

JAPANESE STANDARD MERCHANT SHIP CONSTRUCTION

In the latter part of 1943 and during 1944, a quantity of new and unknown Japanese merchant ships have been observed, many of them radically different in design from the fast, modern vessels of the pre-war era. Sufficient numbers of the same type of ship have been noted to permit the formation of definite conclusions as to the amount and character of standardization accomplished in Japanese wartime merchant ship construction. In addition, recent captured documents have listed the types adopted as standard and outlined sufficient characteristics to make possible the identification of individual classes.

Pre-war Construction

The unusual features of these new vessels can best be illustrated by comparison with the character of pre-war shipbuilding in Japan. Prior to 1941, no actual and effective standardization had been accomplished; for, while shipbuilding was subsidized by the government, design was largely determined by the shipping concerns or builders. The nature of Japan's merchant marine activities before the war dictated specifications in ship design which resulted in a standardization of general types as opposed to the adoption of an individual design. This has made possible the formulation of the JMST system of reporting Japanese vessels, a method which recognizes the similarity in characteristics of vessels within a given tonnage range. Freighter design on the whole was concentrated in Diesel-powered ships averaging 6,000 gross tons, with streamlined superstructure amidships, cruiser sterns, and with hulls built for speed. Few engines-aft cargo carriers were constructed outside of the AMAKASU MARU NO. 1 class of 1,900 gross tons, of which about 40 were built before the war. Tanker design tended to 10,000-ton ships with speeds of 17 knots normal cruising and 20 knots maximum—mostly fitted with Diesel engines. It is interesting to note that in the 6 years prior to the outbreak of war approximately 330 ships of over 1,000 tons were built, involving over 100 different classes; 18 of these classes were composed of 5 or more ships, but in only 2 were more than 10 built. At variance with this

pre-war record is the tendency in new construction to adopt a few individual designs and to produce as great a quantity of these as construction facilities and possible use of mass production methods will allow.

Wartime Design

With her sea lanes enormously extended soon after the outbreak of war, and with the successful activity of United States submarine patrols becoming obvious, Japan must have foreseen the inroads which would be made upon her supply of merchant vessels. Since approximately 2 years are required to design and initiate construction on standard types of ships, work was apparently begun on the radically new designs early in 1942; for it is believed that they did not begin coming off the ways until the early spring of 1944. Between the fall of 1941 and the start of construction on the new types shipbuilding is thought to have continued along the lines of the older designs; for, of the nine standard classes so far identified, two are almost identical with pre-war design, and two, although never before observed, show no radical change in design characteristics. It should also be remembered that between 7 December 1941, and 1 July 1944, approximately 125 ships of non-standard construction totaling 430,000 gross tons have been built. Construction of vessels of individual design will undoubtedly continue, to a limited extent, in the future.

In the preparation of designs for new ships, especially standard designs from which vessels are to be built in quantity, consideration must be given the requirements of the ship itself, such as speed, cargo capacity, range, etc., and the wartime facilities for construction including speed of construction, availability of various types of engines, facilities for casting or forging parts, and the like. In the new Japanese designs, cargo capacity and speed of construction have been given paramount consideration at a considerable sacrifice in the speed of the ships themselves.

A glance at the drawings included in the discussion of individual types which follows will show the emphasis which has been placed on *engines-aft design*.

All but two of the standard classes so far identified are of engines-aft construction. While this is a logical type for economical operation, it may also indicate a shortage of facilities for forging the longer propeller shafts needed in vessels with engines amidship.

Typical of the new hull design is its *angularity* and its *broad beam in relation to length*. The latter is particularly apparent when compared with vessels of the pre-war period, and again is an indication of the need for large carrying capacity at a sacrifice in speed. The hull shape suggests the adoption of flat as opposed to curved surfaces throughout the vessel, which increase the rapidity and ease of construction, even by inexperienced builders. This design can easily be noted in the photograph which accompanies the description of Type E being mass-produced at Wakamatsu. In the discussion of individual types which follows, the word "economy" has been adopted as descriptive of this shape of hull.

It is interesting to note that in all cases where captured statistical data can be ascribed with relative certainty to observed design, the term "Modified" has applied to vessels with "economy" hull shapes. Cruising speeds specified for the various types are a further indication, since those for the regular types are consistently 2 to 3 knots higher than those for the Modified classes. From this it may be assumed that the designs for Types A, B, C, D, E, TL, TM, and TS are of normal construction. Designs with economy hulls have been identified for Type A (Modified), D (Modified), E (Modified), and TM (Modified). Additional "economy" designs have been observed which closely approximate most specifications for Types B and TS. These are, in all probability, later modifications which were either in the experimental stage or not as yet adopted at the time the captured statistics were issued by the Japanese.

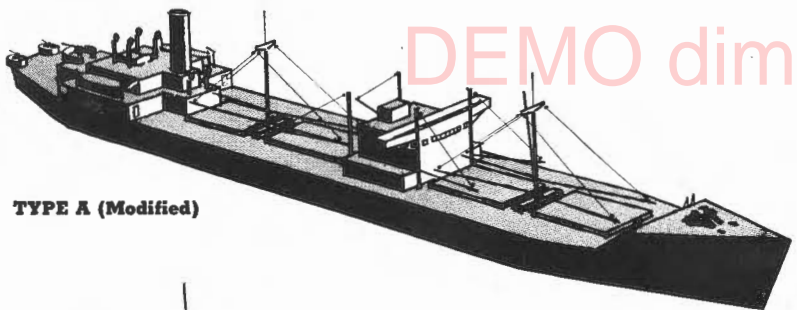
The general use of *steam turbine and reciprocating engines* instead of Diesel, which were in common use before the war, is another noteworthy feature of the standard types. In all probability this indicates a shortage of facilities for building the more complicated Diesel engine, and also denotes foresight on the part of the Japanese in that they may in the future be forced to depend on coal rather than oil for fuel. Among the standard types, Diesels are being used only in vessels under 1,000 gross tons (Types E and F).

Individual Types

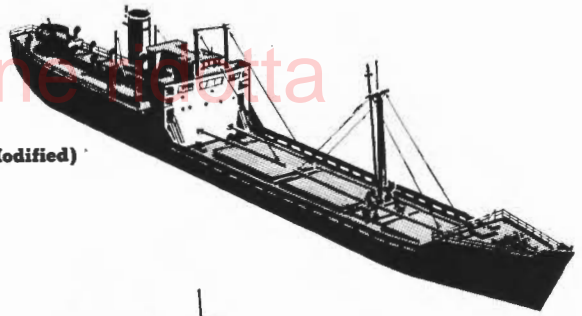
The standard types outlined on the following pages include profile drawings and photographs where they can be assigned, notes on distinctive features which will lead to rapid identification, all known statistical information, and, where possible, names of vessels belonging to the class. Some of the types have not, as yet, been identified; it is possible that certain of the classes, such as Type A (Cargo) and TL (Tanker) were never placed in quantity production. Several of the profiles have been drawn from vertical photographs only and should be considered tentative. Note also that ship names listed for standard types include vessels built up to 1 July 1944, and have been selected from known construction on the basis of types, tonnage, and year built. Their assignment, therefore, should not be considered positive. In addition to the statistical data included under each type, all classes above 1,000 gross tons are believed to carry four depth charges. Profile drawings have been graded A, B, C, and D to indicate their evaluated accuracy.

This summary has been prepared by the Division of Naval Intelligence. Extensive use has been made of "Weekly Intelligence" Bulletin No. 12 published by CINCPAC-CINCPHA, and of Shipping Report No. 11 prepared by the Shipping Center, U. S. Naval Unit, 14th Air Force.

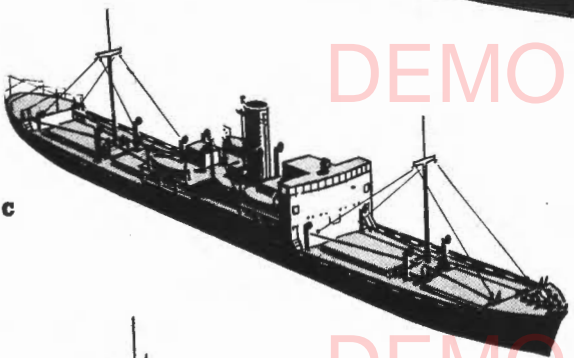
REVERSE SIDE OF DOCUMENT
REVERSE SIDE OF DOCUMENT



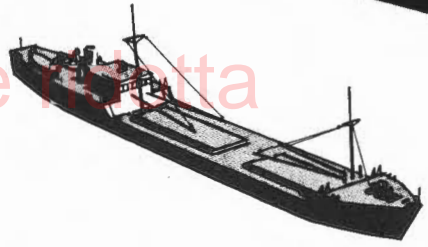
TYPE A (Modified)



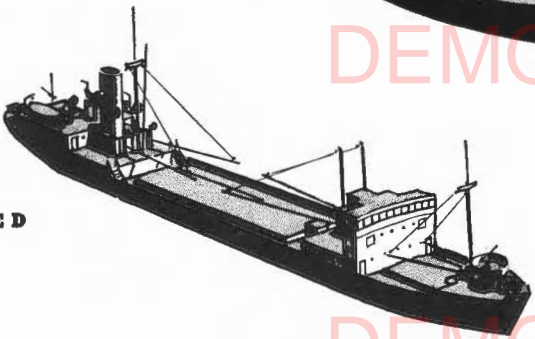
TYPE D (Modified)



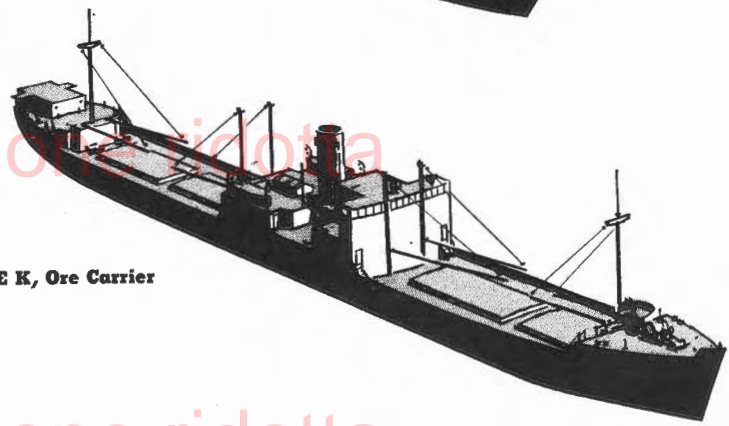
TYPE C



TYPE E



TYPE D



TYPE K, Ore Carrier

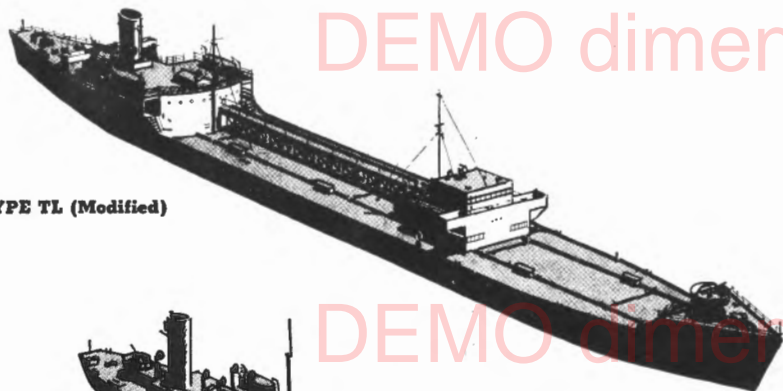
DEMO dimensione ridotta

DEMO dimensione ridotta

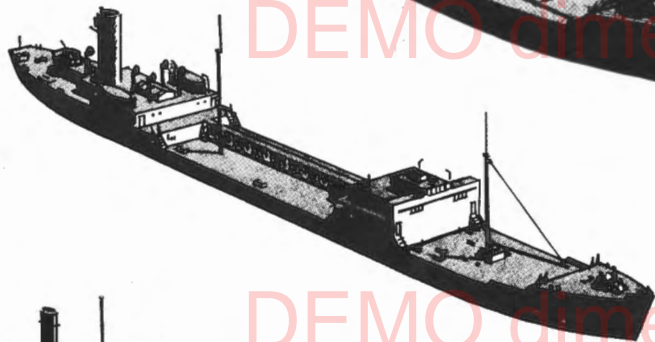
DEMO dimensione ridotta

DEMO dimensione ridotta

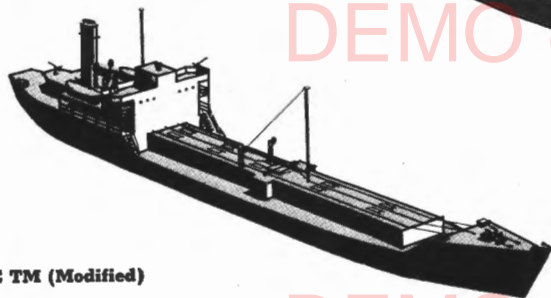
STANDARD CLASSES OF JAPANESE MERCHANT SHIPS



TYPE TL (Modified)



TYPE TM



TYPE TM (Modified)

TYPE A (Modified) Sugar Baker Love

Gross tonnage: 6,670
Length, o. a.: 445'
Beam: 64'

TYPE C Fox Tare Charlie

Gross tonnage: 2,700
Length, o. a.: 321'
Beam: 45'

TYPE D Sugar Baker Sugar

Gross tonnage: 1,900
Length, o. a.: 295'
Beam: 44'

TYPE D (Modified) Sugar Charlie Love

Gross tonnage: 2,300
Length, o. a.: 310'
Beam: 49'

TYPE E Sugar Charlie Sugar

Gross tonnage: 830
Length, o. a.: 210'
Beam: 36'

TYPE K, Ore Carrier Fox Tare Charlie

Gross tonnage: 5,300
Length, o. a.: 410'
Beam: 59'

TYPE TL (Modified) Sugar Able Love

Gross tonnage: 10,000
Length, o. a.: 517'
Beam: 67'

TYPE TM Sugar Able Item

Gross tonnage: 5,200
Length, o. a.: 410'
Beam: 59'

TYPE TM (Modified) Sugar Able Sugar

Gross tonnage: 2,800
Length, o. a.: 325'
Beam: 50'

DEMO dimensione ridotta

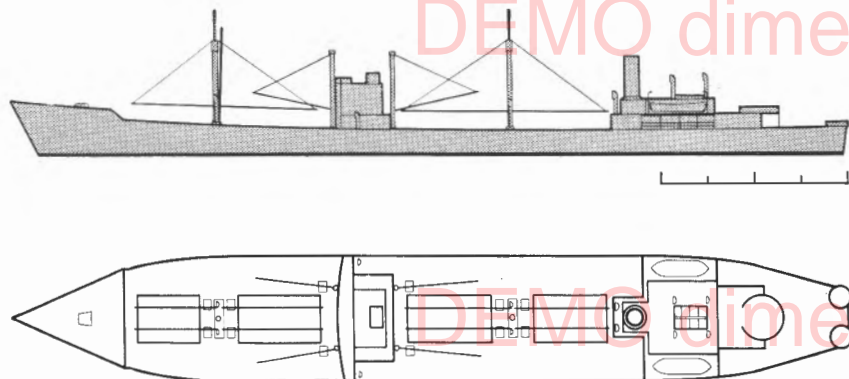
DEMO dimensione ridotta

DEMO dimensione ridotta

DEMO dimensione ridotta

TYPE A (Modified)**45-MKKMF****Sugar Baker Love**

B



▲ Type A (Modified)

Large engines-aft cargo vessel with pronounced "economy" hull. Note kingposts against bridge which is located almost amidships, small stack, and heavy stick masts centered in fore and after wells. One observed variation has wide cargo hatches extending three-fourths the beam of the ship. Ships of this class are under construction at Tokyo and have been observed being built near Nagasaki. No prefabrication of hull sections is apparent. Jap Merchant Ship Card No. S 1007.

Approximately 24 Type A and A (Modified) had been built by July 1944. The following are believed to belong to one of these classes:

Batopaha Maru	5953	Oigawa Maru	6493
Getsuyo Maru	6440	Taiten Maru	6442
Koyo Maru	6435	Tatebu Maru	6816
Kyokuzan Maru	6300	Tatsunan Maru	6417
Mitsuki Maru	6440	Tatsu-ura Maru	6420
Nichiyo Maru	6300	Uyo Maru	6376
Nichizui Maru	6584	Yosan Maru	6487
Nikkyu Maru	6529	Yosho Maru	6300
Nissho Maru	6008	Yowa Maru	6435
Nisshun Maru	6380	Yuzan Maru	6380

TYPE A**TYPE A (Modified)**

Gross tonnage:	6,670	Speed, normal cr.:	10 kts.
Disp. tonnage loaded:	9,720	Machinery:	Steam turbine
Length, o. a.:	445'	SHP:	2,500 (oil)
Beam:	64'		2,000 (coal)
Draft, loaded:	25.5'	Cargo booms:	Twelve 5-ton
			One 30-ton

Gross tonnage:	6,400	Speed, normal cr.:	12 kts.
Disp. tonnage loaded:	9,300	Machinery:	Reciprocating
Length, o. a.:	445' (?)	IHP:	3,300
Beam:	58'	Cargo booms:	Eight 10-ton
Draft, loaded:	25.5'		Eight 15-ton
			Two 25-ton

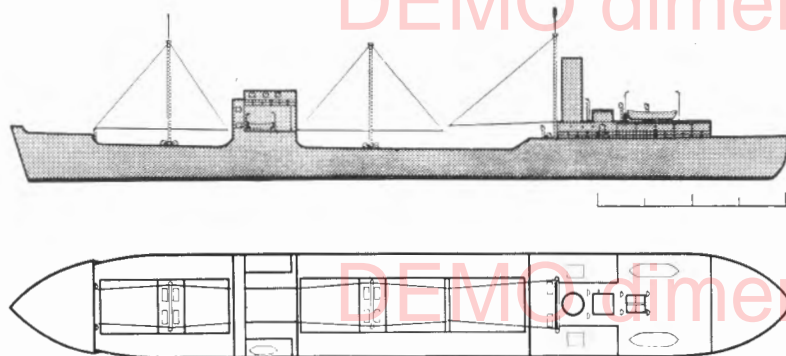
NOTE.—Early reports indicated use of steam turbine and Diesel engines in this class.

45-MKMF

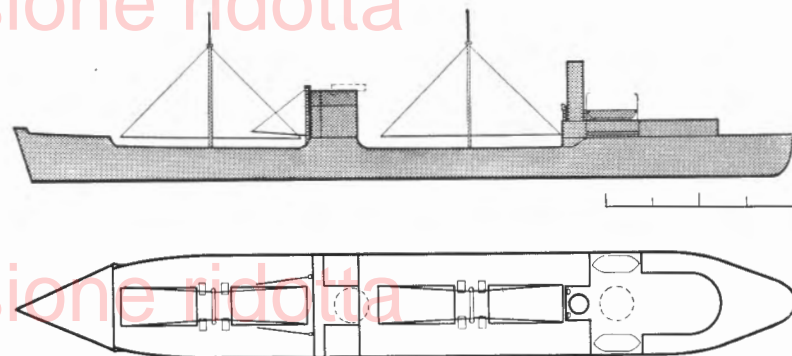
TYPE B

Sugar Baker Love

B



D



Approximately 30 ships of the class are believed to have been built, including the following, some of which are possibly of engines amidship construction.

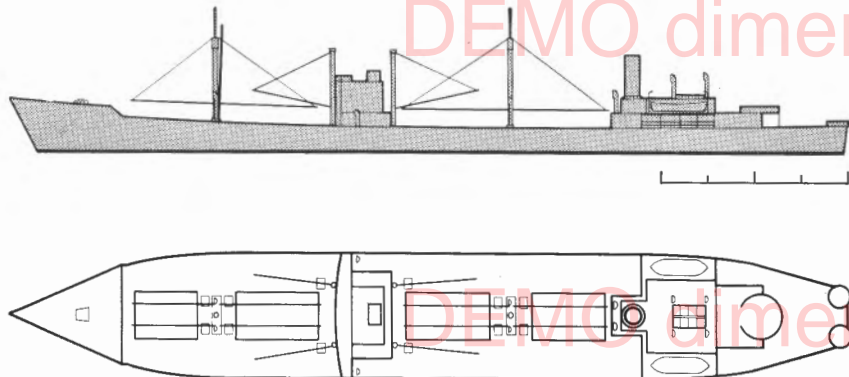
Anbo Maru	4,523	Sankisan Maru	4,776
Bichu Maru	4,667	Shiranesan Maru	4,739
Bizen Maru	4,667	Shiroganesan Maru	4,739
Chiyo Maru	4,700	Shoun Maru	4,399
Fujishima Maru	4,930	Shoyu Maru	4,408
Kokuyo Maru	4,667	Tatebe Maru	4,519
Konan Maru #1	4,558	Toyu Maru	4,532
Naruo Maru	4,823	Yamamiya Maru	4,440
Sainei Maru	4,916	Yukigawa Maru	4,502

Two new ships, one with a pronounced angular hull shape, fall within the probable length range for this class. No other sightings have been observed.

Gross tonnage:	4,400	Speed, normal cr.:	12 kts.
Disp. tonnage loaded:	7,100	Machinery:	Steam turbine
Length, o. a.:	410' (approx.)	SHP:	2,400
Beam:	--	Cargo booms:	Six 5-ton Four 10-ton One 30-ton
Draft, loaded:	24.3'		

TYPE A (Modified)**45-MKKMF****Sugar Baker Love**

B



▲ Type A (Modified)

Large engines-aft cargo vessel with pronounced "economy" hull. Note kingposts against bridge which is located almost amidships, small stack, and heavy stick masts centered in fore and after wells. One observed variation has wide cargo hatches extending three-fourths the beam of the ship. Ships of this class are under construction at Tokyo and have been observed being built near Nagasaki. No prefabrication of hull sections is apparent. Jap Merchant Ship Card No. S 1007.

TYPE A (Modified)

Gross tonnage:	6,670	Speed, normal cr.:	10 kts.
Disp. tonnage loaded:	9,720	Machinery:	Steam turbine
Length, o. a.:	445'	SHP:	2,500 (oil)
Beam:	64'		2,000 (coal)
Draft, loaded:	25.5'	Cargo booms:	Twelve 5-ton One 30-ton

Approximately 24 Type A and A (Modified) had been built by July 1944. The following are believed to belong to one of these classes:

Batopaha Maru	5953	Oigawa Maru	6493
Getsuyo Maru	6440	Taiten Maru	6442
Koyo Maru	6435	Tatebu Maru	6816
Kyokuzan Maru	6300	Tatsunan Maru	6417
Mitsuki Maru	6440	Tatsu-ura Maru	6420
Nichiyo Maru	6300	Uyo Maru	6376
Nichizui Maru	6584	Yosan Maru	6487
Nikkyu Maru	6529	Yosho Maru	6300
Nissho Maru	6008	Yowa Maru	6435
Nisshun Maru	6380	Yuzan Maru	6380

TYPE A

Gross tonnage:	6,400	Speed, normal cr.:	12 kts.
Disp. tonnage loaded:	9,300	Machinery:	Reciprocating
Length, o. a.:	445' (?)	IHP:	3,300
Beam:	58'	Cargo booms:	Eight 10-ton Eight 15-ton Two 25-ton
Draft, loaded:	25.5'		

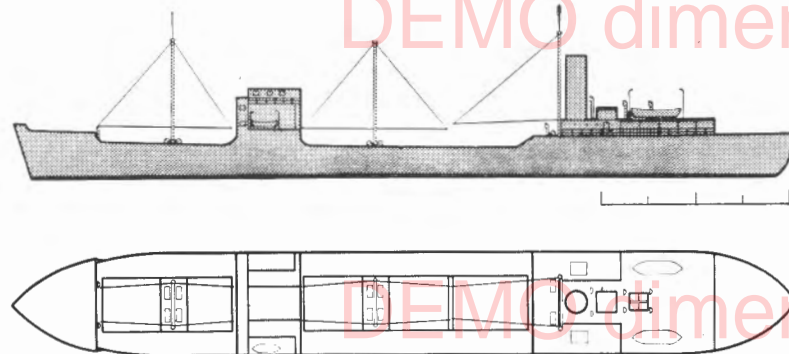
NOTE.—Early reports indicated use of steam turbine and Diesel engines in this class.

45-MKMF

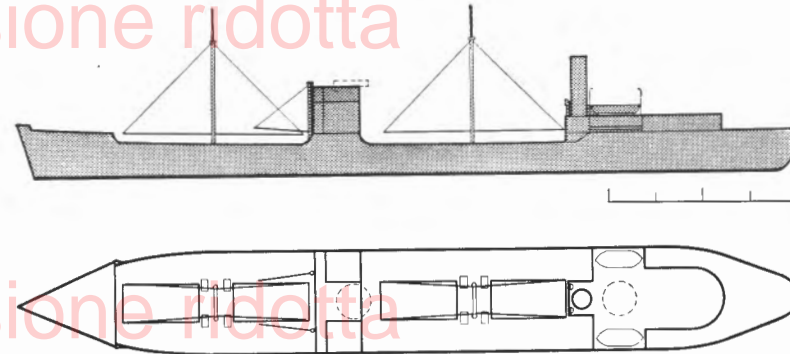
TYPE B

Sugar Baker Love

B



D



Approximately 30 ships of the class are believed to have been built, including the following, some of which are possibly of engines amidship construction.

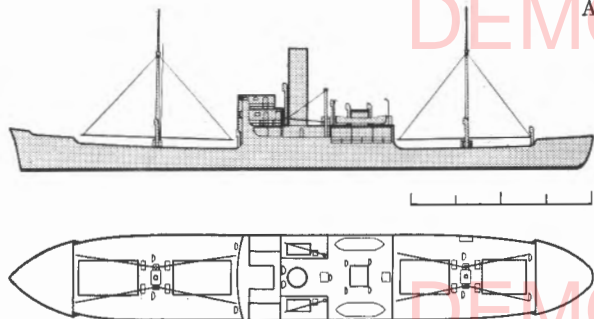
Anbo Maru	4,523	Sankisan Maru	4,776
Bichu Maru	4,667	Shiranesan Maru	4,739
Bizen Maru	4,667	Shiroganesan Maru	4,739
Chiyo Maru	4,700	Shoun Maru	4,399
Fujishima Maru	4,930	Shoyu Maru	4,408
Kokuyo Maru	4,667	Tatebe Maru	4,519
Konan Maru #1	4,558	Toyu Maru	4,532
Naruo Maru	4,823	Yamamiya Maru	4,440
Sainei Maru	4,916	Yukigawa Maru	4,502

Two new ships, one with a pronounced angular hull shape, fall within the probable length range for this class. No other sightings have been observed.

Gross tonnage:	4,400	Speed, normal cr.:	12 kts.
Disp. tonnage loaded:	7,100	Machinery:	Steam turbine
Length, o. a.:	410'	SHP:	2,400
	(approx.)		
Beam:	--	Cargo booms:	Six 5-ton
Draft, loaded:	24.3'		Four 10-ton
			One 30-ton

TYPE C
Fox Tare Charlie

23-MFM



This engines-amidship freighter is closely similar to the AKAGANE MARU and the ANSHU MARU classes shown on pp. 104-5 of ONI 208-J (Revised). Note superstructure slightly aft of amidships, mast centered in fore and after wells, and stack close to bridge. Variations may appear with goal-post masts. Identification of this class has been based on the large number produced before the war, tonnage, length, and the fact that the number of cargo booms correspond with captured statistics. Assignment of this design should not be considered positive.

Gross tonnage:	2,700	Machinery:	Reciprocating
Disp. tonnage loaded:	4,300	Screws:	1
Length, o. a.:	321' (?)	IHP:	1,800
Beam:	45'	Fuel:	Coal
Draft, loaded:	20.7'	Cargo booms:	Two 2-ton
light:	7'-8'		Four 5-ton
Speed, normal cr.:	11 kts.		Four 10-ton
maximum:	13 kts.		One 20-ton



Approximately 30 are believed to have been built between 1941 and 1 July 1944.

Aiyo Maru	2,746	Nikkoku Maru	2,728
Atsuta Maru	2,750	Nittei Maru	2,728
Dai-Akita Maru	2,704	Ryuko Maru	2,764
Daiho Maru	2,720	Shinkoku Maru	2,746
Hagikawa Maru	2,800	Shoei Maru	2,764
Hisajima Maru	2,742	Taishi Maru	2,800
Inari Maru	2,759	Tamon Maru #8	2,750
Kaito Maru	2,745	Tattai Maru	2,800
Masajima Maru	2,742	Unkai Maru #12	2,745
Meiwa Maru	2,721	Wayo Maru	2,726
Mutsuyo Maru	2,726	Yutaka Maru	2,704
Nichinan Maru	2,732	Zuikai Maru	2,700