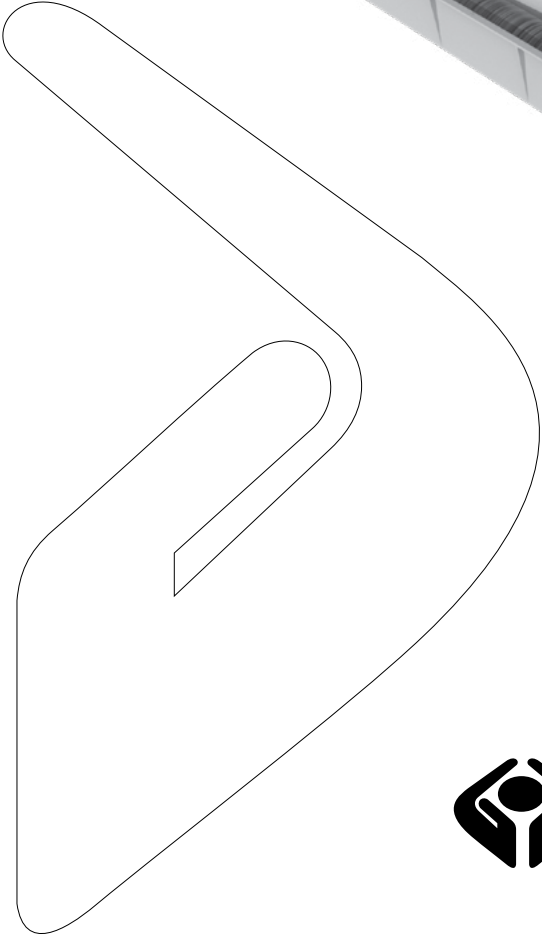
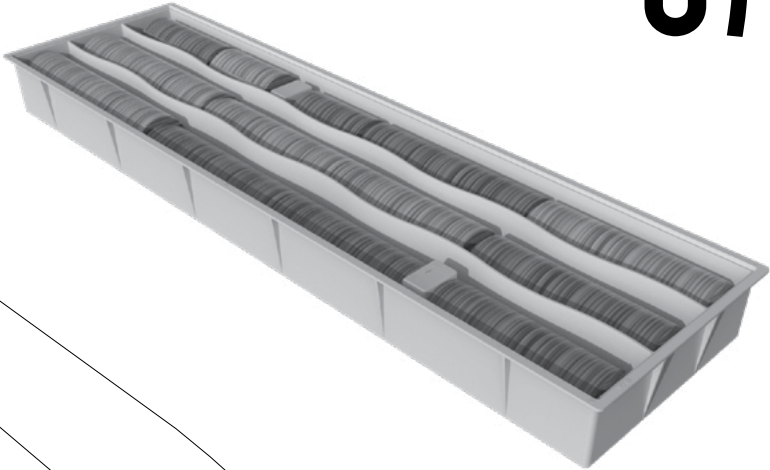


PRODUCT USAGE MANUAL



G1



Version: 1.2





CORE CASE[®]
SUSTAINABLE CORE BOXES


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Both your safety and third-party's are important. This manual and its associated product have many relevant safety-related messages. Attention to these messages:

 Standard symbol for safety-related messages. It warns us about situations that may pose risks to your life, injuries to you or third parties.

 DANGEROUS Risks related to personal or third party accidents, or severe damages, may occur should instructions not be followed right away.

 WARNING Risk of personal or third party accidents, or severe damages, may occur, should instructions not be followed.

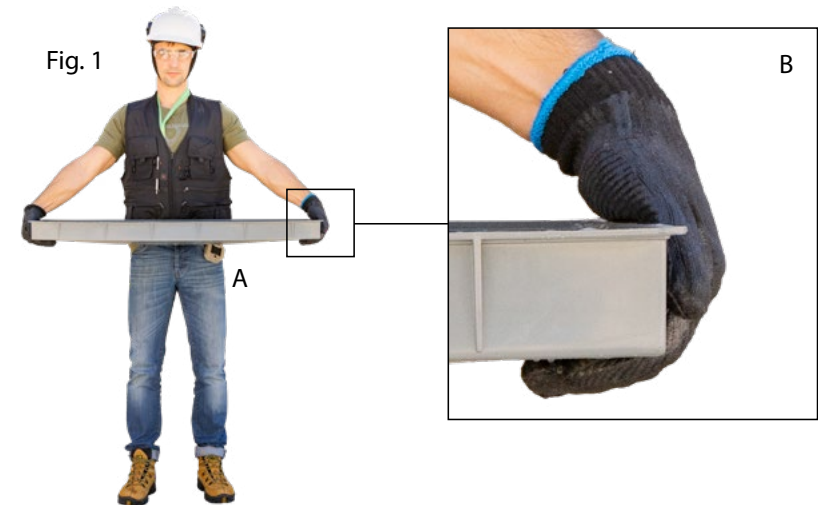



Cases are made in compliance with ISO 9001 quality standards.

PRODUCT USAGE MANUAL

1 - MANUAL CASE USAGE AND TRANSPORT

Maximum care is required when moving and stowing plastic cases with drill cores, so as to avoid injuries to users and damages to products and lithological materials stored. Cases may be transported by a single person, but good ergonomics and occupational practices (maximum 23 kg/person) must be followed. In such case, case must be grabbed at its forepart and back, right at case mid-portion, so as to avoid case twisting even when loaded with drill cores (Fig. 1). Should there be excessive weight, product is recommended to be carried by two people, and they must grab it at its ends using both hands.



 WARNING All PPEs required for the activity must be worn, especially gloves and steel-toe boots.



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2 - VEHICLE TRANSPORTATION

For vehicle haulage (open bed or even closed bed), closing at least the last case on top of the stack with a lid is recommended, so as to avoid material loss during haulage (Fig. 2) Since this case model lid does not come with a tight closure system, using a tape or strap is also recommended for the case to be appropriately closed for this procedure. However, care must be taken with excessive pressure on tapes and straps so as to keep products from being smashed, dented or even broken during haulage. For such condition, steel angles are recommended (FIG. 3) or wooden angles, so that tape or strap pressure is evenly distributed on cases, thus avoiding potential damages.

Fig. 2



Fig. 3



⚠ DANGEROUS

NEVER should cases fit between stacks be removed sideways. Should it be done, fitting system may be broken or the stack may even topple down, causing damages to products or sampled materials, as well as severe accidents to users.

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3 - STACKING AND FINAL STOWAGE

For case stacking, capacity recommended under item 16 of this manual and on information seal usually placed on product site must be complied with (Fig. 4). For safety reasons, most of the companies recommend that stack is no higher than 1.50 m (approximately 15 cases). Using a lid/cover is recommended only for the last case on top of the stack, once cases fit in a quite stable fashion one another during stacking. Case stacking floor must be even and smooth so that product durability and stack stability are not compromised (Fig. 5). Cases should ideally be stored indoors and under no or little influence of sunlight or rainfall (fig. 6).

Fig. 4



Fig. 5



Fig. 6



4 - CASE LOADING WITH DRILL CORES

For drill core placement, cases must be clean, free from any material that might contaminate samples. Also, water drainage holes must be unobstructed by dirt. Such obstruction may occur when drill cores have been stored for a long time before being used. Another potential application for this case model is storage of sample slurry from the laboratory following geochemical analyses, once slurry bags adjust quite well to the size of each case compartment - HQ/HWL (Fig. 7). Additionally, plastic material provides better protection to slurry, which is usually contained in paper bags, with case holes also adding air circulation to samples, not jeopardizing storage conditions and avoiding mold formation. Another favorable point is that a plastic slurry case can be easily stored at the same shed structure used for drill core cases (benches, shelves, trolleys, etc.), thus avoiding the need for specific and standardized structures for slurry storage.

Fig. 7



WARNING

For previous case inspection procedure, PPEs must be worn, especially gloves and mask, to avoid risks of venomous animal bite and dust inhalation.



5 - CORE SHOCK PLACEMENT AND POSITIONING

Core shocks must be placed in cases as per relevant information on drilling maneuvers (FIG. 8). As it is the case with Generation I products, core shocks are not locked in the case, a mark with permanent marker is recommended at the location where core shock has been initially placed (Fig. 9). Such mark helps reposition the drill cores, as well as the core shock to the original point, should they move in the cases.

Fig. 8

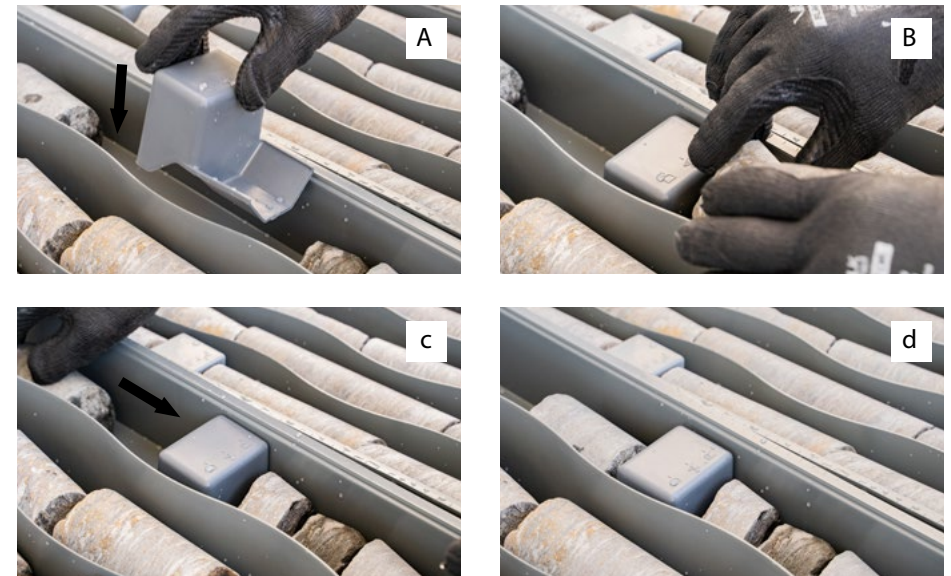


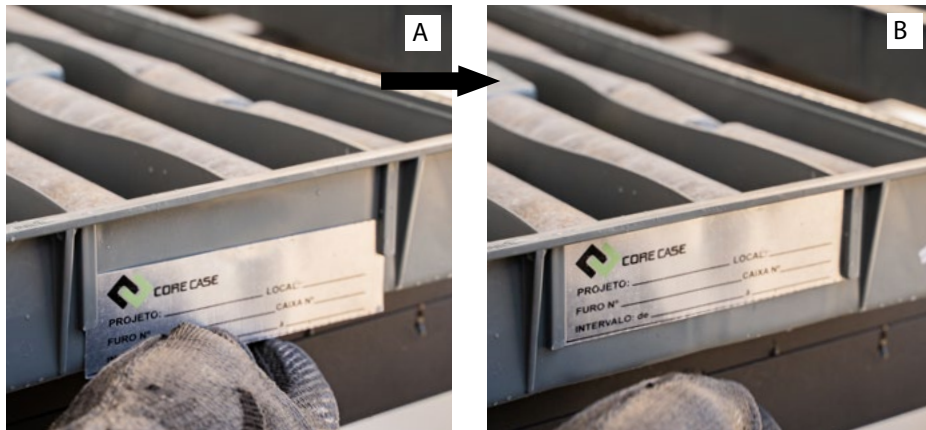
Fig. 9



6 - METAL TAG PLACEMENT

In this product line, metal tags with borehole data are fit on case's upper part (Fig. 11), which makes the system more practical and safer for borehole information to be added. Dimensions: 14 x 4 cm.

FIG. 10



7 - BOREHOLE INFORMATION TO BE RECORDED ON CASES

To write borehole information on cases, permanent markers or marker pens (Fig. 11) are recommended. Due to the fact this case model does not have wide partitions allowing for information to be written on top of them, borehole information should be written on inner case sides. AllFlex® Case Marker The most efficient drill core case marker, ensuring more accurate and long-lasting visibility.



FIG. 11

However, not all markers labelled as permanent are actually good quality ones, appropriate to write information on plastic cases. Due to the fact that case surface is smooth, information written with low-quality markers fades out, especially when cases are exposed to sunlight. Various types of industrial permanent markers and marker pens have been tested for activities with plastic core cases, and the conclusion reached is that AllFlex is the most efficient marker due to the use of high-quality ink and being easier to use than similar brands. Should erasing be needed, chemicals like thinner or solvent must be used. This marker brand is more expensive than conventional ones, however much longer-lasting when used on smooth surface plastic cases, while regular markers used on wooden cases, though cheaper, are damaged more easily due to the more aggressive application nature. Red-ink markers are not recommended, they last less. Moreover, core shed work team are recommended to avoid stowing cases in bench portions with long exposition to sunlight.

8 - HOLES FOR DRAINING THE WATER ACCUMULATED IN CASES

Drainage holes at case bottom (Fig. 12), in addition to eliminating excessive water content from products, may also allow for material contamination from one case to the other when they are stacked.

FIG. 12



This may occur only when stored material is weathered and finer, typically soil and saprolite, for which HW/HWL diameter cases are typically used. In this case, holes should be closed with silver tape, for said material cannot be wet and, therefore, drainage holes will not serve the intended purpose (water drainage), with sampled material contamination risk being thus eliminated.

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9 - CASE PARTITION UNDULATIONS

Plastic case partition undulations have been developed during design for technical reasons (Fig. 13). Firstly, to avoid case warping during post plastic injection cooling. Then, to offer higher mechanic stacking strength, in addition to providing easier drill core removal from cases, without the need for tools.

FIG. 13

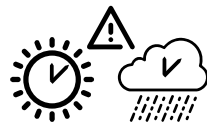


10 - CASE CLEAN-UP AND CHEMICALS

Plastic cases are resistant to core cleaning products (grease detergents, etc.) usually applied during drilling activities, and even to hydrochloric acid (HCl) commonly used by geologists during drill core description. However, care must be taken when using such substances regarding texts written on cases, for they may be wiped out or become hard to read.

11 - DURABILITY VS. USAGE

Plastic case durability is directly associated to transport and stowing process. For longer product durability, cases are recommended to be stacked on even floor, with stacks of 15 cases maximum, on racks with shelves designed for this purpose. In such case, product service life is undetermined. For vehicle transport activities (trucks, pickup trucks, etc.), cases must be duly stabilized to avoid excessive vibration, specially when loaded with drilling samples. Ropes, tapes and straps must be used with appropriate pressure not to smash/dent and/or break cases. Even if products have ultraviolet (UV) protection stabilizers, exposing plastic cases to weather (sunlight and rainfall) for a long period of time is not recommended.



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12 - POTENTIAL ISSUES, CAUSES AND SOLUTIONS

ISSUE	CAUSE	SOLUTIONS
Case is brittle.	- Product has been exposed to weather (rainfall, etc.) for too long; - Product is being subject to extremely low temperature (< 50°C) for a long period of time.	- Store product indoors, in a well ventilated area.
Case is too flexible.	- Product is being subject to extremely high temperatures (> 50°C) for a long period of time.	- Store product indoors, in a well ventilated area.
Case looks rough and easily scratchable.	- Product has been exposed to weather (sunlight, rainfall, etc.) for too long;	- Store product indoors, in a well ventilated area.
Case stack is rather unstable and steep.	- Floor is uneven and/or has irregular profile, jeopardizing correct product stacking.	- Stack product on even and smooth floor so that product durability and stack stability is not compromised.
Stack base case is breaking.	- Floor is uneven and/or has irregular profile, jeopardizing correct product stacking; - Excessive weight of material stored in stacked cases; - Excessive number of cases in stack.	- Stack product on even and smooth floor so that product durability and stack stability is not compromised; - Material load in cases must comply with capacity recommended under item 15 of this manual; - Case stacking must comply with capacity recommended under item 15 of this manual.
Case shows some localized breaks at base and product corners.	- Inappropriate use or care by users during stack handling, assembly and dismantling and/or transport.	- Avoid dragging product when there are elements obstructing appropriate sliding of one case over the other, e.g. rock/core edges and parts, poorly placed core shocks, etc.
Side case fitting system for stacking stabilization broken.	- Forced sideways case removal with side case fitting system is locked.	- Appropriately unfit stacks by removing one case at a time from stack top.

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13 - ENVIRONMENTAL MATTERS

Packaging

Core Case seeks to use as little packaging as practical. All is designed so that, when used, packaging is easily separated and, whenever practical, made of recyclable materials. Packaging (plastic wrap, plastic strap, and cardboard box) must be disposed of consciously, preferably to recyclers or appropriate recycling containers.

Product

This product has been made with 100% recycled raw material (polypropylene-PP). It can be recycled once more and/or reused for other activities. Thus, when disposing of this product and its associated accessories, preferably send it to plastic recycling companies.

Disposal

When disposing of this product, at the end of its service life, we recommend local existing legislation in force is complied with, aiming at best possible disposal.

14 - CONTACT CORE CASE

Should you have questions or issues related to the product or its accessories, contact Core Case Customer Service. Upon calling, please make sure you have full data and information on the product available. Visit our website www.corecase.com to access updated information on our customer service or call +55 51 3012-6531 (Brazil) or +1 844 333-2673 (North America).

15 - WARRANTY

Your Core Case product is warranted against manufacturing defects for 12 months from Invoice issuance date, including:

- 3 months - legal warranty;
- 9 remaining months - special warranty, granted by Core Case. Warranty includes free replacement of products with proven manufacturing defects. Only Core Case professional team, or whoever appointed by Core Case, will be responsible for troubleshooting and product replacement. During warranty period, should defects identified be manufacturing defects, manufacturer holds itself obliged to replace products and/or provide free assistance to your product from the date Customer Service is contacted.

Legal and/or special warranty is automatically invalid should:

- product is not exclusively used for rotating diamond drill core transportation and storage (Generation I, Generation II, Adapt, and Petro Case products), laboratory sample slurry

PRODUCT USAGE MANUAL G)

(Generation I, Generation II, and Petro Case products), side, channel and plug samples (Petro Case line cases), and reverse circulation drilling chip samples (Chip Case line cases);

- improper use, bad conservation, carelessness, aesthetical and/or functional changes occur;

- signs of product violation and/or tampering be identified. Legal and/or special warranty does not cover:

- Damages to product arising from excessive load, as well as animal action (insects, rodents or other animals), or objects inside the product, foreign to product purpose of use;

- Products or accessories that have been damaged due to falls brought about by the customer itself or third parties. Upon delivery, check for accurate Invoice information related to your purchase. Should you identify any conflicting item, do not accept delivery, pointing out the reason for refusal on the back of the Invoice, and contact the person responsible for sale or delivery;

- Products with insignificant aesthetic defects (scratch, dent, or stain) that do not keep product from being appropriately used for intended purpose;

- Drying or warping issues with proven cause due to the following factors:

- Storage at location unprotected from weather;

- Storage on uneven and irregular floor;

- Storage at location close to intense heat source;

- Exposure and/or contact with corrosive substances;

- Application of inappropriate chemicals for cleaning, including use of dirty/rough materials or tools.

Special warranty does not cover:

- Products with defects that do not impact product functionality, e.g., dented, scratched, cracked, stained parts, etc.;

- Product servicing off the limits of Core Case head office municipality, which may include technician's transport expenses, previously approved of by customer, as per mileage table informed by Core Case;

- Parts subject to natural wear under normal usage.

General remarks:

Core Case does not authorize any person or entity to assume, on its behalf, any other responsibility associated with product warranty other than the ones explained herein.

Core Case reserves the right to change general, technical, and aesthetic features of its products, without previous notice. This Warranty is valid for products sold and installed within Brazilian territory. For your safety, keep User's Manual with this Warranty and Invoice at safe and easy-to-access location.

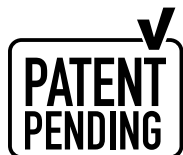
ATTENTION: To be able to make a warranty claim, make sure you keep product Invoice and Warranty at hand. Core Case professional will have to be shown these documents when warranty is claimed.

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16 - GENERAL DATA

Raw material: 100% recycled polypropylene (PP);
Post-use recycling: 5 times minimum;
Manufactured by plastic injection molding;
Chemically inert material, no risk of contamination or
chemical reactions with samples;
Maximum load: 40 kg / 88.18 lbs (per case);
Maximum stacking: 500 kg / 1102.31 lbs;
Length: 102 cm / 40.16";
Width: 25.6 cm / 10.08";
Height: 9 cm / 3.54" (HQ/HWL), 7.5 cm / 2.95" (NQ/NQ2), and 5.1 cm / 2.01" (BQ/LTK48);
Storage capacity: 3 m / 9.84 ft (HQ/HWL), 4 m / 13.12 ft (NQ/NQ2), 5
m / 16.40 ft (BQ/LTK48);
Weight: 1.7 kg / 3.75 lbs (HQ/HWL), 1.5 kg / 3.31lbs (NQ/NQ2), 1.3 kg / 2.87 lbs (BQ/
LTK48);

(* Q® is a trademark of Boart Longyear. Using 'Q' in our codes is only to indicate compatibility of Core Case products with 'Q' sizes of Boart Longyear Wireline.



Core Case product innovations are protected by patents and industrial design registration both in Brazil and abroad.



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