



Motorcycling has the imagery of freedom built into it but the industry today attempts to ensure that safety is discreetly built into the apparel and footwear used. Mel Cheskin focuses on the four categories of boots and their components.

Even Hell's Angels have Soles

Novogar Stivale Cross



In this sport the bends are sharper, the speed is faster, the risk is greater and the footwear is technical, highly technical. Amongst the most hi-tech and demanding of all footwear requirements and manufacture are the boots designed specifically for competition motorcycling. Remember the Empire's storm troopers in Star Wars, or Robocop? Full length, over the calf exoskeletal injection molded shafts with rigid ski-boot soles and air vents - but motorcycle boots are actually more sophisticated than that. At speeds in excess of 300 mph (plus-500kph), with the foot approximately six inches off the ground, the only protection between the foot and an asphalt track is the racing boot. That is why some of the world's most dedicated footwear component

makers spend countless hours and investment dollars to improve the fit and protective qualities that comprise this category of specialised boot making.

Mainly located in and around the Montebelluna region in Italy, companies such as Wesco, Gaerne, Teknic, Sidi, Agvsport, Prexport, Daytona, Alpinestar and Vendramini test and perfect boot designs and materials used in this exhilarating sport. There are basically four categories of motorcycle boots: from the least technical for (a) Road or Touring use, to (b) Enduro or Trail (otherwise known as Motorcross), (c) Track or Dirt bike racing and, the most demanding, (d) Competition Formula Road Racing. All four categories have evolved from rugged all-leather constructions to futuristic integral, articulated, adjustable, injection

molded, aero-dynamic component systems. Leather is still a major component in many categories of motorcycle boots albeit reinforced with the latest Kevlar ballistic weaves, waterproofed with oil or PU coatings, insulated with Thinsulate or integrated with Gore-Tex breathable, waterproof membrane.

The four in detail

(a) The greater amount of leather used the less technical the boot. Just because the boot carries the name Harley-Davidson, for example, this does not necessarily constitute high performance footwear suitable for competition riding. Harley-Davidson long ago licensed its famous motorcycle name for the manufacture of street footwear, some of which may be worn for casual touring or road use. This category of motorcycle boot is typically of Goodyear or Norwegian welted construction with a stacked block heel, stubbed or snoot toe and 8-11 inch high, full-grain oiled leather shaft with or without harness, buckles or zipper. The most technical feature of this style of "street touring" boot may be the inclusion of a protective steel toe. Soling may be Nitrile or SBR rubber with a lug sole pattern.

(b) The Enduro or Trail boot may be used in Motorcross or Supercross. This is the most rugged form of motorcycle riding necessitating boots with a combination of flexibility and protection. There are hills, rocks, gravel and lots of mud with the legs being used frequently as props and paddles. These are the starting criteria riders and shoe designers must face in order to produce a superior boot for Motorcross. Enduro boots are built on a leather frame with up to a 14-17 inch shaft. One of the requirements in this category is a molded shin guard plate which may be injection molded PU/polypropylene or a molded carbon-fibre composition. The latest protection feature in shin plates is made from Titanium. Waterproof oiled leathers and waterproof membranes, such as Gore-Tex, are important throughout the boot to keep the feet dry. Ballistic nylon and Kevlar weaves are inserted as panels to give the rider protection from scrapes, rocks and occasionally from the metal and heat of the bike itself. However, with all the special protection features such as carbon or metal toe boxes, it is crucial for the rider to have flexibility both in the ankle area and sole in order to dig or push the bike out of immobile situations. Also, to add flexibility to the shaft, a stretch panel may be added at the back of the calf. If the boot has an injected front shin plate a rippled leg 'gaiter' may be added to aid dorsal and plantar flexion.

(c) Dirt track (Speedway) racing footwear is similar to the Enduro boot. The main differences are a lower cut 11-14 inch shaft and a replaceable steel sole slider plate. In this discipline the leg and foot are used as a "prop" for cornering. Stability, protection and durability are the main

requirements for track racing footwear. Sidi makes a fully injection molded boot for stability with adjustable calf system that allows the rider to adjust the diameter of the boot at the calf. Integrated with a molded external ankle brace the Flex SRS model has replaceable toe scuff pads and aerodynamic nylon skid pads on the outsoles. AGV has a 180° plastic ankle protector with an advanced track-slide toe skid system. The mandatory front shin guards are made of various lightweight materials such as super-light titanium alloy of aerospace origin. Both Prexport and Vendramini boots have this shin protection feature with adjustable screws.

(d) The ultimate boot is used in Speed Racing on specially built or modified courses. With speeds of over 300 mph, riders look for the finest aerodynamic edge with comfort and protection features such as the Vertebra System from Sidi. This boot is fully injection molded with a highly articulated interlocking system allowing each joint to move independently, with exclusive bolt-on replaceable aerodynamic nylon pads on the toe, ankle joint and calf. This boot has a molded gear change pad (the gear change is pedal operated by the foot) made from DuPont techno-polymers which ensures that its qualities will not change in high or low temperatures. This boot also has a steel inner shank.

Gaerne from Italy has a road competition boot which has air-intake vents molded into the shaft allowing fresh air to circulate inside the boot.

The special mold making and support industry that makes this type of feature possible in a boot is also centred in Montebelluna. The skilled mold making, chemical engineering and technical expertise, built up over many years in this region, make up the shoe making process called Monobloc injection. Montebelluna has tended to monopolise the world's ski boot manufacture and similar specialty boot production such as ice hockey, skate boarding and motorcycle boots. This specialised footwear production is a combined knowledge of shoe making, mold making and injection molding skills. Many other forms of injection molding are used in footwear production in different parts of the world such as rubber, EVA and PU for soling. However, for the Monobloc injected process, which molds complete boots or large integrated segments together to form the familiar futuristic 'ski-boot' look, Montebelluna remains the capital. 

A list of modern day components used in the manufacture of motorcycle footwear

Leather - Full grain oil tanned or PU coated leather. (Daytona brand has a kangaroo Leather boot)

Lorica - (Synthetic leather) composite microfiber impregnated with resins

Clarino - (Synthetic leather) poromeric PU coated material

Cordura - Cordura Plus (2000-560-T440) (350-560-T440) Woven nylon fiber

Surlyn - High density polyurethane/polypropylene composition

Hytrell - High density polyurethane composition

Kevlar - Para-aramid fibre

Gore-Tex - Waterproof /breathable membrane

Indy 500 - High abrasion rubber outsole material

Vibram - High abrasion rubber outsole material

Titanium - Super-light metallic alloy

Carbon Composite Material - Carbon and glass fiber impregnated with resins

Thinsulate - Insulation material

Novogar Stivale Trial

