

The Brake Service Pack

Measure the pads, identify the shoes, find out why it drags, and keep the record. Four sheets with true-size instruments throughout.

BRAKES

These sheets help you measure and record. They are not repair procedures and they do not tell you whether a part will fit or whether a brake is safe. Brake work done wrong does not fail gently, and a fault that passes a stationary test can still fail under use. If you are not confident, have it done — and record what was done.

Four sheets for the system where these machines are worst served by catalogues and where guessing is least acceptable.

PRINT THIS AT ACTUAL SIZE

Several sheets in this pack carry scales, rings and bars printed at true size that you lay a part against. Those are only correct if the pack is printed at 100%. In the print dialog choose “Actual size” or “100%”, not “Fit to page”. Each sheet that needs it carries its own millimetre rule — check one with a steel rule before you trust any dimension in the pack.

WHAT IS IN THIS PACK

- | | | |
|-----------|---|-----------|
| 01 | Brake Pad Measuring Board
Push the pad into the corner and read all four dimensions off the page. Built because look-alike pads differ by millimetres and no photograph shows it. | TSP-ME-13 |
| 02 | Brake Shoe Arc Template
True-size arcs at the two drum diameters the owner community reports. Lay the shoe on the page and see which one it belongs to. | TSP-ME-14 |
| 03 | Brakes Dragging — Diagnostic Chart
A wheel that will not spin freely costs speed and fuel and makes heat. Six causes, each ending at something you can feel or see. | TSP-TS-11 |
| 04 | Brake Service Record
What was fitted, what it measured when it came off, and how long it lasted. For the system where guessing is least acceptable. | TSP-MA-09 |

FREE TO PRINT, COPY AND PASS ON

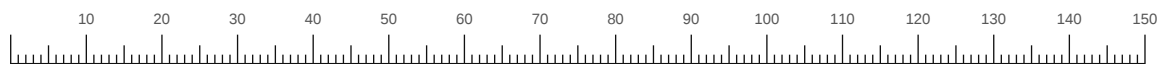
This pack costs nothing and always will. Print it, photocopy it, hand it to somebody in a club or a forum, leave a copy in a workshop. If you find a mistake in it, tell us and it gets corrected — every sheet carries a document number and a version so you can say exactly which one you mean.

BRAKE PAD MEASURING BOARD

BRAKES

This sheet records what you have. It is not a repair procedure and it does not tell you whether a pad is safe or will fit. Brake work done wrong does not fail gently. If you are not confident doing it, have it done.

PRINT CALIBRATION — CHECK BEFORE MEASURING

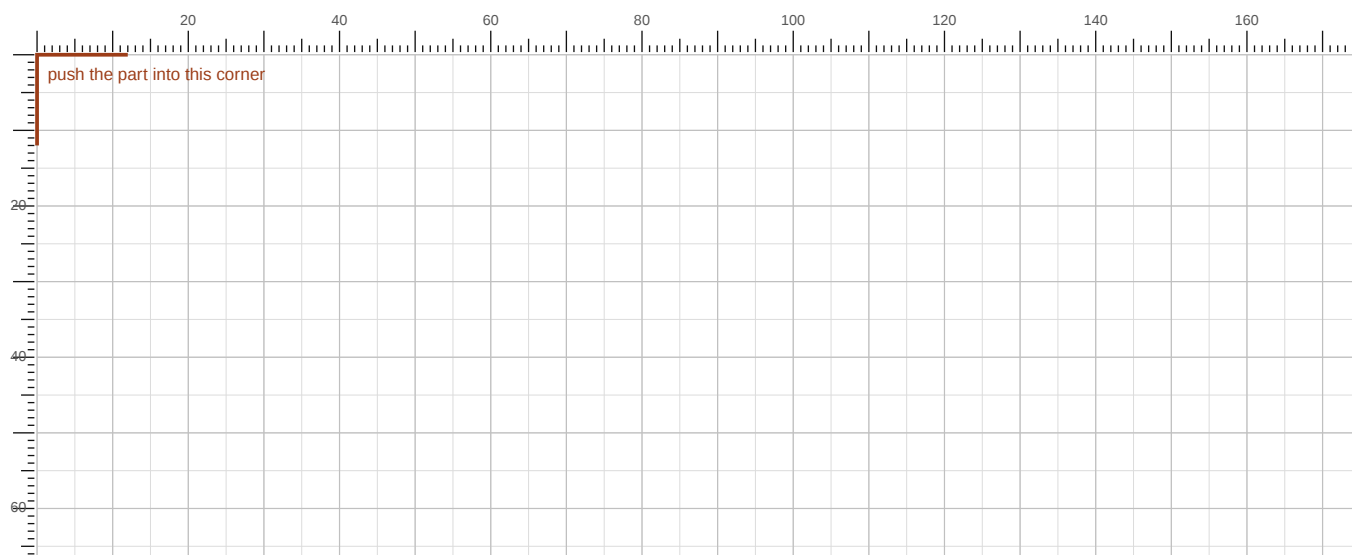


Lay a steel rule along this scale. The 150mm mark must fall at exactly 150mm. If it does not, reprint at 100% / "Actual size" with page scaling off — every measurement you take from a scaled sheet will be wrong.

WHY THERE ARE NO PRINTED PAD SHAPES ON THIS SHEET

A library of true-size silhouettes would be the obvious thing to publish here, and it is exactly what we will not do. We cannot source the outlines of the pads actually in circulation, a printed shape gets matched against and believed, and one that was three millimetres out would send somebody to buy the wrong pad with more confidence than they started with. An instrument you measure with cannot mislead you in that way.

MEASURING BOARD — PUSH THE BACKING PLATE INTO THE CORNER



Read the width along the top scale and the height down the left. Both are in millimetres and both are true size if the calibration rule above checked out.

THE FOUR DIMENSIONS

OVERALL HEIGHT

mm

Backing plate only

OVERALL WIDTH

mm

Backing plate only

HEIGHT AT THE MIDDLE

mm

The one that catches people out

FRICTION THICKNESS

mm

At its thinnest point

THE THREE THAT ACTUALLY DISCRIMINATE

A vendor selling these pads names them explicitly: the overall height, the height in the middle, and the bend of the backing plate. Two pads can share an outline and differ on all three. The middle height is the one nobody thinks to measure, because on a photograph it is invisible.

THE BACKING PLATE

PLATE THICKNESS

 mm

IS THE PLATE FLAT OR BENT?

IF BENT, HOW MUCH AND WHERE?

PIN HOLE DIAMETER

 mm

PIN HOLE SPACING

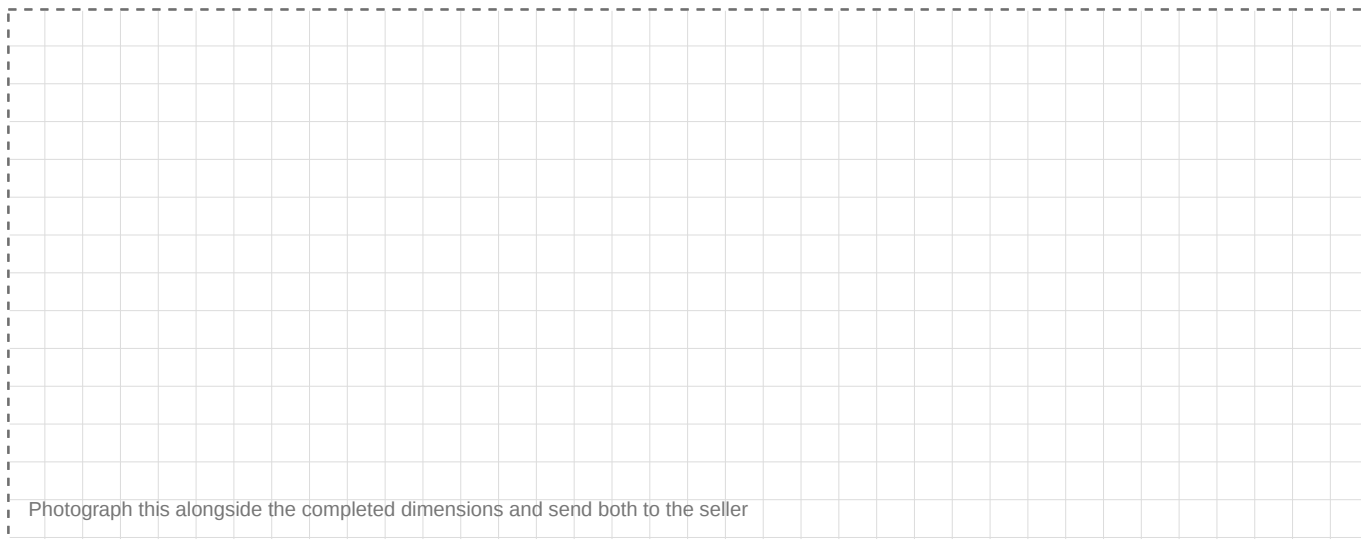
 mm

NUMBER OF PINS

- ☐ Pin hole through the plate, or a slot rather than a hole
- ☐ Ears or tabs standing proud of the outline
- ☐ A notch or step in one edge
- ☐ Mechanical wear indicator tab
- ☐ Anti-rattle spring clip fitted to the pad
- ☐ Shim or backing plate behind the pad
- ☐ Markings stamped or printed on the plate
- ☐ The two pads in the caliper are the same, or deliberately different

TRACE THE OUTLINE

5MM GRID — DRAW ROUND THE PLATE AND CROSS-MARK EVERY HOLE CENTRE



Photograph this alongside the completed dimensions and send both to the seller

THE CALIPER AND DISC

FRONT OR REAR

CALIPER PISTON COUNT

DISC OUTSIDE DIAMETER

 mm

DISC THICKNESS

 mm

DISC BOLT COUNT

DISC BOLT CIRCLE

 mm

THIS SHEET RECORDS, IT DOES NOT RECOMMEND

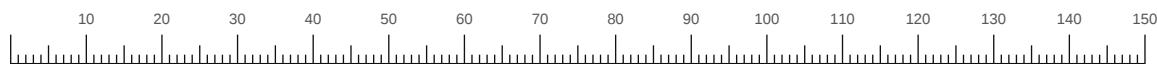
Nothing here tells you which part to buy. It tells you what you currently have, in the units a seller works in. Machines built to the same nominal specification were fitted with different components by different suppliers, sometimes inside one model year, so the only reliable reference is the item in your hand.

BRAKE SHOE ARC TEMPLATE

BRAKES

This sheet helps you record what you have. It does not tell you whether a part will fit or whether a brake is safe. Shoes that do not match the drum will pass a stationary test and fail when you need them. If you are not confident, have it done.

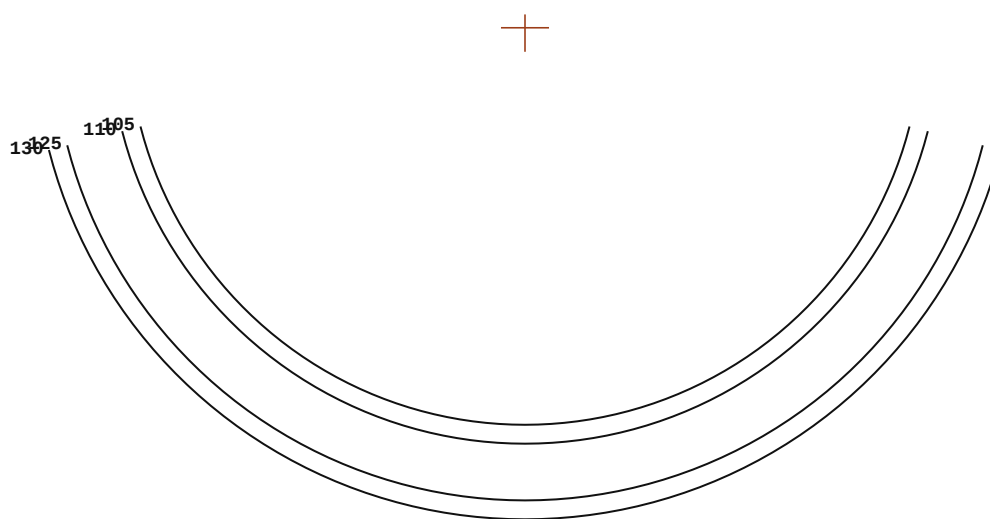
PRINT CALIBRATION — CHECK BEFORE MEASURING



Lay a steel rule along this scale. The 150mm mark must fall at exactly 150mm. If it does not, reprint at 100% / "Actual size" with page scaling off — every measurement you take from a scaled sheet will be wrong.

LAY THE SHOE ON THE ARCS

TRUE-SIZE DRUM ARCS — DIAMETER IN MILLIMETRES



Put the shoe friction-face down and slide it along until one arc follows its curve for its whole length. A shoe that matches at the ends but gaps in the middle, or the reverse, belongs to a different diameter — or has been worn out of shape, in which case measure the drum instead.

WHICH ARCS THESE ARE, AND HOW FIRMLY

The owner community consistently reports two common drum sizes on these machines, around 105mm and around 125mm. That comes from forum consensus and from the volume of vendor listings at exactly those two numbers, not from a manufacturer document — so the intermediate arcs are printed as well, because a machine that matches neither of the common two is a real possibility rather than a measuring error.

IF THE SHOES ARE WORN OUT OF SHAPE

Measure the drum instead. With the wheel off, put a rule or calipers across the inside of the braking surface at its widest point — that is the drum's inside diameter, and it is the number the shoes have to match. Measure across two or three different angles: a drum worn oval reads differently depending where you measure, and that is itself a finding.

DRUM INSIDE DIAMETER

 mm

MEASURED AGAIN AT 90°

 mm

DIFFERENCE BETWEEN THEM

 mm

YOUR BRAKE

ARC THAT MATCHED

 mm

SHOE WIDTH

 mm

FRICTION MATERIAL REMAINING

 mm

FRONT OR REAR

CABLE OR ROD ACTUATED

PIVOT PIN DIAMETER

 mm

RETURN SPRING COUNT

WEAR INDICATOR ON THE BACKPLATE?

DATE MEASURED

THE CASE-LENGTH LINK

The short-case and long-case split, as reported by the owner community. Measure yours rather than assuming from the badge.

WHAT TO CHECK	SHORT CASE	LONG CASE
Bolts around the CVT cover	8	10
Axle centre to case	about 9.5 in	about 11 in
Wheel usually fitted	10 in	12 in
Drive belt	Shorter	Longer

TREAT THIS AS A STRONG HINT, NOT A RULE

This split comes from the owner community rather than from a manufacturer document, and there are exceptions — nine-bolt cases have been reported. Output shaft length and final gearing also differ between the two, so a case measurement narrows the search but does not settle whether a specific part fits. Measure the machine, then check the part against the measurement.

Measure the case before you shop and you narrow the brake search without taking the wheel off. It is a strong hint, not a rule — confirm it against the arc template above once the drum is open.

WHILE THE DRUM IS OPEN

- ☐ Drum braking surface smooth, not deeply scored or grooved
- ☐ No blue heat discolouration on the drum
- ☐ Shoes worn evenly across their width and between the two
- ☐ Friction material not contaminated with oil or grease
- ☐ No oil coming past the axle or hub seal into the drum
- ☐ Return springs present, and both the same
- ☐ Cam and pivot move freely and are lightly greased, away from the friction faces
- ☐ Adjuster has travel left in both directions

THIS SHEET RECORDS, IT DOES NOT RECOMMEND

Nothing here tells you which part to buy. It tells you what you currently have, in the units a seller works in. Machines built to the same nominal specification were fitted with different components by different suppliers, sometimes inside one model year, so the only reliable reference is the item in your hand.

BRAKES DRAGGING — DIAGNOSTIC CHART

BRAKES

This sheet helps you find why a brake is dragging. It is not a repair procedure. Brake work done wrong does not fail gently, and a dragging brake that is freed incorrectly can become a brake that does not work at all. If you are not confident, have it done.

THE TEST

Get the wheel off the ground and spin it by hand. A healthy wheel turns several revolutions and coasts to a stop, perhaps with a light rub you can hear. A wheel that stops within half a turn is dragging. Do both, and note the difference between them — one much worse than the other is itself a finding.

FRONT: REVOLUTIONS BEFORE
STOPPING

REAR: REVOLUTIONS BEFORE
STOPPING

EITHER WHEEL HOT AFTER A RIDE?

FIRST, THE FREE ONE — COMMON TO BOTH TYPES

1 Does the brake lever or pedal return fully to its rest position on its own?

YES It returns. Note it and go to the branch for your brake type.

NO A lever or pedal that does not fully return holds the brake slightly applied all the time. Look at the pivot for dirt and corrosion, at the cable for stiffness, and at the return spring. This costs nothing to fix and is commonly the whole answer.

DISC BRAKES

1 With the pads out, does the piston push back into the caliper with steady hand pressure?

YES The piston retracts. Go on.

NO A piston that will not push back is corroded in its bore or has a perished seal. It cannot release the pad, so the brake is permanently partly applied.

↓ still not solved — go on

2 Do the caliper slide pins move freely in and out by hand?

YES Slides are free. Go on.

NO Seized slides hold the caliper skewed so one pad stays in contact. Clean them and use the correct grease — the wrong one swells the rubber boots and seizes them again.

↓ still not solved — go on

3 When you crack the bleed nipple, does the brake release?

YES Pressure was being held. That points at the master cylinder not returning, or a hose that has swollen internally and is acting as a one-way valve.

NO No trapped pressure. The drag is mechanical — pads, slides, or a warped disc rubbing at one point.

DRUM BRAKES

1 With the adjuster fully slackened off, does the wheel spin freely?

- YES** The brake was simply over-adjusted. Set it so there is free play at the lever before the shoes touch — and ask why it needed that much adjustment, because worn shoes are the usual reason.
- NO** Still dragging with the adjuster off. The fault is inside. Go on.

↓ still not solved — go on

2 Does the operating cam return fully when you release the lever?

- YES** The cam returns. Go on.
- NO** A dry or corroded cam holds the shoes out. It needs cleaning and a trace of grease on the cam and pivot only — never anywhere it can reach the friction faces.

↓ still not solved — go on

3 Are both return springs present, unstretched, and the same as each other?

- YES** Springs are good. Go on.
- NO** A missing, broken or stretched return spring cannot pull the shoes back off the drum. Replace both together.

↓ still not solved — go on

4 Is the cable free, and does the outer casing look undamaged along its whole length?

- YES** Cable is free. If everything above was normal, look at the shoes for a high spot and at the drum for ovality.
- NO** A cable that has corroded or whose outer has been crushed will not let the brake return. Record where the damage is.

WHAT YOU FOUND

WHEEL	WHAT YOU OBSERVED	WHAT YOU DID	SPINS FREE NOW?

WRITE DOWN WHAT YOU SAW, NOT WHAT YOU CONCLUDED

The observation is recoverable later and the conclusion is not. "Wheel would not spin more than half a turn" is still useful in a month. "Brake problem" is not, because you will not remember what made you think so.

BRAKE SERVICE RECORD

BRAKES

This is a record sheet, not a repair procedure. Brake work done wrong does not fail gently, and a fault that passes a stationary test can still fail under use. If you are not confident, have it done and record what was done.

WHAT IS FITTED

FRONT: DISC OR DRUM

--

REAR: DISC OR DRUM

--

FLUID TYPE IF HYDRAULIC

--

FRONT PAD OR SHOE SIZE

--

REAR PAD OR SHOE SIZE

--

CABLE OR HYDRAULIC REAR

--

From the measuring board or arc template

SERVICE LOG

[illegible]

THE PARTS THAT WEAR INVISIBLY

DATE	DISC THICKNESS F	DISC THICKNESS R	DRUM DIA	FLUID CHANGED?	FLUID COLOUR

DATE	DISC THICKNESS F	DISC THICKNESS R	DRUM DIA	FLUID CHANGED?	FLUID COLOUR

FLUID AGES BY TIME, NOT BY MILEAGE

Brake fluid absorbs water from the air through the system's seals and hoses whether the machine is ridden or stored. That lowers its boiling point, which matters most in exactly the situation where you need the brake to work. Dark or cloudy fluid is a reason to change it regardless of how few miles it has covered — which is why this table is dated rather than mileage.

WHILE IT IS APART**DISC BRAKES**

- ☐ Disc not scored, lipped at the outer edge, or blued from heat
- ☐ Disc thickness measured and recorded
- ☐ Disc bolts tight and all present
- ☐ Caliper slides or pins move freely and are greased
- ☐ Piston moves freely and its seal is not weeping
- ☐ Hose not cracked, swollen or rubbing anything
- ☐ Pads worn evenly, both sides and top to bottom

DRUM BRAKES

- ☐ Drum surface smooth, not scored or blued
- ☐ Drum measured at more than one angle
A drum worn oval reads differently depending where you measure
- ☐ Shoes worn evenly across their width and between the two
- ☐ No oil past the hub seal into the drum
- ☐ Return springs present and matched
- ☐ Cam and pivot free and lightly greased, away from friction faces
- ☐ Adjuster has travel left in both directions

BOTH

- ☐ Lever or pedal has firm resistance and does not come back to the bar
- ☐ Wheel spins free once the brake is released
- ☐ Brake light switch works on both brakes

NOTES

Need to work out what you actually own?

The Scooter Parts Registry is a free public record of the Chinese factories behind US-market scooters, ATVs and go-karts — brand, engine family, VIN prefix, factory and related machines. No account, no email.

thescooterparts.com/identify