

# DREW XP TBN TEST KIT



## DESCRIPTION

The DREW XP TBN TEST KIT provides the onboard ability to accurately measure the amount of alkaline reserve of lube oil, represented as its base number (BN), available for neutralizing corrosive acids from combustion and oxidation. The self-contained test kit is battery-operated and includes a USB rechargeable BN test cell, test reagent, test beaker, syringes, agitator and an easy-to-use manual. Test results are available in minutes and can be exported to PC as a comma separated value (\*.csv) file using the supplied USB cable.

Lube oil is formulated with special additives to provide a specified amount of alkaline reserve, which inhibits oxidation during prolonged storage onboard and neutralizes acids formed during combustion. Engine manufacturers typically specify acceptable lube oil grades, identified by BN for the different types of fuel used for specific types of engines to prevent premature acid corrosion of engine components from fuel sulfur content.

Because water contamination accelerates acidic corrosion in lube oils with depleted alkalinity reserves, the DREW XP TBN TEST KIT is offered as part of an integrated onboard program. The DREW XP LUBE OIL 5 TEST KIT also provides testing for water content and sea water contamination, along with screening for insoluble contaminants and qualitatively evaluating viscosity. For best value, the integrated test kit offers the capability to determine water content and base number using a single test cell.

## BASE NUMBER – VALUE OF ONBOARD TESTING

Lube oil is continuously subjected to combustion products (e.g., soot, unburned fuel, etc.) containing acids that can corrode engine internals. The inorganic acids formed from those combustion products are primarily derived from sulfur in the fuel, while weak inorganic acids are also released by oxidation as the oil ages. Depletion of alkalinity reserves reduces the ability of lube oil to neutralize those acids, thus exposing critical engine parts to greater potential for damage. And corrosion is further accelerated when water is present in lube oils with depleted reserves.

Base number expresses the amount of alkalinity reserve in both new and in-service lube oil. The likelihood for corrosive wear increases when actual BN drops below the levels recommended by engine manufacturers. Nearly all engine manufacturers recommend monitoring BN regularly to ensure that the lube oil in service continues to effectively neutralize acids in order to prevent premature wear of engine components.



DREW XP TBN TEST KIT  
(PCN 1AB6167)

Cylinder oil is typically BN 40 for two-stroke engines using residual fuel with less than 1.5% sulfur, and BN 70 for higher levels of sulfur content. Using unsuitable cylinder oil or overdosing of cylinder oil can result in excessive ash in combustion chambers and increase inorganic exhaust deposits. In four-stroke engines, the BN changes depending on the fuel sulfur content and operating period. BN 20 is the typical specified “condemning limit” for replacing BN 30 to BN 55 fresh lube oil, while fresh lube oil less than BN 30 should be replaced when BN drops by fifty percent.

## Onboard testing using the DREW XP TBN TEST KIT allows operators to:

**Confirm purchase grade of lube oil on delivery.** Actual base number can be compared immediately to delivery receipts, and samples should be sent to shore-based labs for further confirmation of any variances.

**Monitor the condition of lube oil while in service.** In addition to confirming acceptable BN as lube oil ages, this is also an important check on cylinder oil BN when using both low-sulfur and high-sulfur oils.

Available separately, Drew Marine also offers the DREW XP WEAR DEBRIS ANALYZER (PCN 1AB2768) for monitoring the iron content in cylinder drain oil. The results of this test can be used to optimize the cylinder oil feed rate.

**Extend the remaining useful life of lube oil.** As tested BN approaches manufacturers’ condemning limits, it may be



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possible to boost BN by adding fresh lube oil. Follow-up testing is needed to confirm improved BN levels.

Monitor trunk piston engine oil BN. Testing ensures that this important oil can be replaced before reaching specified condemning limit.

## TECHNICAL SPECIFICATIONS AND OPERATING FEATURES

- The DREW XP TBN TEST KIT works on the principle of pressure build-up generated by the reaction of a special reagent with a predetermined amount of lube oil.
- This kit has a range of BN 5 to BN 150, with accuracy to laboratory standards.
- Built-in memory can store seven unique lube oil names with corresponding reference BN values, as well as the last tested BN value for each type of lube oil, to assist in tracking remaining useful life without keeping a manual log.
- Step-by-step testing procedures are easy to follow. Simple prompts shown on the LCD screen of the test cell guide operators through the testing process.
- Results are provided in 5 minutes or less.

## BENEFITS AT A GLANCE

- Provides timely data to confirm lube oil purchase grade on delivery, prompting shore-based laboratory follow-up for confirmation of variances.
- Allows regular monitoring of lube oil in service to confirm adequate alkalinity reserves for preventing premature acid corrosion of engine components from fuel sulfur content.
- Enables operators to take timely measures to boost Base Number or replace lube oil when test results show BN approaching manufacturer condemning limits.

## CLEANUP AND HANDLING

The use of harsh chemicals for cleaning test kit instruments and accessories is not advisable. Use only approved cleaning agents (e.g. Drew Marine's TEST KIT CLEANER — PCN 1AB2738) to clean test kit components, and wipe clean using a dry rag. Dispose of the used rag as used oil.

Refer also to the DREW XP TBN TEST KIT Material Safety Data Sheet, available from your Drew Marine representative, for precautions regarding the reagents included in the test kit.

## TEST PROCEDURES

For step-by-step operating procedures and precautions, refer to the TBN sections of the Operating Manuals for the DREW XP FUEL & LUBE OIL TEST CABINET and/or the DREW XP LUBE OIL FIVE-TEST KIT.

## CONTENTS AND ORDERING INFORMATION

**This test is standard as part of:**

- DREW XP FO & LO TEST CABINET (PCN 1AB6170)
- DREW XP LUBE OIL 5 TEST KIT (PCN 1AB6168)

**Reorders**

- DREW XP TBN TEST KIT (PCN 1AB6167)

### Spares and Replacements

DESCRIPTION	PCN
DREW XP-TBN Test Cell, USB	1AB6163
DREW XP Reagent TBN Pack	1AB2735
DREW XP Test Syringe, 10ML, 40 CT.	1AB2740
DREW XP Test Beaker, 100ML, 40 CT.	1AB2803
USB 2.0 A Male - Micro B Cable	1AB6165



Contact your Drew Marine representative for more information

Drew Marine maintains Safety Data Sheets on all of its products. These documents contain health and safety information for the development of appropriate product handling procedures to protect your employees. Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Drew Marine products.



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