Wild Levels for every leveling task

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WILD LEVELS FOR EVERY LEVELING TASK

(Source: Wild Heerbrugg Ltd. Heerbrugg Switzerland printed in 1965)

Each Wild level has been designed for a particular field of application and with a definite type of user in mind. The range extends from the simple dumpy level, used by the builder or farmer for construction or drainage tasks, to the precision level for the civil engineer or geodetic surveyor who requires the highest possible accuracy. All Wild levels have powerful telescopes, commensurate with their required function, with coated optics, internal focusing-and stadia lines for distance measurement. The initial rapid pre-leveling is made with the aid of a circular bubble and three foot screws, which are protected against dust and which can be adjusted to ensure a smooth and adequate run. In the ease of the Wild NA2 Automatic Engineers' Level, the circular bubble has merely to be centered carefully to make the line of sight horizontal. All knobs are controlled, and all eyepieces are viewed, without the observer having to change his position. The NK01 has a metal horizontal circle as a standard feature. With the exception of the N3, all other levels can be supplied either with or without a glass horizontal circle, depending upon the customer’s requirements. When a glass circle is fitted to a level the code name has a "K” added to it - e.g. NK10, NK2 and NAK2, respectively. In all cases the glass circle of a "K” level is read through the eyepiece of a scale microscope. The main numbered divisions are in degrees or grades and the auxiliary scale is in 10 minute intervals, with accurate estimation possible to 1/10 of each such interval.

Containers TOP

The smaller Instruments (NK01, N10 and NK10) have a shock-proof plastic container which is exceptionally strong and long lasting, although very light and easy td handle.

All other Wild levels are carried in metal containers, specially designed to give the maximum protection in the simplest form.

NK01 TOP

The Wild NK01 Dumpy level is a most convenient level for the building site. The telescope rotates under a friction-braked action, thus requiring no horizontal clamp. Fine pointing is completed by means of a tangent screw. Readings on the metal horizontal circle are made by eye against a fixed index mark, with estimation possible to a tenth of a degree or grade, according to the circle division. The circle itself can be turned by hand to set any desired initial bearing. The circular and tubular level bubbles are seen, free from parallax, in the hinged observation mirror which, when closed, protects the glass vials.

N10 TOP

The Wild N10 Small Engineers' Level is an efficient compact and lightweight instrument, giving highly accurate results under all conditions. It is suitable for general leveling, project studies, route surveys, irrigation works, civil and constructional engineering. When fitted with a glass circle (NK10) it can be used in flat terrain for tacheometric work and for measuring or setting-out horizontal angles. The line of sight is leveled with the aid of a tilting screw and the well known Wild "split-bubble" image system. It has an extremely short minimum focusing distance of 1 meter (3.3 feet), which is most useful.

It is possible to supply this instrument with an upright image telescope (models N10-E and NK10-E) - a feature often appreciated by those who use their level only occasionally or who find it difficult to work with an inverted image. The E-models have a minimum focusing distance of 1.35 meters (4-5 feet).

N2 TOP

The Wild N2 Engineers' Level is a strongly built, accurate and reliable general purpose instrument, which is easy to operate. It is unsurpassed foe use on civil and constructional engineering projects, bench mark Establishment breaking down primary level networks, profiles, cross-sections, road and railway surveys and for photogrammetric height control. When fitted with a glass circle (NK2) it can be used in flat terrain for setting out works and for measuring horizontal angles and distances. Fine pointing is made with a horizontal clamp and a tangent screw and an accurate coincidence setting of the tubular level split bubble image is made by means of a tilting screw. The telescope and tubular level can rotate simultaneously about the longitudinal axis, enabling the vertical collimation to be checked easily at one instrumental set-up.

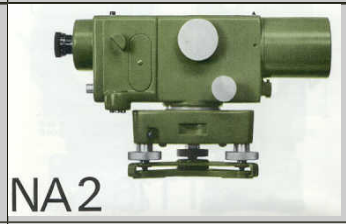
NA2 TOP

The Wild NA2 Automatic Engineers' Level is particularly useful when accurate readings are required quickly. After the circular bubble has been centered carefully, by means of the foot screws, the line of sight is made horizontal automatically through the pendulum type compensator. As a result the NA2 has neither a tubular level nor a tilting screw. Being insensitive to the sun no umbrella is required and this also helps to speed up the leveling. A plane parallel plate micrometer is now available as an optional accessory to the NA2 (and the NAK2, which is identical to the standard model, with the addition of a glass horizontal circle) and this attachment enables an even higher accuracy to be obtained. With it, direct readings to 0.001 ft. or 0.1 mm are made and estimation to 0.0005 ft. or 0.01 mm is possible without difficulty. The micrometer eyepiece is placed most conveniently just above the telescope eyepiece. The reticule differs from the normal type, as one half of the horizontal line has been replaced by two wedge-shaped lines, converging towards the center so that either the chess-board type of staff or one with graduated lines may be used. The telescope gives a bright, contrasting, upright image and the horizontal rotation is friction-braked, with an endless tangent screw for fine pointing.

N3 TOP

The Wild N3 Precision Level is an outstanding instrument for all first order leveling work. Designed originally for geodetic networks it has been adopted universally as the ideal level for the precise measurement required in dam deformation surveys, industrial installations, aircraft fuselage assemblies and vertical displacement determinations. The plane parallel plate micrometer is mounted in front of the objective lens as a built-in feature of the N3 and is available in metric and non-metric models, giving reliable and simple estimation to 0.01 mm and 0.0005 inch, respectively. The reticule has part of its-horizontal line in the form of two wedge-shaped lines, converging towards the center allowing the staff graduation to be split or straddled, depending on the circumstances and on which part of the cross-hair is used. Collimation errors are corrected by means of a rotation of the objective lens cover glass which enables an exceptionally sensitive, but simple, adjustment to be made. Interchangeable eyepieces provide the possibility of observing with either an inverted or an upright image.

Technical Data of Wild Levels (1965) TOP

	NK01	N10 NK10	N2 NK2	NA2	N3
					
Average m.s.e. (standard deviation) in mm per km - double run	±10	±3	±2.0	±1.5	
	(with plane parallel plate micrometer)			±0.4	±0.2
Average m.s.e. (standard deviation) in ft. per mile - double run	±0.05	±0.012	±0.008	±0.006	
	(with plane parallel plate micrometer)			±0.0016	±0.0008
Telescope magnification	18x	20x	24x or 28x	30x	42x
Stadia multiplication constant 100	100	100	100	100	100
Shortest focussing distance	1.6 m 5.2 ft	1 m 3.3 ft	1.8 m 6 ft	2.2 m 7.2 ft	2 m 6.6 ft
Sensitivity of level bubble per 2 mm	60”	60”	30”	-	10”
Accuracy of levelling the line of sight	10”	1.5”	0.5”	0.33”	0.25”
Field of view at 100 ft. (in feet)	4.0	3.8	3.3	2.4	1.8

Telescope length in mm Telescope length in inches	160 6.3	155 6.1	193 7.6	250 9.8	295 11.7
Weight of instrument	1.5 kg 3.3 lb	1.7 kg 3.7 lb	2.8 kg 6.2 lb	2.8 kg 6.2 lb	3.5 kg 7.7 lb
Weight of container	0.6 kg 1.3 lb	0.6 kg 1.3 lb	2.0 kg 4.4 lb	2.4 kg 5.3 lb	2.5 kg 5.5 lb
Wild Heerbrugg Ltd. Brochure No.	G1.101	G1.103	N146	G1.107	N145

Technical Data of Wild Levels (1981) TOP

Automatic levels	NA0 NAK0	NA1 NAK1	NA2 NAK2
			
Standard deviation of 1 km double-run levelling (mm)	±2.5	±1.5	±0.7
		±0.7 (with plane parallel plate micrometer)	±0.3 (with plane parallel plate micrometer)
Telescope magnification	20x	24x	32x , 40x
Field of view at 100m (in m)	3.6	3.2	2.4
Shortest focussing distance	0.9 m 2.95 ft	1 m 3.3 ft	1.6 m 5.25 ft
Setting accuracy of compensator	±0.8”	±0.5”	±0.3”

Stadia multiplication constant 100	100	100	100
Weight of instrument	1.8 kg / 1.8 kg	2.1 kg / 2.2 kg	2.4 kg / 2.9 kg
Weight of container	1.5 kg	1.5 kg	1.8 kg
Wild Heerbrugg Ltd. Brochure No.	G1.142	G1.143	G1.108

Spirit levels	NK01	NK05	N1 NK1	N2 NK2	N3
					
Standard deviation of 1 km double-run levelling (mm)	±10	±5.0	±2.5	±2.0	±0.2
Telescope magnification	19x	19x	23x	30x	40x (depends on sighting distance)
Stadia multiplication constant 100	100	100	100	100	100 (depends on sighting distance)
Field of view at 100m (in m)	4.0 m	4.0 m	3.6 m	2.8 m	1.8 m
Shortest focussing distance	0.8 m 5.2 ft	0.8 m 2.6 ft	0.7 m 2.6 ft	1.6 m 5.25 ft	0.4 m 1.3 ft
Sensitivity of tubular level per 2 mm	90”	60”	60”	30”	10”

Setting accuracy of tubular level	±10”	±10”	±1.5”	±0.8”	±0.2”
Weight of instrument	1.7 kg / 1.8 kg	1.8 kg / 1.8 kg	1.7 kg / 1.8 kg	2.2 kg / 2.8 kg	5.1 kg
Weight of container	1.7 kg	1.7 kg	1.6 kg	1.3 kg	3.7 kg
Wild Heerbrugg Ltd. Brochure No.	G1.153	G1.150	G1.154	G1.131	G1.158

NOTE: All "K“ model levels have a 360° or 400g horizontal circle. The N10 is also supplied as the N10-E and NK10-E, with upright image. Apart from a shortest focusing distance of 1.35 m (4.4 feet) the data for these E models are the same as for the N10 itself.

Staves TOP

Wild staves are made in varying lengths and for all possible purposes. For accurate leveling and all types of optical distance measurement the graduations on the staves are clearly marked and easy to read, allowing the observer to use his instrument to the best advantage. Leveling (NL), Topographical (TL) and Tachometry (VL) staves are all made with the care and precision expected from Wild products. Folding in the middle, each staff has strong hinges and reinforced backing for rigidity. The handles enable the staff to be carried easily and in balance. Depending on the model the staves are available with centimeter graduations (3, 4, 5 meters long) or with 0.01 ft. graduations (12 feet long). The NL and TL staves are made with inverted numbering or up-right numbering (NLE and TLE models) and the VL Tacheometric staves, which are available only with upright numbers, can also be supplied with an extending leg, enabling the zero mark to be set at instrument height. The illustration indicates a representative selection of the metric and non-metric, upright and inverted, and "chess-board" and division graduation types, respectively. All Wild staves have a detachable leveling bubble to help the staff man to obtain correct verticality.

Invar Leveling Staves TOP

The Wild NA2 and N3 levels, with plane parallel plate micrometers, require staves with even more precision than is available in the highly accurate normal range of NL, TL, and VL staves. For this reason the Wild PNL Invar Precision Leveling Staves are available, 3 meters in length and with either inverted or upright (PNL-E) images. The invar facing inset into each staff has two 'sets of graduated divisions. The divisions down one side of the facing indicate the correct height (in centimeters) above the base of the staff, whilst the divisions down the other side are displaced by a small amount and are also numbered with an added constant. By reading to each set of graduations an , immediate check against gross errors is obtained. The invar is held under constant, standard tension by means of a spring at the upper end and, because of this and the extremely low coefficient of thermal expansion of invar, there is negligible change of interval between divisions. When working in areas where large differences in height are being measured under conditions of large temperature changes it is possible to make accurate corrections to compensate for the effect of differential expansion. When using an invar staff it should always be set up on an iron ground plate, and, as an additional safeguard, the Wild detachable struts should also be used. Verticality is ensured with the aid of the detachable leveling bubble.

For industrial use special WL Industrial Staves are available, made with invar and 92 cm, 182 cm, 36 inches and 72 inches long, respectively.

Swiss Precision and Expert Craftsmanship are world-renowned, the excellence and fame of the Swiss watch making industry being a perfect example of this justified reputation. All Wild instruments and accessories are made with the same traditional skill and exactness and for this reason Wild quality is equally famous. The checking system at all stages of the manufacturing sequence ensures that only the highest quality equipment is allowed to be placed on the market.

In addition to the normal tests every instrument is subjected to exposure in a temperature controlled chamber, where careful readings are made throughout the range from –50° to +50° Centigrade (-58° to +122° Fahrenheit), and also to vigorous shaking on a special vibration machine.

Proof of the popularity enjoyed by Wild is the fact that more than 30.000 T1A repetition theodolites and T2 Universal theodolites are now in use throughout the world.

Wild Tripods TOP

All tripods have a standard fixing screw and a similarly shaped head, enabling any Wild level or theodolite. (and also the full range of accessories designed to be mounted on a tripod, as opposed to those for attachment to an instrument) to set up on any Wild tripod. Although each instrument has a particular tripod recommended for its use, it is possible, if circumstances demand, to make use of any Wild tripod that happens to be available. It is, of course, not advisable to use a large instrument on a tripod with a head that is much too small but, in an emergency, it could be done. All tripods have a pouch containing accessories and in most eases they are available with either rigid or telescopic legs (types a and b, respectively). With the exception of the metallic 16bL, they are made from carefully selected and well seasoned wood.

Tripods recommended for various instruments TOP

Tripods	Levels	Theodolites, etc.
2a / 2b	NK01 N10 NK10	T0
16a / 16b 16bL (metal)	N2 NK2 (not the 16bL)	T1A T16 TM10 (Rangefinder)
21a / 21b	NA2 NAK2	T2 RDS RDH
11a	NA2 NAK2 N3	
4a		T3