



LOWERING SYSTEMS

UNDERWATER LOWERING SYSTEM

General Notes for all Systems:

- Capacities shown are the maximum allowable capacities of each system. The force of a suspended load combined with any forces due to dynamic amplification should not exceed the tabulated values.
- This data sheet was generated by JRM and is intended for general information and planning purposes. Individual capacity charts for each of the systems should be used to verify capacities for specific lowering operations. Various other lowering systems have been developed and used on specific projects.



Deepwater Lowering System

The Deepwater Lowering System (DWLS) is a modular system comprised of dual structural davits mounted on the deck of the barge. Each davit is equipped with a 9,200 ft. of 3 1/2 in. diameter wire rope cable stored on a winch reel. Each pulling line is reeved into a traction winch and through upper and lower sheaves on the davit structure. The DWLS is used for the installation of tendons for Tension Leg Platforms. The DWLS has been used successfully to lower components with weights ranging from 500 - 1,100 s.t.

Submerged Depth (ft.)	Capacity (S.Tons)	
	2 @ 2 PTS	2 @ 4 PTS
10	678	1,235
200	672	1,222
2,250	604	1,088
4,500	529	---

DWLS wire rope size: 2 lines @ 3 1/2 in. dia. X 9,200 ft., 1 line RRL, 1 line LRL (break strength 593 s.t.).

A & R Winch "BIG BLUE" Used for J-Lay System

Underwater Lowering Capacity = 387.5 S. Tons @ TBD ft. depth

- A&R winch is a single line system and as such is not torsionally stable in deepwater depth without a restraint line. This winch has been used to lower 230 s.t. template to 4,000 ft. with a restraint line.
- A&R winch wire rope size: 1 line @ 4 1/4 in. dia. x 11,000 ft. (break strength 926 s.t.).

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DB-16: MAIN BLOCK UNDERWATER LOWERING CAPACITY						
Hook Position	Wire Rope Breaking Strength = 157.5 S.T.			Wire Rope Breaking Strength = 125 S.T.		
	2@8 PTS (1) Load (s.t.)	2@4 PTS (2) Load (s.t.)	2@2 PTS (2) Load (s.t.)	2@8 PTS (2) Load (s.t.)	2@4 PTS (2) Load (s.t.)	2@2 PTS (2) Load (s.t.)
Water Level	598.6/101.7	298.7/158.8	141.4/228.3 ft.	470.4/118.5	232.6/185.9	107.9/241.1
2,364 ft.	528.3/94.0ft.	262.4/146.9	123.0/221.1 ft.	410.9/103.1	201.9/169.7	92.3/234.5 ft.
4,971 ft.	---	222.4/136.0	102.7/209.9 ft.	---	168.0/157.2	75.1/227.5 ft.
6,000 ft.	---	---	94.5/205.0 ft.	---	---	68.4/224.9 ft.
10,185 ft.	---	---	62.2/187.7 ft.	---	---	40.8/211.3 ft.

1. **Fixed** - Lift with boom directly over barge stern. 1-degree maximum inclination of load to plane of boom. Limited swing for load spotting.
2. **Operating** - 3-degree maximum barge list with load directly over side of the barge. 2-degree maximum barge roll, full 360 degree swing permitted.
3. Maximum working radius in feet is shown for each capacity.
4. Capacities shown are based on using both new lower block weldment and hook assembly. These capacities can be increased by 9.2 s.t. by removing hook assembly and attaching support slings directly to 10 in pins on lower block.
4. Main block wire rope size: 2 lines @ 1 ½ in. dia. X 21,640 ft., 1 line RRL, 1 line LRL (wire rope break strength shown above).
5. Shaded area denotes higher wire rope break strength (WRBS) capacities. The DB-16 main block presently uses 125. s.t. WRBS.

DB-50: AUXILIARY BLOCK UNDERWATER LOWERING CAPACITY			
Hook Position	2@2 PTS Load (s.t.)	2@4 PTS Load (s.t.)	2@6 PTS Load (s.t.)
Water Level	202	415	551
-1,240 ft.	188	389	551 (2)
-2,040 ft.	180	371 (2)	---
-2,500 ft.	174	---	---
-4,000 ft.	158	---	---
-4,441 ft.	153 (2)	---	---

1. Capacities shown apply at all auxiliary block operating radii.
2. Capacity at maximum water depth.
3. Auxiliary block wire rope size: 2 lines @ 1.89 in. dia. (48mm) x 10,262 ft. 1 line RRL, 1 line LRL (break strength 179.6 s.t.).

DB-50: WHIP BLOCK UNDERWATER LOWERING CAPACITY				
Hook Position	1@2 PTS Load (s.t.)	1@1 PTS Load (s.t.)	1@2 PTS Load (s.t.)	1@1 PTS Load (s.t.)
Water Level	80	40	100	50
-1,672 ft.			100	
-3,572 ft.	80			
-3,672 ft.				50
-7,472 ft.		40		

1. Capacities shown apply at all whip block operating radii.
2. The DB-50 whip block is presently reeved with 8,367 ft. of spin resistant wire rope.
3. Torsional stability of whip block @ 2 and 1 part configurations must be confirmed.
4. Whip block wire rope size: 1 line @ 1.89 in. dia. (48 mm) x (wire rope length shown above) (break strength 241 s.t.).