

Definitions for Instability Test Inputs

Shear Quality

Shear Quality is a measure of how “cleanly” snowpack layers fail during instability tests. The following table describes the characteristics of each value used in pit tests.

Shear Quality	Description
Q1	Sudden, sometimes referred to as “pop and drop”. A Q1 shear releases in a clean, planar, smooth and fast surface, like it is spring-loaded. The weak layer may collapse during failure. Tests with thick, collapsible weak layers may exhibit a rougher surface due to erosion of the base layer, but the fracture is planar and fast.
Q2	Resistant. The shear surface is mostly smooth, but the block does not slide as readily as with Q1 shears. The shear fracture occurs throughout the entire interface or weak layer.
Q3	Break. The fracture is rough, uneven, irregular and non-planar, and does not occur across the entire interface or weak layer tested.

The shear values used for the Slope Jump and Ski Cut Tests conform to the Snow, Weather and Avalanche Guidelines (SWAG) Section 2.8, as follows:

Shear Quality	Description
None	No result
Whoomph	Cut or jump collapses layer in snowpack
Crack	Shooting cracks appear when cut or jumping
Slab	Cut or jump releases slab
Loose	Loose snow or sluff release when cut or jumping

Load Values for Shovel Shear, Handshear, Slope Cut, and Jump Tests

The results from these tests are much more subjective than the standard pit tests. We include these definitions only as a systematic measurement scale – there are no guidelines established by experts in the field. Keep in mind too that the Handshear, Ski Cut and Jump tests will cause fractures in the top layers of the snowpack. The Quality of these failures is at least as important as the force required when interpreting the results of these tests

Load Required	Description
Collapse	Layer fails without any force applied, such as when cutting the block for a shovel shear or handshear test. For the Ski Cut and Jump tests, a value of “Collapse” means the snowpack collapses or cracks are shooting out in front of you.
Very Easy	Only minimal pressure is required for a shear to occur. For a Shovel Shear test, a “Very Easy” failure occurs when inserting the shovel. For Ski Cut and Jump Tests, this value means that a slight knee bend propagates a failure.
Easy	The pressure required for a failure is light. For Ski Cut and Jump Tests, this value means that a single jump will cause a failure
Moderate	As denoted, moderate pressure is required to cause a failure. For Ski Cut and Jump Tests, this value means that two-four jumps will cause a failure.
Hard	Sustained and substantial pressure is required to initiate a failure. For Ski Cut and Jump Tests, this value means that several hard weightings were required for a layer to fail