to fit them with the American Mk. 41 [VLS](http://en.wikipedia.org/wiki/Vertical_launching_system), firing the [BGM-109 Tomahawk](http://en.wikipedia.org/wiki/BGM-109_Tomahawk). The [Fire Shadow](http://en.wikipedia.org/wiki/Fire_Shadow) loitering munition is "compatible with the space envelope" of the Type 45's SYLVER cells but does not appear to be under development for naval use at present.
* The [4.5 inch Mark 8 naval gun](http://en.wikipedia.org/wiki/4.5_inch_Mark_8_naval_gun) has a [naval gunfire support](http://en.wikipedia.org/wiki/Naval_gunfire_support) (NGS) role.



*Daring* being floated on the Clyde after launching.

Countermeasures

* The [Seagnat](http://en.wikipedia.org/wiki/Seagnat) decoy system allows for the seduction and distraction of radar guided weapons, through active and passive means. An infra-red 'spoofing' device is planned for future retrofits.
* Airborne Systems’ IDS300 floating naval decoy system (corner reflectors)
* [Surface Ship Torpedo Defense System](http://en.wikipedia.org/wiki/SSTD) (SSTD) active torpedo decoy system

Communications

* Fully Integrated Communications System (FICS45) - a combined external and internal communications system supplied by [Thales](http://en.wikipedia.org/wiki/Thales_Group) and SELEX Communications Ltd.

METOC [Meteorology](http://en.wikipedia.org/wiki/Meteorology) and [Oceanography](http://en.wikipedia.org/wiki/Oceanography)

* The Metoc system by BAE Systems comprises the Upper Air Sounding System using launchable [radiosondes](http://en.wikipedia.org/wiki/Radiosonde) by Eurodefence Systems Ltd and Graw Radiosondes (Germany) joint venture, as well as a comprehensive weather satellite receiving system and a bathymetric system. These sensors will provide each vessel with a full environmental awareness for tasks such as radar propagation, [ballistics](http://en.wikipedia.org/wiki/Ballistics) and general self-supporting meteorological and oceanographic data production.

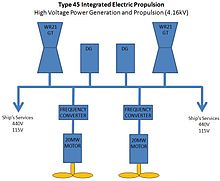
Aircraft

* 1-2 [Lynx HMA 8 helicopter](http://en.wikipedia.org/wiki/Westland_Lynx) - [Sea Skua](http://en.wikipedia.org/wiki/Sea_Skua) anti-ship missiles and [Sting Ray torpedoes](http://en.wikipedia.org/wiki/Sting_Ray_torpedo) *or* 1 [Merlin helicopter](http://en.wikipedia.org/wiki/AgustaWestland_EH101) - [Sting Ray torpedoes](http://en.wikipedia.org/wiki/Sting_Ray_torpedo), dipping [sonar](http://en.wikipedia.org/wiki/Sonar) and [sonobuoys](http://en.wikipedia.org/wiki/Sonobuoys).
* The flight deck of the Type 45 is big enough to accommodate aircraft up to the size of the [Chinook](http://en.wikipedia.org/wiki/CH-47_Chinook).

Other

* Type 45 has sufficient space to embark 60 [Royal Marines](http://en.wikipedia.org/wiki/Royal_Marines) and their equipment.

**Propulsion**



Integrated electric propulsion in the Type 45  
(GT: gas turbine; DG: diesel generator)

The Type 45 is fitted with an innovative [integrated electric propulsion](http://en.wikipedia.org/wiki/Integrated_electric_propulsion) system. Historically, electric-drive ships (like [USS *Langley*](http://en.wikipedia.org/wiki/USS_Langley_(CV-1))) have supplied power to their electric motors using [DC](http://en.wikipedia.org/wiki/Direct_current), and ship's electrical load, where necessary at all, was either separately supplied or was supplied as DC with a large range of acceptable voltage. Integrated electric propulsion seeks to supply all propulsion and ship's electrical load via [AC](http://en.wikipedia.org/wiki/Alternating_current) at a high quality of voltage and frequency. This is achieved by computerized control, high quality transformation and electrical filtering.

Two [Rolls-Royce](http://en.wikipedia.org/wiki/Rolls-Royce_plc) [WR-21](http://en.wikipedia.org/wiki/WR-21) [gas turbine](http://en.wikipedia.org/wiki/Gas_turbine) [alternators](http://en.wikipedia.org/wiki/Alternator) and two [Wärtsilä](http://en.wikipedia.org/wiki/W%C3%A4rtsil%C3%A4) 12V200 diesel generators provide electrical power at 4,160 volts to a high voltage system. The high voltage supply is then used to provide power to two [Converteam](http://en.wikipedia.org/wiki/Converteam) advanced induction motors with outputs of 20 MW (27,000 hp) each. Ship's services, including [hotel load](http://en.wikipedia.org/w/index.php?title=Hotel_load&action=edit&redlink=1) and weapons system power supplies, are supplied via transformers from the high voltage supply at 440 V and 115 V.

The benefits of integrated electric propulsion are cited as:

* The ability to place the electric motors closer to the propeller, thus shortening the shaft line, obviating the need for a gearbox or [controllable pitch propellers](http://en.wikipedia.org/wiki/Controllable_pitch_propellers), and reducing exposure to action damage.
* The opportunity to place prime movers (diesel generators and gas turbine alternators) at convenient locations away from the shaft line, thus reducing the space lost to funnels, while at the same time improving access for maintenance and engine changes.
* The freedom to run all propulsion and ship services from a single prime mover for much of the ship's life, thus dramatically reducing engine running hours and emissions.

Key to the efficient use of a single prime mover is the choice of a gas turbine that provides efficiency over a large load range; the WR21 gas turbine incorporates [compressor intercooling](http://en.wikipedia.org/wiki/Charge_air_cooler) and [exhaust heat recovery](http://en.wikipedia.org/wiki/Energy_recovery), making it significantly more efficient than previous marine gas turbines, especially at low and medium load.

The combination of greater efficiency and high fuel capacity give an endurance of 7,000 nautical miles (13,000 km) at 18 knots (33 km/h). High power density and the hydrodynamic efficiency of a longer hull form allow high speeds to be sustained. It has been reported that *Daring* reached her design speed of 29 knots (54 km/h) in 70 seconds and achieved a speed of 31.5 knots (58 km/h) in 120 seconds during sea-trials in August 2007.

**Construction**



Launch of *Daring*. The ship's funnels, masts and radars were subsequently fitted in dry dock.

The ships are built by [BAE Systems Surface Ships](http://en.wikipedia.org/wiki/BAE_Systems_Surface_Ships), originally created as BVT Surface Fleet by the merger of the surface shipbuilding arms of BAE Systems and VT Group. These two companies previously built the ships in collaboration. BAE's two [Glasgow](http://en.wikipedia.org/wiki/Glasgow) shipyards and single [Portsmouth](http://en.wikipedia.org/wiki/Portsmouth) shipyard are responsible for different "blocks".

BAE's [Govan](http://en.wikipedia.org/wiki/Govan) yard is responsible for Block A (stern to edge of helicopter hangar). The [Scotstoun](http://en.wikipedia.org/wiki/Scotstoun) yard builds Blocks B/C (a 2600 ton section which contains the [WR-21](http://en.wikipedia.org/wiki/WR-21) gas turbines, starts with the helicopter hangar to the bridge section) and Block D (bridge section). BAE's Portsmouth shipyard is responsible for Blocks E/F (bridge to the bow) and the funnels and masts. For ships 2 to 6 blocks A-D are assembled in the Ships Block and Outfit Hall of the Govan shipyard, and taken fully outfitted to the Scotstoun berth. The masts and funnels are also fitted before launch.



Construction of blocks of *Dauntless* at [Portsmouth](http://en.wikipedia.org/wiki/Portsmouth)

For the first-of-class, Block A was assembled at Govan and moved to Scotstoun where it was mated to Block B/C, which was already fitted with the WR-21 turbines and machinery. Block D, also assembled at Scotstoun, was fitted to these three blocks. The bow sections (E/F) were mated at [Portsmouth](http://en.wikipedia.org/wiki/HMNB_Portsmouth) and taken by [barge](http://en.wikipedia.org/wiki/Barge) to Scotstoun. These were the final blocks to be attached. At this point the hull was launched into the [Clyde](http://en.wikipedia.org/wiki/River_Clyde) and towed to the Scotstoun Dry Dock where the masts and funnels were fitted (the masts are partially outfitted with equipment, for example the mast for the [S1850M](http://en.wikipedia.org/wiki/S1850M) radar is sent from Portsmouth to [Thales Nederland](http://en.wikipedia.org/wiki/Thales_Nederland) to be fitted with radar equipment). Once this is complete the remaining equipment is fitted: radar arrays, bow-mounted [sonar](http://en.wikipedia.org/wiki/Sonar), [propellers](http://en.wikipedia.org/wiki/Propellers), missile equipment and [4.5-inch gun](http://en.wikipedia.org/wiki/4.5_inch_(114_mm)_Mark_8_naval_gun).

This modular construction arrangement was agreed in February 2002. However, when the original contract for three ships was signed in July 2000, [BAE Systems Marine](http://en.wikipedia.org/wiki/BAE_Systems_Marine) was to build the first and third ships, and Vosper Thornycroft (now VT) was to build the second.

**Ships in the class**



*Diamond* and *Dauntless* in [HMNB Portsmouth](http://en.wikipedia.org/wiki/HMNB_Portsmouth). The BAE Systems/[QinetiQ](http://en.wikipedia.org/wiki/QinetiQ) facility at [Portsdown Hill](http://en.wikipedia.org/wiki/Portsdown_Hill) can be seen in the distant background, with its replica of the Type 45's two radar masts.

Six ships have been ordered, and transfer of custody of the first happened on 10 December 2008. The MOD's initial planning assumption was to procure twelve ships (essentially a like-for-like replacement of a similar number of Type 42s), with the size of the second batch to be determined between 2005 and 2010. However this was reduced to eight ships in the 2003 defense [white paper](http://en.wikipedia.org/wiki/White_paper) entitled [*Delivering Security in a Changing World: Future Capabilities*](http://en.wikipedia.org/wiki/Delivering_Security_in_a_Changing_World)*.* It was reported in December 2006 that the last two could be cut. In July 2007 Ministry of Defense officials stated that they "still planned to build eight Type 45 destroyers" and that "the extra two ships were still included in planning assumptions". This plan was officially abandoned on 19 June 2008 when the [Minister](http://en.wikipedia.org/wiki/Minister_of_State) for the Armed Forces, [Bob Ainsworth](http://en.wikipedia.org/wiki/Bob_Ainsworth), announced in [Parliament](http://en.wikipedia.org/wiki/Parliament_of_England) that options for the seventh and eighth destroyers would not be taken up. The continual scaling back of the project, first from 12 to 8, and subsequently to 6 ships, has been criticized for leaving the Royal Navy with insufficient ships to meet its requirements.

On 9 March 2007 [*The Independent*](http://en.wikipedia.org/wiki/The_Independent) reported that [Saudi Arabia](http://en.wikipedia.org/wiki/Saudi_Arabia) was considering buying "two or three" Type 45s. On 7 September 2007 it was reported that Saudi Arabian officials had been invited to observe *Daring*'s sea trials.

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| **Name** | [**Pennant number**](http://en.wikipedia.org/wiki/Pennant_number) | **First steel cut** | **Launched** | **Date of commission** | **Current status (as of July 2012)** |
| [*Daring*](http://en.wikipedia.org/wiki/HMS_Daring_(D32)) | D32 | 28 March 2003 | 1 February 2006 | 23 July 2009 | Deployed to the [Persian Gulf](http://en.wikipedia.org/wiki/Persian_Gulf) |
| [*Dauntless*](http://en.wikipedia.org/wiki/HMS_Dauntless_(D33)) | D33 | 26 August 2004 | 23 January 2007 | 3 June 2010 | Deployed to the [Falklands](http://en.wikipedia.org/wiki/Falklands) |
| [*Diamond*](http://en.wikipedia.org/wiki/HMS_Diamond_(D34)) | D34 | 25 February 2005 | 27 November 2007 | 6 May 2011 | Deployed [east of Suez](http://en.wikipedia.org/wiki/East_of_Suez) with the [Combined Maritime Forces](http://en.wikipedia.org/wiki/Combined_Maritime_Forces) |
| [*Dragon*](http://en.wikipedia.org/wiki/HMS_Dragon_(D35)) | D35 | 19 December 2005 | 17 November 2008 | 20 April 2012 | Operational training |
| [*Defender*](http://en.wikipedia.org/wiki/HMS_Defender_(D36)) | D36 | 31 July 2006 | 21 October 2009 | Expected 2013 | Stage 2 trials |
| [*Duncan*](http://en.wikipedia.org/wiki/HMS_Duncan_(D37)) | D37 | 26 January 2007 | 11 October 2010 | Expected 2014 | Fitting out |

**See also**

* [UXV Combatant](http://en.wikipedia.org/wiki/UXV_Combatant)
* [Future of the Royal Navy](http://en.wikipedia.org/wiki/Future_of_the_Royal_Navy)
* [Global Combat Ship](http://en.wikipedia.org/wiki/Global_Combat_Ship)
* [*Zumwalt*-class destroyer](http://en.wikipedia.org/wiki/Zumwalt-class_destroyer)
* [Horizon class frigate](http://en.wikipedia.org/wiki/Horizon_class_frigate)
* [*Kolkata*-class destroyer](http://en.wikipedia.org/wiki/Kolkata_class_destroyer)
* [Korean Destroyer eXperimental](http://en.wikipedia.org/wiki/Korean_Destroyer_eXperimental)
* [*Arleigh Burke*-class destroyer](http://en.wikipedia.org/wiki/Arleigh_Burke-class_destroyer)
* [Type 052C destroyer](http://en.wikipedia.org/wiki/Type_052C_destroyer)

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