DOEN WATER JETS

100 SERIES – PRODUCT OVERVIEW

100kW – 900kW

Performance **Reliability** Simplicity

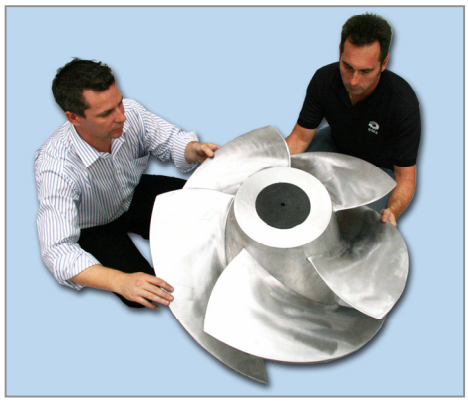
VERSION 4.0

Company Profile

Doen Waterjets have been designed and manufactured by Doen in Melbourne, Australia since 1970.

- Over 35 years experience in design and application engineering. We have a policy of continuous improvement through ongoing research and development.
- All models built to meet the exacting standards of marine classification societies.
- Doen's key design criteria are high performance, reliability and simplicity of construction and maintenance. Our axial flow waterjets provide compact and efficient performance at speeds up to 45 knots combined with exceptional low speed thrust and load carrying capability.
- Global distribution network provide sales & service support for waterjets in the most demanding commercial operations throughout the world.

Global Sales & Service Support



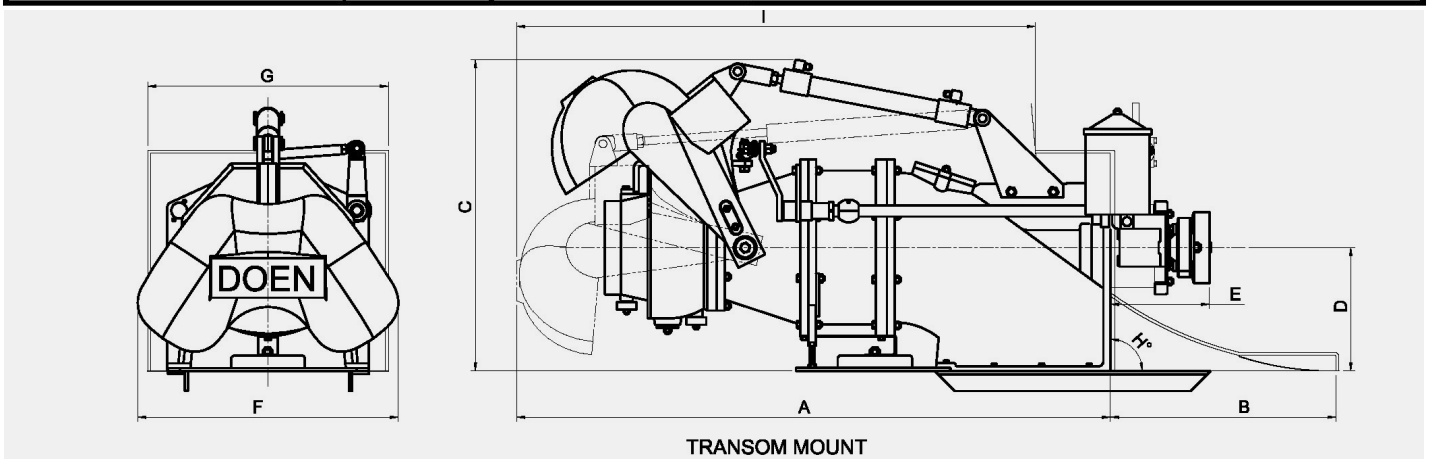
1960's	1970's	1980's	1990's	2000	TODAY
					

Performance **Reliability** Simplicity

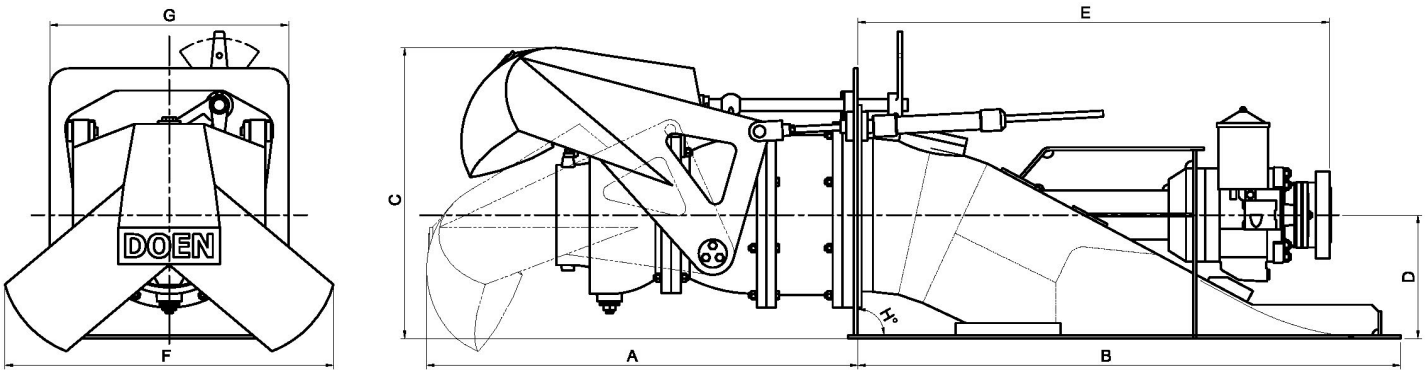
Model Range – 100 SERIES specifications

		TRANSOM MOUNT					PRE FRABRICATED	
		DJ100G	**DJ105**	**DJ110**	**DJ120**	**DJ130**	**DJ140HP**	**DJ170HP**
Input Power - continuous	kW[1] (hp)	225 (300)	260 (350)	335 (450)	380 (510)	410 (550)	670 (900)	855 (1150)
Shaft speed	rpm	3600	3200	3055	2800	2600	2250	1975
Rec. Max.Displacment PLANING VESSEL	Single	3.5t	4t	4.5t	6t	7t	9t	12t
	Twin	8t	9t	10t	12t	17t	20t	26t
Rec. Max.Displacment DISPLACING VESSEL	Single	8t	9t	10t	15t	18t	20t	30t
	Twin	17t	20t	22t	30t	40t	45t	66t
Weight Kg (lbs)	Dry[2]	125 (276)	170 (375)	180 (397)	225 (496)	295 (650)	375 (826)	550 (1213)
Dimensions[3] mm	A	1075	1150	1200	1200	1545	1120	1395
	B	290	455	455	520	630	1410	1600
	C	560	630	630	620	880	755	850
	D	242	250	250	250	370	320	335
	E	170	195	195	265	220	220	1280
	F	540	540	540	700	775	775	900
	G	360	470	470	520	600	600	690
	H	90°	90°[4]	90°[4]	90°	90°[4]	90°[4]	90°
	I	920 - 965	1000-1075	1045-1120	1045-1120	1225-1495	N/A	N/A

Note	(1)	Maximum Rec. Continuous Power
	(2)	Includes Std. Reverse Control System - Excludes Entrained Water
	(3)	Typical only - not to be used for construction purposes
	(4)	95° Transom mounted jet also available



TRANSOM MOUNT



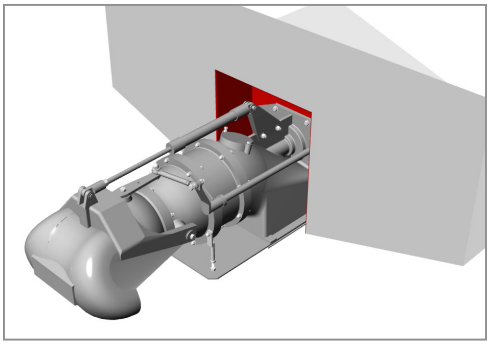
PRE FABRICATED DUCT

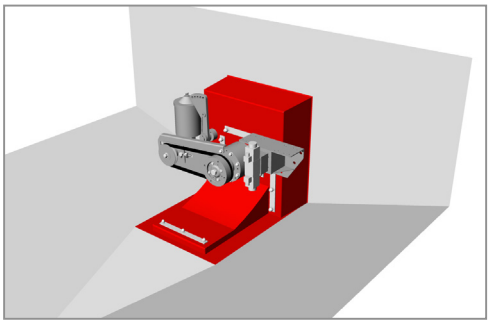
Transom Mount Installation

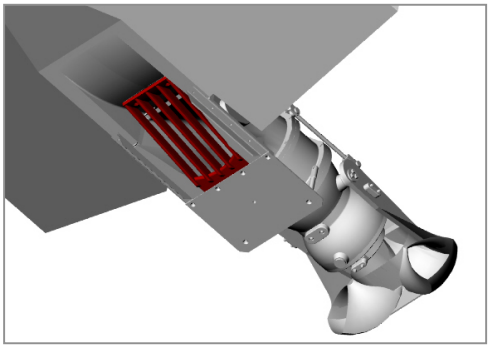
DOEN 100 series - Transom Mounting Method.

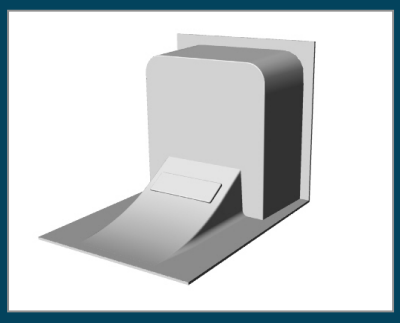
The Doen transom mounting method provides a high strength, simple, precise and low cost installation solution for all hull types of hull construction.

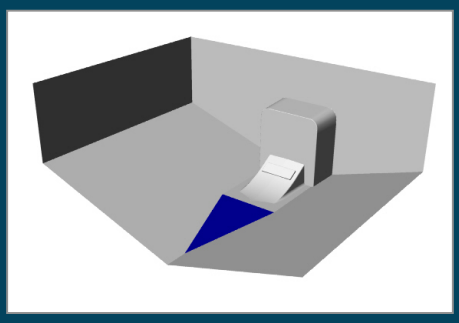
- **Hull insert -** A hull insert is used to form the initial part of the intake tunnel and provide a rigid mounting face. This method provides some flexibility of longitudinal placement in the hull and accommodates all transom profiles.
- **Integral to hull -** The hull insert forms an integral part of the hull and provides a strong and leak proof mounting. Cutting large holes into the transom and bottom of the boat and thereby weakening the transom and aft keel areas is not necessary.
- **Suits all materials –** The hull insert is manufactured in the hull material. Mould inserts are used for GRP boats and bolt in inserts for wooden and plastic hull types. Weld in inserts for Aluminium and steel boats with CAD drawings available to enable integral manufacture.
- **Simple & Quick –** The Doen Waterjet bolts directly to the mounting face making installation very quick and very simple.

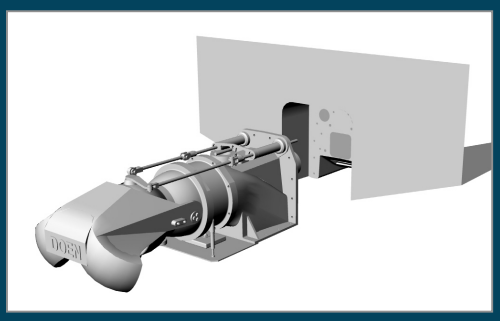










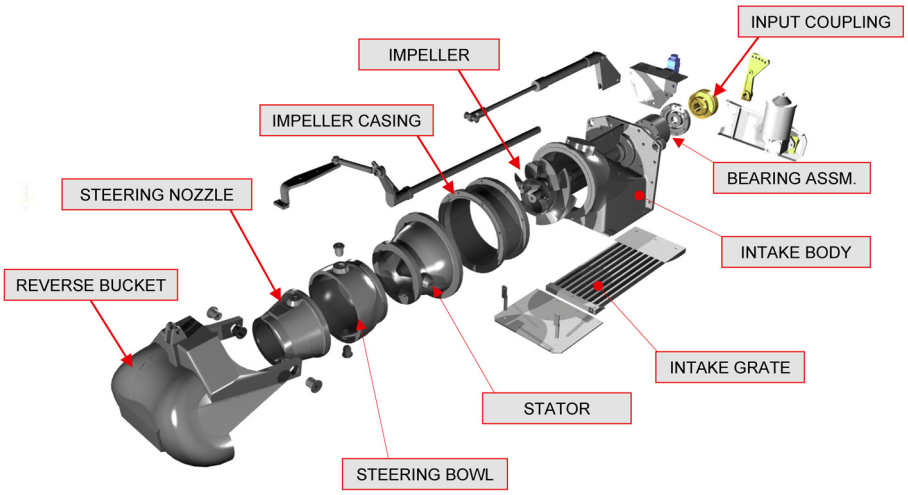


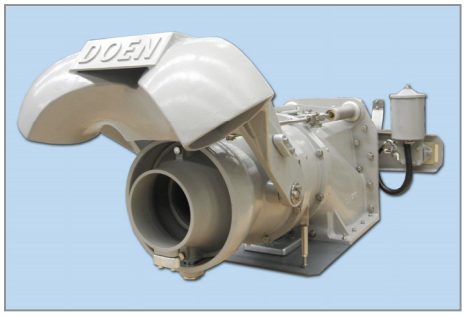
Performance **Reliability** Simplicity

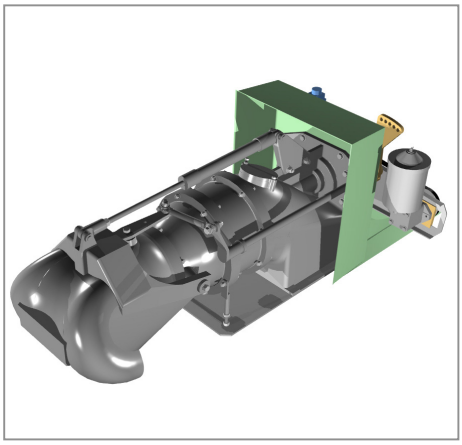
Modular Design and Construction

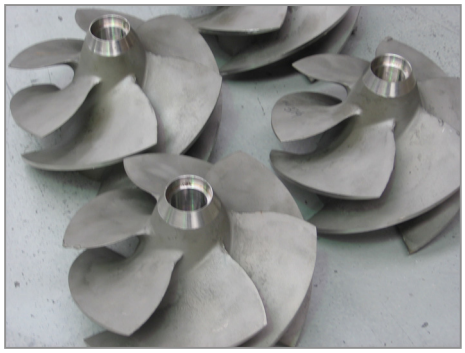
Doen 100 series - constructed using simple modular designs, no special tools required

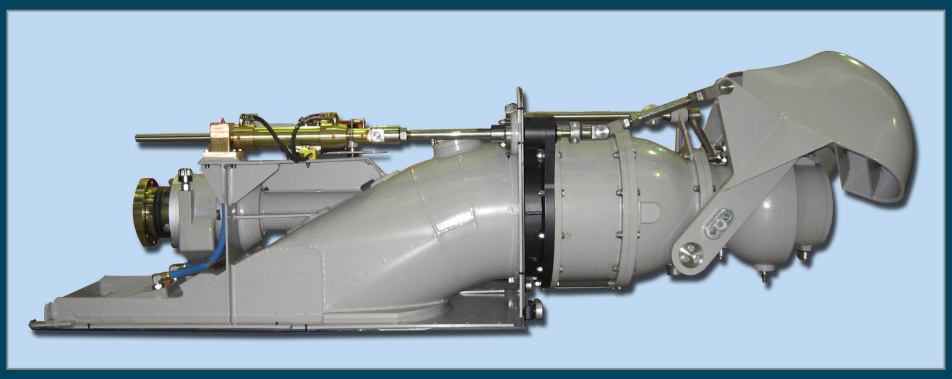
- **Pump Assembly** - manufactured using strong corrosion resistant and compatible materials providing maximum service life and extreme resistance to erosion, corrosion and cavitation.
- **Shaft Assembly** – Duplex stainless steel main shaft with removable inboard thrust bearing assembly, water lubricated rear bearing and face type shaft seal. Simple Doen taper lock coupling system.
- **Steering & Reverse** – Fast response, low force steering nozzle operated from inboard tiller gives superior maneuvering. Split duct reverse bucket providing high astern thrust.

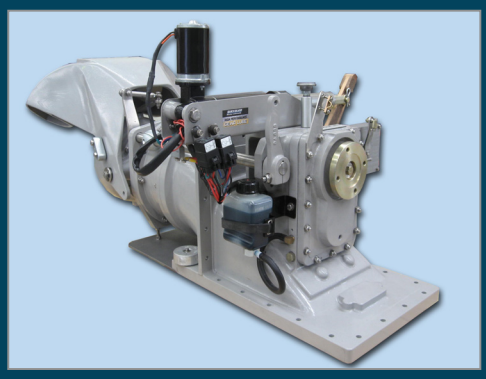












Performance **Reliability** Simplicity

Control Systems

JRS – JOGSTICK REVERSE SYSTEM

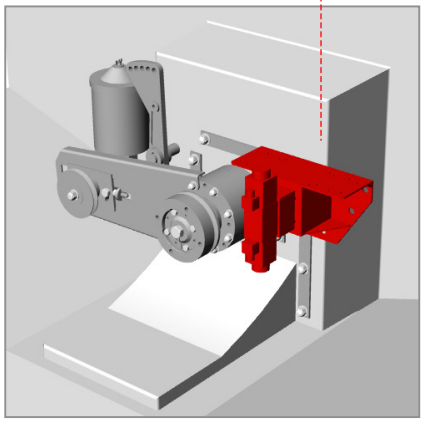
The Jogstick Reverse Control (JRS) system is a simple and robust electro hydraulic control system that provides non-follow up, JOG lever control of the waterjets reverse buckets

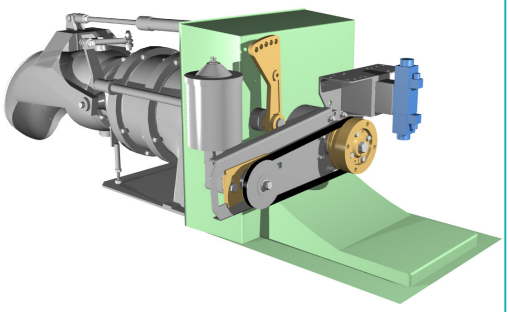
•**Forward and Reverse Control –** Reversing bucket position controlled by simple jog lever. Reverse buckets can be independently positioned and held at any point in their travel arc.

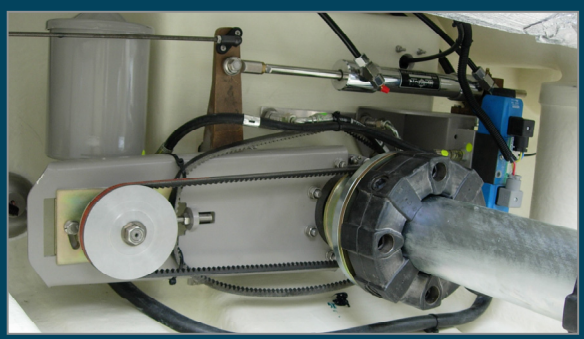
•**Position Indicator –** Robust analogue indicator shows reverse bucket position.

•**Simple robust system –** Ideal for remote and rugged use applications. Standard CETOP 3 hydraulic valve can be configured for either 12 or 24 Volts systems and to suit multi station applications.

•**Integrated hydraulics -** Simple and fast installation. All components jet mounted, hydraulic pump belt driven off input coupling. Complete hose and fittings kit.







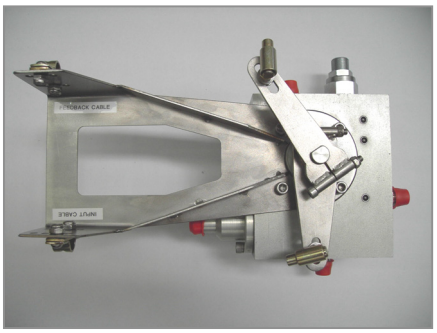
Performance **Reliability** Simplicity

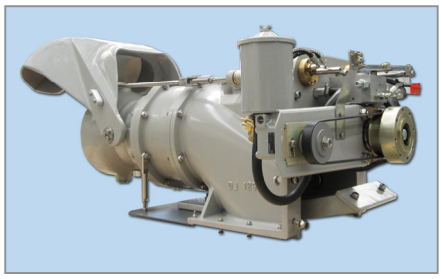
Control Systems

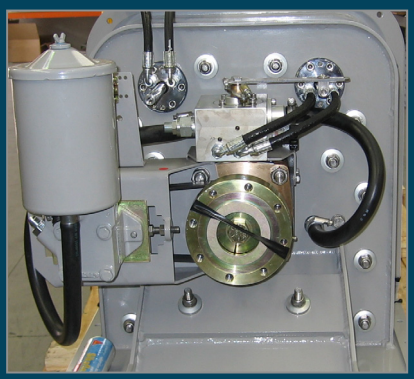
RSC – ROTARY SERVO CONTROL

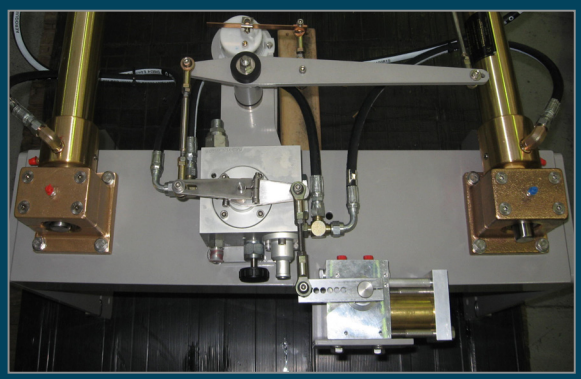
Rotary Servo Control (RSC) is an integrated proportional hydraulic control system providing simple and exact follow up control of the waterjets reverse buckets by conventional lever.

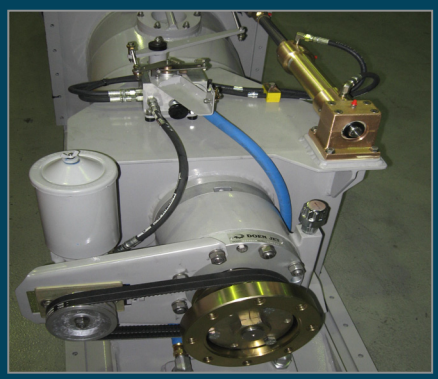
- **Mechanical follow-up control –** bucket position is relative to input lever position. Mechanical hydraulic follow up control with de-coupled feedback system allows quick and free lever movement at all times.
- **Conventional levers –** Control of the reverse bucket is by conventional hand control via Morse 33C cable to RSC input lever. Single lever throttle with bucket function and neutral start safety interlock possible.
- **RSC valve unit –** Doen manufactured RSC unit is engineered for simple construction and enhanced reliability. Low-pressure servo control circuit operates high-pressure cylinder control. Integral pilot check valve ensure positive bucket position and no cylinder leak down.
- **Integrated hydraulics** - Simple and fast installation. All components jet mounted, hydraulic pump belt driven off input coupling. Complete hose and fittings kit











Performance **Reliability** Simplicity

Control Systems

eDOCK – Joystick Docking Control

For the ultimate in docking control and low speed maneuvering all Doen 100 series waterjets can be fitted with Doen's eDOCK joystick control. Allows accurate vessel positioning by controlling vectored thrust from the waterjets

Multi axis joystick provides multi axis vessel control with twist knob for yaw correction.

Add on technology – integrates with all standard Doen waterjet controls to provide joystick docking feature

Single control enclosure housing CPU unit

Fully programmable with simple setup and calibration

Configurable output for bow thruster control

Configurable inputs for external device integration

- Electronic control
- Generic engine controls
- Autopilots
- Dynamic Positioning Systems

Performance **Reliability** Simplicity

100 SERIES

DOEN WATER JETS

MODEL DJ100G

- Product Bulletin
- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

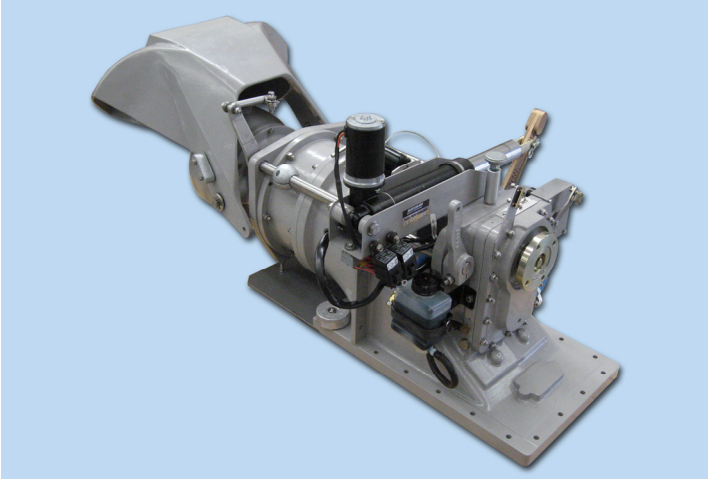
DJ100G Waterjet

Performance **Reliability** Simplicity

Product Bulletin

SPECIFICATIONS

Horsepower:	**Up to:**	**300hp cont.** **400hp sprint**
Vessel Size:	**Single:**	**20 - 26' (6-8m)**
	Twin:	**26 - 32' (8-10m)**
Vessel AUW:	**Single:**	**3.5t (7700lbs)**
	Twin:	**8.0t (17600lbs)**



- The DJ100G transom mount 10inch (254mm) waterjet with integral gearbox meets Doen's key design criteria of high performance, reliability and simplicity of construction and maintenance
- This compact and efficient axial flow waterjet delivers superior acceleration and variable load performance at speeds up to 45+ knots
- Integral single-step reduction gearbox allows simple and precise matching to compact high-revving diesels and high horsepower gas V8's
- The use of modular construction, comprising Stainless Steel and heavy-duty powdercoated Aluminum components protected with an anode anti-corrosion system, has allowed the DJ100G to be lightweight, compact and simple to maintain
- Reverse actuation is by a lightweight, high force, inboard mounted electric actuator mounted inboard. This gives proportional, position sensing, control via a 3" (75mm) stroke Morse 33C cable with a simple pre-set 12V electrical connection
- The transom mounting allows for minimal intrusion into valuable onboard space, just 11.8" (300mm) from the transom to the coupling face

For the ultimate in docking control and low speed maneuvering the DJ100G can be fitted with Doen's eDOCK joystick control. This system can also be interfaced with electronic vessel controls such as autopilots and dynamic positioning systems

eDOCK joystick control

DOEN PACIFIC PTY. LTD.
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Victoria, Australia

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DJ100G TECHNICAL SPECIFICATIONS

DOEN WATER JETS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 225skW (300shp)
Maximum Rec. Power Sprint:	up to 300skW (400shp)[(A)]
Maximum Rec. Impeller speed:	4400rpm
Dry Weight:	125 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	22 kg
Loss of buoyancy	0.011 m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	10 inch (254mm)
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Coupling Rotation	Anti-clockwise (Looking forward from stem)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

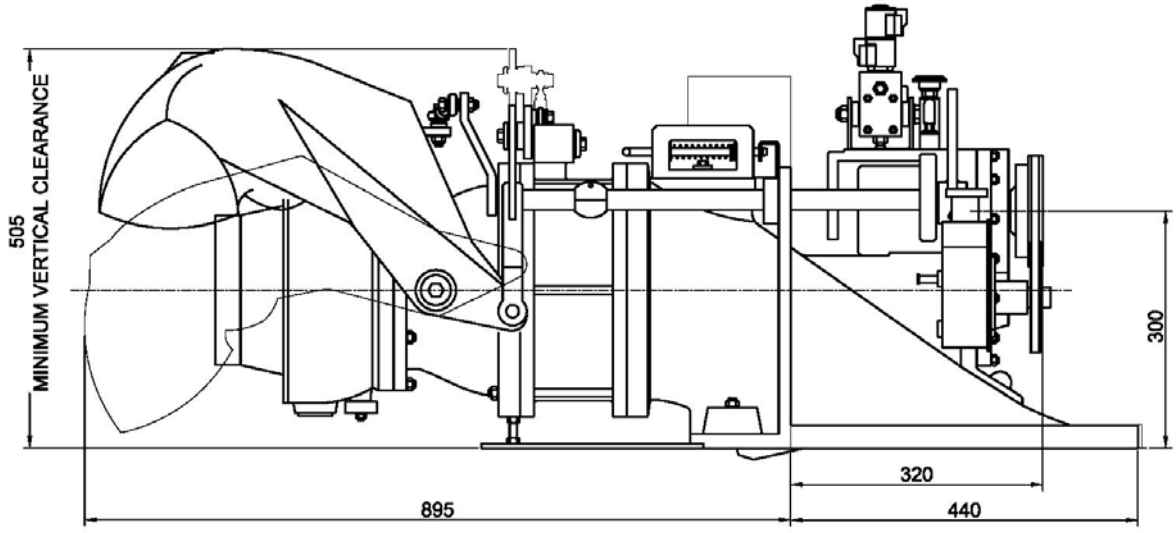
Description	Split Duct Type – “High Thrust”
Operation	Inboard Hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 Aluminium Alloy

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Taper Roller
Lubrication	Oil Lubricated
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	Spicer “1410” Series
Shaft Angle	0 degrees

Intake Body:

Material:	Cast ASTM A356 Aluminium Alloy
Inspection Opening:	Outboard – Quick release type
Intake Grate:	Removable Bar type

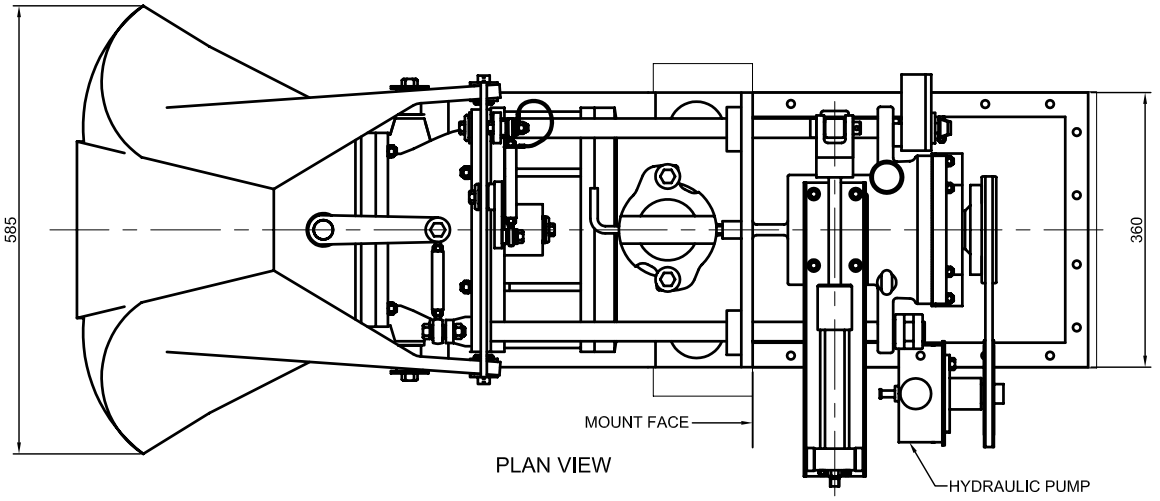


Note (A): Requires application approval by DOEN Pacific
Due to our policy of continuous Research & Development, we reserve the right to change the specifications without notice

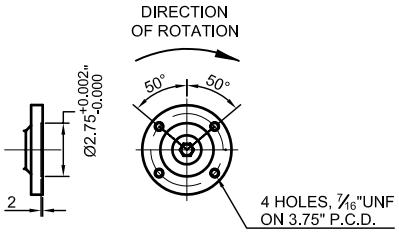
REVISION			
ITEM No.	DESCRIPTION	BY	DATE
A	UPDATED REVERSE MECHANISM	PP	10-08-10
B	STEERING CYLINDER DETAIL ADDED	TU	2020202

STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 130mm. IF A RECESS OF GREATER THAN 130mm IS REQUIRED CONSULT DOEN PACIFIC.

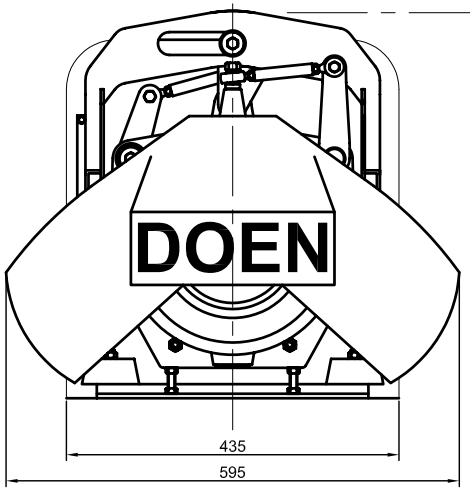
WARNING! ACCESS TO THE INSPECTION OPENING PORT WILL BE RESTRICTED IF THE RECESS IS GREATER THAN STANDARD.



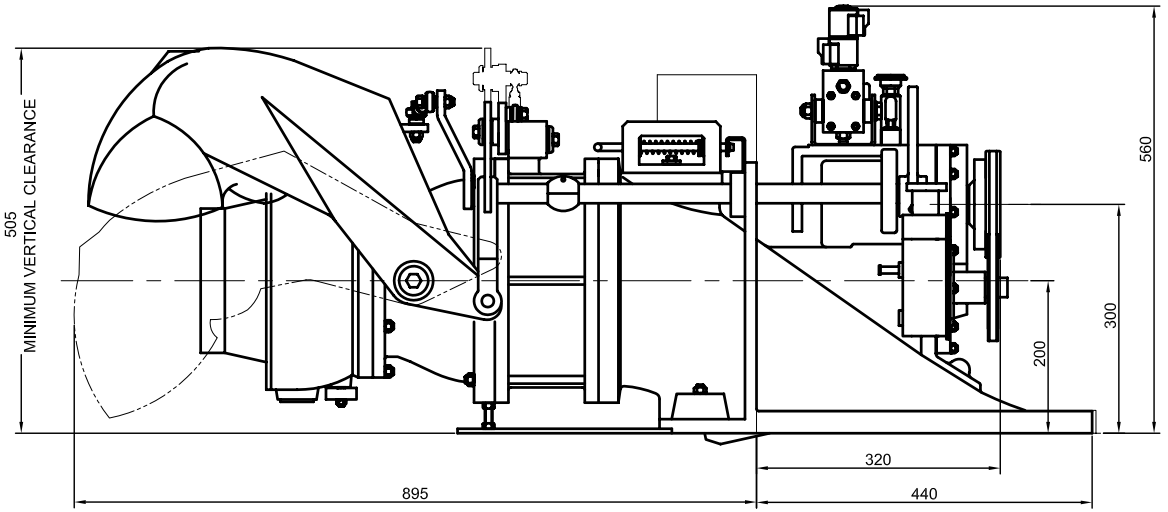
PLAN VIEW



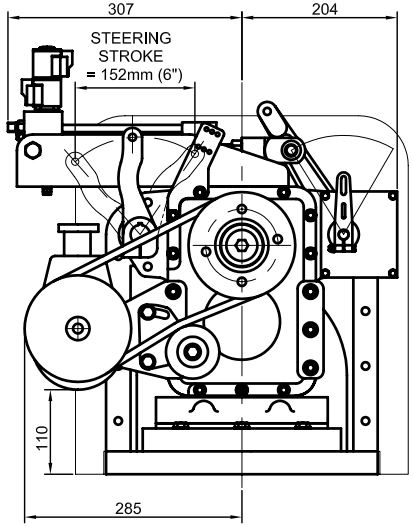
STANDARD COUPLING FLANGE



INBOARD VIEW



PROFILE VIEW



INBOARD VIEW

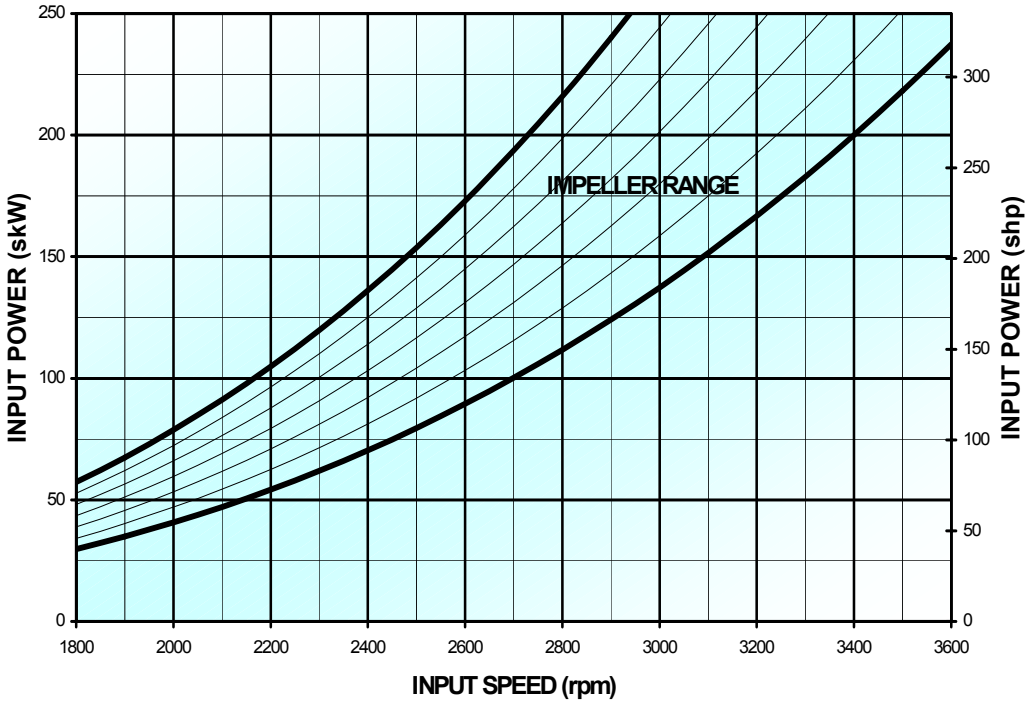
DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT, DRAWING SUBJECT TO CHANGE WITHOUT NOTICE

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES		DRN P.PEIRIS	DOEN PACIFIC PTY. LTD.
		CKD	
TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°	MATERIAL	APPD T.UDVARY	TITLE DJ100G GENERAL ARRANGEMENT HYDRAULIC REVERSE
		ISSUED 290407	
		MODELS DJ100G	
DRAFTING STANDARD AS 1100	FINISH	SIZE A3	DRG. No. DJ100G 100810
		SCALE NONE AS PRINTED	

DJ100G PERFORMANCE CURVES

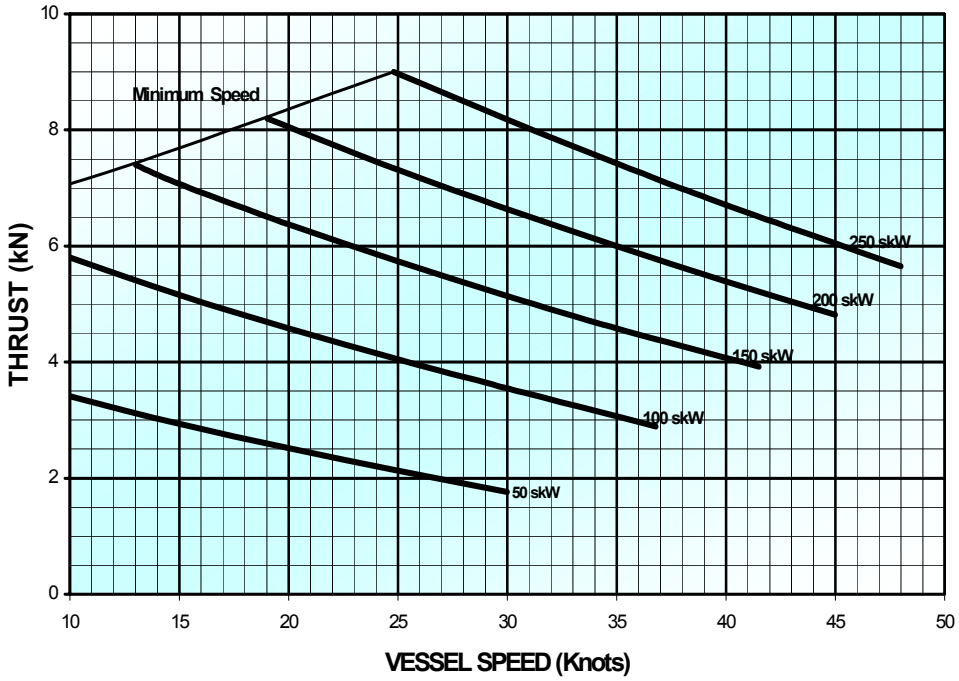
Input Power vs. rpm

Maximum rec. INPUT POWER: 225skW (300shp).
Maximum rec. INPUT SPEED: 3600rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ100G Waterjet

Performance Reliability Simplicity

Case Study 123: **Aquaculture Boat**

SPECIFICATIONS

Waterjet:	**DJ100G**
Engine:	**Yanmar 6BY** **220hp @ 4000rpm**
Gearbox:	**1.423:1 Integral with Jet**
Vessel:	**6.2m L.O.A** **4.8m LWL** **2.0 tonne**
Performance:	**40knots**

A fast, highly maneuverable aquaculture boat from Australia's Oceantech Design

A single **DOEN DJ100G** waterjet propels this aluminium 6.2m (20.4') craft designed and built by Oceantech Design, Australia. A primary requirement of this boat is to operate, in shallow draft areas, with a very high level of reliability in a variety of load conditions.

Power is provided by a single Yanmar 6BY 220hp diesel engine, which has been close coupled to the transom mount DJ100G waterjet. The DJ100G is just 300mm from the transom to the coupling face ensuring minimal intrusion into valuable onboard space of this boat, where onboard space is at a premium.

The DJ100G 10-inch (254mm) diameter high volume axial flow impeller provides excellent acceleration, load carrying and fuel economy with un-compromised top speed. The integral single step reduction gearbox ensures both the impeller and the engine are optimally matched to provide the highest level of efficiency from the propulsion system.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force allowing simple light duty push pull cable steering to be used. This provides the vessel with unparalleled control for the many close quarter maneuvers that this boat has to accurately perform many times in daily operations.

This DJ100G waterjet is fitted with DOEN's Electric Reverse Control (ERC) option utilizing a high force electric actuator to provide follow up, position sensing, control of the reversing bucket. The inboard mounted electric actuator simplifies the installation, set up and maintenance of the waterjet while retaining performance and reliability. This system simply interfaces with the standard Yanmar engine control system providing a simple single lever throttle and reverse bucket control.

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Email: inquiries@doen.com

DJ100G Waterjet

Performance Reliability Simplicity

Case Study 127: **White Water River Boat**

SPECIFICATIONS	
Waterjet:	**DJ100G (Single)**
Engine:	**Yanmar 6LPAM-STP2 315hp @ 3800rpm**
Gearbox:	**1.25:1 Integral with Jet**
Vessel:	**25’ (7.6m) LOA 21’ (6.5m) LWL 5500lbs**
Performance:	**40+mph**

A welded Aluminium white water riverboat from America’s Custom Weld Boats

A single **DOEN DJ100G** waterjet propels this aluminium 25’ (7.6m) craft designed and built by Custom Weld boats of Lewiston, Idaho in the USA. Designed specifically for recreational use in the white water rapids rivers typically found in North West USA; the high performance diesel jet package offers the same performance as a petrol engine options with outstanding fuel economy and range.

Power is provided by a single Yanmar 6LPAM-STP2 315hp diesel engine, which has been coupled to the transom mount DJ100G waterjet. The DJ100G’s integral single step reduction gearbox ensures that the 10-inch (254mm) diameter high volume axial flow impeller is optimally matched to the engine. This provides the highest level of efficiency from the propulsion system providing unparalleled acceleration, load carrying and fuel economy with un-compromised top speed; even when fully loaded with people and cargo.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using Custom Welds center stick steering lever which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional control at both high and low speeds which is essential for navigating through the white water rapids.

This DJ100G waterjet is fitted with DOEN’s Electric Reverse Control (ERC) option utilizing a high force electric actuator to provide follow up, position sensing, control of the reversing bucket. The inboard mounted electric actuator simplifies the installation, set up and maintenance of the waterjet while retaining performance and reliability. This system simply interfaces with the standard Yanmar engine control system providing a simple single lever throttle and reverse bucket control.

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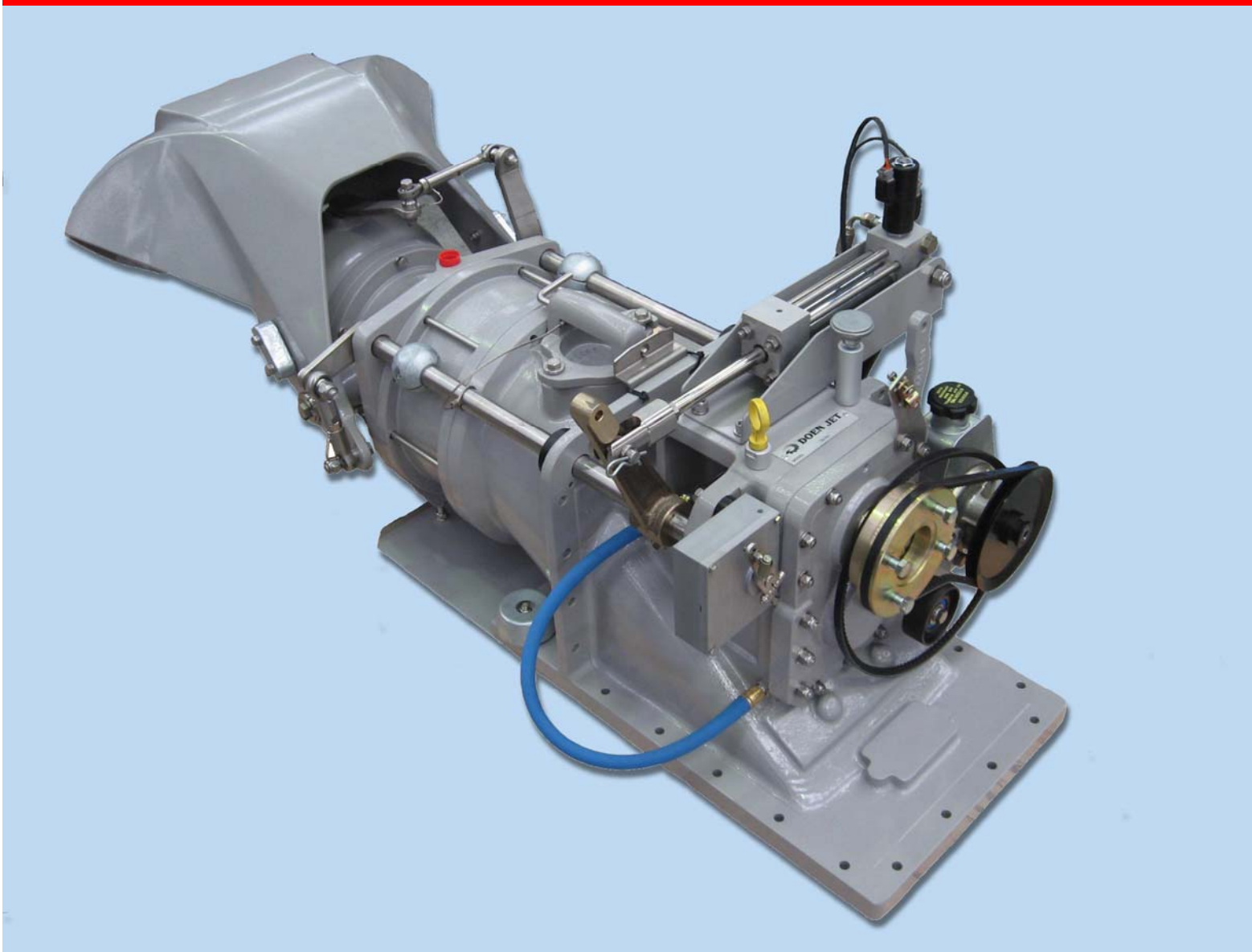
FOR RIB APPLICATIONS

- **6m – 10m**
- **150-350hp diesels**
- **Single and Twin**

DOEN WATER JETS

DJ100G



Performance Reliability Simplicity

DOEN 100G

DOEN WATER JETS

Product Introduction:

Our aim was to provide boat builders and boat operators alike with a waterjet option that has been specifically designed to optimally match with today's high-speed diesels. A waterjet that delivers superior all round performance and better load carrying capability. To best achieve this, several key design criteria had to be met.

- **Larger capacity axial flow pump**
- **Dedicated impeller technology**
- **Correct engine to jet matching**

The new Doen DJ100G delivers all of these criteria within a compact and cost effective package.

■ The **Doen DJ100G** waterjet utilises a large diameter ten-inch (254mm) pump incorporating our latest impeller technology to provide higher thrust with superior cavitation resistance. This results in improved speed, better load carrying, enhanced range and fuel efficiency and unsurpassed cavitation resistant performance.

■ The integration of a gearbox allows the **Doen DJ100G** to be precisely and simply matched with engines to simultaneously ensure proper engine loading and optimal impeller speeds, for best efficiencies and highest cavitation resistance. Stock ratios are available to suit today's high-speed diesels with power outputs up to 300hp continuous and 400hp sprint (by application).

■ This waterjet pump is built using a tough, heavy-duty construction comprising only stainless steel and aluminium with an anode anti-corrosion system. The simplicity of the design makes the **Doen DJ100G** very easy to service and maintain.

photo courtesy **MADERA RIB**

Performance Reliability Simplicity

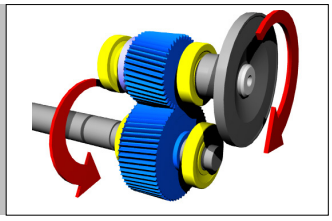
DOEN 100G

DOEN WATER JETS

Key Product Features:

INTEGRAL REDUCTION BOX

Providing perfect impeller matching without the need for a marine gear. The fully integrated step down box uses wide faced, ground helical gears supported with high capacity taper roller bearings. This robust arrangement has been designed and tested to commercial ratings.



IMPELLER TECHNOLOGY

Based upon Doen's proven axial flow impeller designs, the **DJ100G** impeller employs a six blade configuration with our longer progressive pitch profile that results in higher thrust throughout the speed range and unrivalled cavitation resistance.

HIGH THRUST TEN INCH PUMP

Optimally sized to best suit target engine/s power range and target vessel size and weight envelope. The ten-inch axial flow pump efficiently converts horsepower into a high volume jet flow delivering high thrust, more range and more payload with reduced fuel burn.

SPLIT DUCT POWER REVERSE

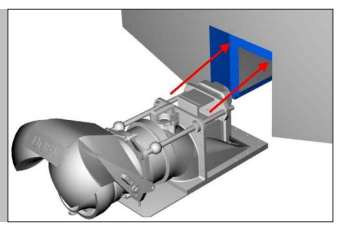
The split duct-reversing bucket provides excellent high thrust reverse maneuverability. This is power operated by a high force, 12VDC actuator, thereby eliminating hydraulics. Feather light follow up control is achieved through the position sensing control box operated by 33C type cable.

QUICK RELEASE INSPECTION COVER

The Inspection Cover is outboard mounted and simply retained using a spring loaded slide bolt. This means quick release operation requiring no tools, without the risk of flooding. The cover itself is tethered to the waterjet with stainless wire so that it cannot be lost.

TRANSOM MOUNTING

The unit is installed using Doen's proven quick and simple transom mounting method. This results in less intrusion into valuable inboard space, allowing more compact machinery arrangements further aft in the boat. Doen can also offers compact coupling systems with the **DJ100G**



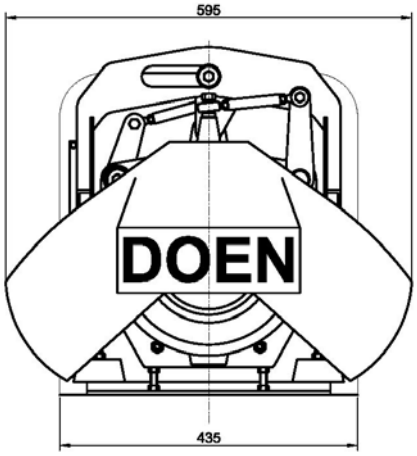
Performance Reliability Simplicity

DOEN 100G

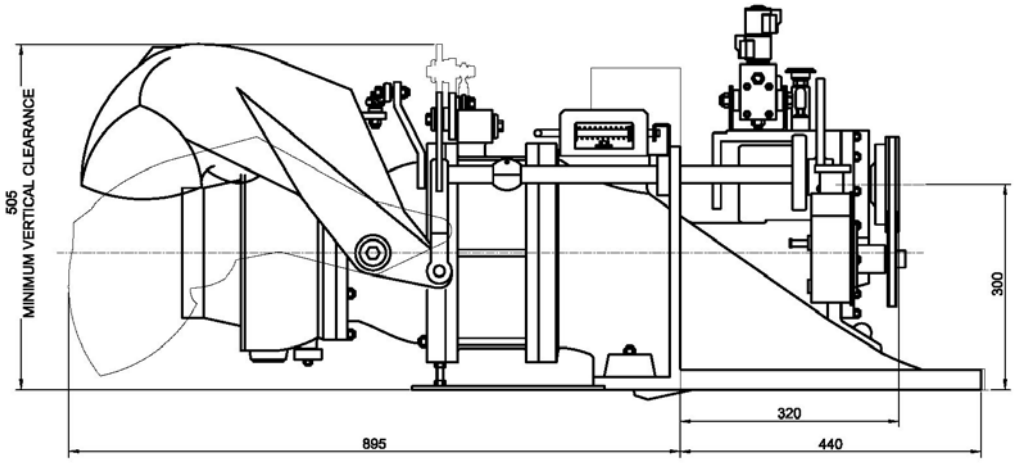
Technical Specification:

Engine Matching:	Input Power – max. rec:	up to 300hp cont. (up to 400hp by application)	
	Input RPM – max. rec:	up to 4400rpm (input coupling speed)	
	Rotation:	Left Hand (anticlockwise looking at flywheel)	
Vessel Parameters:	Weight AUW – max. rec.	up to 3,500 kg	Single
		up to 8,000 kg	Twin
	Length L.O.A: - typical only	up to 8.0m	Single
		Up to 11.0m	Twin
Weights:	Unit Weight:	125kg (includes reverse controls)	
	Entrained Water	39 kg (weight of water in pump and inlet duct)	

Impeller:	Diameter:	10 inch (254mm)
	Type:	Single Stage – Axial flow pump – HyFLO design
	Impeller Material:	Cast CF8M Stainless Steel
Pump Assembly:	Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
	Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy
Steering System:	Description	Balanced nozzle
	Operation	Inboard tiller actuation – push pull cable
	Material - nozzle & bowl:	Cast ASTM A356 Aluminium Alloy
	Nozzle Diameter Range:	∅140mm - ∅150mm
Reverse System:	Description	Split Duct Type – “High Thrust”
	Operation	Inboard Electric cylinder actuation – follow up control
	Material – reverse duct	Cast ASTM A356 Aluminium Alloy
Shaft Assembly:	Main Shaft Material:	Stainless Steel Grade SAF 2205
	Rear Bearing:	Water Lubricated Cutlass Bearing
	Main Bearings:	Taper Roller - Oil Lubricated
	Shaft Seal:	Face type Mechanical Seal
	Coupling Flange:	Spicer “1410” Series
Intake Body:	Material:	Cast ASTM A356 Aluminium Alloy
	Inspection Opening:	Outboard – Quick release type
	Intake Grate:	Removable Bar type



INBOARD VIEW



PROFILE VIEW

DOEN 100G

Contact Details:

DOEN WATERJETS
33 VENTURE WAY
BRAESIDE, 3195
VICTORIA, AUSTRALIA

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BRAESIDE, 3195
VICTORIA AUSTRALIA

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Performance Reliability Simplicity

100 SERIES

MODEL DJ105

- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

DJ105 TECHNICAL SPECIFICATIONS

DOEN WATER JETS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 260skW (350shp)
Maximum Rec. Power Sprint:	up to 300skW (400shp) (A)
Maximum Rec. Impeller speed:	3200rpm
Dry Weight:	167 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	45 kg
Loss of buoyancy	0.005m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	10.5 inch (267mm)
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

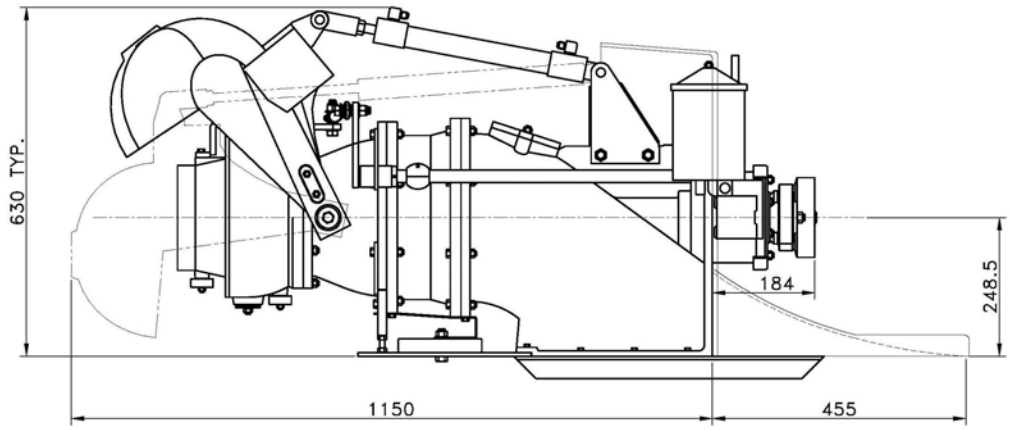
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 Aluminium Alloy

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Angular contact Thrust Bearing
Lubrication	Grease
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	Spicer “1550” Series
Shaft Angle	Available in both 0° (DJ105Z) and 5° (DJ105)

Intake Body:

Material:	Cast ASTM A356 Aluminium Alloy
Inspection Opening:	Outboard
Intake Grate:	Removable Stainless Steel Bars



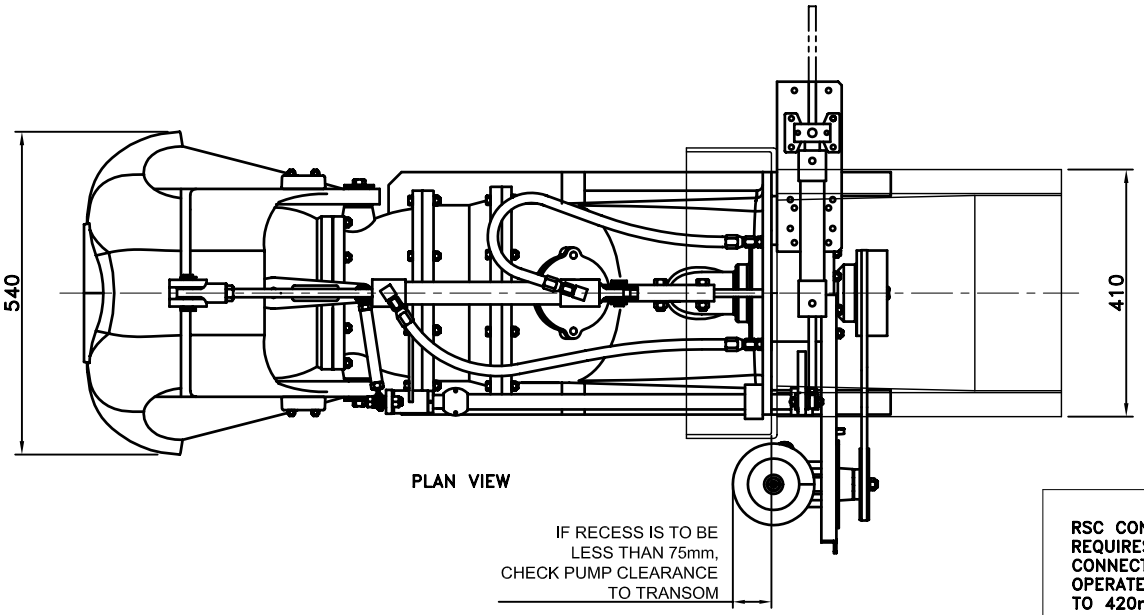
Note (A): Requires application approval by DOEN Pacific
Due to our policy of continuous Research & Development, we reserve the right to change the specifications without notice

REVISION			
ITEM No.	DESCRIPTION	BY	DATE
A	RSC VALVE NOTE ADDED	PP	1-12-06

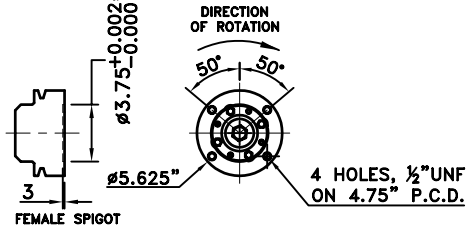
NOTE: FRP MOULD INSERT SHOWN

MAX. RECESS = 130mm
MIN. RECESS = 75mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 75mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 130mm. SHOULD A RECESS GREATER THAN 130mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET

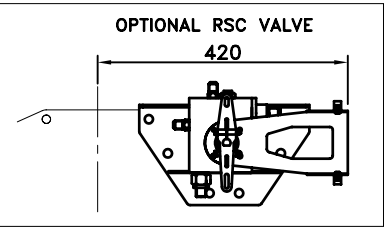


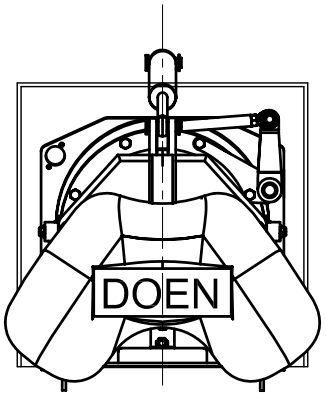
PLAN VIEW



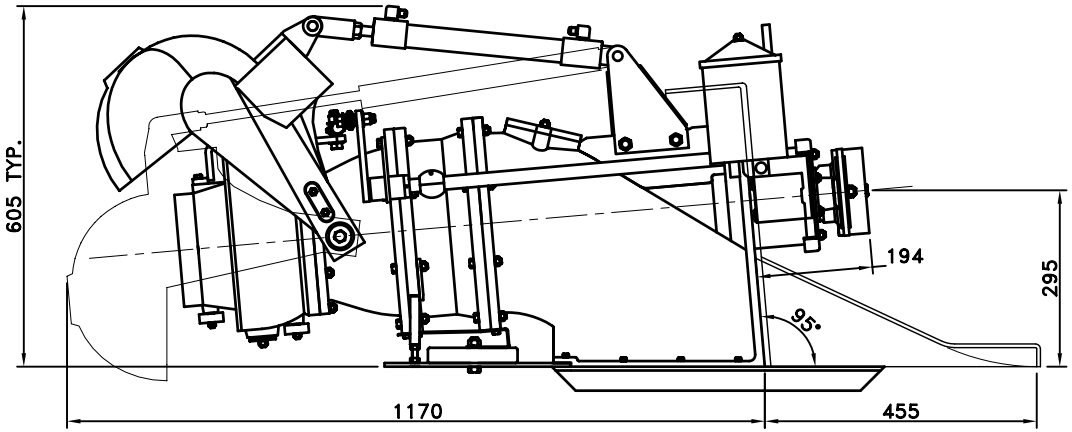
STANDARD COUPLING FLANGE

RSC CONTROL VALVE REQUIRES CABLE CONNECTIONS TO OPERATE. IN ADDITION TO 420mm WIDTH ALLOWANCE FOR CABLE ROUTING IS REQUIRED.

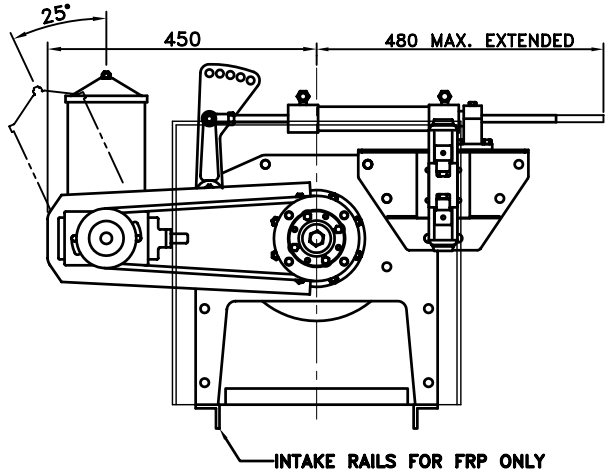




OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT, DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 20-10-05
MODELS DJ105

DOEN PACIFIC PTY. LTD.

TITLE
DJ105
GENERAL ARRANGEMENT

SIZE A3 | DRG. No. DJ105 011206

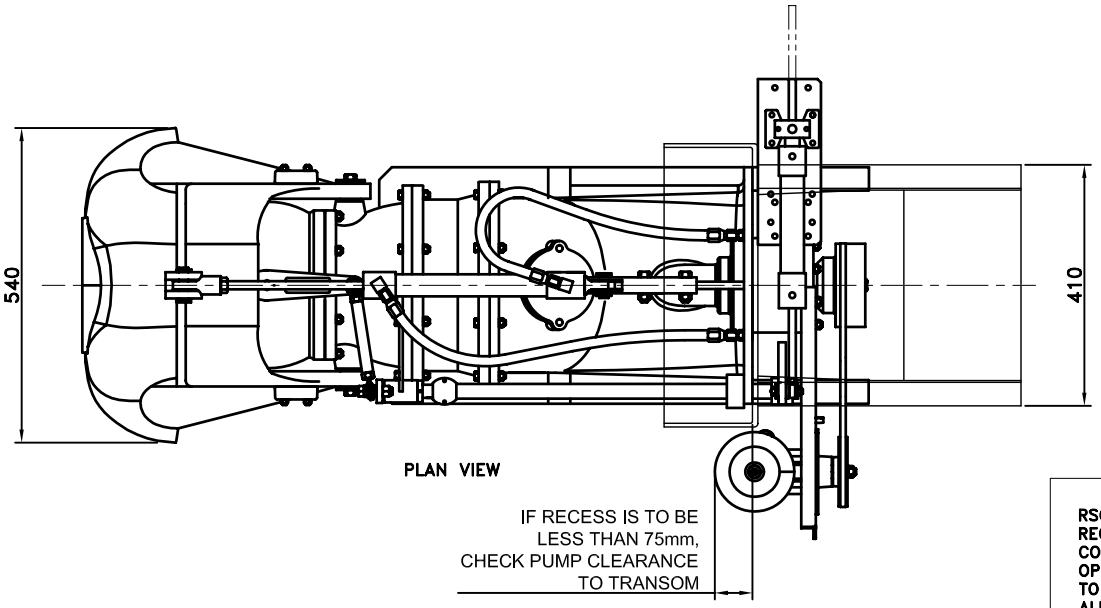
SCALE NONE AS PRINTED

REVISION			
ITEM No.	DESCRIPTION	BY	DATE
A	RSC VALVE NOTE ADDED	PP	1-12-06

NOTE: FRP MOULD INSERT SHOWN

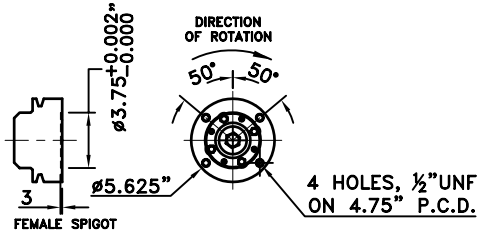
MAX. RECESS = 150mm
MIN. RECESS = 75mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 75mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 150mm. SHOULD A RECESS GREATER THAN 150mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET



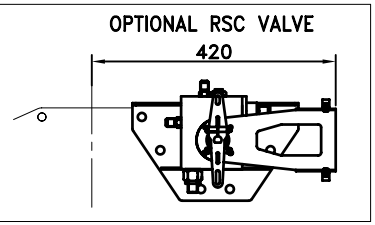
PLAN VIEW

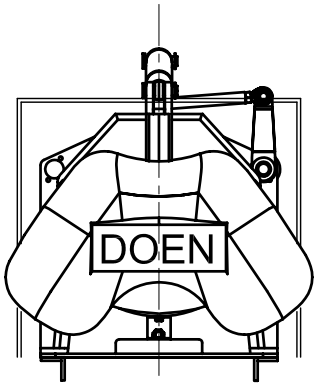
IF RECESS IS TO BE LESS THAN 75mm, CHECK PUMP CLEARANCE TO TRANSOM



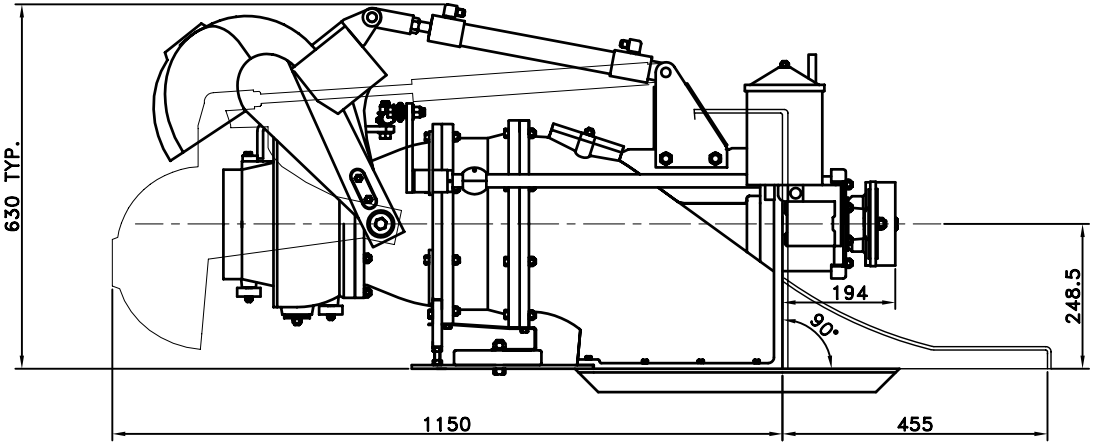
STANDARD COUPLING FLANGE

RSC CONTROL VALVE REQUIRES CABLE CONNECTIONS TO OPERATE. IN ADDITION TO 420mm WIDTH ALLOWANCE FOR CABLE ROUTING IS REQUIRED.

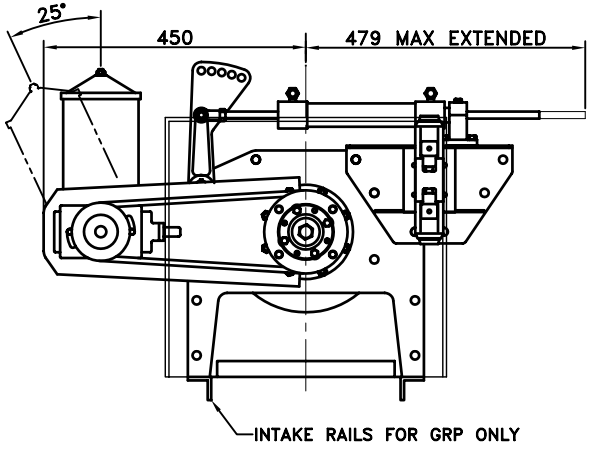




OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

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TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 26-10-05
MODELS DJ105Z

DOEN PACIFIC PTY. LTD.

TITLE
DJ105 ZERO DEGREE GENERAL ARRANGEMENT

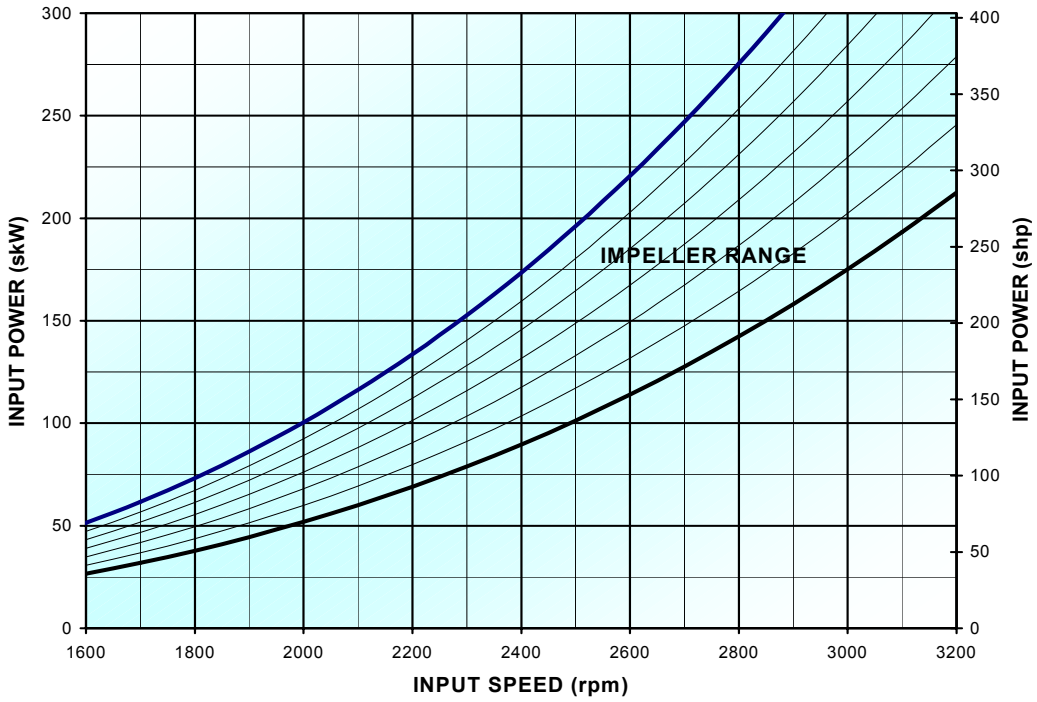
SIZE A3 | DRG. No. DJ105Z 011206

SCALE NONE AS PRINTED

DJ105 PERFORMANCE CURVES

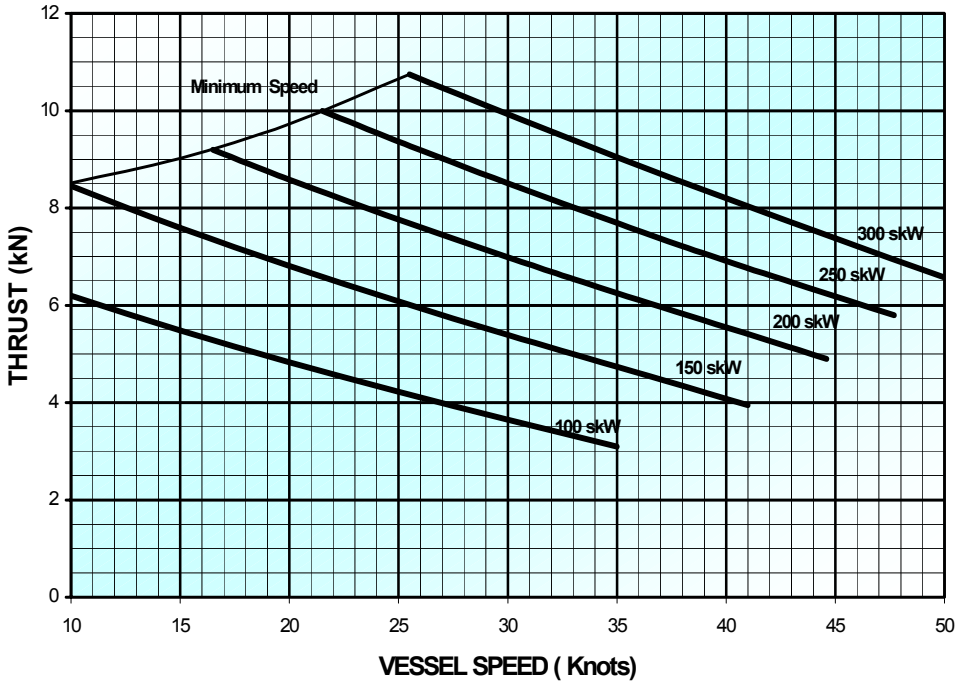
Input Power vs. rpm

Maximum rec. INPUT POWER: 260skW (350shp).
Maximum rec. INPUT SPEED: 3200rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ105 Waterjet

Performance Reliability Simplicity

Case Study 116: **Force Protection Boat**

SPECIFICATIONS

Waterjets:	**DJ105 (Twin)**
Engines:	**Cummins 6BTA 5.9M 315hp @ 2800 rpm**
Gearboxes:	**Twin Disc MG 5075 SC**
Vessel:	**9.8m L.O.A 8.5m L.W.L 8.5 tonne**
Performance:	**33 knots**

SeaArk, Ram series RHIB, for Force Protection Role.

Twin **DOEN DJ105** waterjets propel this aluminium RHIB 9.8m designed and built by SeaArk, in Arkansas USA. This vessel is primarily designed for Force Protection activities, which include harbour and homeland defence, coastal surveillance, and special missions.

Power is provided by twin Cummins 6BTA's 315hp diesel engines, which are coupled to the DOEN waterjets through Twin Disc marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability.

The DOEN DJ105 10.5-inch (267mm) diameter high volume axial flow impeller provides excellent cruise capability and fuel economy with un-compromised top speed under varying load conditions.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using a conventional manual hydraulic steering system with inboard cylinder , which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at both high and low speeds. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ105 waterjets are fitted with DOEN's Jogstick Reverse System (JRS); an electro hydraulic control system that provides non-follow up jog lever control of the waterjets reverse buckets. An analogue indicator is used to show the reverse bucket position. This robust, simple and cost effective system remains very popular with operators in remote and rugged use applications.

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DJ105 Waterjet

Performance Reliability Simplicity

Case Study 129: **Sea Truck**

SPECIFICATIONS

Waterjets:	**DJ105 (Twin)**
Engines:	**Cummins 6BTA 5.9M 315hp @ 2800 rpm**
Gearboxes:	**N/A direct couple**
Vessel:	**12.0m L.O.A 10.3m L.W.L 7 tonne**
Performance:	**30 knots**

More than 150 Sea Truck vessels work the river delta in Indonesia

Twin **DOEN DJ105** waterjets propel these fiberglass and aluminium Sea Truck vessels. With several operators involved in this business, Doen has provided more than 150 ship sets of equipment for this application into this region. These vessels are designed specifically to provide reliable crew and equipment transportation for the oil and gas industry in the shallow river delta regions where low draft is paramount because of the shallow waters and submerged debris that has to be negotiated.

Power is provided by twin Cummins 6BTA 315hp diesel engines, which are directly coupled to the DOEN waterjets. The DOEN DJ105 10.5-inch (267mm) diameter high volume axial flow impeller provides excellent cruise capability and fuel economy with un-compromised top speed under varying load conditions.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using a conventional manual hydraulic steering system with inboard cylinder , which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at both high and low speeds. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ105 waterjets are fitted with DOEN's Jogstick Reverse System (JRS); an electro hydraulic control system that provides non-follow up jog lever control of the waterjets reverse buckets. An analogue indicator is used to show the reverse bucket position. This robust, simple and cost effective system remains very popular with operators in remote locations and heavy-duty applications.

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100 SERIES

MODEL DJ110

- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

DJ110 TECHNICAL SPECIFICATIONS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 300skW (400shp)
Maximum Rec. Power Sprint:	up to 335skW (450shp) (A)
Maximum Rec Impeller speed:	3055rpm
Dry Weight:	175 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	30 kg
Loss of buoyancy	0.005m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	11 inch (280mm)
No of Stages/Configuration:	Single Stage – Axial pump contruction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

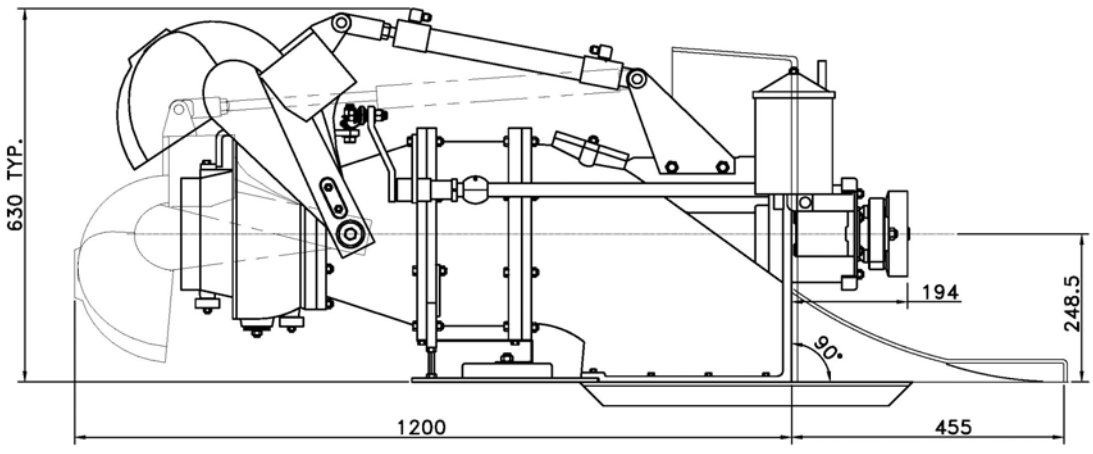
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 Aluminium Alloy

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Angular contact Thrust Bearing
Lubrication	Grease
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	Spicer “1550” Series
Shaft Angle	Available in both 0° (DJ110Z) and 5° (DJ110)

Intake Body:

Material:	Cast ASTM A356 Aluminium Alloy
Inspection Opening:	Outboard
Intake Grate:	Removable Stainless Steel Bars

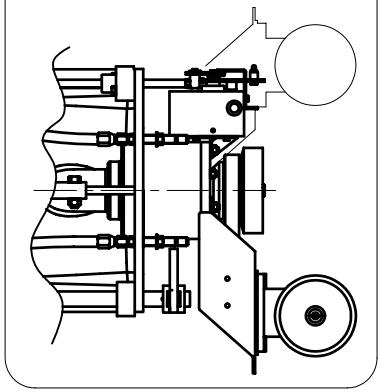


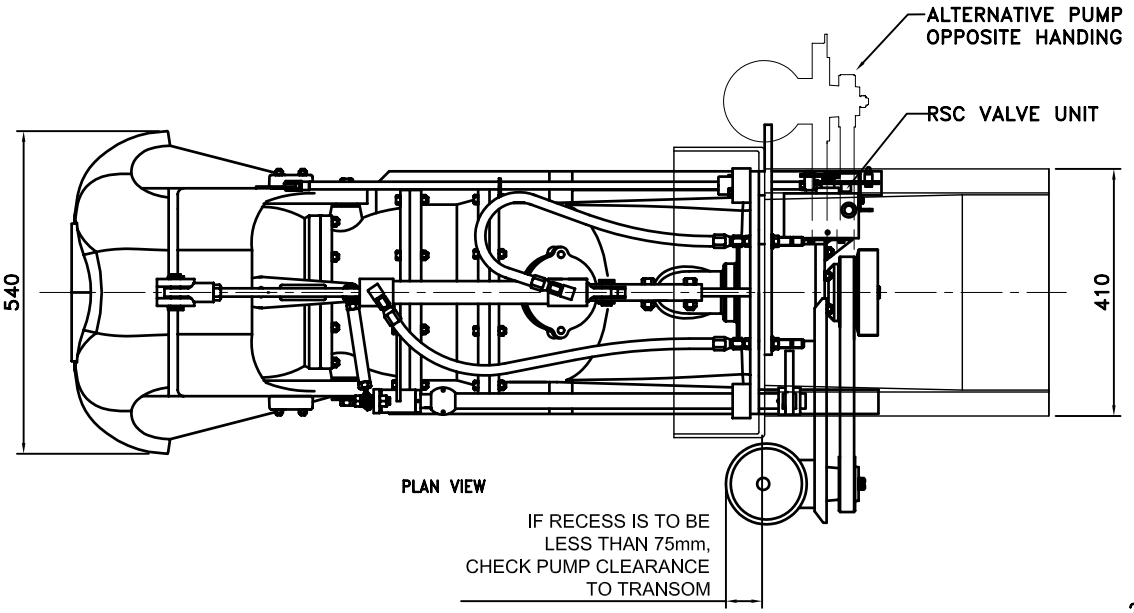
Note (A): Requires application approval by DOEN Pacific
Due to our policy of continuous Research & Development, we reserve the right to change the specifications without notice

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT,
DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

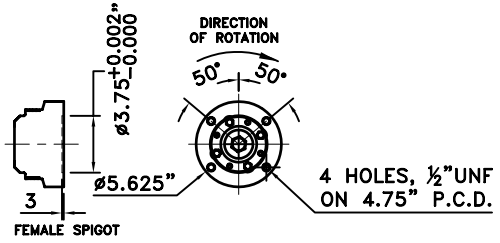
REVISION			
ITEM No.	DESCRIPTION	BY	DATE

OPTIONAL FRONT MOUNTED
PUMP ARRANGEMENT

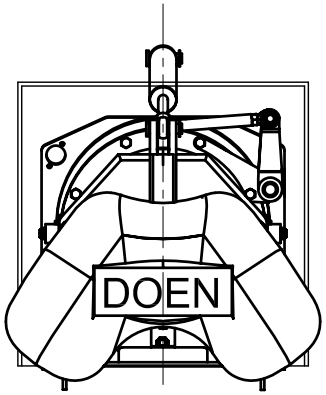




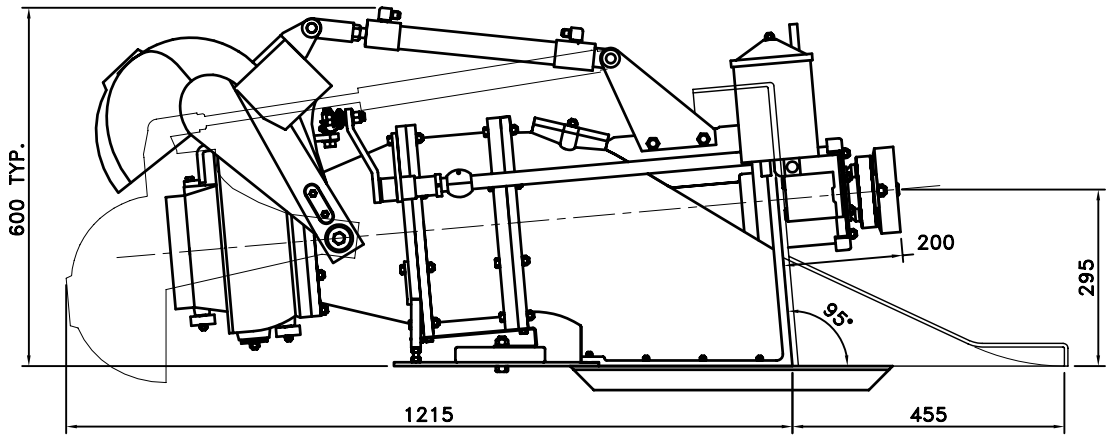
PLAN VIEW



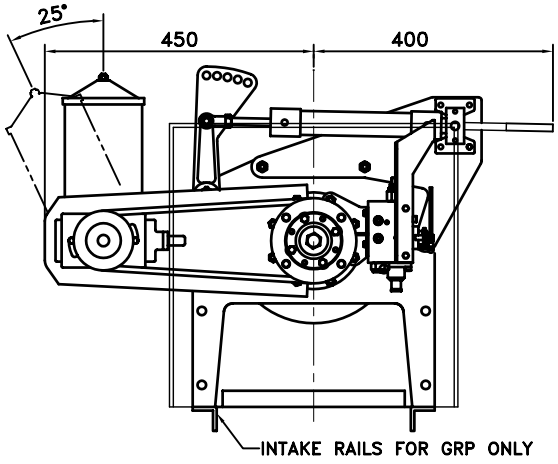
STANDARD COUPLING FLANGE



OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

NOTE: FRP MOULD INSERT SHOWN
MAX. RECESS = 150mm
STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 150mm. SHOULD A RECESS GREATER THAN 150mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET

WITH STANDARD PUMP MOUNT.
MIN. RECESS = 75mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 75mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

WITH OPTIONAL FORWARD PUMP MOUNT
MIN. RECESS = DIRECTLY TO TRANSOM.
PLEASE NOTE THAT TRANSOM MUST BE VERTICAL TO ALLOW THIS OR MOULD INSERT MUST STILL BE USED WITH MINIMUM INSET TO CORRECT FOR ANY TRANSOM ANGLE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5'

MATERIAL

DRAFTING STANDARD AS 1100

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 20-04-2010
MODELS DJ110

DOEN PACIFIC PTY. LTD.

TITLE
DJ110
GENERAL ARRANGEMENT

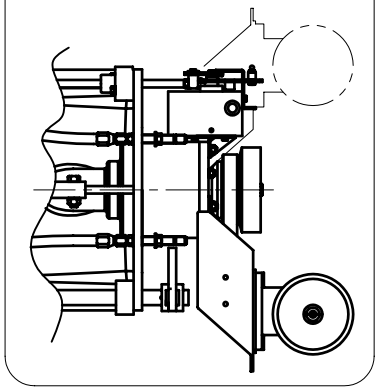
SIZE A3 DRG. No. DJ110 200410

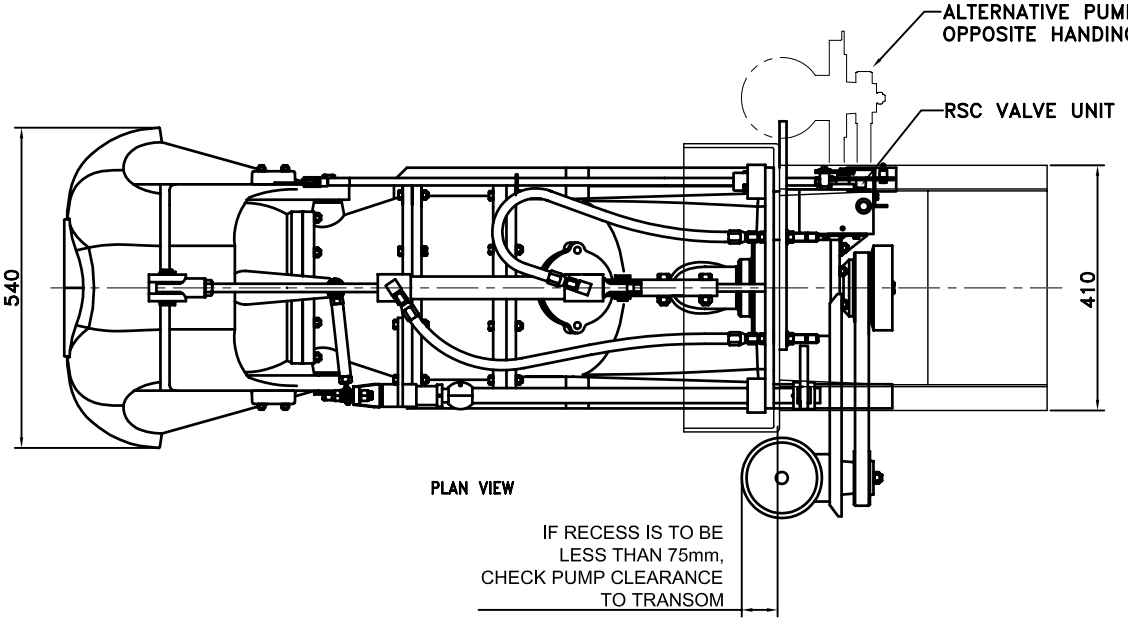
SCALE NONE AS PRINTED

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT,
DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

REVISION			
ITEM No.	DESCRIPTION	BY	DATE

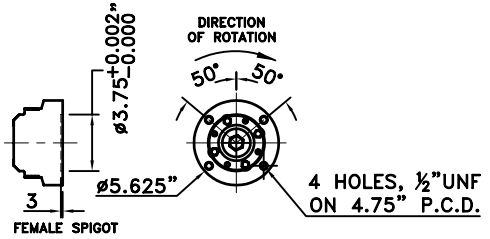
OPTIONAL FRONT MOUNTED PUMP ARRANGEMENT



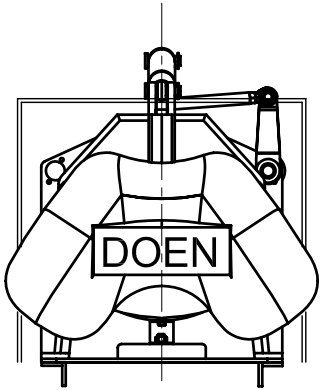


PLAN VIEW

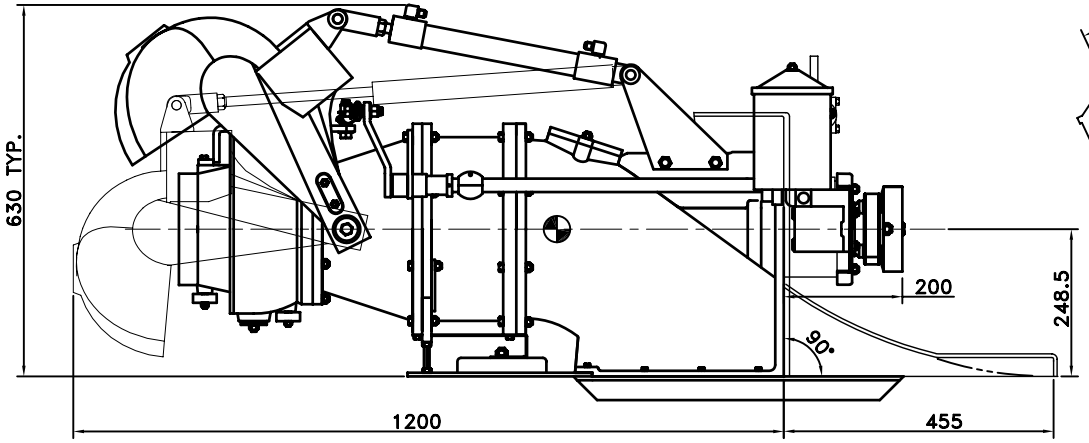
IF RECESS IS TO BE LESS THAN 75mm, CHECK PUMP CLEARANCE TO TRANSOM



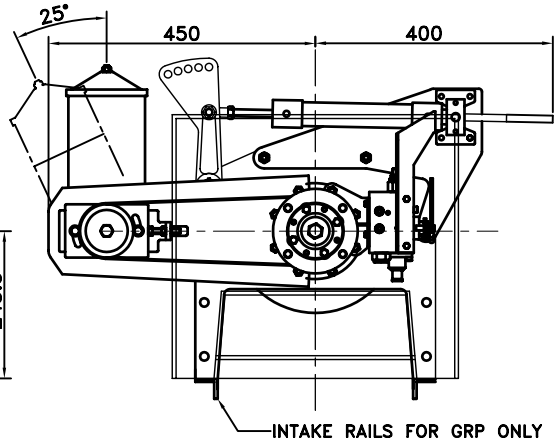
STANDARD COUPLING FLANGE



OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

NOTE: FRP MOULD INSERT SHOWN
MAX. RECESS = 130mm
STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 130mm. SHOULD A RECESS GREATER THAN 130mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET

WITH STANDARD PUMP MOUNT.
MIN. RECESS = 75mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 75mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

WITH OPTIONAL FORWARD PUMP MOUNT
MIN. RECESS = DIRECTLY TO TRANSOM.
PLEASE NOTE THAT TRANSOM MUST BE VERTICAL TO ALLOW THIS OR MOULD INSERT MUST STILL BE USED WITH MINIMUM INSET TO CORRECT FOR ANY TRANSOM ANGLE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES
LINEAR : +/- 0.4
ANGULAR : +/- 0.5'

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN T.UDVARY
CKD
APPD F.UDVARY
ISSUED 21-01-10
MODELS DJ110Z

DOEN PACIFIC PTY. LTD.

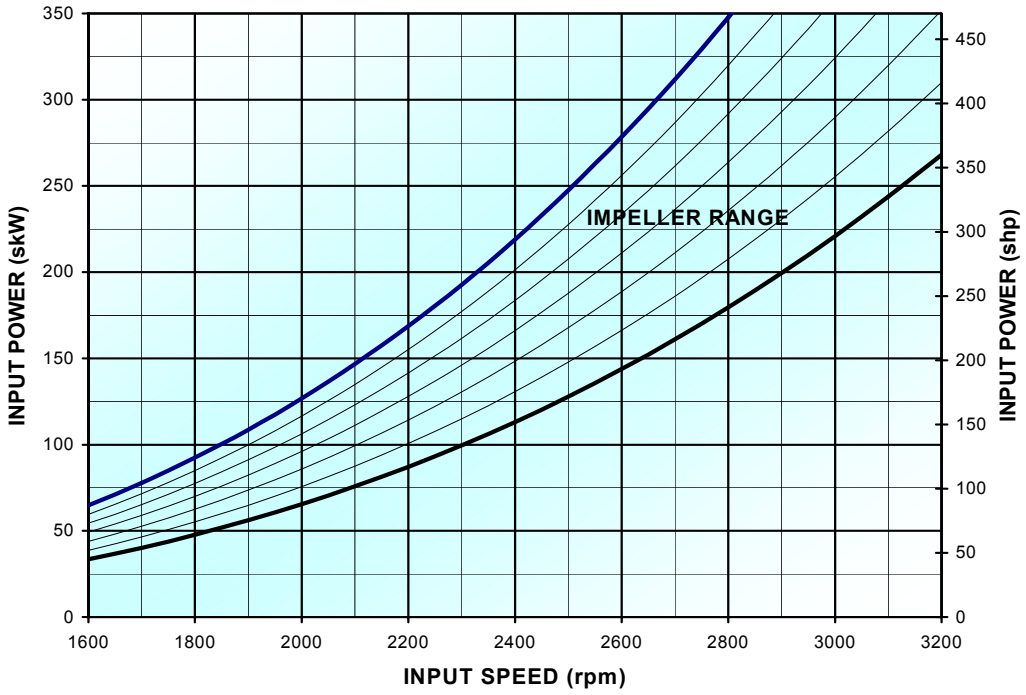
TITLE
DJ110Z -RSC
GENERAL ARRANGEMENT

SIZE A3 | DRG. No. DJ110Z_RSC 2101010
SCALE NONE AS PRINTED

DJ110 PERFORMANCE CURVES

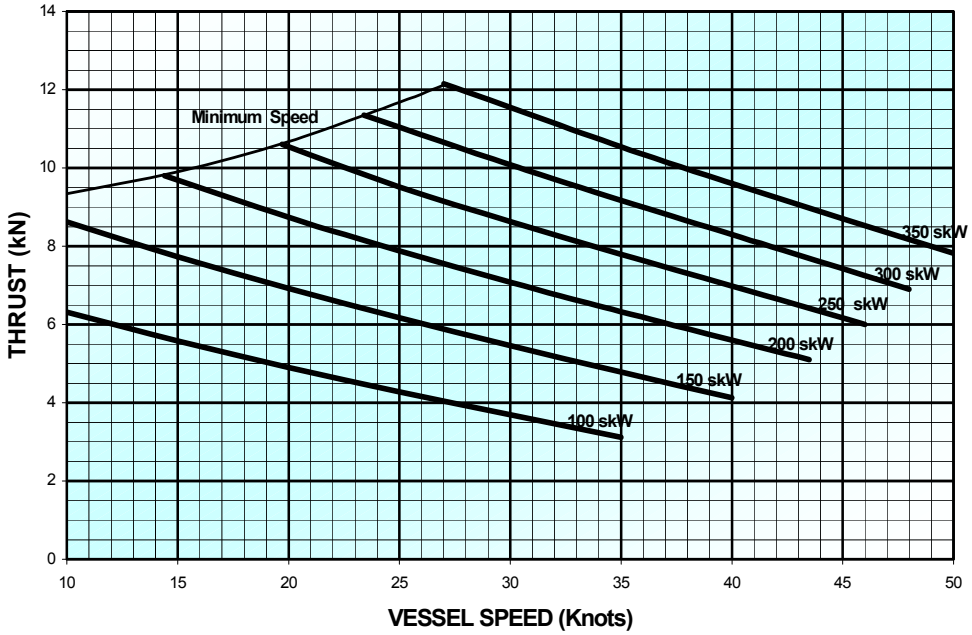
Input Power vs. rpm

Maximum rec. INPUT POWER: 335skW (450shp).
Maximum rec. INPUT SPEED: 3055rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ110 Waterjet

Performance **Reliability** Simplicity

Case Study 119: **Thursday Island Reef Pilot**

SPECIFICATIONS

Waterjets:	**DJ110 (Twin)**
Engines:	**Cummins 6CTA 8.3M 430hp @ 2600 rpm**
Gearboxes:	**N/A direct couple**
Vessel:	**12.6m L.O.A 10.2m L.W.L. 9.2 tonnes**
Performance:	**35 knots**

Launched in 1998, this pilot vessel is still going strong on her second set of engines

Launched in 1998 this aluminium RHIB 12.6m pilot vessel, propelled by twin **DOEN DJ110** waterjets, operates in the warm tropical waters around Thursday Island off the far North Australian coast. During this time it has logged more than 15,000 hours and has provided exceptional reliability at all times.

Originally launched with Volvo 420hp diesels these engines were subsequently replaced by twin Cummins 6CTA 8.3M 430hp diesels after many years of hard work. The current engines are direct coupled to the DOEN DJ110 11.0-inch (279.5mm) diameter high volume axial flow impellers. The waterjet units provides excellent cruise capability and fuel economy with un-compromised top speed under arduous sea and varying load conditions; all of which are extremely important for a pilot vessel.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using a conventional manual hydraulic steering system with inboard cylinder , which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at all speeds and especially when maneuvering alongside a moving ship for pilot transfer. both high and low speeds. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ110 waterjets are fitted with DOEN's Jogstick Reverse System (JRS); an electro hydraulic control system that provides non-follow up jog lever control of the waterjets reverse buckets. An analogue indicator is used to show the reverse bucket position. This robust, simple and cost effective system remains very popular with operators in remote and rugged use applications.

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Victoria, Australia

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DJ110 Waterjet

Performance **Reliability** Simplicity

Case Study 120: **U.S. Navy RIB Tender**

SPECIFICATIONS

Waterjets:	**DJ110Z (Twin)**
Engines:	**Cummins QSB-380 380hp @ 3000 rpm**
Gearboxes:	**Twin Disc MG5075**
Vessel:	**11.0m L.O.A 10.0m L.W.L 8.5 tonne**
Performance:	**36 knots**

11m Standard Navy R.I.B.

Twin **DOEN DJ110** waterjets propel this 11.0m aluminium RHIB. Since 2003 more than sixty units of this ongoing US Navy spec. vessel have been built by both Willard Marine and Zodiac Hurricane to U.S. Navy Standards. This version of the 11m Standard Navy RIB makes a comfortable and fast patrol boat providing protection for the crew during long patrols.

The DOEN DJ110Z 11.0-inch (279.5mm) diameter high volume axial flow impeller provides excellent cruise capability and fuel economy with un-compromised top speed under varying load conditions

Power is provided by twin Cummins QSB 380hp diesel engines, which are coupled to the DOEN waterjets through Twin Disc marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using a conventional manual hydraulic steering system with inboard cylinder , which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at both high and low speeds. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ110 waterjets are fitted with DOEN's Jogstick Reverse System (JRS); an electro hydraulic control system that provides non-follow up jog lever control of the waterjets reverse buckets. An analogue indicator is used to show the reverse bucket position. This robust, simple and cost effective system remains very popular with operators in remote and rugged use applications.

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100 SERIES

MODEL DJ120

- Product Bulletin
- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

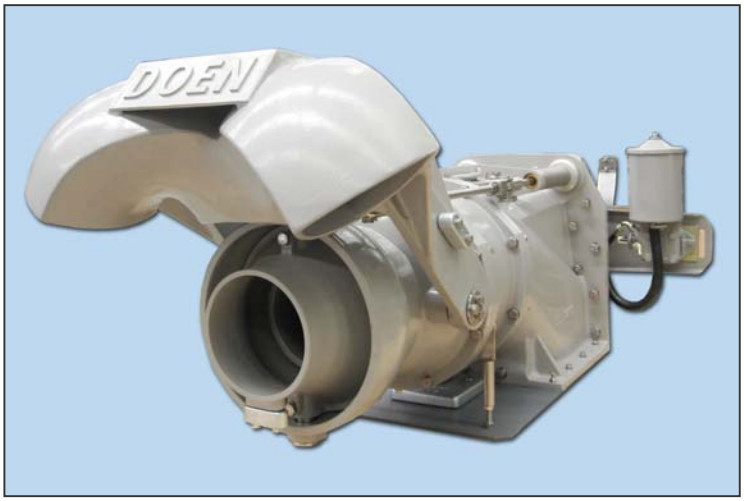
DJ120 Waterjet

Performance Reliability Simplicity

Product Bulletin

SPECIFICATIONS

Horsepower:	**Up to:**	**510hp cont.** **600hp sprint**
Vessel Size:	**Single:**	**23-30’ (7-9m)**
	Twin:	**30-43’ (9-13m)**
Vessel AUW:	**Single:**	**6t (13,200lbs)**
	Twin:	**12t (26,400lbs)**



- The DJ120 transom mount 12.2inch (310mm) waterjet meets Doen’s key design criteria of high performance, reliability and simplicity of construction and maintenance
- This compact and efficient axial flow waterjet delivers superior performance at speeds up to 45+ knots with impeller options to provide enhanced low speed and high bollard pull operation
- Construction comprises Stainless Steel and heavy-duty powdercoated Aluminum components protected with an anode anti-corrosion system. The transom mounting and very low profile of the waterjet ensure minimal intrusion into valuable onboard space
- Modular construction has allowed the DJ120 to be extremely robust, lightweight, compact and simple to maintain and repair. The heavy-duty main shaft and bearings assist in providing long life and trouble-free operation
- Fully integrated hydraulic system with in built cooling, steering and reverse cylinders bulkhead mounted and all connections inboard and protected from corrosion
- Hydraulic rotary servo control (RSC) gives proportional, position sensing, control of the reversing bucket via a standard 3” (75mm) stroke Morse 33C cable
- Optional inboard inspection hatch for vessels operating in waters with dangerous marine life

For the ultimate in docking control and low speed maneuvering the DJ120 can be fitted with Doen’s eDOCK joystick control. This system can also be interfaced with electronic vessel controls such as autopilots and dynamic positioning systems

eDOCK joystick control

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www.doen.com

DJ120 TECHNICAL SPECIFICATIONS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 380skW (510shp)
Maximum Rec. Power Sprint:	up to 447skW (600shp) (A)
Maximum Rec Impeller speed:	2800rpm
Dry Weight:	225 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	45 kg
Loss of buoyancy	0.006m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	12.2 inch (310mm)
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

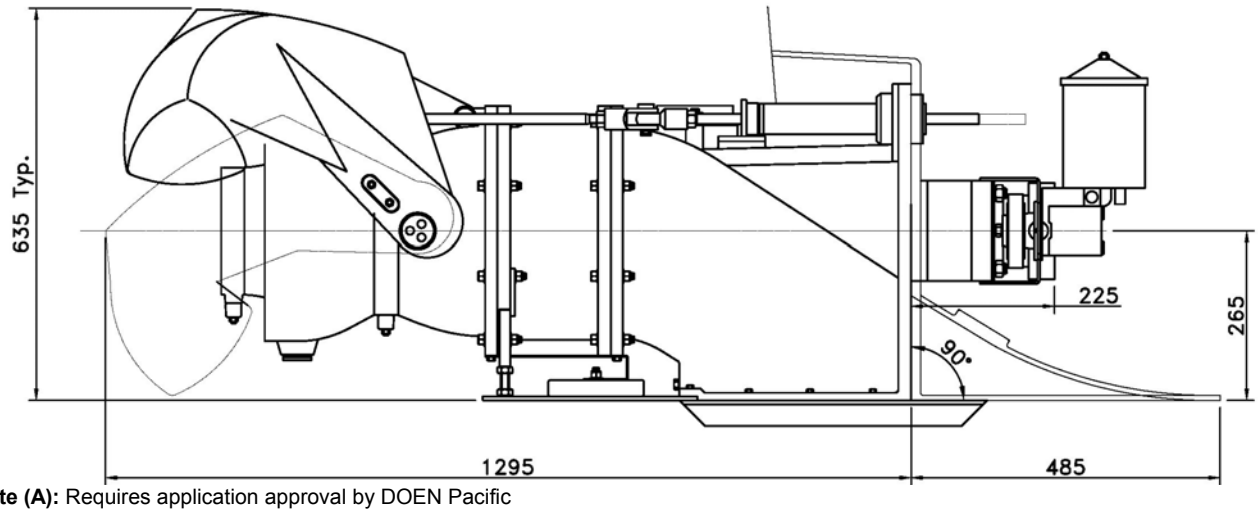
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 Aluminium Alloy

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Angular contact Thrust Bearing
Lubrication	Grease
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	SAE Ø150 – 8Holes
Shaft Angle	0^{o}

Intake Body:

Material:	Cast ASTM A356 Aluminium Alloy
Inspection Opening:	Outboard
Intake Grate:	Removable , Bar type



Note (A): Requires application approval by DOEN Pacific

Due to our policy of continuous Research & Development, we reserve the right to change the specifications without notice

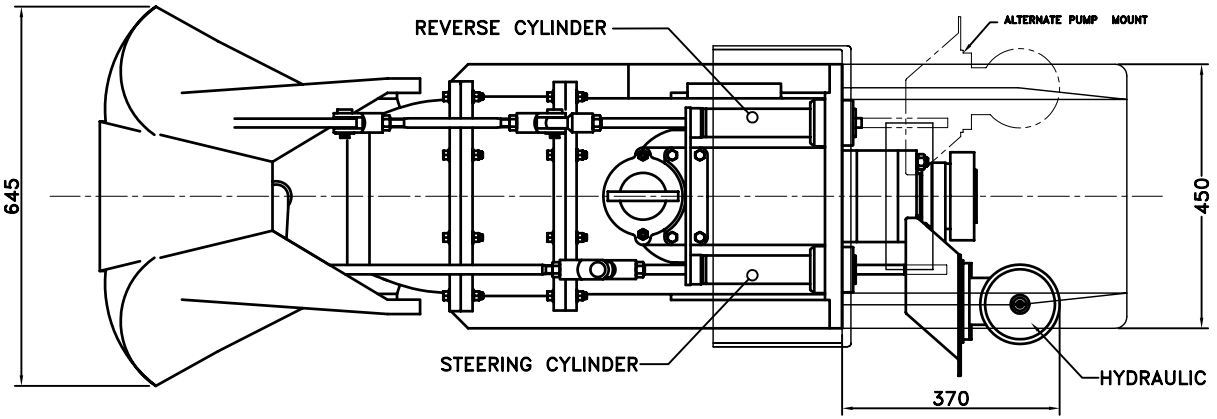
REVISION			
ITEM No.	DESCRIPTION	BY	DATE

NOTE: FRP MOULD INSERT SHOWN

MAX. RECESS = 220mm

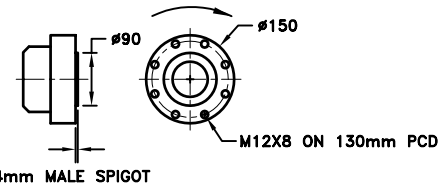
STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 220mm. SHOULD A RECESS GREATER THAN 220mm BE REQUIRED THE MOULD INSERT LENGTH WILL NEED TO BE INCREASED.

WARNING! ACCESS TO THE INSPECTION OPENING PORT WILL BE RESTRICTED IF THE RECESS IS GREATER THAN 220mm.

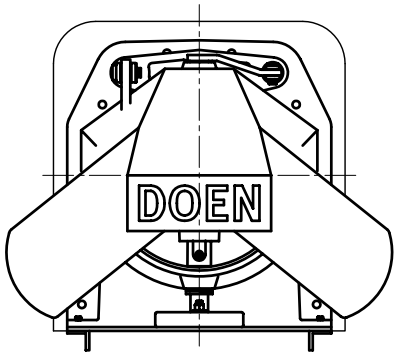


PLAN VIEW

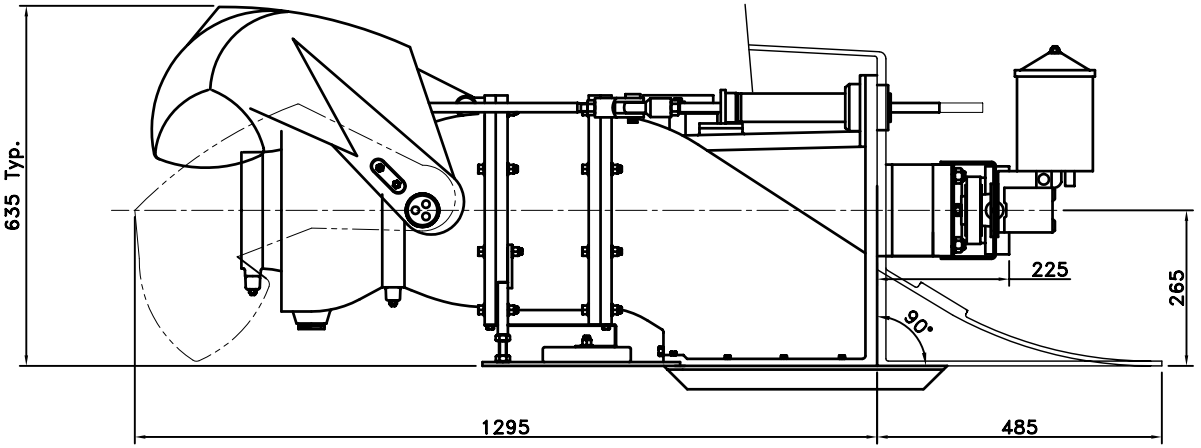
DIRECTION OF ROTATION



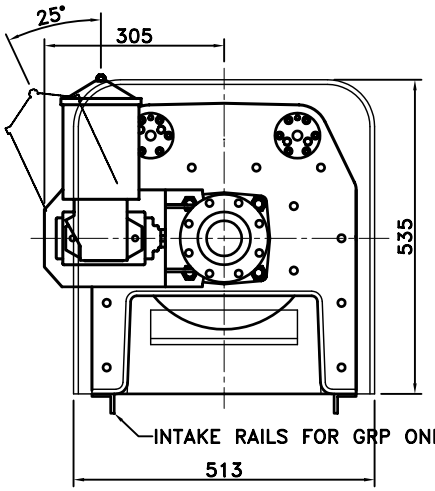
STANDARD COUPLING FLANGE



OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT, DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN T.UDVARY
CKD T.UDVARY
APPD T.UDVARY
ISSUED 28-02-2008
MODELS DJ120Z

DOEN PACIFIC PTY. LTD.

TITLE
DJ120Z
GENERAL ARRANGEMENT

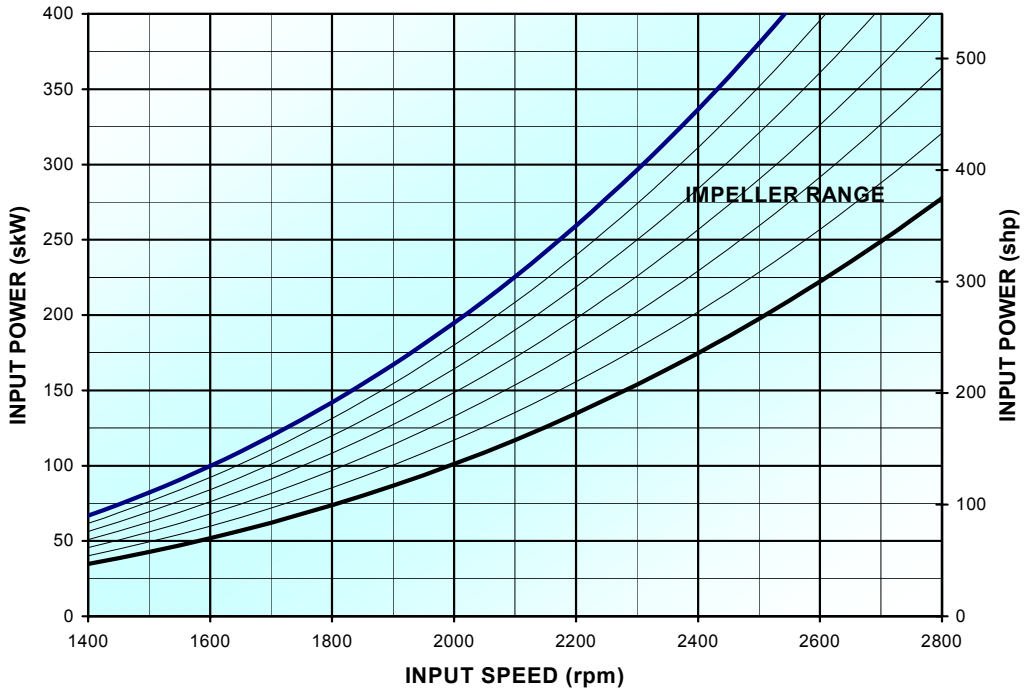
SIZE A3 | DRG. No. DJ120Z 280208

SCALE NONE AS PRINTED

DJ120 PERFORMANCE CURVES

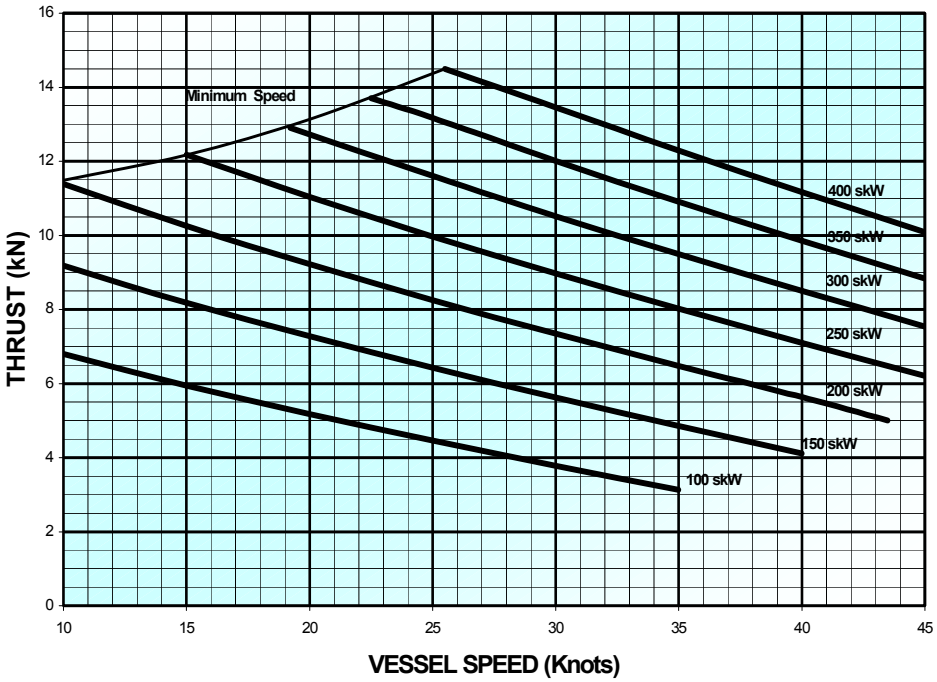
Input Power vs. rpm

Maximum rec. INPUT POWER: 380skW (510shp).
Maximum rec. INPUT SPEED: 2800rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ120 Waterjet

Performance Reliability Simplicity

Case Study 128: **Hel-a-va Jet – Thrill Ride Boat**

SPECIFICATIONS

Waterjets:	**DJ120Z (Twin)**
Engines:	**Yanmar 6LY3AM-STP 337hp @ 3100rpm**
Gearboxes:	**ZF280-1**
Vessel:	**10.1m L.O.A 9.0m L.W.L 5.6tonne**
Performance:	**45 knots**

Third in a series of hard working thrill ride boats from Australia's Calibre Marine

The brief for this boat was full-throttle hard-turning operation, 7 days a week all year round, up to 45 knot performance with 12 passengers, Captain and a full load of fuel. This boat gets put through a series of full throttle, hard turning, spin and crash stop maneuvers during every one of the many 20 minute rides it takes passengers on every day.

A pair of Doen DJ120 jets, coupled via ZF transmissions, to Yanmar 337hp engines are ideally suited to the task. The 310mm diameter, high volume axial flow impellers, providing the immediate high thrust that is needed even under extreme acceleration, white water and hard cornering conditions.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force allowing simple light duty steering system to be used. An electric power steering system is used to provide small turn ratio's with little effort. The heart of the package is the microprocessor controlled pump unit which senses loads and instantly delivers flow and pressure when loads are applied, reverting to minimum current draw when no load is sensed. This provides the vessel with precise control for the quick and aggressive maneuvers that this boat has to perform many times in daily operations

The DJ120 waterjets are fitted with DOEN's Rotary Servo Control (RSC), which is an proportional hydraulic control system providing simple and exact follow up control of the waterjets reverse buckets, by conventional lever. This system has fully integrated hydraulics with in built cooling; bulkhead mounted steering and reverse cylinders and all connections inboard and protected from corrosion. This system interfaces with the standard Yanmar engine control system providing a simple single lever throttle and reverse bucket control.

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Victoria, Australia

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Email: inquiries@doen.com

DJ120 Waterjet

Performance Reliability Simplicity

Case Study 131: **Eco Tourisism Vessel**

SPECIFICATIONS

Waterjets:	**DJ120Z (single)**
Engines:	**Yanmar 6LY3AM-UTP 380hp @ 3100rpm**
Gearboxes:	**ZF280-1**
Vessel:	**9.0m L.O.A 8.0m L.W.L 4.8 tonne**
Performance:	**36 knots**

Another hard working tourism boat from Australia's Calibre Marine

This aluminium 9.0m monohull, propelled by a single **DOEN DJ120** waterjet, is the first of a new and innovative vessel design to take passengers on day and night time rides through spectacular eco-sensitive areas. Built by Calibre Marine in South Australia, the vessel was designed specifically to transport up to 12 paying passengers quickly and efficiently across open water to the tourist area. Then, using its shallow draft capability navigate and maneuver through the eco-sensitive shallow mangrove areas.

A DOEN DJ120 jet, coupled via ZF transmissions, to the Yanmar 380hp engine is ideally suited to the task. The 310mm diameter, high volume axial flow impellers, provides this vessel with a 36knot top speed and cruise efficient cruise capability at full load. The high volume pump ensures full control and excellent maneuverability even at low engine idle when exploring shallow waters.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force allowing simple light duty steering system to be used. An electric power steering system is used to provide small turn ratio's with little effort. The heart of the package is the microprocessor controlled pump unit which senses loads and instantly delivers flow and pressure when loads are applied, reverting to minimum current draw when no load is sensed. This provides the vessel with precise control for the quick and aggressive maneuvers that this boat has to perform many times in daily operations

The DJ120 waterjet is fitted with DOEN's Rotary Servo Control (RSC), which is an proportional hydraulic control system providing simple and exact follow up control of the waterjets reverse buckets, by conventional lever. This system has fully integrated hydraulics with in built cooling; bulkhead mounted steering and reverse cylinders and all connections inboard and protected from corrosion. This system interfaces with the standard Yanmar engine control system providing a simple single lever throttle and reverse bucket control.

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100 SERIES

DOEN WATER JETS

MODEL DJ130

- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

DJ130 TECHNICAL SPECIFICATIONS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 410skW (550shp)
Maximum Rec. Power Sprint:	up to 450skW (600shp) (A)
Maximum Rec Impeller speed:	2585rpm
Dry Weight:	295 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	65 kg
Loss of buoyancy	0.015m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	13 inch (330mm)
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

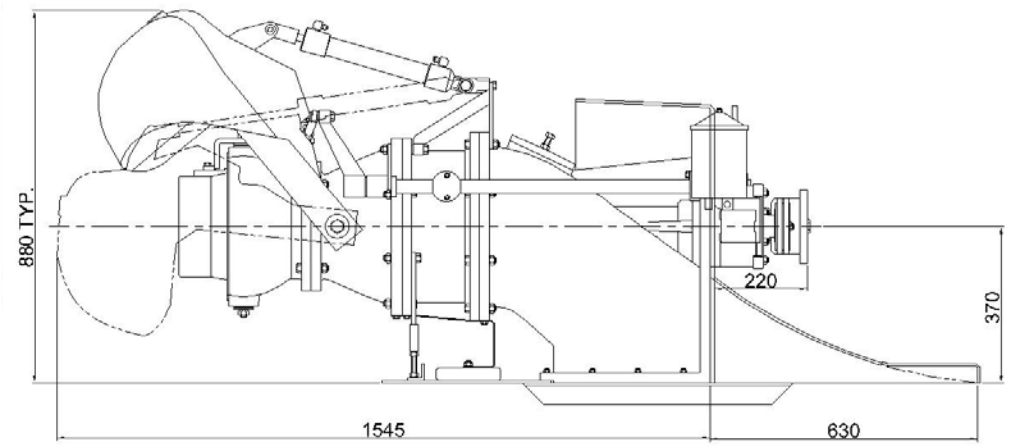
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 Aluminium Alloy

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Angular contact Thrust Bearing
Lubrication	Grease
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	Spicer “1600” Series
Shaft Angle	Available in both 0^O (DJ130Z) and 5^O (DJ130)

Intake Body:

Material:	Cast ASTM A356 Aluminium Alloy
Inspection Opening:	Outboard
Intake Grate:	Removable Stainless Steel Bars



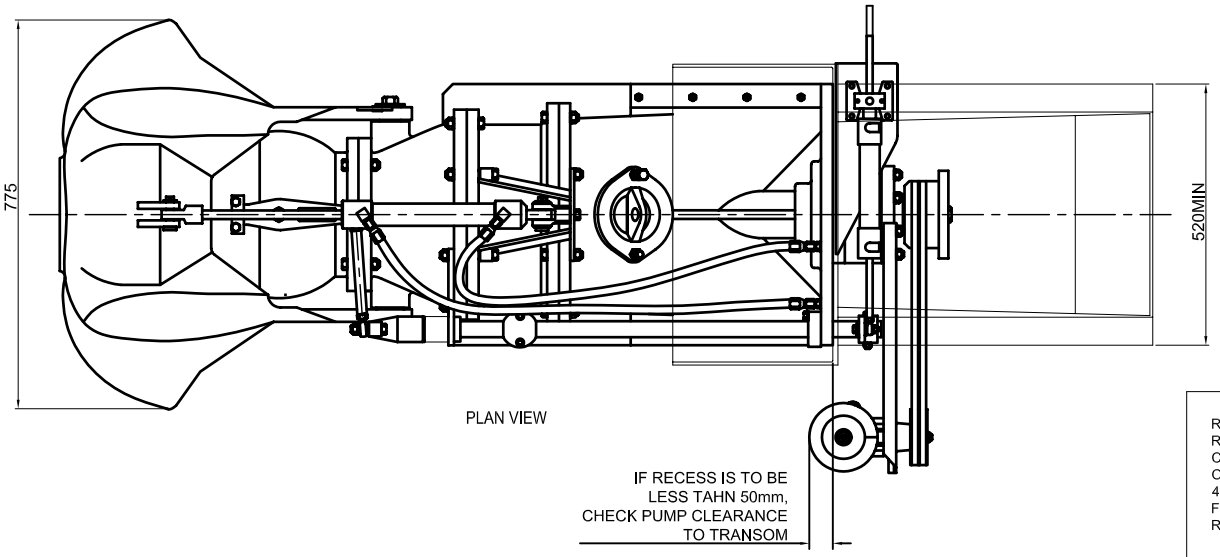
Note (A): Requires application approval by DOEN Pacific
Due to our policy of continuous Research & Development, we reserve the right to change the specifications without notice

REVISION			
ITEM No.	DESCRIPTION	BY	DATE

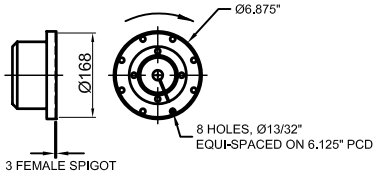
NOTE: FRP MOULD INSERT SHOWN

MAX. RECESS = 320mm
MIN. RECESS = 50mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 50mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 320mm. SHOULD A RECESS GREATER THAN 320mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET



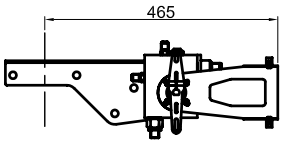
PLAN VIEW

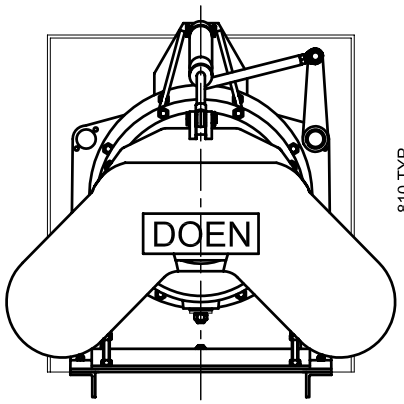


STANDARD COUPLING FLANGE

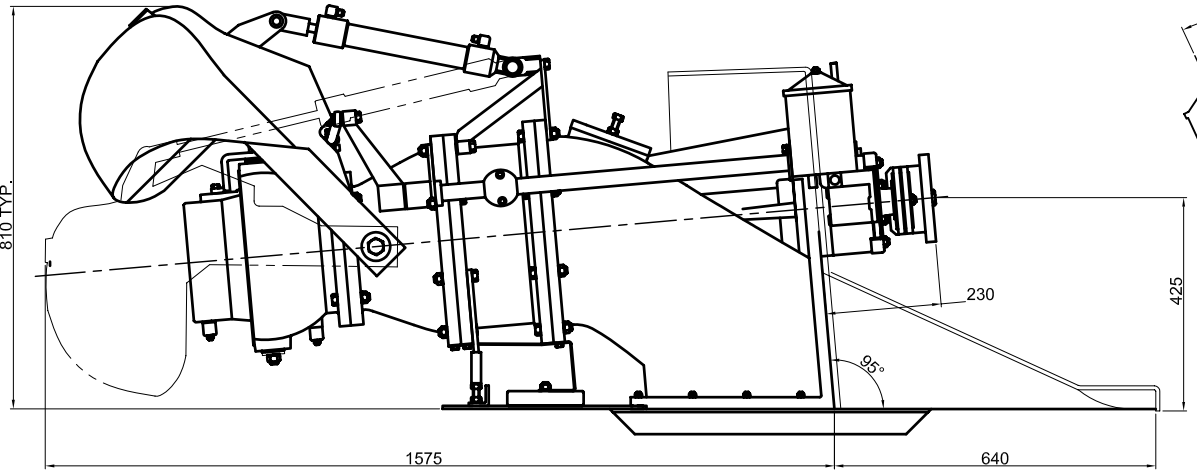
RSC CONTROL VALVE REQUIRES CABLE CONNECTIONS TO OPERATE. IN ADDITION TO 465mm WIDTH ALLOWANCE FOR CABLE ROUTING IS REQUIRED.

OPTIONAL RSC VALVE

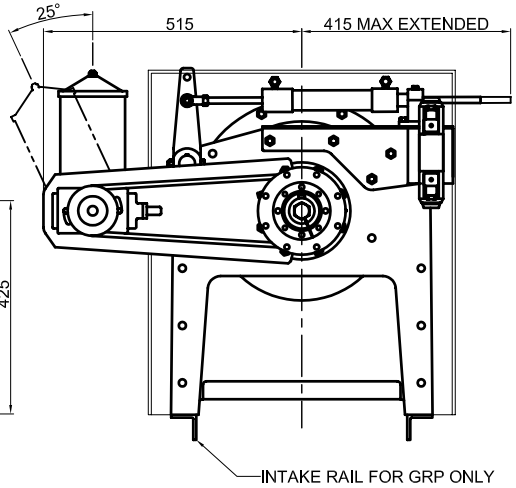




OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT, DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 25-11-05
MODELS DJ130

DOEN PACIFIC PTY. LTD.

TITLE
DJ130 - FIVE DEGREE GENERAL ARRANGEMENT

SIZE A3 | DRG. No. DJ130 311006

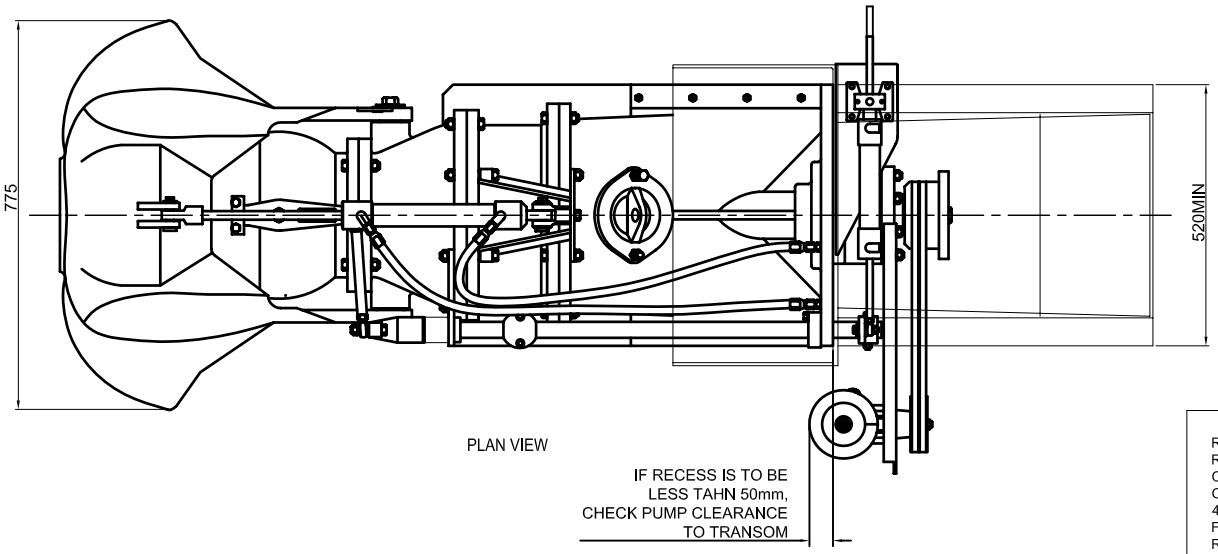
SCALE NONE AS PRINTED

REVISION			
ITEM No.	DESCRIPTION	BY	DATE

NOTE: FRP MOULD INSERT SHOWN

MAX. RECESS = 320mm
MIN. RECESS = 50mm+TRANSOM THICKNESS
PLEASE NOTE THAT A MINIMUM "RECESS" OF 50mm IS REQUIRED, AS MEASURED INTERNALLY SO THAT PUMP HOSES ETC. HAVE SUFFICIENT CLEARANCE.

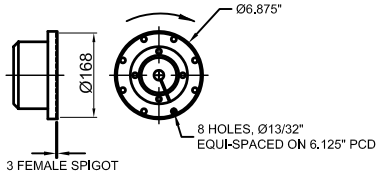
STANDARD MOULD INSERT PROVIDES FOR A MAXIMUM RECESS OF 320mm. SHOULD A RECESS GREATER THAN 320mm BE REQUIRED THE MOULD INSERT HEIGHT WILL NEED TO BE INCREASED TO CLEAR THE REVERSE RAM'S FWD BRACKET



PLAN VIEW

IF RECESS IS TO BE LESS TAHN 50mm, CHECK PUMP CLEARANCE TO TRANSOM

DIRECTION OF ROTATION



STANDARD COUPLING FLANGE

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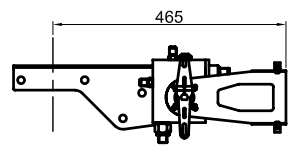
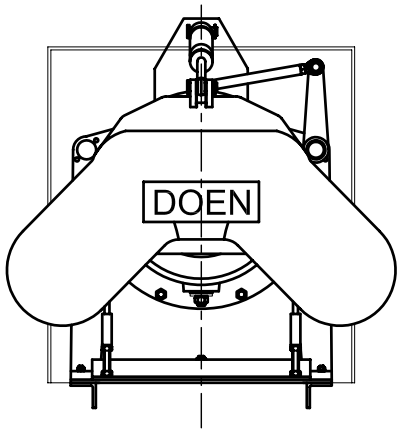
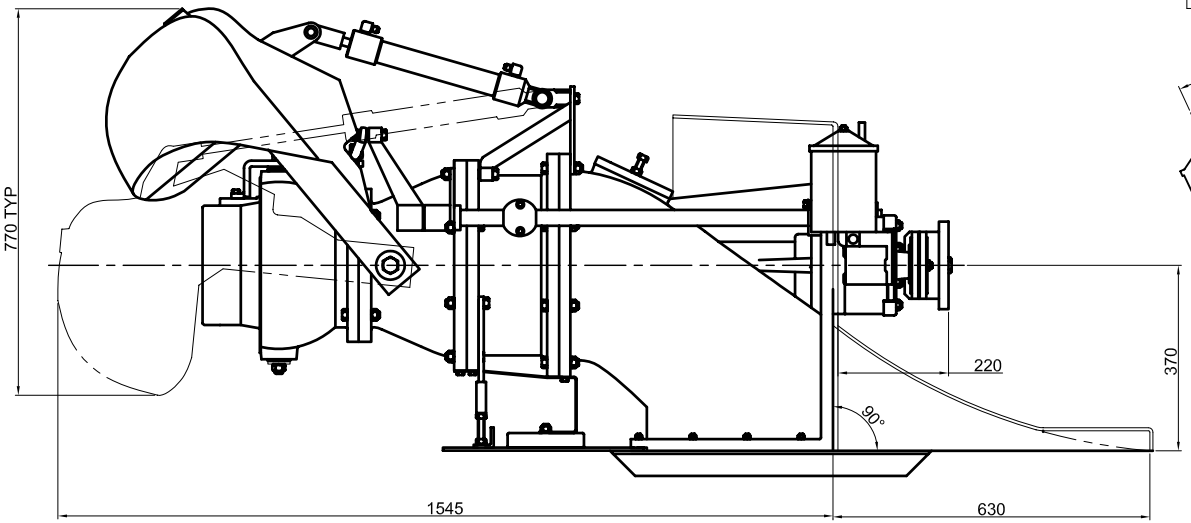
OPTIONAL RSC VALVE

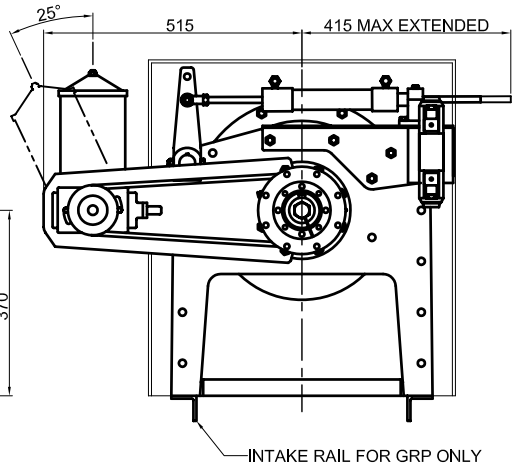




OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

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UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 15-03-06
MODELS DJ130Z

DOEN PACIFIC PTY. LTD.

TITLE DJ130 - ZERO DEGREE GENERAL ARRANGEMENT

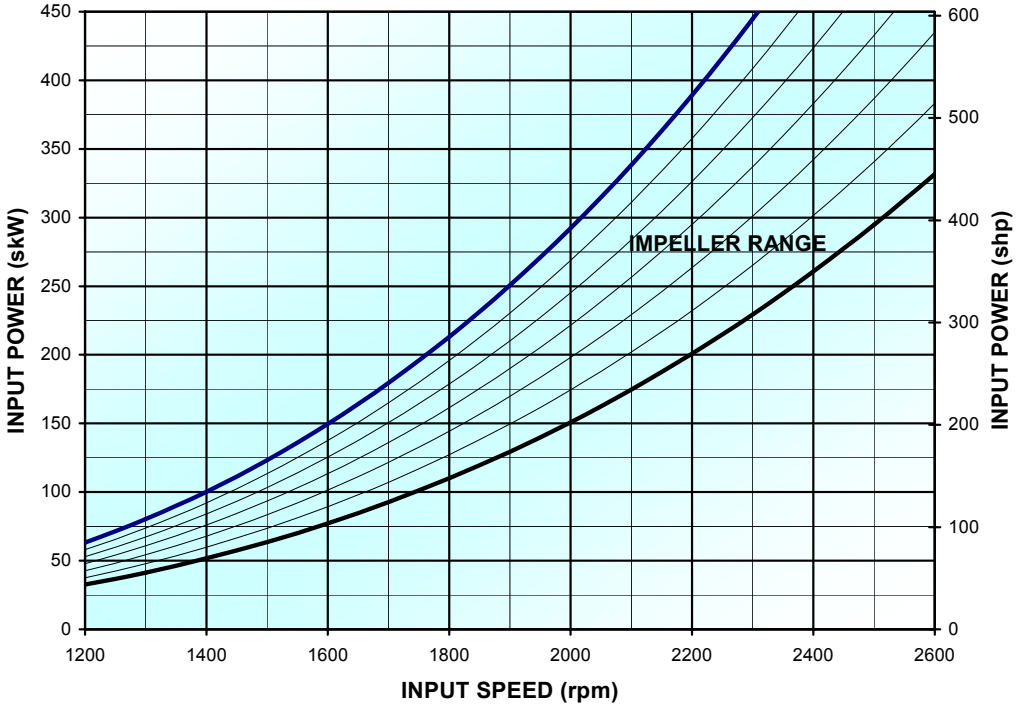
SIZE A3 | DRG. No. DJ130Z 311006

SCALE NONE AS PRINTED

DJ130 PERFORMANCE CURVES

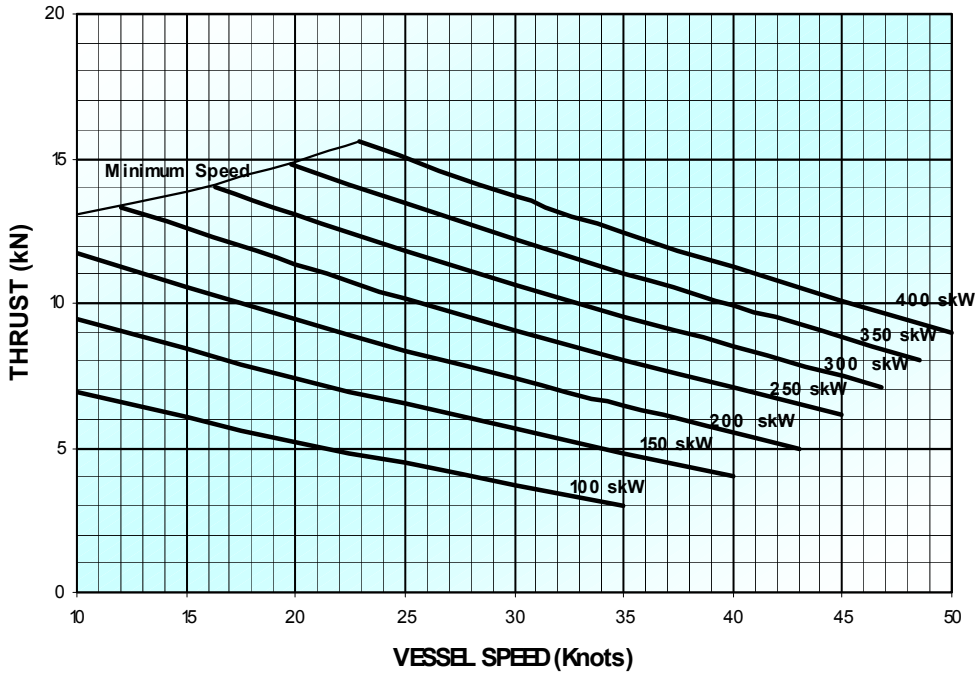
Input Power vs. rpm

Maximum rec. INPUT POWER: 225skW (300shp).
Maximum rec. INPUT SPEED: 3600rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ130 Waterjet

Performance **Reliability** Simplicity

Case Study 104: **Johor Port Pilot Boat**

SPECIFICATIONS

Waterjets:	**DJ130 (Twin)**
Engines:	**Cummins 6BTM3** **315hp @ 2800 rpm**
Gearboxes:	**ZF 220**
Vessel:	**12.4m L.O.A** **11.2m L.W.L** **9.8 tonne**
Performance:	**30 knots**

A fast and reliable workhorse operating in Malaysian waters

Launched in 2002 this 12.4m pilot vessel, propelled by twin **DOEN DJ130** waterjets, operates in the waters of Malaysia. This boat commonly works more than 12 hours per day, and has been operating continuously with only minimal maintenance required.

Power is provided by twin Cummins 6BTM3, 315hp diesels coupled to DOEN waterjets through ZF marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability. The DOEN DJ130, 13.0-inch (330mm) diameter high volume axial flow impellers provide excellent cruise capability and fuel economy with un-compromised top speed under arduous sea and varying load conditions; all of which are extremely important for a pilot vessel.

The DOEN balanced steering nozzle gives fast and precise response. These are controlled using a conventional helm power assisted hydraulic steering system. Inboard cylinders are mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at all speeds and especially when maneuvering alongside a moving ship for pilot transfer. both high and low speeds. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ130 waterjets are fitted with DOEN's Jogstick Reverse System (JRS); an electro hydraulic control system that provides non-follow up jog lever control of the waterjets reverse buckets. An analogue indicator is used to show the reverse bucket position. This robust, simple and cost effective system remains very popular with operators in remote and rugged use applications.

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DJ130 Waterjet

Performance **Reliability** Simplicity

Case Study 114: **Utility Response Boat**

SPECIFICATIONS

Waterjet:	**DJ130 (Single)**
Engine:	**Caterpillar 3126** **400hp @ 2800 rpm**
Gearbox:	**Twin Disc MG5075 SC**
Vessel:	**9.14m L.O.A** **8.22m L.W.L** **7 tonne**
Performance:	**27 knots**

A tough, high speed response boat for Police use.

A **DOEN DJ130** waterjet propels this aluminium RHIB 9.14m designed and built by SeaArk, in Arkansas USA. This vessel was built for use by the Security Police whose activities include harbour patrol, homeland defence and surveillance activities.

The DOEN DJ130, 13.0-inch (330mm) diameter high volume axial flow impeller provides this vessel with an excellent cruise performance; allowing long range patrols at reduced fuel consumption with high top speed capability under all load conditions. Additionally the large diameter pumps ensures high thrust at low speed and high bollard pull which is essential for this vessels towing capability.

Power is provided by a single CAT 3126 coupled to the DOEN waterjet through a Twin Disc marine transmission. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability.

The DOEN balanced steering nozzle gives fast, precise response with minimal input force. This is simply controlled using a conventional manual hydraulic steering system with inboard cylinder , which is mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptionally easy control at both high and low speeds.

The DJ130 waterjet is fitted with an electronic control system. This fully electronic control provides single lever function which combines control of the engine throttle and waterjet reverse bucket into one simple and reliable system. The reverse function provides full follow up control of the reverse bucket by way of the jet mounted hydraulic system incorporating a proportional solenoid valve. Control of the marine transmission is by way of separate, simple to use, touch pad.

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100 SERIES

DOEN WATER JETS

MODEL DJ140HP

- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

DJ140HP TECHNICAL SPECIFICATIONS

DOEN WATER JETS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 560skW (750shp)
Maximum Rec. Power Sprint:	up to 670skW (900shp) (A)
Maximum Rec Impeller speed:	2250rpm
Dry Weight:	430 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	95 kg
Loss of buoyancy	0.105m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	380mm
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

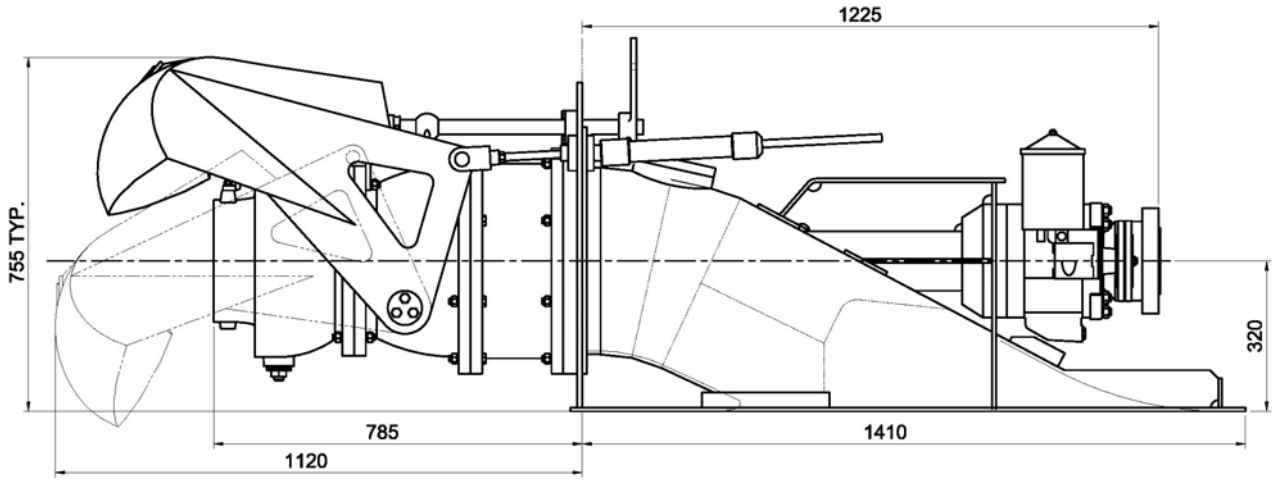
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic with twin hydraulic cylinder actuation
Reverse duct material	Cast ASTM A356 & 5083 grade plate Aluminium

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearings:	Spherical roller Thrust Bearing Spherical roller Radial Bearing
Lubrication	Oil lubrication
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	GWB (DIN) Series to suit application
Shaft Angle	0 degrees standard - Custom shaft angles available

Intake Body:

Material:	5083 grade Aluminium
Inspection Opening:	Inboard
Intake Grate:	Removable Stainless Steel Bars



Note (A): Requires application approval by DOEN Pacific.
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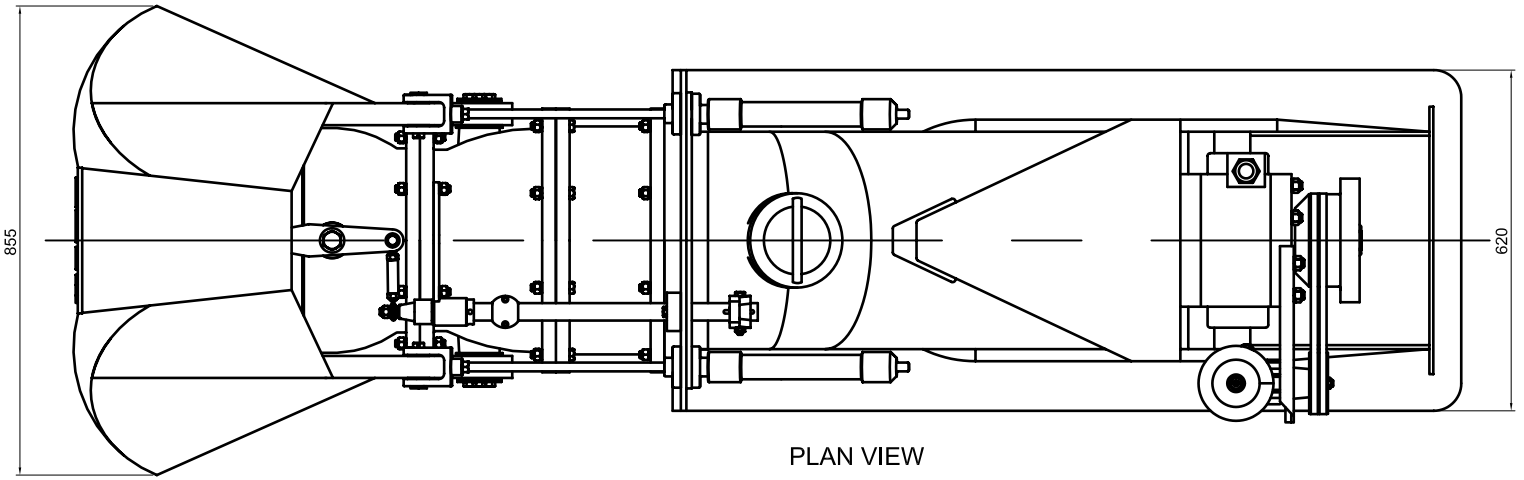
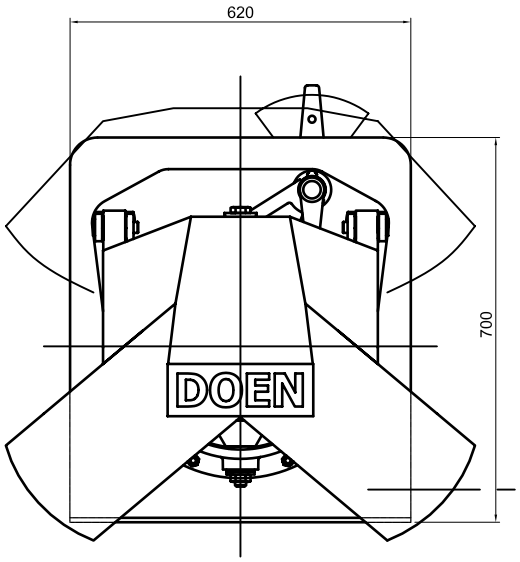
Issued 07/11/2013
T:\SALES DOCUMENTATION\Tech Specs\MASTER\DJ140HP Tech spec 071113.doc

H:\Commonfiles\ENGINEERING\AutoCAD\

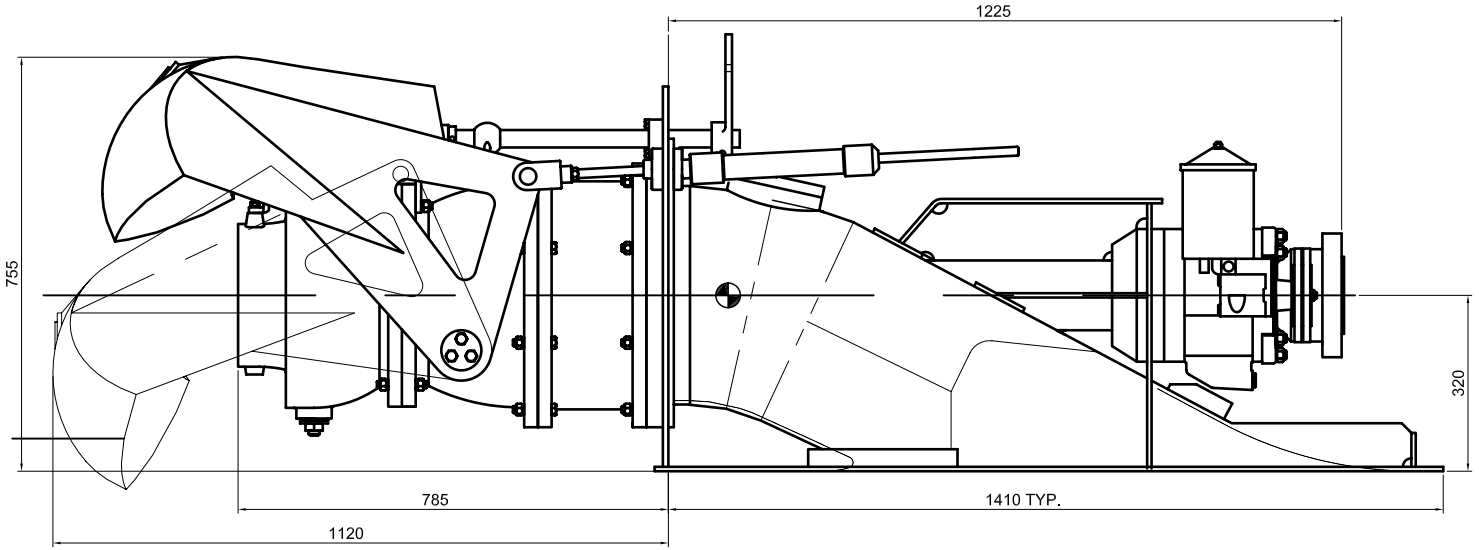
REVISION			
ITEM No.	DESCRIPTION	BY	DATE



PLAN VIEW



OUTBOARD VIEW



PROFILE VIEW

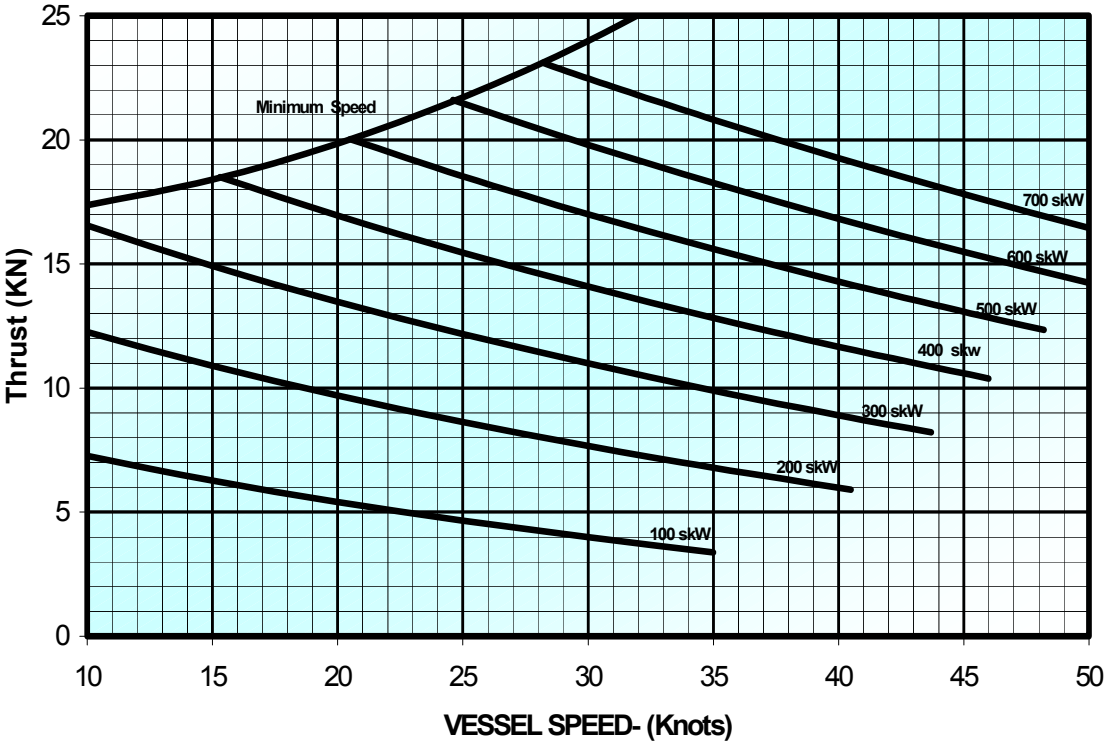
NOTE: UNITS CAN HANDED STANDARD ARRANGEMENT SHOWN

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES		DRN P.PEIRIS	DOEN PACIFIC PTY. LTD.
TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°	MATERIAL	CKD T.UDVARY	
		APPD T.UDVARY	TITLE DJ140 HP GA - WELD IN
		ISSUED	
		MODELS DJ140HP	
DRAFTING STANDARD AS 1100	FINISH		SIZE A3 DRG. No. DJ140HP-170811
			SCALE NONE AS PRINTED

DJ140HP PERFORMANCE CURVES

Input Power Vs. rpm

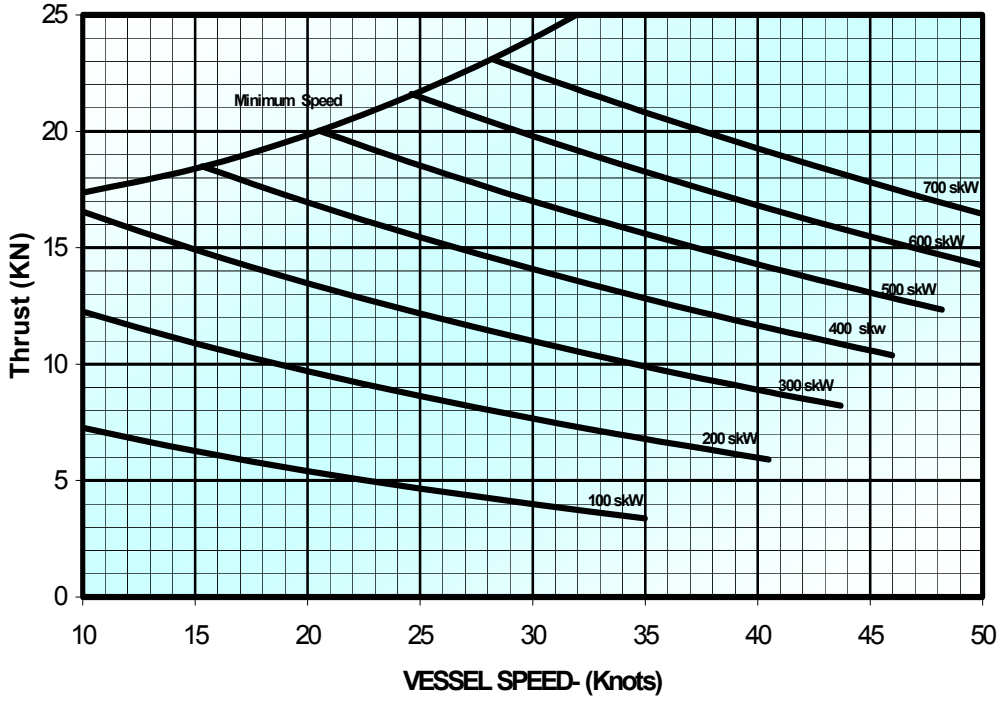
Maximum rec INPUT POWER: 560skW (750shp)
Maximum rec. INPUT SPEED : 2250 rpm



NOTES: Standard **IMPELLER RANGE** shown.

mpeller options allow engine matching within this band

Dynamic Thrust Curve



DJ140HP Waterjet

Performance **Reliability** Simplicity

Case Study 133: **Multipurpose Fast Craft**

SPECIFICATIONS

Waterjet:	**DJ140HP x2**
Engine:	**MAN R6-800** **588 bkW @ 2300 rpm**
Gearbox:	**Direct Couple**
Vessel:	**16.7m L.O.A** **13.4m LWL** **16.6 tonne (laden)**
Performance:	**41 knots (laden)** **44 knots (light)**

RUSSIAN COAST GUARD – 16.7m Multipurpose Fast Craft

This 16.7m fiberglass vessel has been built for the Russian Coast Guard. It is powered by twin MAN R6-800 diesel engines direct coupled to **DOEN DJ140HP** waterjets. Designed for high-speed patrol and sea rescue activities this vessel has fully enclosed cabin with forward accommodation and sleeping for crew.

The **DJ140HP** is a 380mm diameter single stage compact high performance waterjet that uses Doen's latest impeller technology that delivers mixed flow type, high-speed performance, within an axial build. This approach combines the key benefits of excellent high-speed efficiency with superior cavitation margins and efficiency at lower speeds and cruise conditions. This waterjet model incorporates many innovative features that enhance its application into high-speed craft such as the lightweight fabricated intake tunnel, providing scope for design customization and efficiency optimisation

Each waterjet has its own fully integrated hydraulic system to operate the waterjet reverse and steering functions. Jet driven hydraulic pumps supply fluid power to the jet mounted hydraulic valve bank. All of the hydraulic equipment including reverse cylinders, steering cylinders and hydraulic lines are mounted inboard.

The vessel is fitted with Doen's **ECS-100** Control System with **eDOCK** joystick control. This electronic control system provides primary control of engine throttle and the waterjet steering and reverse functions. A single joystick lever provides combined bucket and throttle control with steering by conventional helm wheel in cruise mode and in docking mode this same joystick provides a full vectored control of the waterjets steering, reverse and engine throttle function for precise and intuitive low speed maneuvering control.

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100 SERIES

MODEL DJ170HP

- Product Bulletin
- Technical Specifications
- General Arrangement Drawing
- Impeller Power Curve
- Dynamic Thrust Curve
- Case Study

Performance **Reliability** Simplicity

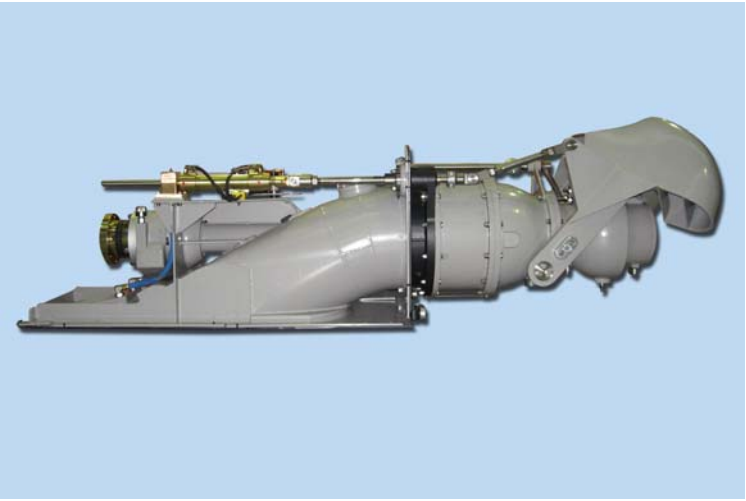
DJ170HP Waterjet

Performance Reliability Simplicity

Product Bulletin

SPECIFICATIONS

Horsepower:	**Up to:**	**1150hp cont.** **1250hp sprint**
Vessel Size:	**Single:**	**30-43’ (9-13m)**
	Twin:	**43-65’ (13-20m)**
Vessel AUW:	**Single:**	**12t (26,400lbs)**
	Twin:	**26t (57,300lbs)**



- The D170HP 17inch (431mm) waterjet meets Doen’s key design criteria of high performance, reliability and simplicity of construction and maintenance
- This compact and efficient axial flow waterjet delivers superior performance at speeds up to 45+ knots with impeller options to provide enhanced low speed and high bollard pull operation
- Construction comprises Stainless Steel and heavy-duty powdercoated Aluminum components protected with an anode anti-corrosion system. The fabricated Aluminum duct is typically 30% lighter than a cast duct, and can be welded directly into Aluminum boats
- Modular construction has allowed the DJ170HP to be lightweight compact and simple to maintain. The heavy-duty main shaft and bearings assist in providing long life and trouble-free operation
- Completely inboard mounted, fully integrated, hydraulic system with in built cooling. Standard hydraulic rotary servo control (RSC) gives proportional, position sensing, control of the reversing bucket via a standard 3” (75mm) stroke Morse 33C cable
- Power steering systems and other optional electric and electronic control systems are available and can be integrated with vessel and engine controls

For the ultimate in docking control and low speed maneuvering the DJ170HP can be fitted with Doen’s eDOCK joystick control. This system can also be interfaced with electronic vessel controls such as autopilots and dynamic positioning systems

eDOCK joystick control

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DJ170HP TECHNICAL SPECIFICATIONS

DOEN WATER JETS

UNIT DETAILS

Maximum Rec. Power Continuous:	up to 750skW (1000shp)
Maximum Rec. Power Sprint:	up to 930skW (1250shp) (A)
Maximum Rec Impeller speed:	1975rpm
Dry Weight:	510 kg (complete waterjet including jet mounted hydraulic items)
Entrained Water:	140 kg
Loss of buoyancy	0.140 m^3 (duct volume within hull bound)
Corrosion Protection:	Cathodic with Anodes
Design Standard:	To international authority standards

CONSTRUCTION DETAILS

Impeller:

Diameter:	17 inch (432mm)
No of Stages/Configuration:	Single Stage – Axial pump construction
Standard Rotation:	Anti-clockwise (Looking forward from stern)
Impeller Material:	Cast CF8M Stainless Steel

Pump Assembly:

Impeller Casing Material:	Cast ASTM A356 Alum. Alloy with stainless steel liner
Discharge Nozzle Material:	Cast ASTM A356 Alum. Alloy

Steering System:

Description	Balanced nozzle
Operation	Inboard tiller actuation
Steering Bowl/Nozzle Material:	Cast ASTM A356 Aluminium Alloy

Reverse System:

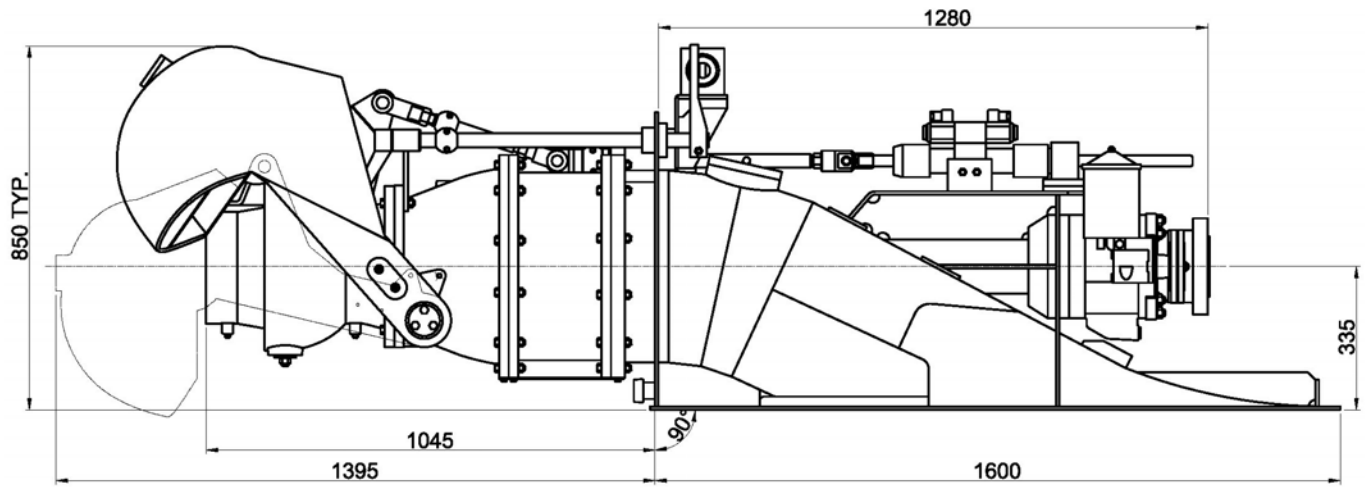
Description	Split Duct Type – “High Thrust”
Operation	Hydraulic with Inboard Cylinder Actuation
Reverse duct material	Cast ASTM A356 & 5083 grade plate aluminium

Shaft Assembly:

Main Shaft Material:	Stainless Steel Grade SAF 2205
Rear Bearing:	Water Lubricated Cutlass Bearing
Main Bearing:	Spherical roller Thrust Bearing Spherical roller Bearing - Radial
Lubrication	Oil lubrication
Shaft Seal:	Face type Mechanical Seal
Coupling Flange:	GWB series to suit application
Shaft Angle	0 degrees

Intake Body:

Material:	5083 grade plate aluminium
Inspection Opening:	Inboard
Intake Grate:	Removable Stainless Steel Bars



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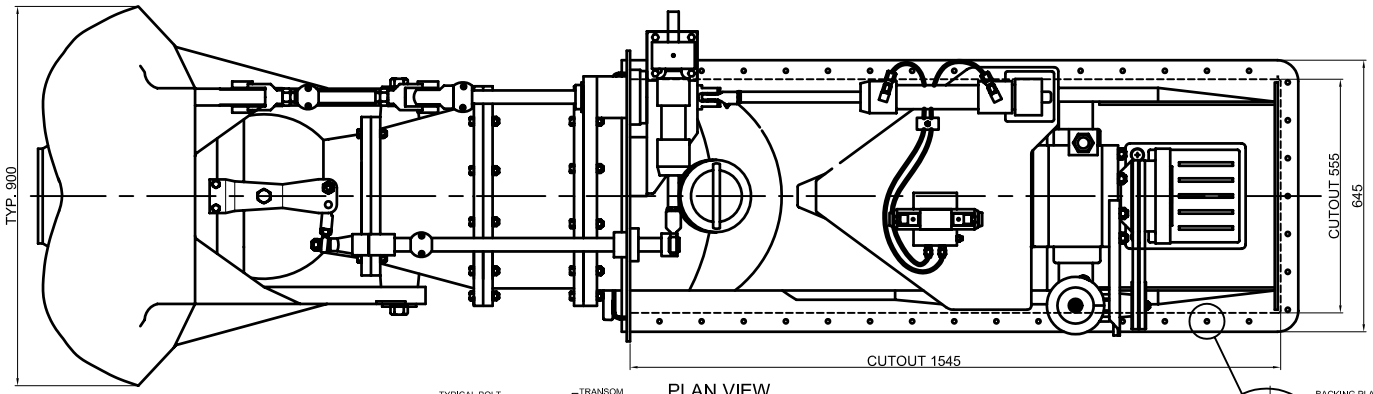
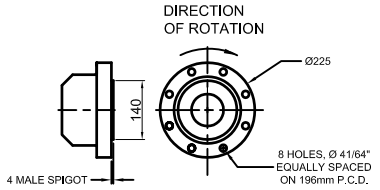
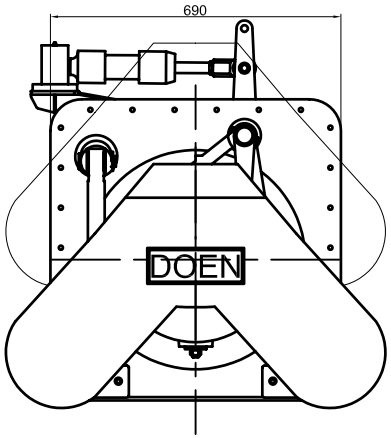


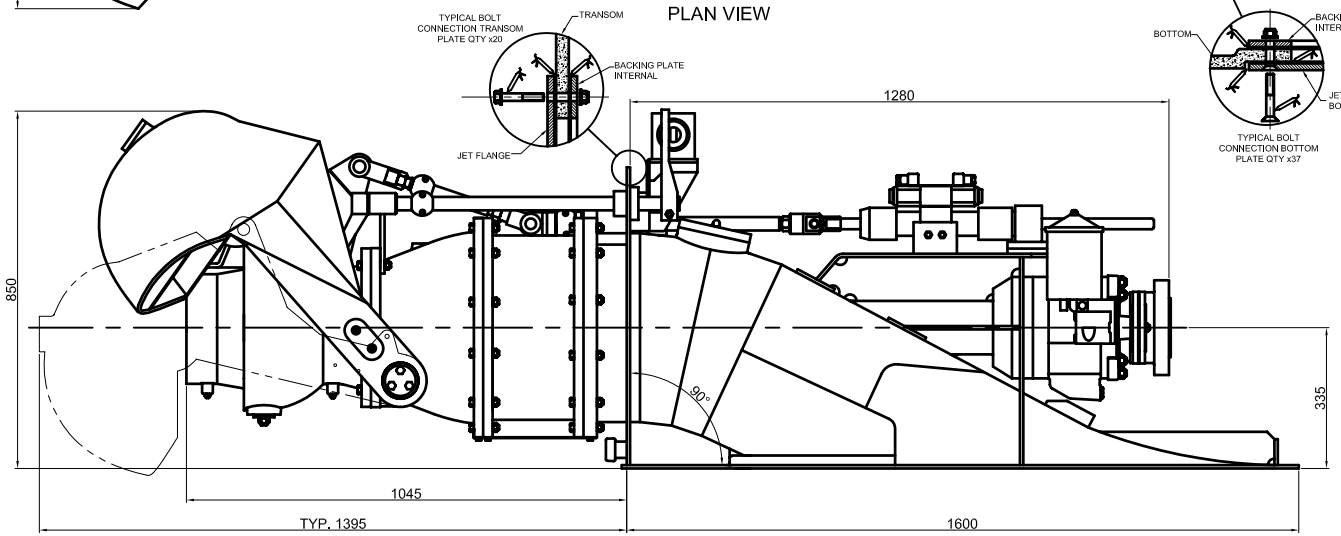
PLAN VIEW



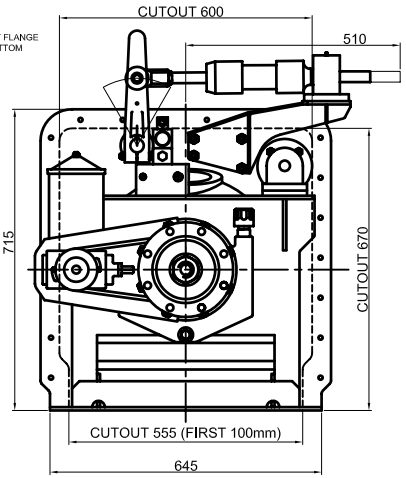
VIEW OF STANDARD DRIVE FLANGE



OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

DOEN DJ170HP FABRICATED DUCT BOLT IN WATERJET - GENERAL ARRANGEMENT

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT,
DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR +/- 0.4 ANGULAR +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 13-04-07
MODELS DJ170HP

DOEN PACIFIC PTY. LTD.

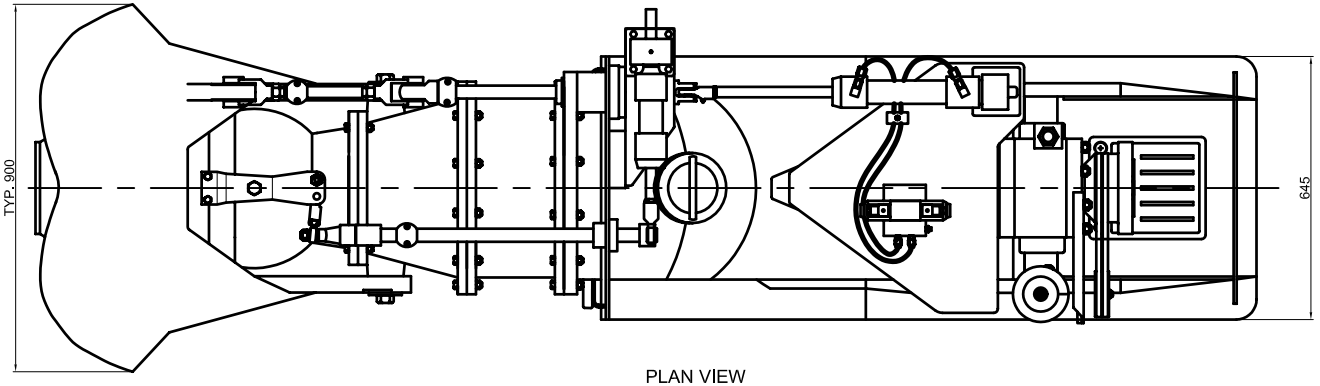
TITLE DJ170HP ARRANGEMENT BOLT IN VERSION

SIZE A3 | DRG. No. DJ170HP-BOLT 290408

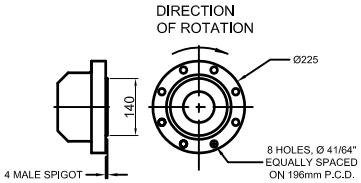
SCALE NONE AS PRINTED

REVISION			
ITEM No.	DESCRIPTION	BY	DATE

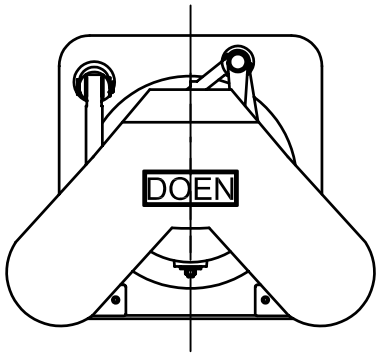
NOTE: UNITS CAN HANDED STANDARD ARRANGEMENT SHOWN



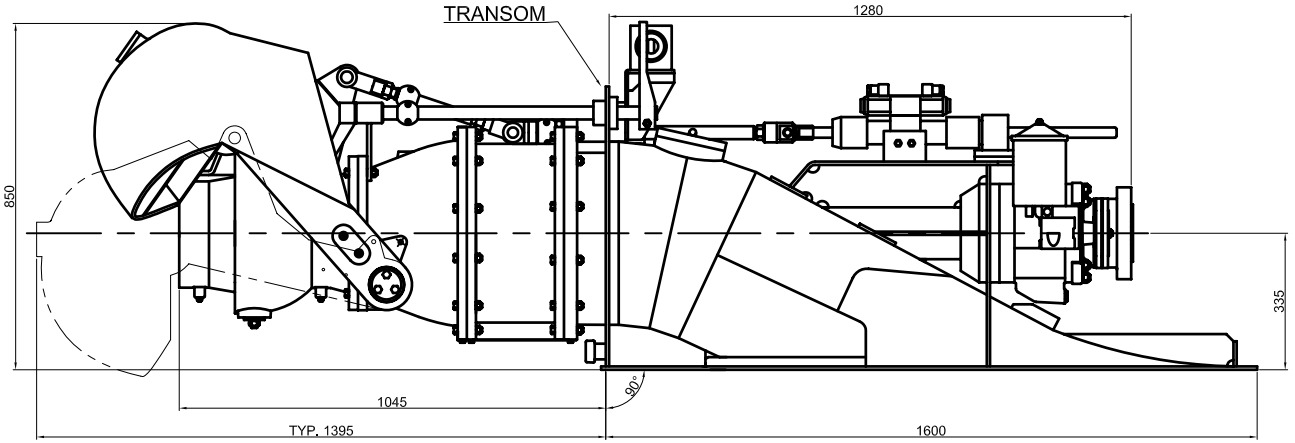
PLAN VIEW



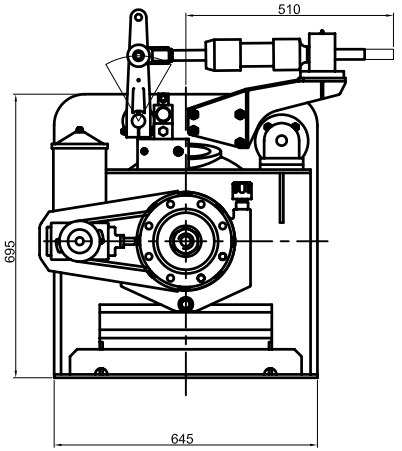
STANDARD COUPLING FLANGE



OUTBOARD VIEW



PROFILE VIEW



INBOARD VIEW

DUE TO OUR POLICY OF CONTINUAL DEVELOPMENT,
DRAWINGS SUBJECT TO CHANGE WITHOUT NOTICE.

UNLESS OTHERWISE STATED ALL DIMENSIONS IN MILLIMETRES

TOLERANCES LINEAR : +/- 0.4 ANGULAR : +/- 0.5°

DRAFTING STANDARD AS 1100

MATERIAL

FINISH

DRN P.PEIRIS
CKD T.UDVARY
APPD T.UDVARY
ISSUED 29-09-06
MODELS DJ170HP

DOEN PACIFIC PTY. LTD.

TITLE
DJ170HP
GENERAL ARRANGEMENT

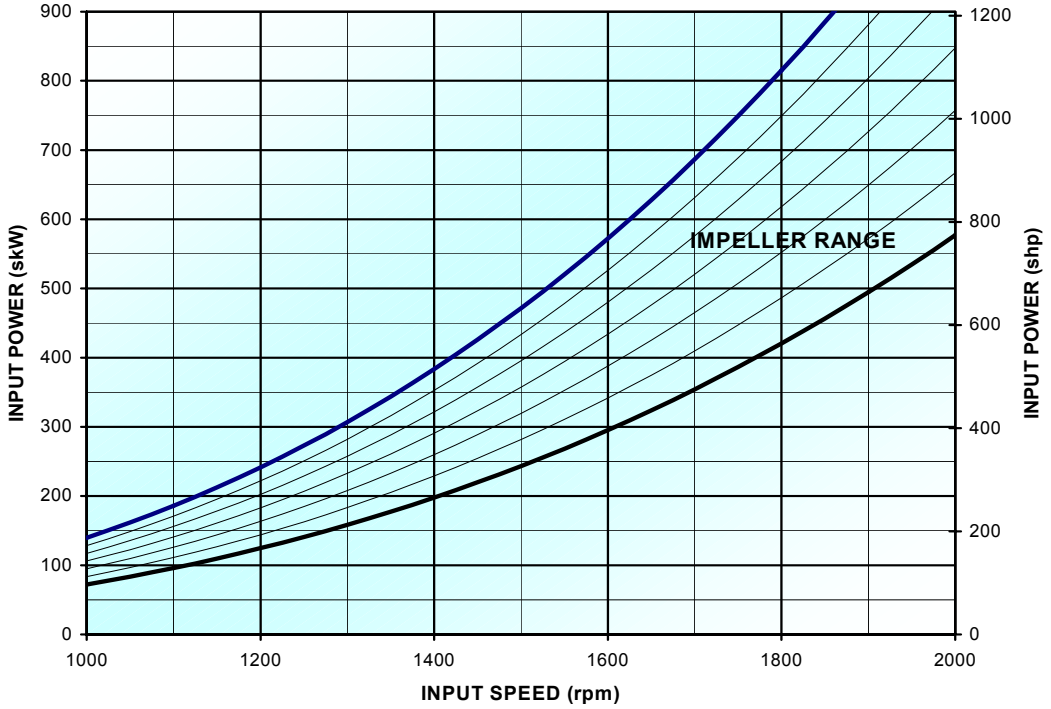
SIZE A3 | DRG. No. DJ170HP-WELD 290408

SCALE NONE AS PRINTED

DJ170HP PERFORMANCE CURVES

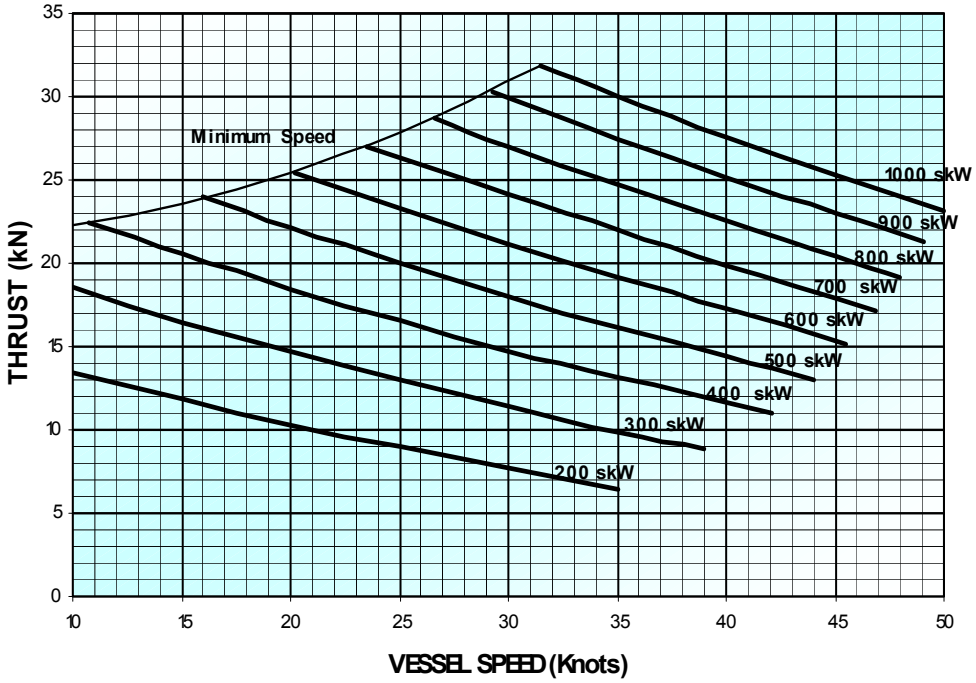
Input Power vs. rpm

Maximum rec. INPUT POWER: 855skW (1150shp).
Maximum rec. INPUT SPEED: 1975rpm



NOTES: Standard IMPELLER RANGE shown.
Impeller options allow engine matching within this band.

Dynamic Thrust Curve



DJ170HP Waterjet

Performance **Reliability** Simplicity

Case Study 125: **Fast Patrol Boat**

SPECIFICATIONS

Waterjets:	**DJ170HP (Twin)**
Engines:	**CAT C18** **747kW @ 2300 rpm**
Gearboxes:	**ZF 550**
Vessel:	**15.1m L.O.A** **13.4m L.W.L** **19.5 tonne**
Performance:	**45 knots**

A high speed Aluminium monohull operating in the Red Sea off Saudi Arabia

DOEN DJ170HP waterjets propels this aluminium 15.1m monohull designed and built to BV Class Rules by NGV Tech in Malaysia. This vessel is one of five built for use by a Saudi Arabian Security Company that provides harbour patrol and surveillance activities for oil company asset protection.

Power is provided by twin CAT 747kW diesel engines, which are coupled to the DOEN waterjets through ZF marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability.

The DOEN 17.0-inch (432mm) diameter high volume axial flow impellers provide excellent cruise capability allowing long range patrol at reduced fuel consumption whilst delivering an un-compromised top speed of 45 knots.

The DOEN balanced steering nozzle gives fast and precise response. These are controlled using a conventional helm power assisted hydraulic steering system. Inboard cylinders are mechanically connected to the waterjets inboard steering tiller. This provides the vessel with exceptional easy control at all speeds and especially when maneuvering around rigs and alongside other vessels. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ170HP waterjets are fitted with an electronic control system. This fully electronic control provides single lever function, which combines control of the engine throttle and waterjet reverse bucket into one simple and reliable system. The reverse function provides full follow up control of the reverse bucket by way of the jet mounted hydraulic system incorporating a proportional solenoid valve. Control of the marine transmission is by way of separate, simple to use, touch pad.

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Victoria, Australia

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Email: inquiries@doen.com

DJ170HP Waterjet

Performance **Reliability** Simplicity

Case Study 126: **Water Taxi**

SPECIFICATIONS

Waterjet:	**DJ170HP x2**
Engine:	**CAT C18** **533kW @ 2100 rpm**
Gearbox:	**ZF 550**
Vessel:	**18.5m L.O.A** **16.3m LWL** **22 tonne**
Performance:	**25 knots**

Five Nigel Gee 18.5m Water Taxis for service in Nigeria

Estaleiros Navais de Peniche yard on Portugal's Atlantic Coast built five of these BMT Nigel Gee designed 18.5m catamarans ordered for a Rivers State Water Taxi Service in Nigeria to carry up to 70 passengers. The vessels are used to provide transport to remote riverine regions where low draft was required. In these regions there is extensive oil and gas industry but little or poorly developed road infrastructure exists to provide access.

Power is provided by twin CAT 533kW diesel engines, which are coupled to the DOEN waterjets through ZF marine transmissions. A reduction ratio is used to optimise the waterjet impeller selection and the gearbox also provides the vessel with disengagement and a back flushing capability.

The DOEN 17.0-inch (432mm) diameter high volume axial flow impellers provide highly efficient propulsion that delivers excellent cruise performance and extended range in this application under all load conditions.

The DOEN balanced steering nozzles are controlled using a conventional helm power assisted hydraulic steering system. Inboard cylinders are mechanically connected to the waterjets inboard steering tiller. This provides the vessel with simple and easy control at all speeds and especially when docking. A simple mechanical tie bar is used to connect the waterjets providing synchronized steering at all times.

The DJ170HP waterjets are fitted with DOEN's Rotary Servo Control (RSC), which is a proportional hydraulic control system providing simple and exact follow up control of the waterjets reverse buckets, by conventional lever. This system has fully integrated hydraulics with in built cooling; bulkhead mounted steering and reverse cylinders and all connections inboard and protected from corrosion. Conventional control levers using push pull cables operate this system.

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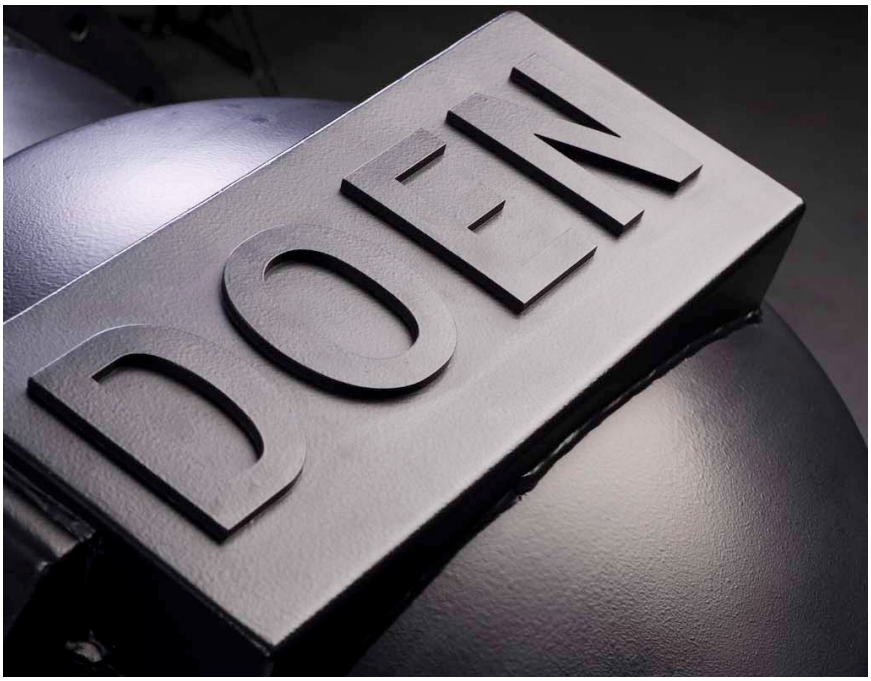

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