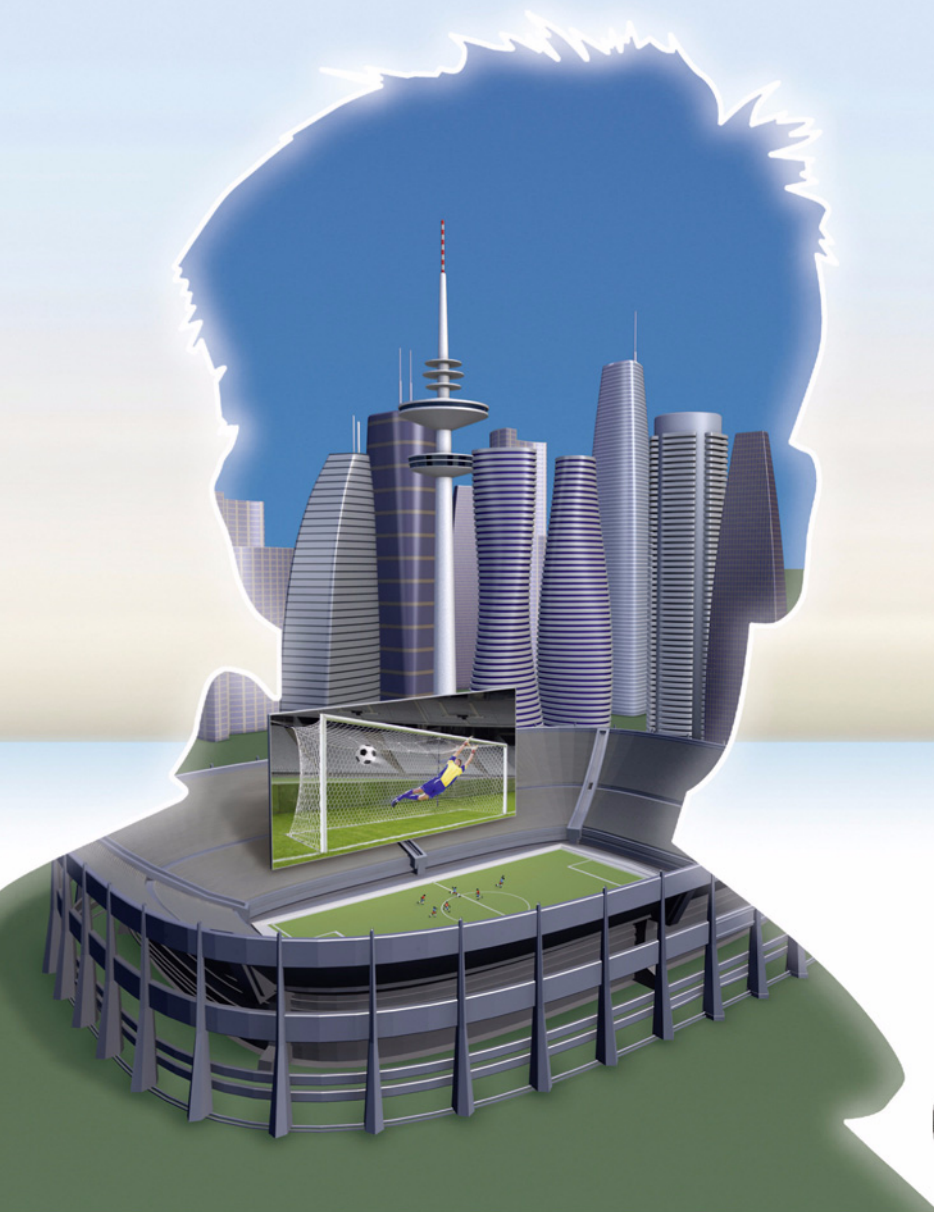


Leica Viva TPS TS15 Equipment List



- when it has to be **right**

Leica
Geosystems

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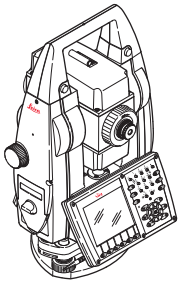
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Total Station

1 TS15

1.1 Models



	TS15				
	TS15 M	TS15 A	TS15 G	TS15 P	TS15 I
Angle measurement	●	●	●	●	●
Distance measurement to prism	●	●	●	●	●
Distance measurement to any surface (reflectorless)	●	●	●	●	●
Motorised	●	●	●	●	●
Automatic Target Aiming	-	●	●	●	●
PowerSearch (PS)	-	-	-	●	●
Wide Angle Camera	-	-	-	-	●
RS232, USB and SD card interface	●	●	●	●	●
Bluetooth	●	●	●	●	●
Internal Flash Memory (1GB)	●	●	●	●	●
Hotshoe interface for RadioHandle	●	●	●	●	●
Guide Light (EGL)	●	●	-	●	●
Laser Guide	-	-	●	-	-
SmartStation GS15 GNSS receiver	○	○	○	○	○
SmartStation GS12 GNSS receiver	○	○	○	○	○
CS10 radio field controller	○	○	○	○	○
CS15 field controller with communication cap	○	○	○	○	○

- Standard
- Optional
- Not available

1.2 Angular Accuracies

		1" Accuracy	2" Accuracy	3" Accuracy	5" Accuracy
TS15 M	PinPoint R400	780 834	780 833	780 832	780 831
	PinPoint R1000	780 840	780 839	780 838	780 835
TS15 A	PinPoint R30	780 844	780 843	780 842	780 841
	PinPoint R400	780 849	780 847	780 846	780 845
	PinPoint R1000	780 853	780 852	780 851	780 850
TS15 G	PinPoint R30	780 886	780 885	780 884	780 883
	PinPoint R400	780 890	780 889	780 888	780 887
	PinPoint R1000	780 894	780 893	780 892	780 891
TS15 P	PinPoint R30	780 861	780 860	780 859	780 858
	PinPoint R400	780 865	780 864	780 863	780 862
	PinPoint R1000	780 869	780 868	780 867	780 866
TS15 I	PinPoint R30	780 873	780 872	780 871	780 870
	PinPoint R400	780 877	780 876	780 875	780 874
	PinPoint R1000	780 882	780 880	780 879	780 878



All TS15 models are delivered with one full VGA colour touch screen, standard applications, user manual, SmartWorx Viva DVD and container GVP625.

Additional Options & Accessories

2 Additional Options for Total Station

2.1 Second Keyboard



779 481	GTS34	2nd keyboard with full VGA colour touch screen, for TS15 instruments, for telescope position 2, fitted.
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2.2 Producer Certificates



794 056	GDI67	Producer Inspection Certificate M for theodolites and total stations: Angle.
794 060	GDI68	Producer Inspection Certificate M for total stations: Distance measurement to prisms.
794 062	GDI69	Producer Inspection Certificate M for total stations: Angle and Distance measurement to prisms.
794 063	GDI70	Producer Inspection Certificate M for total stations: Distance measurement to prisms and to any surfaces (reflectorless).
794 064	GDI71	Producer Inspection Certificate M for total stations: Angle and Distance measurement to prisms and to any surfaces (reflectorless).



2.3 Calibration Certificates



757 424	GDI58	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz and V.
757 425	GDI59	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz, V and Distance measurement to prism.
777 783	GDI61	Calibration Certificate for electronic total stations - Swiss accredited Calibration Laboratory: Angle Hz, V, Distance measurement to prism and to any surface (reflectorless).

3 SmartWorx Viva Application Programs & Software Options


3.1 SmartWorx Viva Software for TS15

767 908	SmartWorx Viva software and DVD.
781 307	TS SmartWorx Viva LT licence key.  Requires 767 908 SmartWorx Viva software.
788 857	TS SmartWorx Viva LT extended settings licence key
788 858	TS SmartWorx Viva LT extended applications licence key
781 305	TS SmartWorx Viva licence key.  Requires 767 908 SmartWorx Viva software.
781 308	TS SmartWorx Viva LT to TS SmartWorx Viva upgrade option.





3.2 Applications included in SmartWorx Viva for TS15

	TS Smart-Worx Viva	TS Smart-Worx Viva LT
Survey includes: <ul style="list-style-type: none"> • Survey • Code points • Auto points recording • Remote Heights • Target Offset calculations 	<ul style="list-style-type: none"> ● ● ● ● ● 	<ul style="list-style-type: none"> ● ● ○ - ●
Setup includes: <ul style="list-style-type: none"> • Get station coordinates from GPS, 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 	<ul style="list-style-type: none"> ● ● ● ● ● ● ● 	<ul style="list-style-type: none"> ○ ● ● ● ● ● ●
Stakeout includes: <ul style="list-style-type: none"> • Navigate to point using various methods: North, point, to and from total station • Quality control - checking of coordinate differences before storing • Automatic selection of next closest point to stake • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic "reversing beep" when getting closer to point 	<ul style="list-style-type: none"> ● ● ● ● ● ● 	<ul style="list-style-type: none"> ○ - - ● - -
COGO includes: <ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Line calculations • Arc calculations • Angle and curve calculator • Shift, Rotate & Scale (manual) • Shift, Rotate & Scale (match Points) 	<ul style="list-style-type: none"> ● ● ● ● ● ● ● ● 	<ul style="list-style-type: none"> ● ● ● ● ● - ● ●
Determine coordinate system: <ul style="list-style-type: none"> • 1 step, 2 step, 3D Transformation • All common projections 	<ul style="list-style-type: none"> ● ● 	<ul style="list-style-type: none"> ● ●
Alignment Editor: <ul style="list-style-type: none"> • Horizontal alignments • Vertical alignments • Cross sections • Chainage equations 	<ul style="list-style-type: none"> ● ● ● ● 	<ul style="list-style-type: none"> ● ● ● ●
Data import: ASCII, DXF	●	●
Data export: Custom ASCII, DXF, LandXML, FBK, RW5, RAW	●	●
<ul style="list-style-type: none"> ● All options and functionality available ○ Limited options and functionality - Not available 		



3.3 SmartWorx Viva Application Software Packages for TS15

		TS Smart-Worx Viva	TS Smart-Worx Viva LT
781 311	Worksite+ includes: <ul style="list-style-type: none"> • TS DTM Stakeout application (781 326) • TS Reference Line application (781 322) • TS Surface & Volumes application (781 327) 	<ul style="list-style-type: none"> ● ● ● 	<ul style="list-style-type: none"> ● ○ ●
781 309	Survey+ includes: <ul style="list-style-type: none"> • TS Reference Plane and Grid Scanning (781 323) • TS Cross Section (781 325) • TS Traverse (781 333) • TS Sets of Angles (781 334) • TS Hidden Point (781 332) <p> Requires Art. No. 781 305 TS SmartWorx Viva.</p>	<ul style="list-style-type: none"> ● ● ● ● ● 	<ul style="list-style-type: none"> - - - - -
<ul style="list-style-type: none"> ● All options and functionality available ○ Limited options and functionality - Not available 			

3.4 Optional Applications for SmartWorx Viva for TS15

		TS Smart-Worx Viva	TS Smart-Worx Viva LT
781 331	TS Athletics	●	-
781 324	TS COGO Area Division  Requires COGO application.	●	●
781 326	TS DTM Stakeout  Requires Stakeout application.	●	●
781 336	TS Monitoring  Requires Sets of Angles application.	●	-
781 322	TS Reference Line  Requires Stakeout application.	●	○
781 323	TS Reference Plane and Grid Scanning	●	-
781 328	TS RoadRunner	●	○
781 330	TS RoadRunner Rail	●	-
781 329	TS RoadRunner Tunnel	●	-
781 343	TS RoadRunner Importer	●	●
781 334	TS Sets of Angles	●	-
781 325	TS Cross Section	●	-
781 327	TS Surface and Volumes	●	●
781 332	TS Hidden Point	●	-
781 333	TS Traverse	●	-
<ul style="list-style-type: none"> ● All options and functionality available ○ Limited options and functionality - Not available 			

3.5 Optional Licences for TS Smartworx Viva for TS15

781 346	TS Imaging Licence.  Licence key enables extended imaging functionality on TS15 I instruments.
 Additional TS15 software options for GS12 SmartStation setups can be found in the GS12 chapter 19.4.	

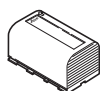
Accessories for Total Station

4 Accessory Set

6006467	TS15 Accessory Set, consisting of: GDF121 tribrach, 2 GEB222 batteries, GKL221 charger with 2 GDI221 charging adapters, MSD1000 SD memory card 1 GB, GEV223 data transfer cable USB host to USB Mini 1.8 m.
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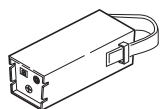
5 Power Supply


5.1 Internal Batteries



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

5.2 External Batteries



727 367	GEB171	External universal battery, NiMH, 12V/9Ah, rechargeable.
749 279	GEV208	External power supply unit. To connect TS11/TS12/TS15 instruments to mains power (220V to 12V).  Requires a GEV52 or GEV187 cable.

5.3 Battery Cables



439 038	GEV71	Car battery cable 4m, to connect 12V car battery.
409 678	GEV52	Cable, connects TS11/TS12/TS15 or DNA to external battery.
734 697	GEV186	Y-cable, connects TS11/TS12/TS15 to TCP528 and external battery.
734 698	GEV187	Y-cable, connects TS11/TS12/TS15 to PC (9-pin RS232 serial) and external battery, 2m.
707 525	GK1	Lemo Canon converter 30°, for PC (Lemo to RS232) to be used with GEV186 cable.

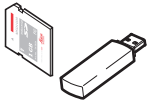
5.4 Battery Chargers



733 271	GKL221	Charger, to be used with up to two charging adapters GDI221 or GDI222, charger cable and net adapter included.
733 323	GDI221	Adapter for GKL221 for charging 2 Li-Ion batteries GEB221, GEB222, GEB211 or GEB212.
734 389	GDC221	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS10/CS15 field controller directly from a cigarette lighter.
734 752	GKL211	Charger, for Li-Ion batteries GEB221, GEB222, GEB211 and GEB212, car adapter cable and net adapter included.
785 703	GKL232	Charger, 230V, 50/60Hz, charges one battery with 5-pin charging socket, also usable for GEB171.

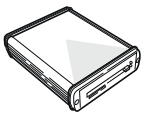
6 Data Storage and Data Transfer

6.1 Memory Devices



767 856	MSD1000	SD memory card 1GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.
789 139	MSD08	SD memory card 8GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.
765 199	MS1	USB memory stick, 1GB, for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller, industrial grade.
733 257	MCF256	CompactFlash card 256MB for TS12 Robotic instruments and CS10/CS15 field controller.
745 995	MCF1000	CompactFlash card 1GB for TS12 Robotic instruments and CS10/CS15 field controller.

6.2 Card Reader



767 895	MCR7	Card reader for SD/CF cards.
733 258	MCFAD1	CompactFlash PC card adapter.

6.3 Data Transfer Cables





563 625	GEV102	Data transfer cable, connects TS11/TS12/TS15 to PC (9-pin RS232 serial), 2m.
734 697	GEV186	Y-cable, connects TS11/TS12/TS15 to TCP528 and external battery.
734 698	GEV187	Y-cable, connects TS11/TS12/TS15 to PC (9-pin RS232 serial) and external battery, 2m.
734 700	GEV189	Data transfer cable, Lemo to USB connector (incl. USB electronics), 2.0m. Connects TS11/TS12/TS15/DNA to PC for data transfer. PC driver and user manual included on CD.
756 367	GEV217	Data transfer cable, connects CS10/CS15 field controller with CBC01 Lemo connector to TS11/TS12/TS15, 1.8m.
764 700	GEV223	Data transfer cable for connecting CS10/CS15 or TS11/TS12 Lite/TS15 to PC (USB A to USB mini connector).
707 525	GK1	Lemo Canon converter 30°, for PC (Lemo 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.
734 514	GFZ3	Diagonal eyepiece for telescope.
376 236	GOK6	Eyepiece for steep sights, with joint allowing variable sighting angle.

7.2 Autocollimation Set



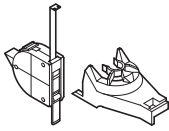
199 899	GOA2	Autocollimation eyepiece.
394 787	GEB62	Plug-in lamp, with cable for autocollimation eyepiece.
394 792	GEB63	Battery box for autocollimation eyepiece and eyepiece lamp.

7.3 Objective



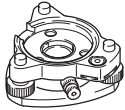
743 504	GVO13	Objective solar filter for TPS instruments.
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8 Instrument Height Meter



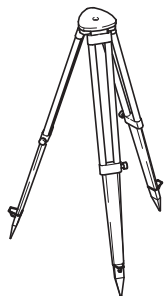
667 718	GHM007	Instrument height meter.
722 045	GHT196	Distance holder for height meter.

9 Tribrachs



667 304	GDF121	Precision Tribrach, without optical plummet, pale green.
667 307	GDF122	Precision Tribrach, with optical plummet, pale green.
748 888	GDF111-1	Tribrach, without optical plummet, pale green.
667 308	GDF112	Tribrach, with optical plummet, pale green/red.

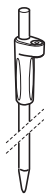
10 Tripods



296 632	GST20	Tripod, telescopic, with accessories (plumb bob, carrying strap and side clamp screws), with pouch.
394 752	GST20-9	Tripod, telescopic, with accessories.
667 301	GST120-9	Tripod, telescopic, selfclosing, with accessories.
332 200	GST4	Tripod-star, for setting up tripods on hard and slippery surfaces.

11 Reflector Poles

11.1 Standard Poles

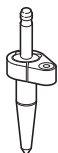


385 500	GLS11	Reflector pole, telescopic, with circular bubble, cm and ft graduation, extends to 2.15m.
754 391	GLS12	Reflector pole, telescopic to 2.00m with circular bubble, cm graduations.
754 389	GLS12F	Reflector pole, telescopic to 2.00m with circular bubble, ft graduations.
752 292	GLS30	Telescopic carbon GNSS pole with 5/8" screw. Snap locks at 1.80m and 2.00m. Includes circular bubble.
766 359	GLS31	Reflector carbon-fibre pole with circular bubble and twist lock. Snap-locks at 2.00m for GPS (GNSS) antennas with GAD31 adapter or GRZ122 reflector (SmartPole setup).
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

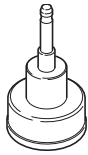
742 329	GMP112	Hidden Point pole extension for GMP111 (mini prism pole set). Includes mini prism with holder and 30cm adapter pole.
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11.3 Mini Pole



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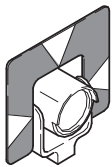
12 Reflector Carriers



667 313	GRT144	Carrier with stub, pale green.
667 316	SNLL121	Precision carrier, with plate level and zenith-nadir laser plummet.
428 340	GZR3	Precision carrier, with plate level and optical plummet.
725 566	GZR103	Carrier, with plate level and optical plummet, for reflectors and GPS antenna, pale green.

13 Reflectors

13.1 Circular Reflectors



362 830	GPR1	Circular prism, in black housing.
641 618	GPR111	Circular prism, with holder and target plate.
753 492	GPR113	Circular prism, with red holder.
641 617	GPR121	Circular prism, with metal holder and target plate.
362 820	GPH1	Single-prism holder.
400 080	GPH3	Three-prism holder.
362 823	GZT4	Target plate, for GPH1.

13.2 360° Reflectors



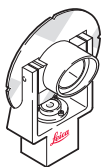
639 985	GRZ4	360° reflector.
644 327	GRZ101	360° mini prism with 1/4" thread fitting. Not supported by PowerSearch.
754 384	GRZ122	360° reflector with 5/8" thread adapter for mounting of GPS antenna.
742 006	GAD103	Adapter for attaching GRZ101 to all poles with Leica Geosystems stub.

13.3 Precision Reflectors



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



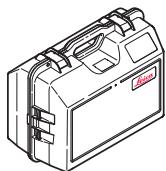
641 662	GMP101	Mini prism, incl. bubble, target plate and spike, in bag, also suitable for GLS11/GLS12 and GRT144 (same height as GPH1, additive constant +17.5mm).
641 762	GMP104	Mini prism, with L-bar, for fixed installations.
641 615	GMP111	Mini prism, incl. bubble, with GLS115 pole set.
642 534	GMP111-0	Mini prism 0-constant, incl. bubble, with GLS115 pole set.
743 503	GAD105	Adapter for GMP111 to all poles with Leica Geosystems stub.

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.

14 Additional Containers



767 828	GVP642	Hard container for CS10/CS15 field controller, GS15 SmartAntenna and corresponding SmartStation SmartPole accessories.
667 451	GVP609	Container for 2 circular prisms GPR111/121, 2 carriers/laser plummets and 2 tribrachs.
791 696	GVP660	Small-sized hard container for TPS Robotic Pole Setup. Fits CS15 with CTR16 attached and all necessary pole accessories.
744 501	GDZ66	Backstraps (2) for all hard container.
727 589	GVP102	Soft bag with shoulder strap, for prism station, consist of tribrach, prism carrier or laser plummet and prism.
782 384	GVP656	Viva hard container for GS12 SmartAntenna, CS10/CS15 field controller, Smart-Pole and SmartStation accessories.

Remote Control

15 Remote Control

15.1 Remote Control Sets

Advanced Remote Control Set with integrated radio

6003611	Advanced CS10 Set for TS15 instruments, consisting of CS10 radio field controller (767 866) with integrated TPS radio modem, CBC01 Lemo connector modul and CS SmartWorx Viva licence key (767 909), GHT62 pole holder with GHT63 pole clamp, RH15 RadioHandle, 2 GEB212 battery and container.
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Advanced Remote Control Set with communication cap

6006517	Advanced CS15 Set for TS15 instruments, consisting of CS15 field controller (767 869), CBC01 Lemo connector modul and CS SmartWorx Viva licence key (767 909), CTR16 communication cap, GHT62 pole holder with GHT63 pole clamp, RH16 RadioHandle, 2 GEB212 battery and container.
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Professional Remote Control Set with communication cap


6006518	Professional CS15 Set for TS15 instruments, consisting of CS15 UMTS field controller (781 599), CBC01 Lemo connector modul and CS SmartWorx Viva licence key (767 909), CTR16 communication cap, GHT62 pole holder with GHT63 pole clamp, RH16 RadioHandle, 2 GEB212 batteries and container.
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15.2 CS10 Radio Field Controller



767 866	CS10 Radio Field Controller	CS10 Radio Field Controller. Ruggedized WinCE field controller with full VGA colour touch screen, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, internal TPS radio module, numeric keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
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15.3 CS15 Field Controller with Communication Cap

 Communication between CS15 field controller and totalstation with RH16 attached requires a CTR16 communication cap attached to the field controller.



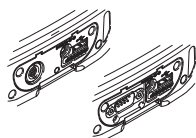
781 599	CS15 3.5G Field Controller	CS15 3.5G Field Controller. Ruggedized WinCE field controller with full VGA touch display, 1GB NAND Flash Memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, internal WLAN module, 3.5G GSM/UMTS module, QWERTY keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).
767 869	CS15 Field Controller	CS15 Field Controller. Ruggedized WinCE field controller with full VGA touch display, 1GB NAND flash memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, QWERTY keypad, stylus. Available with either Lemo connector (CBC01) or DSUB connector module (CBC02).





Communication Cap

788 855	CTR16	Communication Cap with integrated Bluetooth module and antenna for CS15 field controller. Used to establish radio connection between CS15 field controller and TS totalstations equipped with RH16. Frequency range 2402 - 2480MHz.
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15.4 Connector Modules for CS10/CS15



767 874	CBC01	Lemo connector module with power jack, Lemo (USB and Serial) and USB A host for CS10 and CS15 field controller.  Can only be ordered with CS10/CS15 field controller.
767 875	CBC02	DSUB connector module with power jack, DSUB 9-pin, USB A host and USB mini AB for CS10 and CS15 field controller.  Can only be ordered with CS10/CS15 field controller.

16 SmartWorx Viva Software and Application Programs

16.1 SmartWorx Viva Software for CS10/CS15


767 908	SmartWorx Viva software and DVD.
767 910	CS SmartWorx Viva LT licence key.  Requires 767 908 SmartWorx Viva software.
788 859	CS SmartWorx Viva LT extended settings licence key
788 860	CS SmartWorx Viva LT extended applications licence key
767 909	CS SmartWorx Viva licence key.  Requires 767 908 SmartWorx Viva software.
767 911	CS SmartWorx Viva LT to CS SmartWorx Viva upgrade option.

16.2 Applications included in SmartWorx Viva for CS10/CS15

	CS Smart- Worx Viva	CS Smart- Worx Viva LT
Survey includes: <ul style="list-style-type: none"> • Survey • Code points • Auto points recording • Remote Heights • Target Offset calculations 	● ● ● ● ●	● ● ○ - ●
Setup includes: <ul style="list-style-type: none"> • Get station coordinates from GPS, 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 	● ● ● ● ● ● ●	○ ● ● ● ● ● ●
Stakeout includes: <ul style="list-style-type: none"> • Navigate to point using various methods: North, point, to and from total station • Quality control - checking of coordinate differences before storing • Automatic selection of next closest point to stake • Graphical selection of point from map • Edit heights and offset heights of points • Acoustic "reversing beep" when getting closer to point 	● ● ● ● ● ●	○ - - ● - -
COGO includes: <ul style="list-style-type: none"> • Inverse • Traverse • Intersections • Line calculations • Arc calculations • Angle and curve calculator • Shift, Rotate & Scale (manual) • Shift, Rotate & Scale (match Points) 	● ● ● ● ● ● ● ●	● ● ● ● ● - ● ●
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, DXF	●	●
Data export: Custom ASCII, DXF, LandXML, FBK, RW5, RAW	●	●





- All options and functionality available
- Limited options and functionality
- Not available

16.3 SmartWorx Viva Application Software Packages for CS10/CS15

		CS Smart-Worx Viva	CS Smart-Worx Viva LT
767 913	Worksite+ includes: <ul style="list-style-type: none"> CS DTM Stakeout application (767 919) CS Reference Line application (767 915) CS Surface & Volumes application (767 920) 	<ul style="list-style-type: none"> ● ● ● 	<ul style="list-style-type: none"> ● ○ ●
767 912	Survey+ includes: <ul style="list-style-type: none"> CS Reference Plane and Grid Scanning (767 916) CS Cross Section (767 918) CS Traverse (767 927) CS Sets of Angles (767 929) CS Hidden Point (767 926) <p> Requires Art. No. 767 909 CS SmartWorx Viva.</p>	<ul style="list-style-type: none"> ● ● ● ● ● 	<ul style="list-style-type: none"> - - - - -

● All options and functionality available
 ○ Limited options and functionality
 - Not available


16.4 Optional Applications for SmartWorx Viva for CS10/CS15

		CS Smart-Worx Viva	CS Smart-Worx Viva LT
767 917	CS COGO Area Division  Requires COGO application.	●	●
767 919	CS DTM Stakeout  Requires Stakeout application.	●	●
767 931	CS Monitoring  Requires Sets of Angles application.	●	-
767 915	CS Reference Line  Requires Stakeout application.	●	○
767 916	CS Reference Plane and Grid Scanning	●	-
767 921	CS RoadRunner	●	○
767 923	CS RoadRunner Rail	●	-
767 922	CS RoadRunner Tunnel	●	-
777 645	CS RoadRunner Importer	●	●
767 929	CS Sets of Angles	●	-
767 918	CS Cross Section	●	-
767 920	CS Surface and Volumes	●	●
767 926	CS TPS Hidden Point	●	-
767 927	CS Traverse	●	-

● All options and functionality available
 ○ Limited options and functionality
 - Not available

16.5 Optional Licences for CS10/CS15 Controller

781 486	CS Imaging Licence. Licence key allows to link a TS image to a CS database object.
779 474	Topcon total station control licence.
782 287	Nikon totalstation control licence.
782 286	SOKKIA totalstation control licence.

 Additional CS software options for GS12 SmartPole setups can be found in the GS12 chapter 19.3.

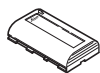
16.6 SmartWorx Viva PC Software

773 894	SmartWorx Viva PC Software. Licence Key to run the SmartWorx Viva software on a PC.
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Accessories for Remote Control

17 Accessories for Remote Control

17.1 Internal Batteries



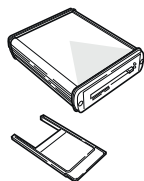
733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.

17.2 Memory Devices



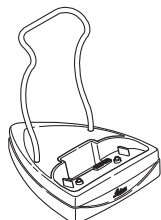
767 856	MSD1000	SD memory card 1GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.
789 139	MSD08	SD memory card 8GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.
733 257	MCF256	CompactFlash card 256MB for CS10/CS15 field controller.
745 995	MCF1000	CompactFlash card 1GB for CS10/CS15 field controller.
765 199	MS1	USB memory stick, 1GB, for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller, industrial grade.

17.3 Card Reader & Adapter



767 895	MCR7	Card reader for SD/CF cards.
733 258	MCFAD1	CompactFlash PC card adapter.

17.4 Docking Station



767 906	CCS01	Docking station for CS10 and CS15 field controller for charging and data transfer to PC, includes: GEV223 (USB A to USB mini data transfer cable).
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17.5 Pen and Display foils

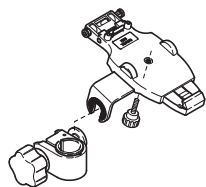


Extra pen		
781 521	GDZ69	Extra pen with allen key for CS10 and CS15 field controller.
Anti-glare display foils		
767 907	SPF01	Anti-glare display foils for CS10 and CS15 field controller.

17.6 Additional Power Accessories

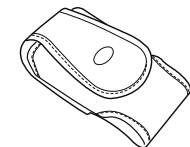
767 900	GEV235	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the EU.
773 753	GEV235-1	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the US.
773 754	GEV235-2	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Japan.
773 755	GEV235-3	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in the UK.
773 756	GEV235-4	1.5m power cable. Allows CS10/CS15 controller to be externally powered via the power jack. Usable in Australia.
734 389	GDC221	Car adapter for the GKL221 charger. Allows the use of the GKL221 with a cigarette lighter; 12V/24V DC/DC converter. Can also be used to power CS10/CS15 field controller directly from a cigarette lighter.

17.7 Pole Accessories for CS10/CS15 Field Controller



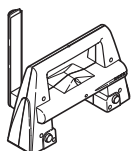
767 879	GHT62	Pole holder base plate for CS10 and CS15 field controller.
767 880	GHT63	Clamp arrangement for attaching the GHT62 to all poles.

17.8 Softbags and Hand Strap for CS10/CS15 Field Controller



Soft bags		
767 904	GVP643	Soft bag for CS10 field controller for transportation and protection against dirt. Including belt loop.
767 905	GVP644	Soft bag for CS15 field controller for transportation and protection against dirt. Including belt loop.
Hand strap		
767 877	GHT61	Hand strap for CS10/CS15 field controller with utility hook for attaching to belt or tripod.

17.9 RH15/RH16 RadioHandle



RH15		
772 300	RH15	Radio Handle with integrated radio modem and radio antenna. Used as radio modem for TS12 Robotic/TS15 instruments together with CS10/CS15 radio field controller (frequency range 2402 - 2452MHz).
RH16		
788 853	RH16	Radio Handle with integrated bluetooth module and radio antenna. Used as radio modem for TS15 instruments. Establishes communication to CS15 field controller equipped with CTR16 or TCPS29 attached to PC (frequency range 2402 - 2480MHz).

17.10 TCPS29 Modems



788 854	TCPS29	Bluetooth radio modem with antenna and user manual. Used as external radio modem for TS total stations or PC (frequency range 2402 - 2480MHz).
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17.11 TCPS Accessories



734 163	GHT43	Adapter for mounting TCPS radio module on GST20/GST120 tripod.
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17.12 Cables for CS10/CS15 Field Controller and TCPS Radio Modems



Cable adapters

734 389	GDC221	Car lighter to power jack for CS10/CS15 field controller.
707 525	GK1	Lemo Canon converter 30°, for PC (Lemo to RS232) to be used with GEV186 cable.

Data transfer cables

764 700	GEV223	Data transfer cable for connecting CS10/CS15 or TS15 to PC (USB A to USB mini connector).
767 899	GEV234	Cable to connect CS10/CS15 field controller to GS10/GS15 SmartAntenna for data transfer. USB A to Lemo connector (for GS15 SmartStation setup).
772 807	GEV237	Cable to connect CS10/CS15 field controller to GS15 SmartAntenna for data transfer. Lemo to Lemo connector (for GS15 SmartStation setup).

Power cables

758 469	GEV219	Power cable, connects CS10/CS15 (with Lemo CBC01 connector module) to external battery.
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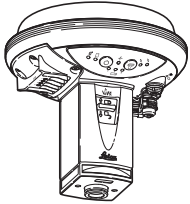
Y - power cables

734 697	GEV186	Y-cable, connects TS15 to TCPS and external battery.
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SmartPole & SmartStation

18 SmartStation & SmartPole Setup using GS15 GNSS Receiver

18.1 GS15 GNSS Receiver

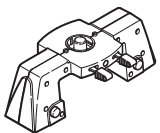


767 789	GS15	Leica GS15 Basic SmartAntenna
771 502	GS15	Leica GS15 Limited SmartAntenna
771 503	GS15	Leica GS15 Performance SmartAntenna
771 504	GS15	Leica GS15 Professional SmartAntenna

	Leica GS15 Basic	Leica GS15 Limited	Leica GS15 Performance	Leica GS15 Professional
Supported GNSS Systems				
GPS L2	●	●	●	●
GPS L5	○	○	○	●
GLONASS	○	○	○	●
Galileo	○	○	○	●
RTK performance				
DGPS/RTCM	○	●	●	●
RTK up to 5km	○	●	●	●
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

18.2 SmartAntenna Adapter

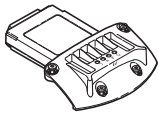




767 802	GAD110	SmartAntenna adapter to mount GS15 SmartAntenna. 📖 BT module to connect the TS to the GS15 GNSS receiver is standard on all TS15 instruments.
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18.3 Additional GS15 Receiver Options

GNSS Software options		
767 804	LOP1	GPS L5 option, enables GPS L5 tracking on a GS10 or GS15 receiver.
767 805	LOP2	GLONASS option, enables GLONASS tracking on a GS10 or GS15 receiver.
767 806	LOP3	Galileo option, enables Galileo tracking on GS10 or GS15 receiver.
Position update and data recording options		
767 807	LOP4	5Hz option, enables to compute positions with an update rate up to 5Hz.
767 808	LOP5	20Hz option, enables to compute positions with an update rate up to 20Hz.
767 809	LOP6	Upgrade option from 5Hz to 20Hz. (LOP4 to LOP5)
767 810	LOP7	Raw data option, allows logging of GNSS raw data on GS10 or GS15 receiver or on a CS10/CS15 field controller.
767 811	LOP8	RINEX option, allows logging of RINEX data on GS10 or GS15 receiver.
RTK performance options		
767 812	LOP9	5km RTK option, enables RTK positions to be computed up to a distance of 5km from a single base station.
767 813	LOP10	Unlimited RTK option, enables RTK positions to be computed from a single base station with no limit of distance.
767 814	LOP11	Upgrade from 5km RTK to unlimited RTK. (LOP9 to LOP10)
767 815	LOP12	Unlimited RTK and Network RTK, enables RTK position to be computed from a single base station and within a RTK network.
767 817	LOP14	Upgrade option for GS10 or GS15 receivers from RTK unlimited only to RTK unlimited including RTK Network. (LOP10 to LOP12)
771 971	LOP20	Leica Lite option, to receive GS09 RTK data on the GS10, GS15 receivers.
Other options		
767 816	LOP13	RTK Reference station option, allows a GS10 or GS15 receiver to transmit RTK data.

18.4 RTK Modems



Satellite radio modules		
767 819	SLR1	Satellite M3 T1 403-470MHz TXO radio. RTK transmitting only UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 820	SLR2	Satellite M3 R1 403-470MHz RXO radio. RTK receive only UHF radio module to be easily plugged into the GS15 GNSS receiver.
781 646	SLR5	Satellite M3 TR1 403-470MHz RX/TX radio. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
Pacific Crest radio modules		
767 821	SLR3-1	Pacific Crest ADL RX/TX radio 390-430Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
767 822	SLR3-2	Pacific Crest ADL RX/TX radio 430-470Mhz. RTK receive and transmit UHF radio module to be easily plugged into the GS15 GNSS receiver.
6002544		Configuration tool kit for programming Satellite and Pacific Crest SLR RTK radio modules; includes programming cable GEV231 and configuration software CD ROM.
 SLR radios will be delivered pre-configured according to country-specific radio regulations. In countries where radios need to be configured locally, the configuration tool kit is to be used.		
 External high power radios such as Satellite Epic Pro (10, 35W), Pacific Crest (2, 35W) or GFU radios can be used for RTK communication instead of the slot-in RTK modems.		
Mobile phone modules		
767 823	SLG1	5-Band (850/900/1800/1900/2100MHz) Telit GSM/GPRS/UMTS module. Provides full flexibility due to 5-band technology and is globally compatible to all GSM, GPRS, EDGE and UMTS network providers. Can be easily plugged into the GS15 GNSS receiver.
774 689	SLG2	4-Band (850/900/1800/1900MHz) Siemens MC75i GSM/GPRS module. Universal 4-band technology supports GSM, GPRS, and EDGE network providers. Can be easily plugged into the GS15 GNSS receiver.

767 824	SLC1	Dual band Telit CDMA 1xRTT module for US. Supports Sprint (US) network provider and can be easily plugged into the GS15 GNSS receiver.
767 825	SLC2	Dual band Telit CDMA 1xRTT module for US. Supports Verizon (US) network provider and can be easily plugged into the GS15 GNSS receiver.

18.5 External RTK Antennas



The GS15 receiver is equipped with internal GSM/GPRS/UMTS antenna and internal UHF antenna as standard. In areas of poor GSM/GPRS/UMTS or UHF reception, the use of an external RTK antenna may improve reception.



RTK antenna arm

767 790	GAD108	Arm to mount external UHF/GSM antenna to GS15 SmartAntenna, useful in areas of poor radio or GSM network reception.
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Gainflex radio antennas

639 964	GAT1	Gainflex radio antenna (frequency range 400-435MHz).
667 243	GAT2	Gainflex radio antenna (frequency range 435-470MHz).

Antennas for mobiles phones

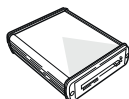
782 500	GAT18	Multiband GSM/UMTS Antenna for 850/1900MHz, for 900/1800MHz and for 2100MHz mobile networks.
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18.6 Memory Devices



767 856	MSD1000	SD memory card 1GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.
789 139	MSD08	SD memory card 8GB for TS11/TS12 Lite/TS15 instruments and CS10/CS15 field controller.

18.7 Card Reader



767 895	MCR7	Card reader for SD/CF cards.
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18.8 Power Supply



733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.

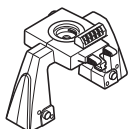
19 SmartStation & Smartpole Setup using a GS12 GNSS Receiver

19.1 GS12 GNSS Receiver



782 288	GS12	GS12 GNSS receiver, Geodetic 120 channels GNSS receiver, includes: GPS L1+L2, 1 Hz position rate, easily upgradeable with TS/GS12 or CS/GS12 options (e.g. GLONASS, Galileo, GPS L5, Network Licence, Raw data logging).
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19.2 SmartAntenna Adapter



741 965	GAD104	GS12 SmartAntenna Adapter. Required to attach a GS12 GNSS Antenna onto a TS15 Instrument.
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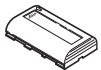
19.3 Additional CS Options for GS12 GNSS SmartPole Setup

782 278	GSW949	CS/GS12 GLONASS License. License key for the CS10/CS15 field controller which enables use of GLONASS with a GS12 receiver.
782 279	GSW950	CS/GS12 GPS L5 License. License key for the CS10/CS15 field controller which enables use of GPS L5 with a GS12 receiver.
782 280	GSW951	CS/GS12 GPS Galileo License. License key for the CS10/CS15 field controller which enables use of Galileo with a GS12 receiver.
782 281	GSW952	CS/GS12 5Hz License. License key for the CS10/CS15 field controllers which enables to compute 5Hz positions with a GS12 receiver.
782 282	GSW953	CS/GS12 Raw Data Logging License. License key for the CS10/CS15 field controllers which enables logging of Leica MDB raw data with a GS12 receiver.
782 283	GSW954	CS/GS12 RINEX Logging License. License key for the CS10/CS15 field controllers which enables logging of RINEX raw data with a GS12 receiver.
782 284	GSW955	CS/GS12 Network RTK Network License. License key for the CS10/CS15 field controllers which enables the GS12 receiver to work within an RTK network. Includes unlimited RTK baseline.
782 285	GSW956	CS/GS12 Leica Lite RTK License. License key for the CS10/CS15 field controllers which enables the GS12 antenna to receive Leica Lite RTK messages.

19.4 Additional TS Options for GS12 SmartStation Setup

782 615	GSW964	TS/GS12 GLONASS License. License key for the TS15 total stations which enables use of GLONASS with a GS12 receiver.
782 617	GSW965	TS/GS12 GPS L5 License. License key for the TS15 total stations which enables use of GPS L5 with a GS12 receiver.
782 618	GSW966	TS/GS12 GPS Galileo License. License key for the TS15 total stations which enables use of Galileo with a GS12 receiver.
782 620	GSW968	TS/GS12 Raw Data Logging License. License key for the TS15 total stations which enables logging of Leica MDB raw data with a GS12 receiver.
782 621	GSW969	TS/GS12 RINEX Logging License. License key for the TS15 total stations which enables logging of RINEX raw data with a GS12 receiver.
782 622	GSW970	TS/GS12 Network RTK Network License. License key for the TS15 total stations which enables the GS12 receiver to work within an RTK network.
782 623	GSW971	TS/GS12 Leica Lite RTK License. License key for the TS15 total stations which enables the GS12 antenna to receive Leica Lite RTK messages.

19.5 Power Supply



733 269	GEB211	Lithium-Ion battery, 7.4V/2.2Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.
772 806	GEB212	Lithium-Ion battery, 7.4V/2.6Ah, rechargeable. To be used with CS10/CS15 field controller and GS09, GS12 or GS15 receivers.

Care Packages

20 Customer Care Packages



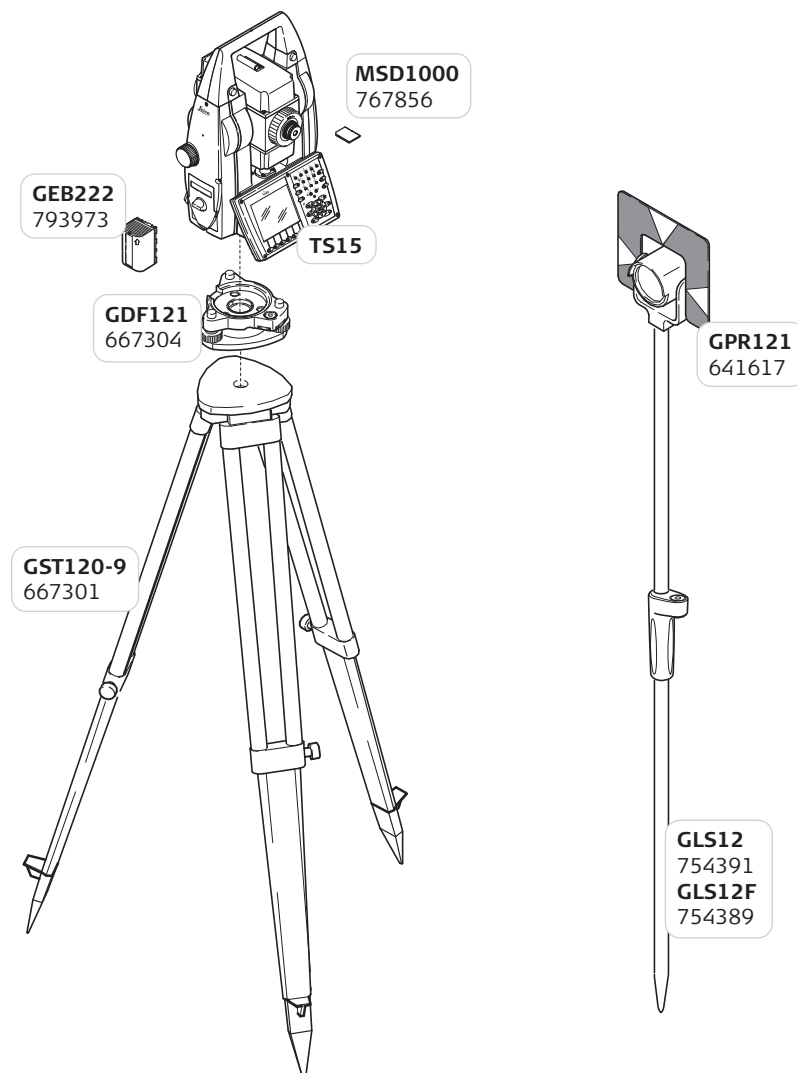
A wide selection of comprehensive Customer Care Packages (CCPs) is available bundling Hardware Maintenance, Software Maintenance, Customer Support and Extended Warranty.

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

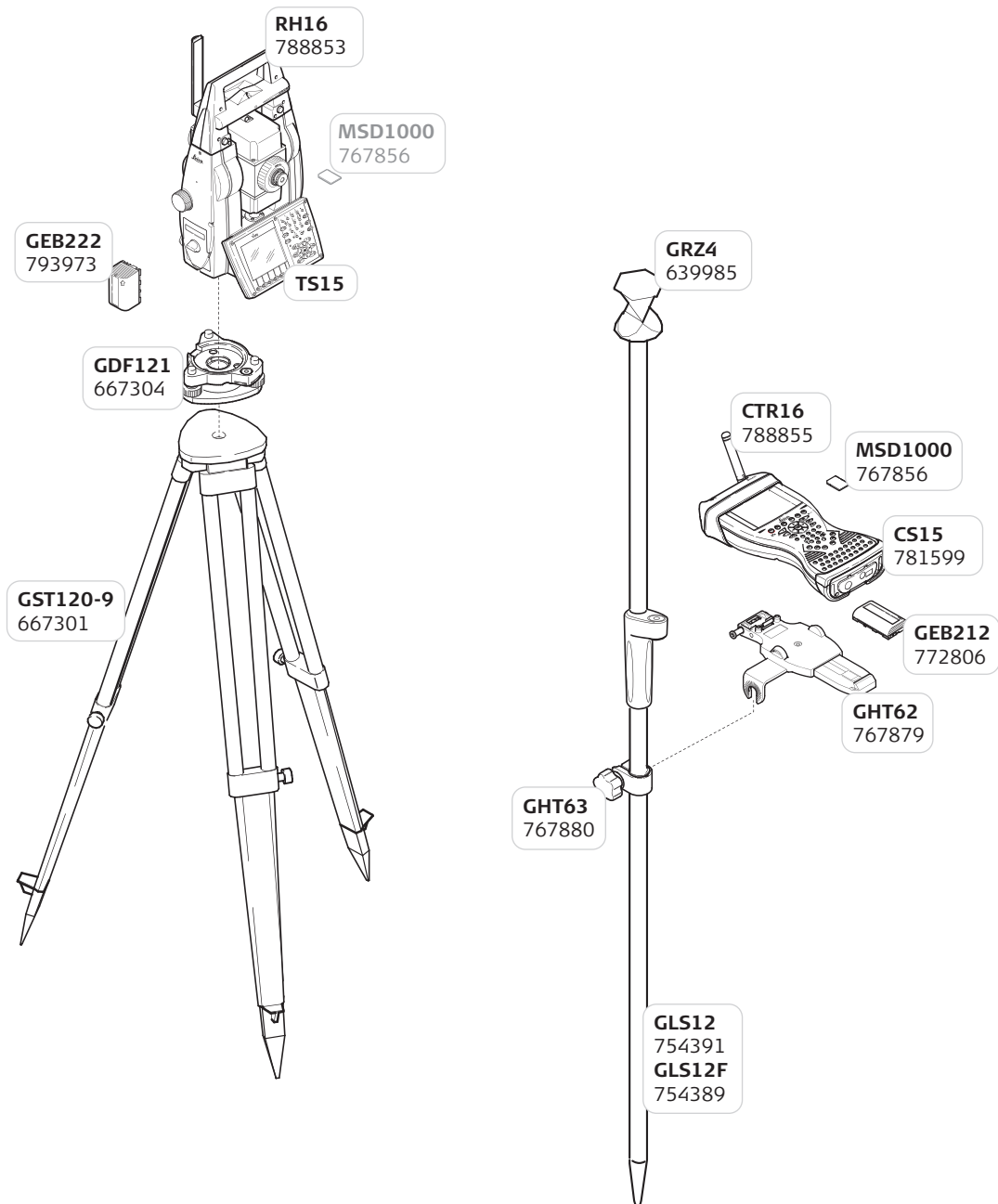
Suggested Equipment Setups

21 Conventional Surveying

21.1 Two Person Surveying using a TS15 totalstation

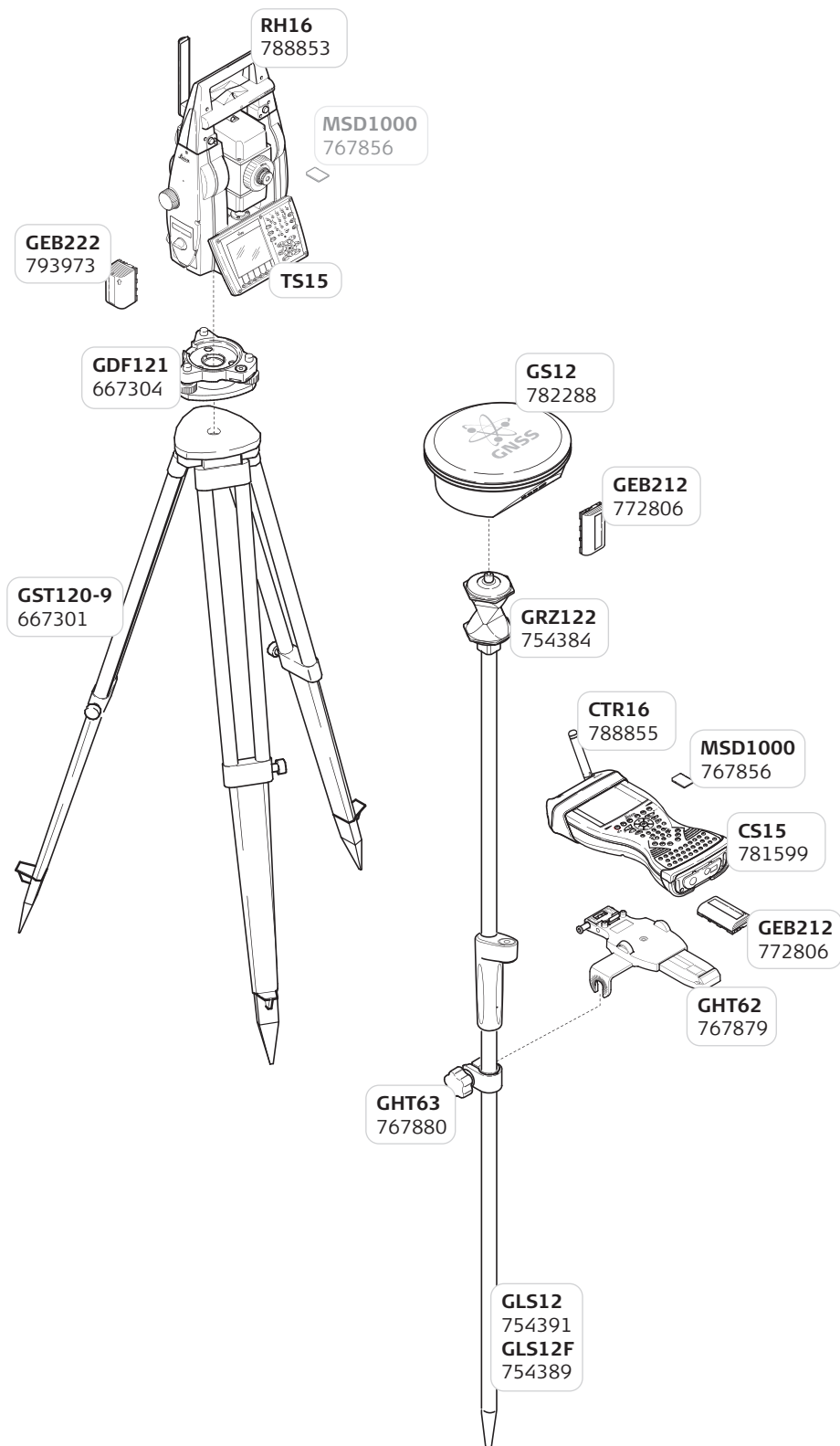


21.2 Robotic Surveying using a TS15 totalstation



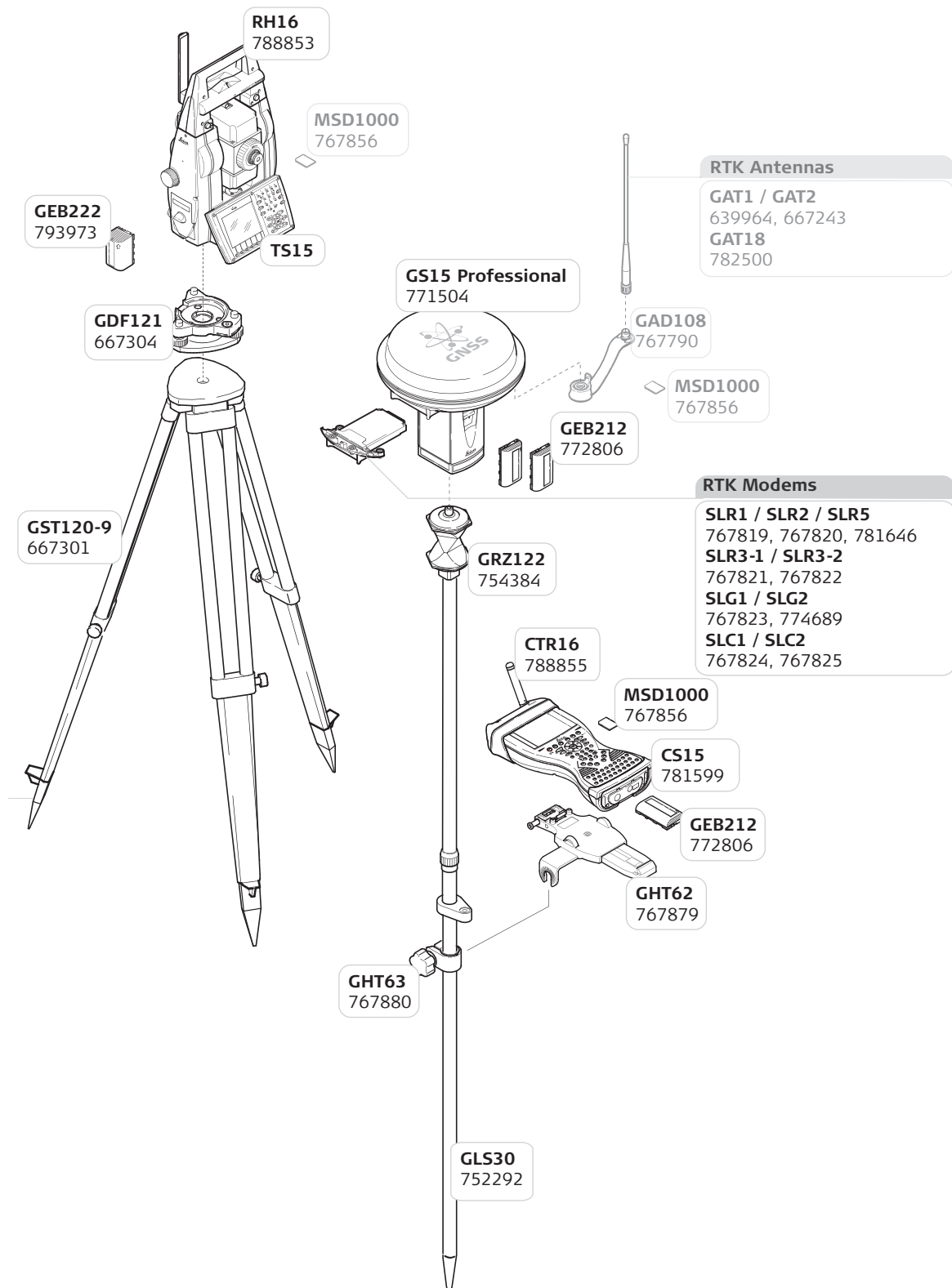
22 SmartPole Surveying

22.1 SmartPole using the GS12 GNSS Receiver



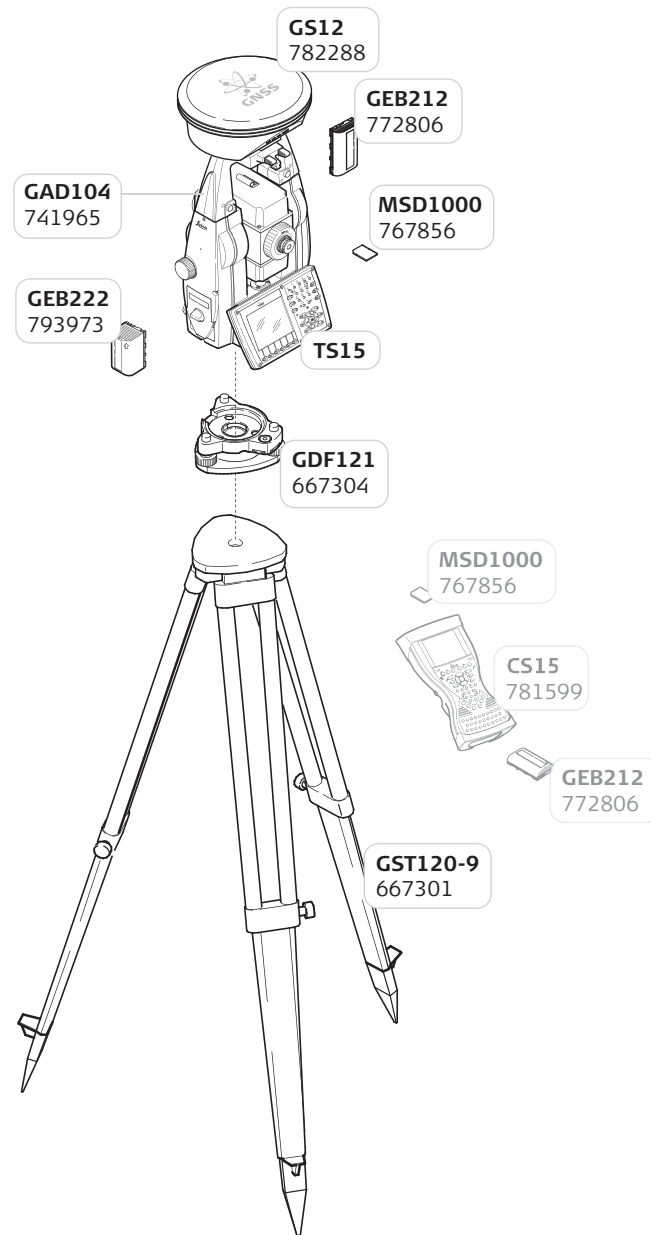
- SmartPole setup with GS12 GNSS receiver requires a Bluetooth mobile phone or CS15 UMTS field controller in order to receive RTK correction data.
- GFU RTK devices cannot be used for this SmartPole setup.

22.2 SmartPole using the GS15 GNSS Receiver



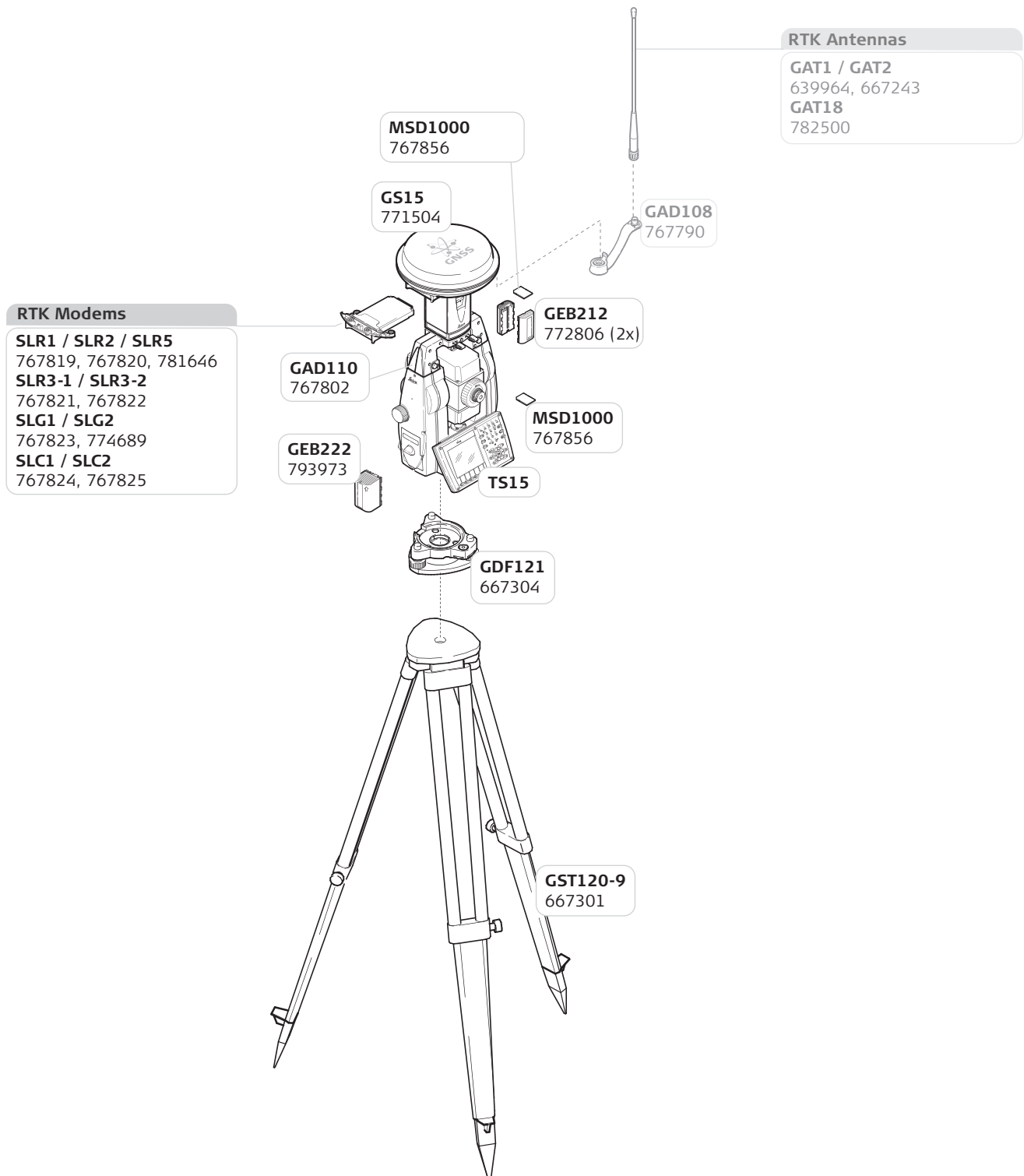
23 SmartStation

23.1 SmartStation using the GS12 GNSS Receiver



- SmartStation setup with GS12 GNSS receiver requires a Bluetooth mobile phone or CS15 UMTS field controller in order to receive RTK correction data.
- GFU RTK devices cannot be used for this SmartStation setup.

23.2 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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Total Quality Management - our commitment to total customer satisfaction.

Ask your local Leica Geosystems dealer for more information about our TQM program.

**Distance meter (Prism),
ATR 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



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