

Leica Viva TPS TS16 Equipment List



- when it has to be **right**

Leica
Geosystems

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Total Station

1 TS16

1.1 Models




	TS16 M	TS16 A	TS16 P	TS16 I
Angle measurement	●	●	●	●
Distance measurement to prism	●	●	●	●
Distance measurement to any surface (reflectorless)	●	●	●	●
Motorised	●	●	●	●
Automatic Target Aiming (ATRplus)	-	●	●	●
Lock mode	-	●	●	●
PowerSearch (PS)	-	-	●	●
Overview Camera	-	-	-	●
RS232, USB and SD card interface	●	●	●	●
WLAN	●	●	●	●
Bluetooth	●	●	●	●
Internal Flash Memory (2 GB)	●	●	●	●
Hotshoe interface for RadioHandle	●	●	●	●
Guide Light (EGL)	●	●	●	●
SmartStation GS15 GNSS receiver	○	○	○	○
SmartStation GS14 GNSS receiver	○	○	○	○
CS20 Field Controller (with internal TS communication module)	○	○	○	○
CS20 with CTR20 TS communication expansion pack	○	○	○	○
CS35 Tablet (with internal Bluetooth v4.0)	○	○	○	○

- Standard
- Optional
- Not available

1.2 Angular Accuracies

		1" Accuracy	2" Accuracy	3" Accuracy	5" Accuracy
TS16 M	PinPoint R500	822 474	822 475	822 476	822 478
	PinPoint R1000	822 468	822 469	822 471	822 473
TS16 A	PinPoint R500	8224 61	822 463	822 465	822 466
	PinPoint R1000	822 455	822 456	822 458	822 459
TS16 P	PinPoint R500	822 449	822 451	822 453	822 454
	PinPoint R1000	822 445	822 446	822 447	822 448
TS16 I	PinPoint R500	822 436	822 437	822 438	822 441
	PinPoint R1000	822 432	822 433	822 434	822 435

 All TS16 models are delivered with one 5" WVGA colour touch screen, Quick Guide, documentation USB card (833 146) and container GVP725 (817 058).

Additional Options & Accessories

2 Additional Options for Total Station


2.1 Second Keyboard



813 810	GTS36	2nd keyboard with full 5" WVGA colour touch screen, for TS16 instruments, for telescope position 2, fitted.
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2.2 TS16 I Camera Calibration





793 861		<p>Overview camera calibration workflow. Article ensures the predelivery logistics for the calibration of the overview camera of the Leica Viva TPS.</p> <p> 3rd party fees for instrument calibration and licensing of software are not included.</p>
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2.3 Calibration and Producer Certificates



812 535		Calibration Certificate "Gold", Angle
812 536		Calibration Certificate "Gold", A + Dist IR
812 539		Calibration Certificate "Gold", A + Dist, IR&RL
812 542		Calibration Certificate "Silver", Angle
812 543		Calibration Certificate "Silver", A + Dist, IR
812 544		Calibration Certificate "Silver", A + Dist, IR&R

-  Calibration Certificate "Blue" (812 541) is always included in initial order (myWorld download).
-  For Service Calibration Certificates see Standard Service Products (SSPs) document.

3 Leica Captivate Apps & Software Options

3.1 Leica Captivate Software for TS




827 646	Leica Captivate Measure & Stakeout TS/MS.
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3.2 Apps included in Leica Captivate for TS

<p>Measure includes:</p> <ul style="list-style-type: none"> • Measure • Code points • Automatically measure points • Remote Heights • Target Offset calculations
<p>Setup includes:</p> <ul style="list-style-type: none"> • Get station coordinates from GNSS, from Job or enter manually • Orientation by known Azimuth • Orientation by known Backsight • Orientation & Height transfer to up to 10 target points • Resection up to 10 target points • Resection Helmert • Orientation to Line
<p>Stake points includes:</p> <ul style="list-style-type: none"> • Navigate to point using various methods: from and behind instrument, point, base line, arrow, North • Quality control - checking of coordinate differences before storing • Automatically select next closest point • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic beep getting faster when getting closer to point

COGO includes:
<ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Angle calculations • Line & arc calculations • Bearing & distance calculations • Shift, Rotate, Scale (manual & matching points) • Triangle calculations
Determine coordinate system:
<ul style="list-style-type: none"> • 1 step, 2 step, 3D Transformation • All common projections
Alignment Editor:
<ul style="list-style-type: none"> • Horizontal alignments • Vertical alignments • Cross sections • Chainage equations
Data import:
ASCII, XML, DXF, DTM, alignments
Data export:
ASCII, Custom, DXF, XML, Style Sheets, FBK, RW5, RAW and local formats

3.3 Optional Apps for Leica Captivate for TS

834 221	Athletics
827 650	Area Division
	 Requires COGO app.
827 651	DTM Stakeout
	 Requires Stake app.
827 648	Measure and Stake to Line
	 Requires Stake app.
827 649	Measure to Plane / Grid
827 653	Measure and Stake to Road
827 654	Measure and Stake to Tunnel
827 655	Measure and Stake to Rail
827 658	Sets of Angles
827 652	Volume Calculation
827 656	Hidden Point
827 657	Traverse
827 659	QuickVolume
834 226	Set Orientation
834 229	Auto Setup
834 233	Unlevelled Setup
834 230	Remote Monitoring
836 522	Machine Control Guidance

3.4 Optional Licences for Leica Captivate for TS

827 661	Leica Active Assist
827 662	Leica Exchange

Accessories for Total Station

4 Power Supply

4.1 Internal Batteries



733 270	GEB221	Lithium-Ion battery, 7.4V/4.4Ah, rechargeable. To be used with TS11/TS12/TS15/TS16.
793 973	GEB222	Lithium-Ion battery, 7.4V/6Ah, chargeable. To be used with TS11/TS12/TS15/TS16.

4.2 External Batteries



818 916	GEB371	External universal battery, Li-Ion, 13 V, 250 Wh, rechargeable.
807 696	GEV270	Power supply unit for TPS/GNSS/DNA. For indoor use only. Input 100-240VAC to output 13.2VDC, with connection for power cables. ☞ Requires a GEV52 or GEV187 cable for Viva TS.

4.3 Battery Chargers



799 185	GKL311	Single-bay Charger Professional 3000. Charger for one Li-Ion battery (GEB211, GEB212, GEB221, GEB222, GEB241, GEB242 and GEB331), including AC/DC adaptor and cigarette lighter cable.
799 187	GKL341	Multi-bay Charger Professional 5000. Charges up to 4 batteries (GEB211, GEB212, GEB221, GEB222, GEB241, GEB242 and GEB331), including power cable.
734 389	GDC221	Car adapter for the GKL341 charger. Allows the use of the GKL341 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS15 field controller directly from a cigarette lighter.
774 437	GEV242	Charger for GEB371 external battery.

5 Data Storage and Data Transfer

5.1 Memory Devices



767 856	MSD1000	SD memory card 1GB for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.
789 139	MSD08	SD memory card 8GB for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.
765 199	MS1	USB memory stick, 1GB, for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.

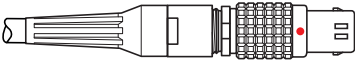

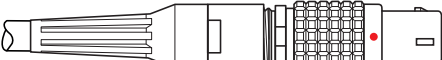

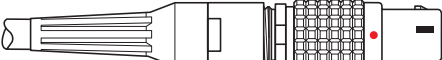



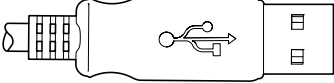



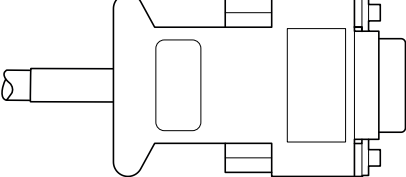
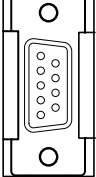
5.2 Card Reader



767 895	MCR7	Card reader for SD/CF cards.
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6 Connectivity

6.1 Connector Types

Name	Used on		
Lemo0 5-pin	Leica Viva TPS		
Lemo1 5-pin	Battery / External power		
Lemo1 8-pin	Leica Viva field controllers / Leica Nova TPS		
Lemo1 8-pin	External TS radios		
USB A	PC / Laptop		
USB Mini	Leica Viva TPS		
9-pin RS232 serial	PC / Laptop		

6.2 Cables



409 678	GEV52	Battery cable, connects Leica Viva Total Stations or DNA Lemo0 5-pin to external battery connector Lemo 1 5-pin.
439 038	GEV71	Car battery cable, connects 12V car battery connector to Lemo1 5-pin female.
563 625	GEV102	Serial data cable for communication to PC, connects Lemo0 5-pin (instrument) to PC (9-pin RS232 serial), 2m.
734 698	GEV187	Serial data Y-cable, connects Lemo0 5-pin connector to PC (9-pin RS232 serial) and external battery (Lemo1 5pin), 2m.
756 367	GEV217	Serial data cable for communication between Leica Viva Total Stations and CS10/CS15, connects Lemo0 5-pin to Lemo1 8-pin, 1.8m.
764 700	GEV223	Data transfer cable connecting TS to PC, USB Mini connector to USB A.
806 093	GEV267	Serial data transfer cable, converter cable USB A to Lemo0 5-pin, connects PC to Leica Viva Total Stations, PC driver included on CD.
707 525	GK1	Lemo Canon converter 30°, for PC (Lemo 0 5-pin to RS232) to be used with GEV186 cable.

7 Optical Accessories

7.1 Eyepiece



377 802	FOK53	Magnification eyepiece, additional eyepiece for increasing telescope magnification to 42x. ☞ Modification in a workshop necessary.
308 838	FOK53	Magnification eyepiece, additional eyepiece for increasing telescope magnification to 42x. ☞ Modification ex factory. Can only be ordered with a new instrument.
793 979	GFZ3	Diagonal eyepiece for telescope with bayonet connection.
376 236	GOK6	Eyepiece for steep sights, with joint allowing variable sighting angle.

7.2 Autocollimation Set



199 899	GOA2	Autocollimation eyepiece.
394 787	GEB62	Plug-in lamp, with cable for autocollimation eyepiece.
394 792	GEB63	Battery box for autocollimation eyepiece and eyepiece lamp.

7.3 Objective



743 504	GVO13	Objective solar filter for TPS instruments.
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8 Instrument Height Meter



667 718	GHM007	Instrument height meter.
722 045	GHT196	Distance holder for height meter.
60100179		Height Meter set including GHM007 Instrument height meter and GHT196 Distance holder for height meter.

9 Tribrachs



777 508	GDF321	Tribrachs Series 5000, without optical plummet.
777 509	GDF322	Tribrachs Series 5000, with optical plummet.
748 888	GDF111-1	Tribrachs Series 3000, without optical plummet.
798 181	GDF112-1	Tribrachs Series 3000, with optical plummet.

10 Tripods



296 632	GST20	Heavy duty tripod, with side clamp screws, carrying strap and plumb bob.
394 752	GST20-9	Heavy duty tripod, with side clamp screws and carrying strap.
667 301	GST120-9	Heavy duty tripod, self-closing, with side clamp screws and carrying strap.
332 200	GST4	Tripod-star, for setting up tripods on hard and slippery surfaces.

11 Reflector Poles


11.1 Standard Poles



754 391	GLS12	Reflector pole, telescopic to 2.00m with circular bubble, cm graduations.
754 389	GLS12F	Reflector pole, telescopic to 2.00m with circular bubble, ft graduations.
766 359	GLS31	Reflector carbon-fibre pole with circular bubble and twist lock. Snap-locks at 2.00m, 1.80m and 1.50m for GPS (GNSS) antennas with GAD31 adapter or GRZ122 reflector (SmartPole setup).
385 500	GLS11	Reflector pole, telescopic, with circular bubble, cm and ft graduation, extends to 2.15m.
667 309	GLS111	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 2.60m, with red/white 0.20m graduations.
667 310	GLS112	Reflector pole, with bull's-eye bubble, cm/ft graduation, extends to 3.65m, with red/white 0.20m graduations.
555 720	GSR2	Dual-strut support for GLS11 plumbing pole.
667 319	GSR111	Dual-strut support for all GLS.
403 428	GZW12	Extension 1m long, for reflector pole GLS11 and carriers.

11.2 Hidden Point Pole



742 329	GMP112	Hidden Point pole extension for GMP111 (mini prism pole set). Includes mini prism with holder and 30cm adapter pole.  Additional GMP111 Mini prim (641 615) required for complete Hidden Point pole set with two prisms.
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11.3 Mini Pole



403 427	GLS14	Mini reflector pole, (prism/target 20cm over point), with circular bubble.
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12 Reflector Carriers



667 313	GRT144	Carrier with stub.
667 316	SNLL121	Precision carrier, with longitudinal bubble and zenith-nadir laser plummet.
428 340	GZR3	Precision carrier, with longitudinal bubble and optical plummet.
725 566	GZR103	Carrier, with longitudinal bubble and optical plummet, for reflectors and GPS antenna.
667 217	GAD31	Screw-to-stub adapter for fitting GPS antenna on carriers with stub and poles with stub.

13 Reflectors

13.1 Circular Reflectors



641 617	GPR121	Circular prism, with metal holder and target plate.
362 830	GPR1	Circular prism, in black housing.
362 820	GPH1	Single-prism holder.
400 080	GPH3	Three-prism holder.
362 823	GZT4	Target plate, for GPH1.

13.2 360° Reflectors



754 384	GRZ122	360° reflector with 5/8" thread adapter for mounting of GNSS antenna.
639 985	GRZ4	360° reflector.
644 327	GRZ101	360° mini prism with 1/4" thread fitting. Not supported by PowerSearch.
756 637	MPR122	360° reflector with 5/8" thread adapter and 5/8" screw nut.
742 006	GAD103	Adapter for attaching GRZ101 to all poles with Leica Geosystems stub.

13.3 Precision Reflectors



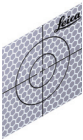
555 631	GPH1P	Single-prism precision reflector.
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13.4 Mini Reflectors



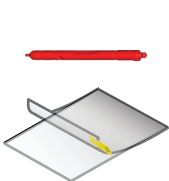
641 662	GMP101	Mini prism, incl. bubble, target plate and spike, in bag, also suitable for GLS11/GLS12 and GRT144 (same height as GPH1, additive constant +17.5mm).
641 762	GMP104	Mini prism, with L-bar, for fixed installations.

13.5 Reflector Tapes



763 532	GZM29	Reflective tape, 20x20mm for short range, pack of 20 pieces.
763 533	GZM30	Reflective tape, 40x40mm for medium range, pack of 20 pieces.
763 534	GZM31	Reflective tape, 60x60mm for long range, pack of 20 pieces.

13.6 Pen and Screen Protection Foils



Extra pen		
813 914	GDZ71	Pen with tether clip interface for CS20 field controller and TS16/MS60/TS60 instruments.
Screen Protection Foil set		
813 781	SPF05	5" WVGA screen protection foils for CS20 field controller and TS16/MS60/TS60 instruments.

14 Additional Containers



727 589	GVP102	Soft bag with shoulder strap, for prism station, consist of tribrach, prism carrier or laser plummet and prism.
667 451	GVP609	Container for 2 circular prisms GPR111/121, 2 carriers/laser plummets and 2 tribrachs.
833 516	GVP716	Backpack carrying systems for all large TPS and GNSS containers.
833 517	GVP717	Sidebag for container GVP721/722/723/725.
833 518	GVP718	Basic backstrap for container GVP721/722/723/725.
833 519	GVP719	Shoulderstrap for container GVP721/722/723/725.
817 055	GVP722	Hard container for SmartAntenna, CS Field Controller and accessories for a SmartPole and SmartStation setup.
817 057	GVP724	Small-sized hard container for 360° prism and controller for TS Robotic Pole setup.

Remote Control

15 Remote Control - CS20 Field Controller

15.1 CS20 Field Controller



823 165	CS20 3.75G	CS20 3.75G Field Controller Ruggedized WinEC7 field controller with 5" WVGA touch display, 2 GB eMMC Flash Memory, 1 GB SDRAM, SD card slot, 5MP camera and LED flash. Includes internal Bluetooth/WLAN module, 3.75G GSM/UMTS module, internal TS communication module, QWERTY keypad, stylus.
823 169	CS20 3.75G Disto	CS20 3.75G Disto Field Controller Ruggedized WinEC7 field controller with 5" WVGA touch display, 2 GB eMMC Flash Memory, 1 GB SDRAM, SD card slot, 5MP camera and LED flash. Includes internal Bluetooth/WLAN module, 3.75G GSM/UMTS module, internal TS communication module, integrated Disto-Lasermeter, QWERTY keypad, stylus.

15.2 CTR20 TS Communication Expansion Pack




Not available in EU countries due to EN 300 328 V.1.8.1.



Recommended only for robotic applications systematically exceeding ranges beyond 400 m.



6010023		CTR20 expansion pack set TS communication expansion pack set including CTR20 module and GAT25 radio antenna.
808 038	CTR20	CTR20 TS communication expansion pack CTR20 TS communication expansion pack with integrated radio module for CS20 3.75G field controller variants. Used to establish long range radio connection between CS20 3.75G field controller and TS Total Stations equipped with RH16. GAT25 radio antenna not included (frequency range 2402 - 2480 MHz).  Requires a GAT25 radio antenna.
812 027	GAT25	GAT25 radio antenna for CTR20 module Radio antenna for CTR20 long range TS communication module (frequency range 2402 - 2480 MHz).

16 Leica Captivate Software and Apps - CS20 Field Controller

16.1 Leica Captivate Software for CS20 Field Controller

827 698	Leica Captivate - Measure and Stake for CS20.
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16.2 Apps included in Leica Captivate for CS20 Field Controller

Measure includes:

- Measure
- Code points
- Automatically measure points
- Remote Heights
- Target Offset calculations

Setup includes:

- Get station coordinates from GNSS, from Job or enter manually
- Orientation by known Azimuth
- Orientation by known Backsight
- Orientation & Height transfer to up to 10 target points
- Resection up to 10 target points
- Resection Helmert
- Orientation to Line

	<p>Stake points includes:</p> <ul style="list-style-type: none"> • Navigate to point using various methods: from and behind instrument, point, base line, arrow, North • Quality control - checking of coordinate differences before storing • Automatically select next closest point • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic beep getting faster when getting closer to point
	<p>COGO includes:</p> <ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Angle calculations • Line & arc calculations • Bearing & distance calculations • Shift, Rotate, Scale (manual & matching points) • Triangle calculations
	<p>Determine coordinate system:</p> <ul style="list-style-type: none"> • 1 step, 2 step, 3D Transformation • All common projections
	<p>Alignment Editor:</p> <ul style="list-style-type: none"> • Horizontal alignments • Vertical alignments • Cross sections • Chainage equations
	<p>Data import: ASCII, XML, DXF, DTM, alignments</p>
	<p>Data export: ASCII, Custom, DXF, XML, Style Sheets, FBK, RW5, RAW and local formats</p>
	<p>3rd party total station control:</p> <ul style="list-style-type: none"> • Topcon total station control licence • Nikon total station control licence • SOKKIA total station control licence

16.3 Optional Apps for Leica Captivate for CS20 Field Controller

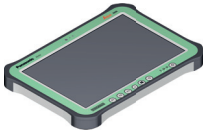
834 296	Athletics
827 701	Area Division  Requires COGO app.
827 702	Stake DTM  Requires Stake points app.
827 699	Measure and Stake to Line  Requires Stake points app.
827 700	Measure to Plane / Grid
827 704	Measure and Stake Road
827 705	Measure and Stake Tunnel
827 706	Measure and Stake Rail
827 711	Sets of Angles
827 703	Volume Calculation
827 708	Hidden Point
827 709	Traverse
827 712	QuickVolume
834 301	Set Orientation
834 305	Auto Setup
834 309	Unlevelled Setup

16.4 Optional Licences for Leica Captivate for CS20 Field Controller


827 714	Active Assist
827 715	Leica Exchange

17 Remote Control - CS35 Tablet

17.1 CS35 Tablet



827 979	CS35-1	CS35-1 10" Tablet, EU Ruggedized Win8.1 Pro 64-bit tablet computer including: 10" touch-widescreen, 128 GB SSD hard drive, 4 GB SDRAM, WLAN 802.11 b/g/n, 3G integrated mobile broadband module, Bluetooth v4.0, stylus, tether, integrated GPS, 1x battery (4.1 Ah), AC/DC adaptor and 5MP camera with flash.
833 131	CS35-2	CS35-2 10" Tablet, US Ruggedized Win8.1 Pro 64-bit tablet computer including: 10" touch-widescreen, 128 GB SSD hard drive, 4 GB SDRAM, WLAN 802.11 b/g/n, 3G integrated mobile broadband module, Bluetooth v4.0, stylus, tether, integrated GPS, 1x battery (4.1 Ah), AC/DC adaptor and 5MP camera with flash.
833 132	CS35-3	CS35-3 10" Tablet, CA Ruggedized Win8.1 Pro 64-bit tablet computer including: 10" touch-widescreen, 128 GB SSD hard drive, 4 GB SDRAM, WLAN 802.11 b/g/n, 3G integrated mobile broadband module, Bluetooth v4.0, stylus, tether, integrated GPS, 1x battery (4.1 Ah), AC/DC adaptor and 5MP camera with flash.
833 133	CS35-11	CS35-11 10" Tablet, AUS Ruggedized Win8.1 Pro 64-bit tablet computer including: 10" touch-widescreen, 128 GB SSD hard drive, 4 GB SDRAM, WLAN 802.11 b/g/n, 3G integrated mobile broadband module, Bluetooth v4.0, stylus, tether, integrated GPS, 1x battery (4.1 Ah), AC/DC adaptor and 5MP camera with flash.

 All CS35 Tablets are delivered with stylus, tether, one GEB235 Lithium-Ion battery (10.8 V/4.1 Ah, rechargeable) and country specific AC/DC adaptor.

18 Leica Captivate Software and Apps - CS35 Tablet

18.1 Leica Captivate Software for CS35 Tablet

827 719	Leica Captivate - Measure and Stake for CS35 Tablet.
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18.2 Apps included in Leica Captivate for CS35 Tablet

<p>Measure includes:</p> <ul style="list-style-type: none"> • Measure • Code points • Automatically measure points • Remote Heights • Target Offset calculations
<p>Setup includes:</p> <ul style="list-style-type: none"> • Get station coordinates from GNSS, from Job or enter manually • Orientation by known Azimuth • Orientation by known Backsight • Orientation & Height transfer to up to 10 target points • Resection up to 10 target points • Resection Helmert • Orientation to Line
<p>Stake points includes:</p> <ul style="list-style-type: none"> • Navigate to point using various methods: from and behind instrument, point, base line, arrow, North • Quality control - checking of coordinate differences before storing • Automatically select next closest point • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic beep getting faster when getting closer to point
<p>COGO includes:</p> <ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Angle calculations • Line & arc calculations • Bearing & distance calculations • Shift, Rotate, Scale (manual & matching points) • Triangle calculations

Determine coordinate system:
<ul style="list-style-type: none"> • 1 step, 2 step, 3D Transformation • All common projections
Alignment Editor:
<ul style="list-style-type: none"> • Horizontal alignments • Vertical alignments • Cross sections • Chainage equations
Data import:
ASCII, XML, DXF, DTM, alignments
Data export:
ASCII, Custom, DXF, XML, Style Sheets, FBK, RW5, RAW and local formats
3rd party total station control:
<ul style="list-style-type: none"> • Topcon total station control licence • Nikon total station control licence • SOKKIA total station control licence

18.3 Optional Apps for Leica Captivate for CS35 Tablet

834 683	Athletics
827 722	Area Division
	 Requires COGO app.
827 723	Stake DTM
	 Requires Stake points app.
827 720	Measure and Stake to Line
	 Requires Stake points app.
827 721	Measure to Plane / Grid
827 725	Measure and Stake Road
827 726	Measure and Stake Tunnel
827 727	Measure and Stake Rail
827 730	Sets of Angles
827 724	Volume Calculation
827 728	Hidden Point
827 729	Traverse
827 731	QuickVolume
834 688	Set Orientation
834 691	Auto Setup
834 695	Unlevelled Setup

18.4 Optional Licences for Leica Captivate for CS35 Tablet

827 734	Leica Exchange
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Accessories for Remote Control

19 Accessories for Remote Control - CS20 Field Controller

19.1 Internal Batteries



799 190	GEB331	Li-Ion battery, 11.1 V / 2.8 Ah, rechargeable, for CS20.
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19.2 Battery Chargers



799 185	GKL311	Single-bay Charger Professional 3000. Charger for one Li-Ion battery (GEB211, GEB212, GEB221, GEB222, GEB241, GEB242 and GEB331), including AC/DC adaptor and cigarette lighter cable.
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799 187	GKL341	Multi-bay Charger Professional 5000. Charges up to 4 batteries (GEB211, GEB212, GEB221, GEB222, GEB241, GEB242 and GEB331), including power cable.
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734 389	GDC221	Car adapter for the GKL341 charger. Allows the use of the GKL341 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS15 field controller directly from a cigarette lighter.
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19.3 Memory Devices



767 856	MSD1000	SD memory card 1GB for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.
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789 139	MSD08	SD memory card 8GB for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.
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765 199	MS1	USB memory stick, 1GB, for Leica Viva TPS and Leica Nova instruments and CS10/CS15 field controller, industrial grade.
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19.4 Card Reader & Adapter



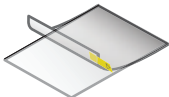
767 895	MCR7	Card reader for SD/CF cards.
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733 258	MCFAD1	CompactFlash PC card adapter.
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19.5 Pen and Screen Protections Foils



Pen		
813 914	GDZ71	Pen with tether clip interface for CS20 field controller and TS16/MS60/TS60 instruments.



813 582	GHT76	Tether to connect GDZ71 Pen to CS20 field controller.
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Screen Protection Foil set		
813 781	SPF05	5" WVGA screen protection foils for CS20 field controller and TS16/MS60/TS60 instruments.

19.6 Additional Power Accessories



822 787	GEV276	Power supply unit for CS20, for indoor use only. Input 100-240 VAC to output 15.0 VDC, 40 W.
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19.7 Pole Accessories for CS20 Field Controller



807 157	GHT66	Holder attaching a CS20 with a GHT63 clamp to a pole. GHT63 is not included.
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767 880	GHT63	Clamp arrangement for attaching the GHT66 and GHT78 to all poles.
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19.8 Utility Hook and Hand Strap for CS20 Field Controller



Utility hook

807 245	GHT68	Utility hook for CS20 field controller for attaching to belt or tripod.
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Hand strap

807 158	GHT67	Hand strap for CS20 field controller.
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20 Accessories for Remote Control - CS35 Tablet

20.1 Internal Batteries



832 119	GEB235	Lithium-Ion battery, 10.8 V/4.1 Ah, rechargeable, for CS35 Tablet.
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832 120	GEB236	Lithium-Ion battery, 10.8 V/8.7 Ah, rechargeable, for CS35 Tablet.
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All CS35 Tablets are delivered with one GEB235 Lithium-Ion battery (10.8 V/4.1 Ah, rechargeable).

20.2 Battery Chargers



832 118	GKL235	Charger for CS35 batteries GEB235 and GEB236. Country specific AC/DC adaptor (GEV280-x) not included.
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832 113	GEV280-1	AC/DC adaptor, EU. Power Supply for CS35 Tablet.
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8321 14	GEV280-2	AC/DC adaptor, UK. Power Supply for CS35 Tablet.
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832 115	GEV280-3	AC/DC adaptor, US. Power Supply for CS35 Tablet.
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832 116	GEV280-4	AC/DC adaptor, AUS. Power Supply for CS35 Tablet.
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832 117	GEV280-5	AC/DC adaptor, CH. Power Supply for CS35 Tablet.
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Country specific AC/DC adaptor (GEV280-x) is delivered with CS35 Tablet.

20.3 Pen and Screen Protection Foils



Pen

832 121	GDZ75	Digitiser Pen for CS35 Tablet.
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832 122	GHT77	Tether to tie GDZ75 Digitiser Pen to CS35 Tablet.
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Screen Protection Foil set

832 126	SPF06	Screen protection foils for CS35 Tablet.
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All CS35 Tablets are delivered with one GDZ75 Digitiser Pen and a GHT77 Tether.

20.4 Pole Accessories for Tablet



832 127	GHT78	Tablet holder for attaching a CS35 Tablet with a GHT63 clamp to a pole. GHT63 is not included.
---------	--------------	--

767 880	GHT63	Clamp arrangement for attaching the GHT66 and GHT78 to all poles.
---------	--------------	---

20.5 Hand Strap





833 343	GHT79	Hand strap for CS35 Tablet. Including 4 high corner guards.
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21 RadioHandles and TCPS Modems



21.1 RadioHandles



788 853	RH16	RadioHandle with integrated Bluetooth module and radio antenna. Used as radio modem for Leica Viva TPS and Leica Nova instruments. Establishes communication to CS15 field controller equipped with CTR16/17 or external radio modem TCPS29/30 attached to PC. Frequency range 2402 - 2480 MHz.  Not available in EU countries due to EN 300 328 V.1.8.1.
818 467	RH17	RadioHandle with integrated long range Bluetooth module and radio antenna. Used as radio modem for Leica Viva TPS and Leica Nova instruments. Establishes communication to CS15 field controller equipped with CTR16/17 or external radio modem TCPS29/30 attached to PC. Frequency range 2402 - 2480 MHz.  Fulfils EN 300 328 V.1.8.1.

21.2 TCPS Modems




788 854	TCPS29	Bluetooth radio modem with antenna and user manual. Used as external radio modem for Leica Viva TPS and Leica Nova instruments or PCs. Frequency range 2402 - 2480 MHz.  Not available in EU countries due to EN 300 328 V.1.8.1.
818 469	TCPS30	Bluetooth radio modem with antenna and user manual. Used as external radio modem for Leica Viva TPS and Leica Nova instruments or PCs. Frequency range 2402 - 2480 MHz.  Fulfils EN 300 328 V.1.8.1.


21.3 TCPS Accessories



734 163	GHT43	Adapter for mounting TCPS radio module on GST20/GST120 tripod.
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21.4 Cables for TCPS Radio Modems

 For an overview of the different connector types, refer to chapter 6.1.

734 697	GEV186	Serial data Y-cable for TS Robotic setup, Lemo1 5-pin (battery) to Lemo0 5-pin (instrument) and Lemo1 8-pin (external TCPS radio).
707 525	GK1	Lemo Converter 30° for PC (9-pin RS232 serial).  Use GK1 in combination with GEV186 to connect TCPS with PC for configuration or communication.
771 057	GEV236	Y-cable Lemo1 8-pin (CS20 Field Controller) to Lemo1 5-pin (battery) and Lemo1 8-pin (external TCPS radio), 1.8 m.

SmartPole & SmartStation

22 SmartStation & SmartPole Setup using GS15 GNSS Receiver

22.1 GS15 GNSS Receiver




771 501	GS15	Leica GS15 Single Frequency SmartAntenna
771 503	GS15	Leica GS15 Performance SmartAntenna
771 504	GS15	Leica GS15 Professional SmartAntenna
813 741	GS15	Leica GS15 Unlimited SmartAntenna


	Leica GS15 Single Frequency	Leica GS15 Performance	Leica GS15 Professional	Leica GS15 Unlimited
Supported GNSS Systems				
GPS L2	○	●	●	●
GPS L5	○	○	●	●
GLONASS	○	○	●	●
Galileo	○	○	●	●
BeiDou	○	○	○	●
RTK performance				
DGPS	○	●	●	●
RTK unlimited	○	●	●	●
Network RTK	○	●	●	●
Leica Lite RTK	○	○	●	●
SmartLink (L-band)	○	○	○	●
Position update & data recording				
5 Hz positioning	●	●	●	●
20 Hz positioning	○	●	●	●
Raw data logging	●	●	●	●
RINEX logging	○	○	●	●
NMEA out	○	○	●	●
Additional features				
RTK Reference Station functionality	○	●	●	●

- Standard
- Optional

22.2 SmartAntenna Adapter



767 802	GAD110	SmartAntenna adapter to mount GS14 and GS15 SmartAntenna.  BT module to connect the TS to the GS14 and GS15 GNSS receiver is standard on all Leica Viva TPS and Leica Nova instruments.
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 Please refer to the Leica Viva GNSS Equipment list for GS15 related options and accessories.

23 SmartStation & Smartpole Setup using a GS14 GNSS Receiver

23.1 GS14 GNSS Receiver



807 524	GS14	3.75G Single Frequency SmartAntenna
807 525	GS14	3.75G Performance SmartAntenna
807 526	GS14	3.75G Professional SmartAntenna
807 527	GS14	3.75G & UHF Single Frequency SmartAntenna
807 528	GS14	3.75G & UHF Performance SmartAntenna
807 529	GS14	3.75G & UHF Professional SmartAntenna
832 348	GS14	3.75G & UHF Professional SmartAntenna with BeiDou
822 515	GS14	3.75G & UHF Professional SmartAntenna (JP)
813 738	GS14	3.75G & UHF Unlimited SmartAntenna
807 530	GS14	3.75G & UHF Single Frequency SmartAntenna (US/CAN)
807 531	GS14	3.75G & UHF Performance SmartAntenna (US/CAN)
807 532	GS14	3.75G & UHF Professional SmartAntenna (US/CAN)
813 739	GS14	3.75G & UHF Unlimited SmartAntenna (US/CAN)

	Leica GS14 Single Frequency	Leica GS14 Performance	Leica GS14 Professional	Leica GS14 Unlimited
Supported GNSS Systems				
GPS L2	○	●	●	●
GLONASS	○	○	●	●
Galileo	○	○	●	●
BeiDou	-	-	-/●*	●
RTK performance				
DGPS	○	●	●	●
RTK unlimited	○	●	●	●
Network RTK	○	●	●	●
Leica Lite RTK	○	○	●	●
Position update & data recording				
5 Hz positioning	●	●	●	●
20 Hz positioning	○	●	●	●
Raw data logging	●	●	●	●
RINEX logging	○	○	●	●
NMEA out	○	○	●	●
Additional features				
RTK Reference Station functionality	○	●	●	●

- Standard
- Optional
- Not available
- * 832 348 only

23.2 SmartAntenna Adapter



767 802 **GAD110**

SmartAntenna adapter to mount GS14 and GS15 SmartAntenna.



BT module to connect the TS to the GS14 and GS15 GNSS receiver is standard on all Leica Viva TPS and Leica Nova instruments.



Please refer to the Leica Viva GNSS Equipment list for GS14 related options and accessories.

Care Packages

24 Customer Care Packages



A wide selection of comprehensive Customer Care Packages (CCPs) is available bundling Hardware Maintenance, Software Maintenance, Customer Support and Extended Warranty.

For more information about the CCP offering in your country please contact your local Leica Geosystems organization or distribution partner.

Trademarks & Technical Data

25 Trademarks

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SD and microSD are trademarks of the SD-3C, LLC.

Other trademarks and trade names are those of their respective owners.

26 Technical Data

Guide light (EGL):

LED class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Distance meter (Prism), ATRplus and PowerSearch:

Laser class 1 in accordance with IEC 60825-1 resp. EN 60825-1

Laser plummet:

Laser class 2 in accordance with IEC 60825-1 resp. EN 60825-1

Distance meter (Non-Prism):

Laser class 3R in accordance with IEC 60825-1 resp. EN 60825-1



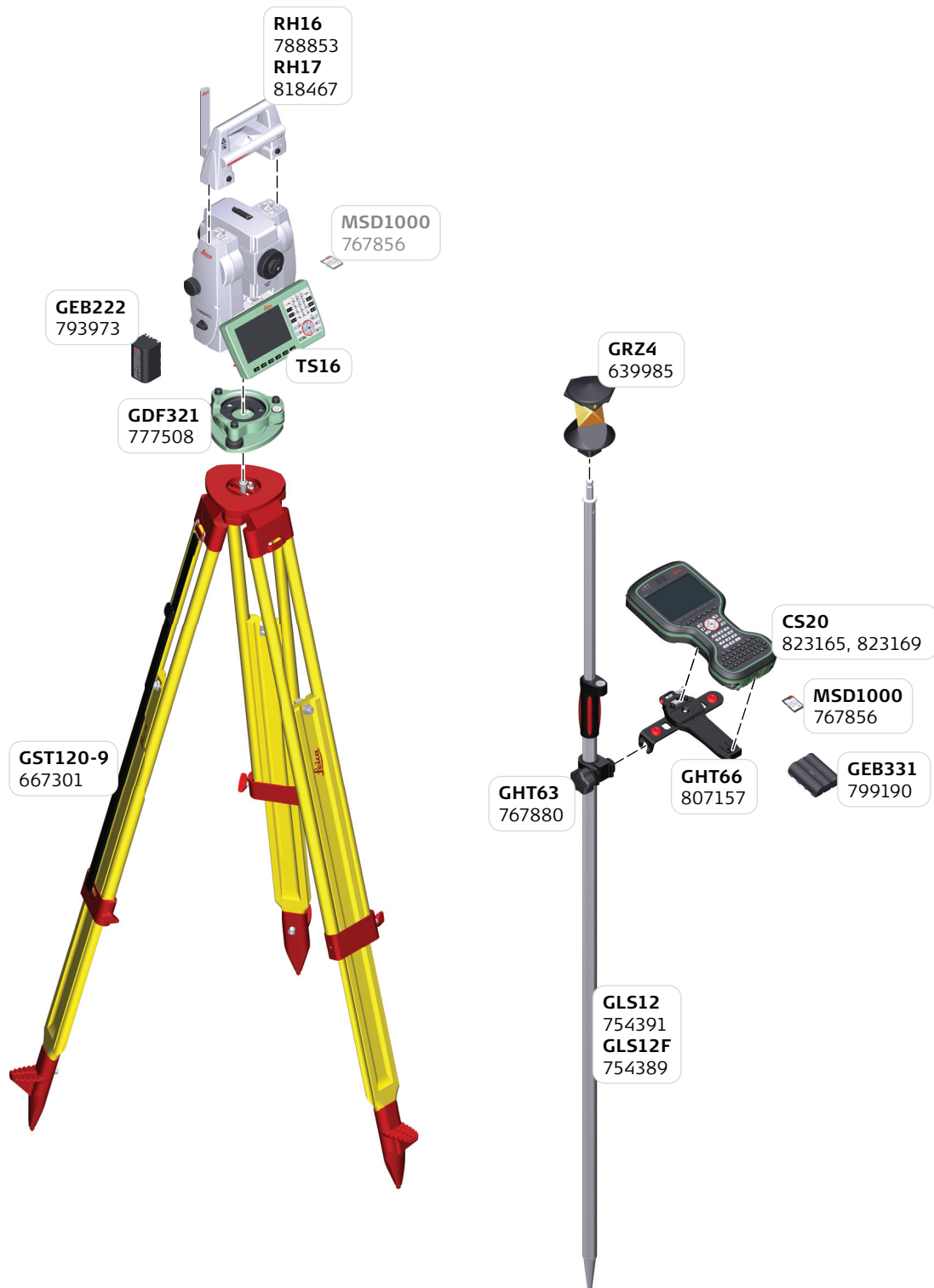
Suggested Equipment Setups

27 Conventional Surveying

27.1 Two Person Surveying using a TS16 Total Station



27.2 Robotic Surveying using a TS16 Total Station and CS20 Field Controller

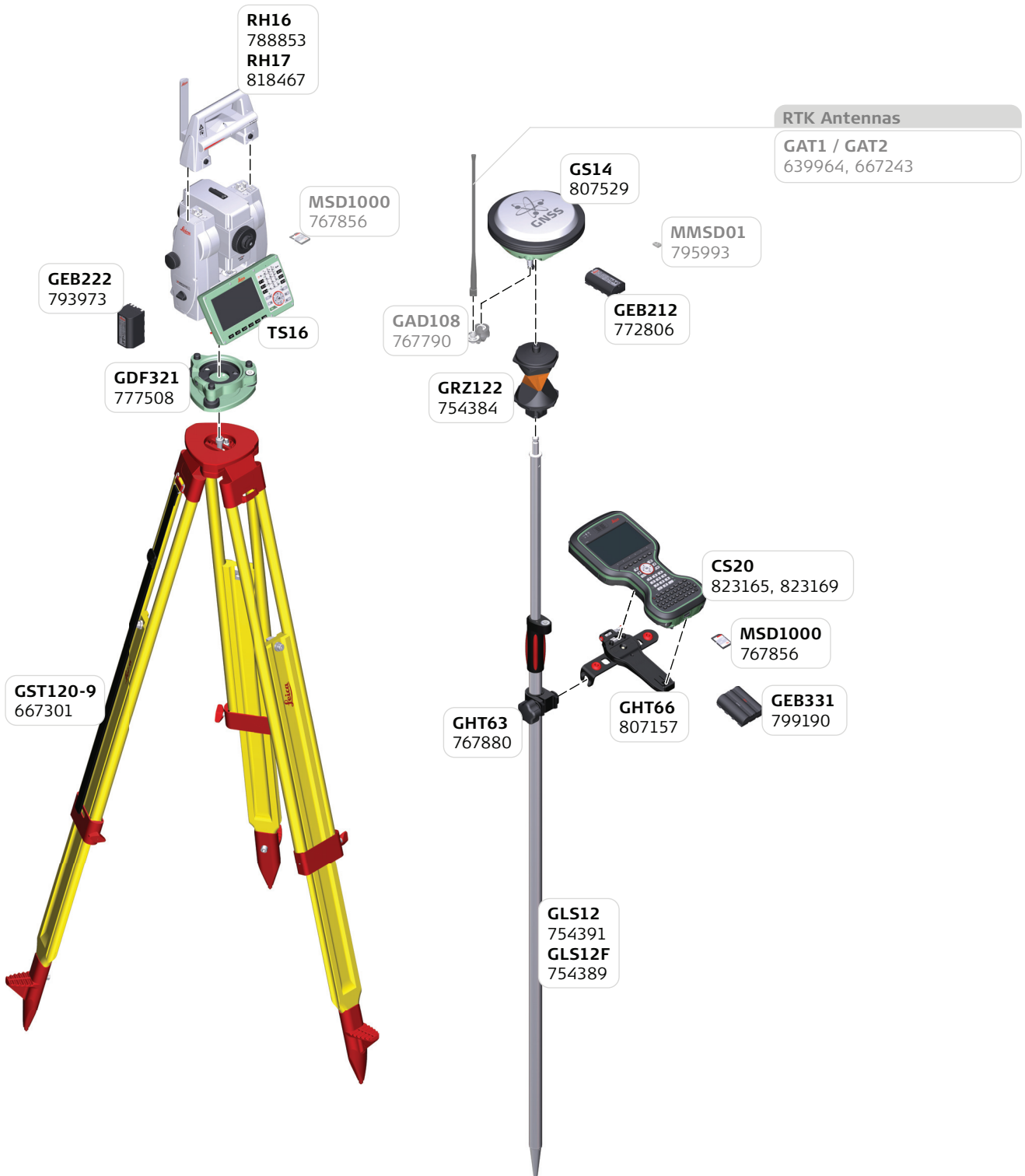


27.3 Robotic Surveying using a TS16 Total Station and CS35 Tablet

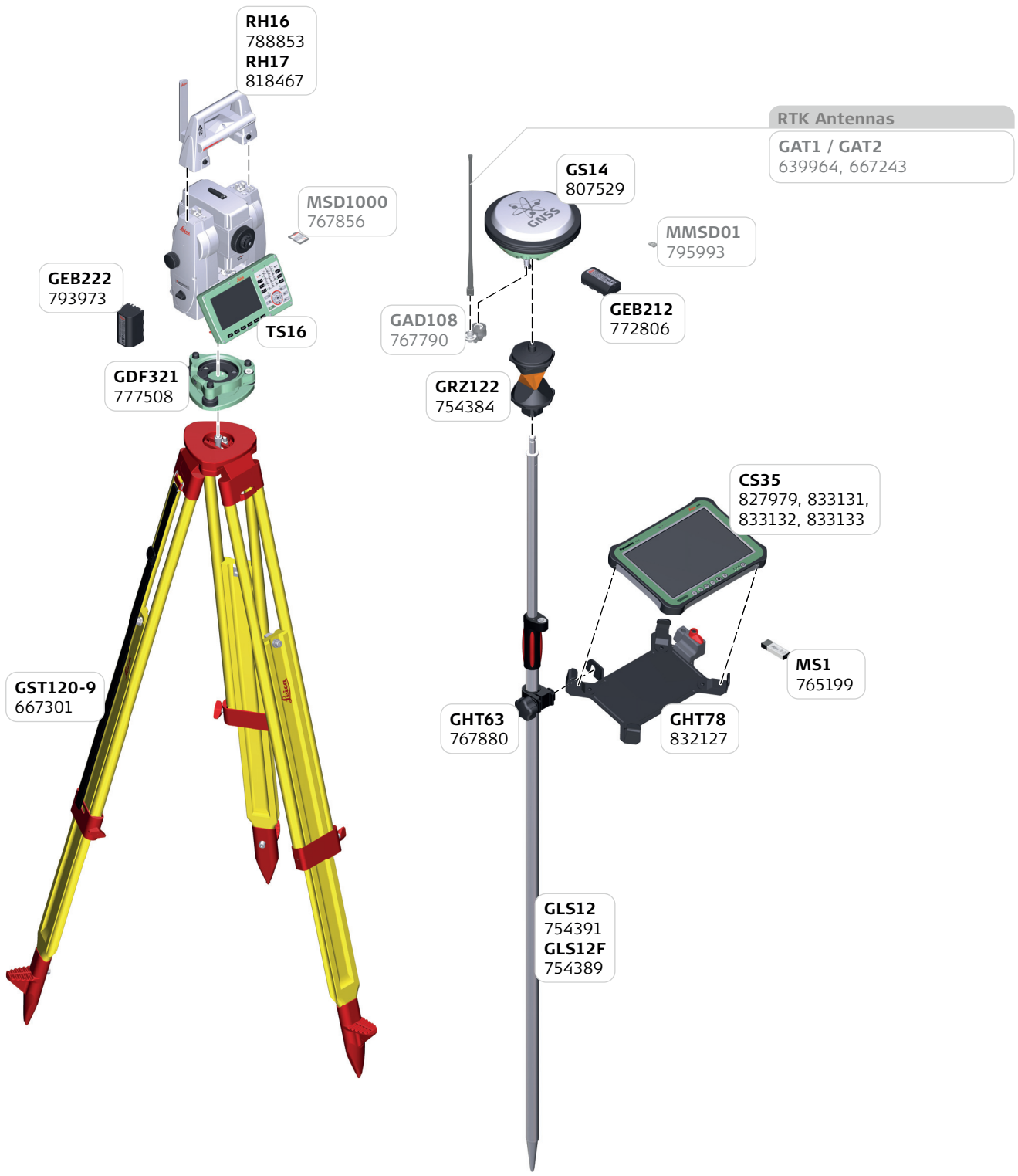


28 SmartPole Surveying

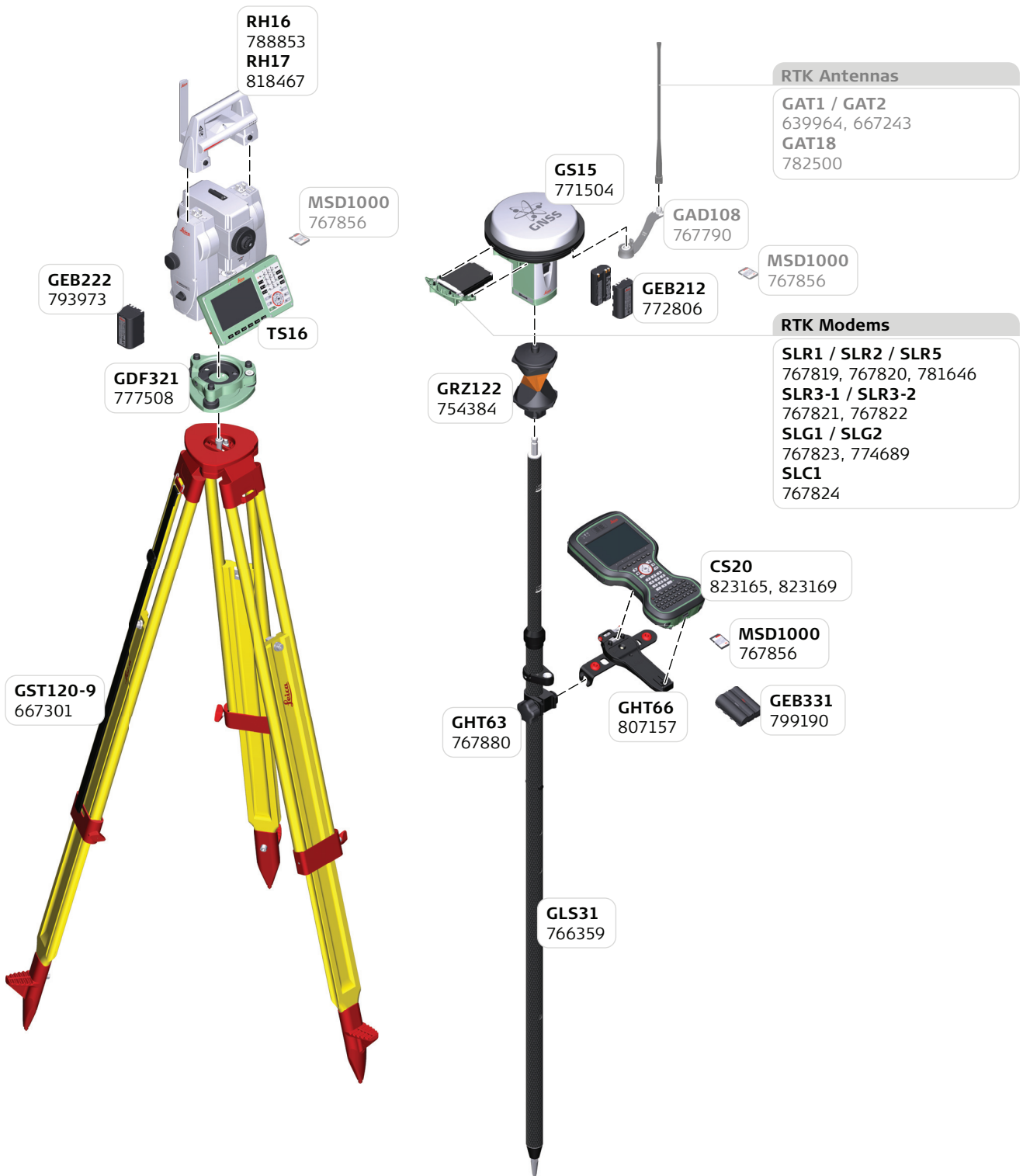
28.1 SmartPole using the GS14 GNSS Receiver and CS20 Field Controller



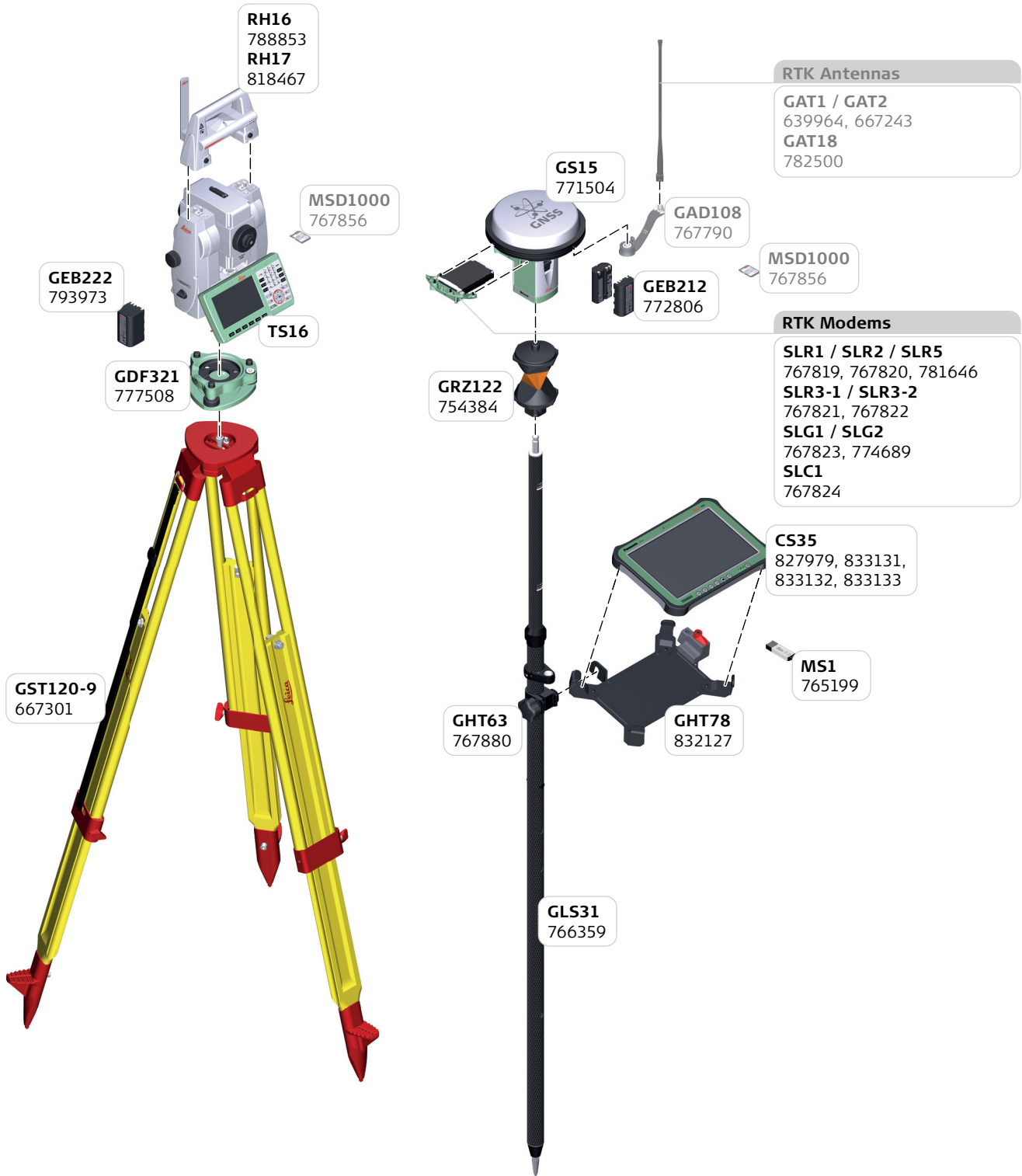
28.2 SmartPole using the GS14 GNSS Receiver and CS35 Tablet



28.3 SmartPole using the GS15 GNSS Receiver and CS20 Field Controller

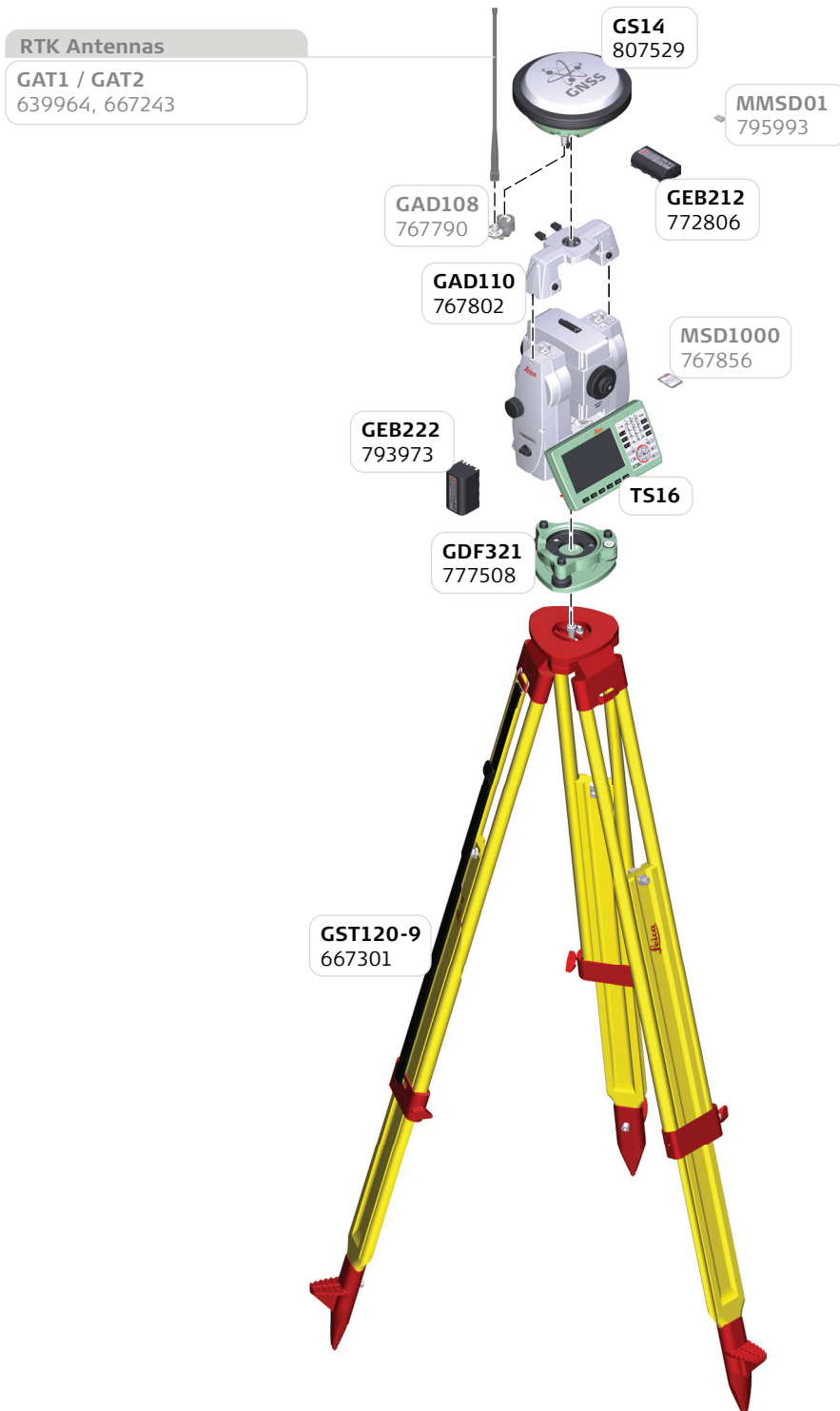


28.4 SmartPole using the GS15 GNSS Receiver and CS35 Tablet

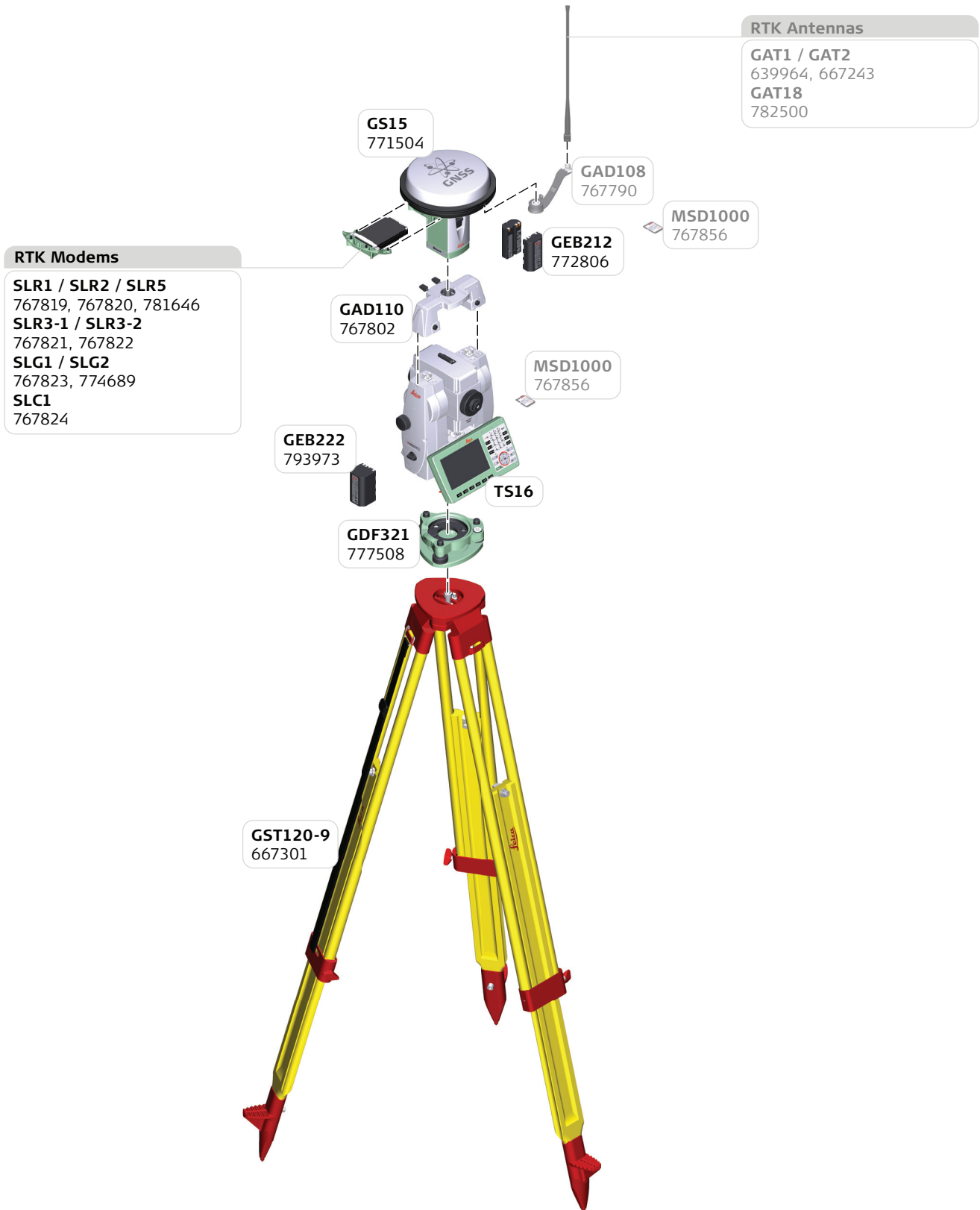


29 SmartStation

29.1 SmartStation using the GS14 GNSS Receiver



29.2 SmartStation using the GS15 GNSS Receiver



Whether you want to stake-out an object on a construction site or you need accurate measurements of a tunnel or a bridge; whether you want to determine the area of a parcel of land or need the position of a power pole or to capture objects for as-built maps - you need reliable and precise data.

Leica Viva combines a wide range of innovative products designed to meet the daily challenges for all positioning tasks. The simple yet powerful and versatile Leica Viva hardware and software innovations are redefining state-of-the-art technology to deliver maximum performance and productivity. Leica Viva gives you inspiration to make your ambitious visions come true.

When it has to be right.

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