

# Power Exchange



**Power  
Exchange**

Core Acceptance Criteria



## Power Exchange

Perkins is working hard to ensure continuity of component supply. Power Exchange, the Perkins remanufactured offering, provides a cost effective solution to obtain good as new quality parts, from reworked core. A sustainable proposition, at the right price and all this with a reduced impact on the environment.

Power Exchange components are produced to the latest design specification and use only genuine Perkins components, whether you are supplied with a new or remanufactured product you can be assured that you will have the highest quality part available.

Using state of the art techniques and advanced remanufacturing processes we can guarantee that each part is as good as new.



Remanufactured core

Old core



Power Exchange components work the same as new and last just as long. They are backed by the same 12-month warranty. Today we have over 800 parts across 22 engine ranges; this is regularly reviewed to match customer needs.

# Power Exchange

# Core Acceptance Criteria

## Introduction and Key Points

### Introduction

The Perkins Power Exchange programme operates on an exchange basis. For every unit sold, a core (or worn out unit) must be returned in order to receive core credit. Each core must be inspected to determine whether it is eligible for full core refund, damaged core refund or no core refund. Add charges may apply for damaged or missing components with the maximum possible surcharge being paid by Perkins. This introduction explains how to inspect cores following the Power Exchange core acceptance criteria.

### Core Acceptance Criteria

This portion of the guide contains the core acceptance criteria used by Perkins to inspect cores for core deposit refunds. You should inspect cores consistently by applying the core criteria. Each product family has a series of visual checks that must be performed to determine if the core is acceptable for core deposit refund.

At the beginning of each core acceptance criteria document, you will find simple visual core acceptance guidelines. You will also find core inspection tips that you can refer to on where to look for likely damage. You will also find several pictures to aid with your core inspection.

A few product families, such as cylinder heads, have two levels of possible core deposit refunds – full and damaged. You must inspect the core to determine which level is appropriate. The core inspection criteria are easy to apply and take only minutes to perform with no special tools required.

### Add Charges

For certain product families, core credit will be reduced if parts are missing or damaged. These reductions in core credit are called 'add charges'. They are usually equal to the sales price of the missing or damaged parts. However, if an add charge is administered, it will be done to the benefit of the customer returning the core as the only other option would be to award no core credit or a damaged core credit if available.

### Abrasive Cleaning

Cores should not be cleaned by abrasive methods such as sandblasting or glass beading. If abrasive cleaning has damaged critical areas, the core will receive no credit.

### Disassembled Cores

Cores may be disassembled for repair requirement determination, failure analysis, or other diagnostic requirements only. If a core is disassembled and then returned to Perkins, it must be returned completely reassembled with the original parts from that core. Cores that have been disassembled run increased risk of corrosive damage and loss of parts before inspection by Perkins, which may decrease core credit received. Further, components that are disassembled and reassembled with scavenged parts (parts from other than the original core) will receive no core credit.

### Cores with Evidence of Unsuccessful Attempts to Salvage

Cores showing signs of unsuccessful salvage attempts will be rejected. Cores must be in the 'as removed' condition to be considered for credit. Please see the individual core criteria for specific information on each product family.

### Non-operational Damage

Cores exhibiting non-operational damage such as mishandling, excessive rust, corrosion, pitting or fire damage are not acceptable for credit.

### Packaging of Cores for Return to Perkins

The customer holding the core entitlement is responsible for packaging the core in the container of the original Power Exchange part for return to Perkins for credit. If the core returned to Perkins in a damaged condition due to improper packaging, the core credit will be reduced to a damaged core refund or no core refund dependent upon the product family.

## Core Acceptance Criteria

### Atomisers

#### You will receive:

##### Full Core Refund

- Acceptable Perkins part number
- Nozzle body and tip not cracked or broken
- Fully assembled and complete
- No excessive rust or corrosion
- No damage to control solenoid or electrical connections



Figure 1 - Full Core Refund  
Mechanical



Figure 2 - Full Core Refund  
Electronic

#### Cracked or Damaged

Check injector cores for any visible cracks. Cracking will usually be found on the injector case if it exists and will result in core rejection.

Missing or broken springs, tappets, guide pins or injector tips are acceptable and should receive full core refund.

Bent or broken levers are also acceptable for full core refund.

#### Rust or Corrosion Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund. Pitting caused by combustion gas erosion around the injector end is acceptable.

Be sure to protect the injector core to prevent damage during return shipment. Fuel levers are easily bent by improper shipping methods.

## Core Acceptance Criteria

### Atomisers - Fuel Injectors

You will receive:

#### Full Core Refund

- Acceptable Perkins part number or service code
- Not bent or broken
- No damage to nozzle tip
- No excessive rust or corrosion
- Fully assembled and complete
- No damage to fuel feed or leak off threads



Figure 1 - Full Core Refund  
Mechanical



Figure 2 - Full Core Refund  
Electronic

#### Bent or Broken

Bent or broken nozzles can usually be identified by visual inspection.

Cracked body assemblies or damaged threads will receive no core refund.

Minor scratches, nicks, gouges on the body or evidence of overheating are acceptable for full core refund.

#### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.

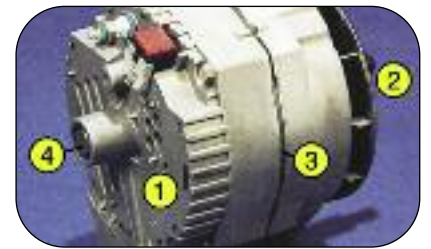
# Core Acceptance Criteria

## Alternators

### You will receive:

#### Full Core Refund - Mechanical

- Not cracked or damaged
- Fully assembled and complete (see explanation below)
- No excessive rust, corrosion or fire damage
- Acceptable Perkins part number
- Rotor turns



#### Damaged Core Refund

- Housings cracked or damaged
- Fully assembled and complete (see explanation below)
- Acceptable Perkins part number
- Excessively rusted, corroded, pitted or fire damaged
- Seized rotor



#### No Core Refund

- Disassembled
- Any missing sub-assemblies (see explanation below)
- Not interchangeable with a Perkins Power Exchange alternator

#### Key for Full Core Refund

1. Opposite drive end
2. Drive end
3. Stator
4. Rotor

### Evidence of Unsuccessful Attempts to Salvage

Cores that show signs of unsuccessful salvage attempts will be rejected. Cores must be in the 'as removed' condition to be considered for the programme.

### Fully Assembled and Complete

If any major sub-assembly is missing, no core refund will be issued. Major sub-assemblies include:

- Rotor
- Stator
- Drive End Frame
- Opposite Drive End Frame

(Fan may be missing)

### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.

### Seized Rotor

Damaged core refund will be given if the rotor does not turn by hand.

## Core Acceptance Criteria

### Complete Engines

#### You will receive:

##### Full Core Refund

- Cylinder block is not visibly cracked, broken or welded
- Non-failed and running engine core
- Fully assembled and complete
- No non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Acceptable Perkins engine model
- Must be returned on engine stand provided with reman engine purchase

##### Damaged Core Refund

- Cylinder block visibly cracked, broken or previously welded by source other than Perkins
- Acceptable Perkins engine model
- Failed, non-running engine core
- Evidence of bearing, piston, connecting rod, valve, gear train or other internal failure

##### Damaged Core Refund

- Scavenged cores returned (See Inspection Tips)
- Non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Disassembled
- Not an acceptable Perkins engine model

All complete engine core must be returned completely assembled with these components included **in the container from the original Power Exchange complete engine:**

- Sump (oil pan) assembly
- Damper assembly (if applicable)
- Timing case
- Intake and exhaust manifold
- Turbocharger (if applicable)
- Governor (if applicable)
- Fuel filter group
- Top cover (rocker cover)
- Flywheel housing (if applicable)
- Oil Cooler (if applicable)
- Water pump
- Fuel/air ratio control (if applicable)
- Cylinder head



## Core Acceptance Criteria

- Crankshaft assembly
- Camshaft assembly
- Connecting rods and pistons
- Liners (if applicable)
- Fuel lift pump
- Thermostat housing cover
- Air compressor (if applicable)
- Cylinder block
- Injector assemblies
- Fumes disposal (breather system) tube
- Oil filter group
- All engine-mounted pulleys
- Valve mechanism group
- Electronic control module (ECM) (if applicable)

If there is a known internal failure, use 'KNOW' inspection code on the electronic CCR.

### Damaged Blocks

Cracked or broken or welded blocks will receive damaged core refund.

### Add Charges

Add charges will be applied for disassembled or missing main or connecting rod bearing caps, as well as for any other required parts that are missing. Add charges will also apply for any engine stands that may be provided.

### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive rust or corrosion will result in no core refund.

Engine cores with fire damage receive no core refund.

Engine cores which appear to have had salvageable parts removed from them and had non-salvageable parts substituted in their place, will be subject to a detailed inspection. Disassembly of suspect cores may be necessary to determine the authenticity of the core.

If a returned core is found to have been scavenged or assembled from scrap material, the core will be rejected and the customer returning the core to Perkins will be assessed a £200 inspection fee.

## Core Acceptance Criteria

### Connecting Rods

#### You will receive:

##### Full Core Refund

- Fully assembled and complete – rod and end cap match and are marked
- Rod not scored and discoloured due to overheating from a bearing failure
- No pin bore damage due to failed bushing
- Rod not visibly cracked, broken, bent or twisted
- No non-operational damage (mishandling, excessive rust, corrosion or pitting)
- Acceptable Perkins part number



Figure 1 - No Core Refund  
Crank bore is scored and heat discoloured

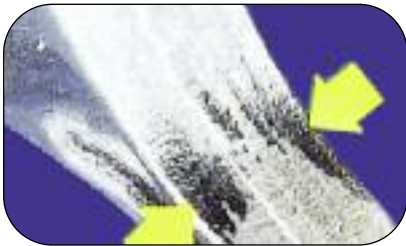


Figure 2 - Full Core Refund  
Chemical/sludge discolouration



Figure 3 - No Core Refund  
Pin bore damage



Figure 4 - No Core Refund  
Visibly bent and twisted

#### Discolouration Due to Overheating from a Bearing Failure

Rod bearing failure (blue-black colour) will not cause core rejection. To be rejected, the crank bore must show evidence of bearing failure scoring and a rough inner diameter and be discoloured from overheating as shown in Figure 1.

Discolouration from chemical build-up or sludge is acceptable (see Figure 2).

#### Fully Assembled and Complete (rod and end cap must match and are marked)

Rod and end cap must match and be marked for full credit. If your cores are not already numbered, mark your rods and end caps before removal. Then reassemble them into matched sets before core shipment. If either the rod or the end cap is unmarked upon return to Perkins, no core refund will be issued.

#### Non-operational Damage (mishandling, excessive rust, corrosion or pitting)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust, or pitting, which are most often caused by improper storage, will result in a damaged core refund.

# Core Acceptance Criteria

## Crankshafts

### You will receive:

#### Full Core Refund

- Not visibly cracked or broken
- Not chromed or welded
- Complete with undamaged gear and counterweights (where applicable)
- Not excessively damaged fillet areas
- Undamaged by mishandling, excessive rust, corrosion or pitting
- Acceptable Perkins part number

#### No Core Refund

- Chromed or welded
- Cracked or broken



Figure 1 - No Core Refund  
Visible crack

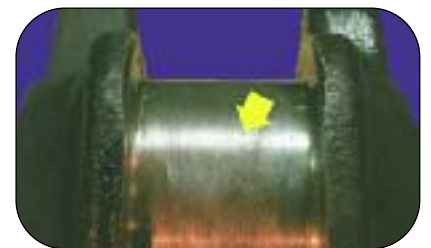


Figure 2 - No Core Refund  
Visible crack

### Fully Assembled with Gear and Counterweights

Gears must be included with your core or you will be add charged. See the introduction for details on add charges.

Condition of the gear is not a factor unless the gear is an integral part of the crankshaft forging. For these, no core refund will be issued if the gear is cracked, damaged or broken.

When applicable, counterweights must be returned. Each missing, damaged or disassembled and unmarked counterweight will be add charged. See the introduction for details on add charges.

### Chromed or Welded

Cores which have been competitively rebuilt using chrome plating or welding are not acceptable for full core refund. When checking for welding or chrome plating:

- Look for a shiny, raised journal surface as shown in Figure 3
- Inspect the oil holes and look for a layer of chrome or weld material
- Inspect the journal surface. A chromed surface usually will have a shattered glass appearance
- A copper sulphate test may be done to verify a chromed part



Figure 3 - No Core Refund  
Chromed journal surface

### Non-operational Damage (mishandling, excessive rust, corrosion or pitting)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund (Figure 4).

## Core Acceptance Criteria



Figure 4 - No Core Refund  
Excessive pitting

### Excessively Damaged Fillet Areas

Bearing failures may cause excessive fillet damage. Damage is excessive when metal is removed from the red shaded areas as shown in Figure 5. It is usually due to contact with the connecting rod or main bearing.

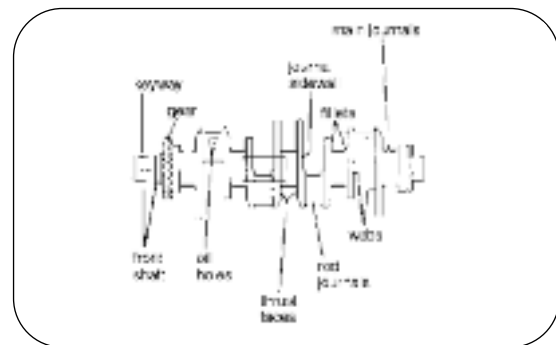
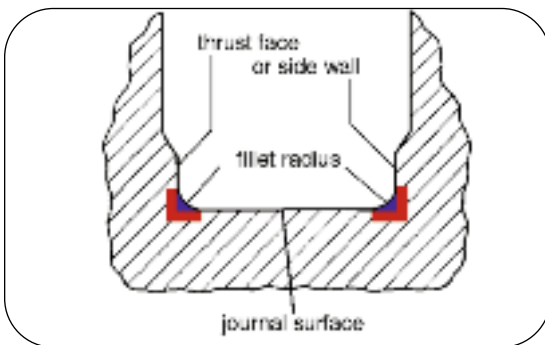


Figure 5

A crankshaft with metal removed from the blue shaded area of the fillet radii is acceptable for full credit. A crankshaft with metal removed from the red shaded areas is not acceptable for full credit



Figure 6 - Full Core Refund  
Bearing build-up

## Core Acceptance Criteria

### Cylinder Blocks

#### You will receive:

##### Full Core Refund

- Cylinder block is not cracked, broken or welded
- Fully assembled with matched bearing caps in proper locations
- No non-operational damage (mishandling, unsuccessful attempts to salvage, excessive rust, corrosion, pitting or fire damage)
- Acceptable Perkins part number
- Liners must be included (if applicable)
- No material removed from top deck surface of block



Figure 1 - Not Acceptable

#### No damaged core refund is available for cylinder blocks.

##### Damaged Blocks

Cracked, broken or welded blocks receive no core refund. Examine all areas of the block including the top deck face, pan rail, front and rear mounting faces, cam bores and cylinder bores. Top deck cracks are most commonly found between the water passages and bolt holes as per Figure 1.

##### Fully Assembled

Blocks must be returned completely assembled with the bearing caps properly bolted in place and with liners if applicable.

##### Cylinder Liners

Blocks with cylinder bores lined with genuine Perkins liners are acceptable.

##### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.

Unsuccessful attempts to salvage the block will result in no core refund.

Blocks with fire damage will receive no core refund.

# Core Acceptance Criteria

## Cylinder Heads



Figure 1 - Damaged Core Refund  
Welder's mark



Figure 2 - Damaged Core Refund  
Bottom deck crack



Figure 3 - Damaged Core Refund  
Top deck crack



Figure 5 - Damaged Core Refund  
Metal stamp on combustion face



Figure 7 - Damaged Core Refund  
This head had a top deck crack and was repaired by welding the freeze plug hole shut. Perkins does not use or authorise this process



Figure 4 - Damaged Core Refund  
Dropped valve damage



Figure 6 - Damaged Core Refund  
A plug which is not cast iron has been welded into this head to replace a cracked area around the bore. Perkins does not use or authorise this process

### You will receive:

#### Full Core Refund

- Not visibly cracked, damaged or welded (see exception under *Cracked Full Core Refund*)
- Fully assembled and complete
- No non-operational damage (mishandling, excessive rust, corrosion or metal stamps on combustion face)
- Acceptable Perkins part number

#### Damaged Core Refund

- Visibly cracked, damaged, or previously welded (see exception under *Cracked Full Core Refund*)
- Non-operational damage (mishandling, excessive rust, corrosion or metal stamps on combustion face)
- Disassembled completely

#### No Core Refund

- Broken casting
- Not a Perkins part or not an acceptable part number
- Any evidence of unsuccessful attempts to salvage
- Fire damage

## Core Acceptance Criteria

### Visual Inspection

Only a visual inspection of the cylinder head is needed. You are not required to disassemble, clean, dye check or magnaflux cylinder head cores.

### Welded

#### ■ Full Core Refund

Perkins Power Exchange cylinder heads, welded or unwelded, have the Perkins part number stamped on them. Any Perkins Power Exchange cylinder head will receive full core refund if it is uncracked and meets all other full core refund criteria.

#### ■ Damaged Core Refund

Cylinder heads with a welder's mark (Figure 1) or with any visible weld as in Figures 6 and 7 will result in a damaged core refund.

Minor cosmetic damage is acceptable for full core refund. Cosmetic welding is often used on the sides of castings to hide minor dents and scratches or to repair bolt hole bosses. Welding in the fire ring area is never cosmetic and will result in damaged core refund if welded by a source other than Perkins.

### Cracked

#### ■ Full Core Refund

A head with an internal crack that is not visible is eligible for full core refund if it meets all other full core refund criteria. Mark the head 'Internal Crack' to assure it is not reused.

#### ■ Damaged Core Refund

Cracked cylinder heads are acceptable for damaged core refund. Cracks are often difficult to locate. For best results, scrape away excess oil, dirt and carbon. Shine a flashlight at an angle rather than straight at the head. Cylinder heads typically crack in the fire ring area on the bottom deck (Figure 2) or on the top deck (Figure 3). One good indicator that a top deck crack may be present is a build-up of dirt and oil near the crack. You can usually find these cracks by carefully inspecting the top decks between adapter holes and freeze plugs.

### Damaged

A severely damaged cylinder head is acceptable for damaged core refund. Severe damage is usually caused by debris from a major engine failure such as dropped valves, damaged pistons or injector tips (Figure 4). No add charge will be made for valves damaged due to a component failure within a cylinder. Minor damage such as stripped threads, broken bolts, and scratches in non-machined areas are acceptable for full core refund.

### Pitting

Pitting which occurs through normal operation will be acceptable for full refund. Pitting is defined as the flaking of metal caused by the presence of moisture during operation (Figure 8). Pitting usually occurs in the fire ring area of the bottom deck or around exhaust parts.



Figure 8 - Full Core Refund  
Pitting

## Core Acceptance Criteria

### Fully Assembled

The following parts should be included with your assembled cylinder head kit for core return:

- Head casting
- Valves
- Springs
- Guides
- Adapters (when applicable)



Figure 9 - Full Core Refund  
Complete cylinder head for core return

### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.



## Core Acceptance Criteria

### ECMs

You will receive:

#### Full Core Refund

- Fully assembled and complete
- No signs of tampering or attempts to rebuild
- Acceptable Perkins part number



Figure 1 - Full Core Refund

## Core Acceptance Criteria

### Fuel Injection Pumps

This document covers the following pumps:



Figure 1 - Bosch EPVE



Figure 2 - Stanadyne Rotary



Figure 3 - Lucas Rotary

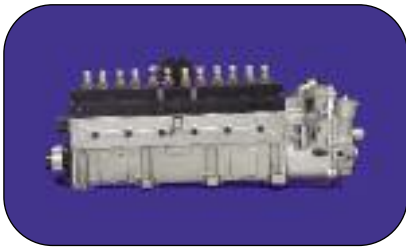


Figure 4 - In-line



Figure 5 - Bosch VP30

#### You will receive:

##### Full Core Refund

- Acceptable Perkins part number
- No visible cracked or broken parts (including connections to electronic modules)
- No damage to the drive end of the main shaft
- Fully assembled and complete
- Drive shaft **can** be rotated by hand (Stanadyne and Delphi)
- Drive shaft **can not** be rotated by hand (Bosch)
- Identification plate is intact and adhered to fuel pump
- No evidence of unauthorised interference
- No damaged threads on fuel connectors onto the pump body and housing

#### Cracked or Broken Housings

Check for visible cracks in the housing. No core refund will be given if the housing is severely cracked or broken. Housing or body cracks are an indication of possible internal damage. Minor cracks on the mounting flange are acceptable for full core refund.

#### Internal Inspection (Stanadyne Only)

Remove the top cover by removing three securing screws (Figure 1) and check that the head (Figure 2) rotates when the drive shaft is turned. Remember to replace cover after inspection.

#### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.



## Core Acceptance Criteria

### Long Engines (Kits)

#### You will receive:

##### Full Core Refund

- Cylinder block and head are not visibly cracked, broken or welded
- Fully assembled
- No non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Crankshaft is not visibly broken
- Acceptable Perkins engine model
- Crankshaft rotates two complete revolutions

##### Damaged Core Refund

- Cylinder block or head visibly cracked, broken or previously welded
- Crankshaft is visibly broken

##### No Core Refund

- Non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Scavenged cores returned (See Inspection Tips)
- Disassembled
- Not an acceptable Perkins engine model

All long block core must be returned completely assembled with these components included **in the container from the original Power Exchange long block:**

- Crankshaft with bearing caps and bearings
- Pistons and connecting rods with bearings
- Cylinder block
- Cylinder head
- Liners (if applicable)
- Camshaft (if applicable)
- Push rods and followers (if applicable)
- Rocker lever assembly (if applicable)

#### Inspection Tips

Refer to **Practices and Policies, Core Return and Management Procedure** and **Core Return Shipping Instructions** in the 'Policies and Instructions' tab and to **Core Acceptance Guide Introduction** in the 'Core Acceptance Guidelines' tab for additional information applicable to **all** cores.

## Core Acceptance Criteria

### Damaged Cylinder Blocks/Heads

Cracked or broken cylinder heads or blocks will receive damaged core refund.

Examine all exposed areas of the cylinder block and head including front and rear mounting faces and pan rail.

Long blocks with visibly broken crankshafts receive damaged core refund.

### Add Charges

Add charges will be applied for disassembled or missing main or connecting rod bearing caps, as well as for any other required parts that are missing. Add charges will also apply for any engine stands that may be provided.

### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive rust or corrosion will result in no core refund.

Blocks with fire damage receive no core refund.

Long blocks which appear to have had salvageable parts removed from them and had non-salvageable parts substituted in their place will be subject to a detailed inspection. Disassembly of suspect cores may be necessary to determine the authenticity of the core.

If a returned core is found to have been scavenged or assembled from scrap material, the core will be rejected and the customer returning the core to Perkins will be assessed a £200 inspection fee.

## Core Acceptance Criteria

### Oil Coolers

#### You will receive:

##### Full Core Refund

- No cracked or broken housings (no salvage welding)
- Fully assembled and complete
- No non-operational damage (mishandling, excessive rust, corrosion or pitting)
- Acceptable Perkins part number



Figure 1 - Full Core Refund  
Fully assembled

#### Cracked or Broken Housings

Check for visible cracks in the housing. If cracked or broken, no core credit will be issued.

#### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive rust, corrosion, or pitting, which are most often caused by improper storage, will result in no core refund.

## Core Acceptance Criteria

### Oil Pumps

#### You will receive:

##### Full Core Refund

- No cracked or broken housings
- Fully assembled and complete
- No non-operational damage (mishandling, excessive rust, corrosion or pitting)
- Acceptable Perkins part number



Figure 1 - Full Core Refund  
Fully assembled

#### Cracked or Broken Housings

Check for visible cracks in the housing. If cracked or broken, no core credit will be issued.

#### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive rust, corrosion, or pitting, which are most often caused by improper storage, will result in no core refund.



## Core Acceptance Criteria

### Short Engines

#### You will receive:

##### Full Core Refund

- Cylinder block is not visibly cracked, broken or welded
- Fully assembled
- No non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Crankshaft is not visibly broken
- Acceptable Perkins engine model
- No material removed from top surface of cylinder block

##### Damaged Core Refund

- Cylinder block is visibly cracked, broken or welded
- Crankshaft is visibly broken

##### No Core Refund

- Non-operational damage (mishandling, excessive rust, corrosion, pitting or fire damage)
- Not an acceptable Perkins engine model

All short block core must be returned completely assembled with these components included in the container from the original Power Exchange short block:

- Crankshaft with bearing caps and bearings in correct position
- Pistons and connecting rods with bearings
- Cylinder block
- Liners (if applicable)

#### Damaged Cylinder Blocks

Cracked or broken cylinder blocks will receive damaged core refund.

Examine all exposed areas of the cylinder block including deck faces, pan rail, front and rear mounting faces, cylinder bores and cam bore bosses.

Short blocks with visibly broken crankshafts receive damaged core refund.

Top deck cracks are commonly found between the water passages and bolt holes.

#### Add Charges

Add charges will be applied for disassembled or missing main or connecting rod bearing caps, as well as for any other required parts that are missing. Add charges will also apply for any engine stands that may be provided.

#### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive rust or corrosion will result in no core refund.

Blocks with fire damage receive no core refund.

Short engines which appear to have had salvageable parts removed from them and had non-salvageable parts substituted in their place will be subject to a detailed inspection. Disassembly of suspect cores may be necessary to determine the authenticity of the core.

If a returned core is found to have been scavenged or assembled from scrap material, the core will be rejected and the customer returning the core to Perkins will be assessed a £200 inspection fee.

## Core Acceptance Criteria

### Starter Motors

#### You will receive:

##### Full Core Refund

- Not cracked or damaged housings
- Fully assembled and complete
- No excessive rust, corrosion or fire damage
- Acceptable Perkins part number
- Armature turns

##### Damaged Core Refund

- Housings cracked or damaged
- Fully assembled and complete
- Excessively rusted, corroded or pitted
- Acceptable Perkins part number
- Armature drive locked

##### No Core Refund

- Disassembled
- Any missing subassemblies
- Unacceptable Perkins part number



Figure 1 - Typical Illustration of Starter Subassemblies

1. Armature (hidden)
2. Drive housing
3. Solenoid
4. Lever housing
5. Commutator end frame
6. Main housing
7. Drive (Pinion)

#### Evidence of Unsuccessful Attempts to Salvage

Cores that show signs of unsuccessful salvage attempts will be rejected. Cores must be in the 'as removed' condition to be considered for the programme.

#### Locked Armature

Damaged core refund will be given if the armature will not turn when using a screwdriver or pliers.

#### Fully Assembled and Complete

No core refund will be issued for cores with one or more major subassemblies missing. The starter is considered fully assembled if drive or pinion is the only component missing. However, the armature must still rotate.

#### Non-operational Damage (mishandling, excessive rust, corrosion, pitting or fire damage)

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in a damaged core refund.



## Core Acceptance Criteria

### Turbochargers

**Note:** No disassembly is required. Use visual inspection and adjustable flashlight

#### You will receive:

##### Full Core Refund

- Turbine wheel is not cracked, broken or bent to the extent that it is visible without disassembly
- Unit is fully assembled with end housings and complete (band clamps must be tight)
- Unit is an acceptable Perkins part number
- Unit has not been damaged by fire
- Unit has no non-operational damage due to:
  - Mishandling that results in broken flanges or housings
  - Torch marks that melt any housing material on the turbocharger

##### Damaged Core Refund (Large frame turbos only)

- Turbine wheel is cracked, broken or bent to the extent that it is visible without disassembly
- Unit is not fully assembled and complete (band clamps are loose or missing)
- Unit is an acceptable Perkins part number
- Unit has not been damaged by fire
- Unit has non-operational damage due to either of:
  - Mishandling that results in broken flanges or housings
  - Torch marks that melt any housing material on the turbocharger or cartridge

##### No Core Refund

- Unit has been damaged by fire
- Unit is not an acceptable Perkins part number
- Unit is disassembled

#### Turbine Wheel Damage

Do not disassemble the turbine housing to inspect the turbine wheel. Inspect for damage to turbine wheel using a flashlight. If necessary, adjust the flashlight beam and tilt the turbo to allow easier inspection to determine if the turbine wheel is bent or broken.

#### Acceptable Perkins Part Number

The core must be an acceptable Perkins part number.

## Core Acceptance Criteria

### Other Tips

- Do not inspect compressor wheel
- Do not inspect for housing cracks
- Wheels do not have to turn to receive full core credit
- To avoid shipping damage for returned core, place the core in the packaging of the replacement part with proper packaging to protect the core



Figure 1 - Full Core Refund  
Fully assembled and complete



Figure 2 - Full Core Refund  
Operational damage - crack



Figure 3 - Full Core Refund  
Damage - chipped cold housing



Figure 4 - Full Core Refund  
Webbing burned out

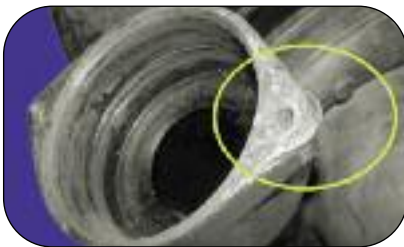


Figure 5 - Full Core Refund  
Turbo with hammer marks/blows on cold housing

### Damaged Core Refund (Large frame turbos only)



Figure 6 - Damaged Core Refund  
Hot wheel bent



Figure 7 - Damaged Core Refund  
Hot wheel broken



Figure 8 - Damaged Core Refund  
Hot wheel broken



Figure 9 - Damaged Core Refund  
Non-operational damage - melted by torch

## Core Acceptance Criteria

### Water Pumps

You will receive:

#### Full Core Refund

- Housings and pulleys (if applicable) are not visibly cracked or broken (see Inspection Tips)
- Fully assembled and complete
- No non-operational damage (mishandling, excessive rust on machined surfaces, pitting or corrosion)
- Acceptable Perkins part number



Figure 1 - Full Core Refund

#### Cracked or Broken

Check the housing and pulley (if applicable) for visible cracks and damage.

#### Non-operational Damage

If rust can be wiped away with an emery cloth, the core will be accepted for full core refund. Excessive corrosion, rust or pitting, which are most often caused by improper storage, will result in no core refund.

**Asia**

Perkins Engines (Asia Pacific) Pte Ltd  
14 Tractor Road  
Singapore 627973  
Telephone +65 6828 7469  
Fax +65 6828 7414

**Europe, Middle East and Africa**

Perkins Engines Company Limited  
Peterborough PE1 5NA  
United Kingdom  
Telephone +44 (0)1733 583000  
Fax +44 (0)1733 582240

**North America**

Perkins Engines Inc  
N4 AC 6160  
PO Box 610  
Mossville, IL 61552-0610, USA  
1-888-PERK-ENG  
Telephone +1 309 578 7364  
Fax +1 309 578 7329

**Latin America**

Perkins Motores do Brasil Ltda  
Rua Alexandre Dumas, 1711 Ed. Birman 11, 9º andar  
Chácara Santo Antonio  
São Paulo / SP - Brasil  
Cep: 04717-004  
Telephone +55 11 2109 2038  
Fax +55 11 2109 2089

