

TACTICAL LIGHTING AND SIGNALS

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RULES FOR SIGNAL DEVICES

The category "signal devices" includes a broad range of flares, star signals, and sometimes even whistles and radar reflectors designed to aid in rescue, sending a signal to begin an operation, or warn friendly forces of imminent danger. They can range from hand-held flare tubes to rocket-powered signals to ground-based devices with tripwires meant to catch enemy troops that are entering a friendly area of control. Most hand-launched devices are simple tubes that are discarded once fired; others are shells that are fired from specially-designed pistols (referred to as "flare guns" or "signal pistols" here) or sometimes grenade launchers. Hand-held devices are usually flares or smoke, and are normally used to signal rescuers, dropped on the ground, or (in some cases) thrown into water. Most launched devices, whether tube launchers or signal pistol shells, are designed to leave no trail, so they cannot be visually back to their launching point; some do produce such a trail, and some do it by design (these are usually warning signals).

Flares: These are very bright lights that are generally launched into the air, but may be hand-held. They are very bright, visible from long ranges, and typically have longer burn times. Some deploy parachutes when they actuate, slowing their descent and in game terms increasing their burn times. Most use white light, but some use other colors. A flare on the ground will cause dry objects or wood to catch fire 0-4 phases after they light (roll 1D6-2).

Star Signals: These signals also deploy bright signals, but the signal is more of a bright but localized light rather than illuminating an area. Star signals (also called "star shells," particularly when launched from a signal pistol or grenade launcher) usually come in colors rather than simple white light, though white-light star signals are by no means unknown. Like flares, star signals can cause fires if they land in dry areas or in woods, though the chance of this happening is 0-3 phases (roll 1D6-3).

Smoke: Smoke is, well, smoke. Most (but not all) smoke signals are orange, and are usually hand-held devices; few are designed for launching. Virtually all use non-flammable compounds and will not ignite dry tinder or items. Unlike smoke grenades, these signals are not designed to produce obscuring smoke; most have short burn times and produce relatively thin smoke.

Radar Reflectors: These signals are composed of a chaff packet that spreads when the payload bursts. They are primarily meant to allow a signal to show up on friendly radar and therefore aid in a rescue, but they also have a secondary use as a decoy for enemy radars.

Whistles: This is a loud, high-pitched whistle designed to get attention, scare enemy troops, or ruin an enemy's hearing for a short time (or any or all of the above).

THE TABLES

SIGNALS

Size: The size of the device or shell; this gives the players and GM some idea of the size of the device they are carrying around. (It also helped me figure out costs...) Virtually all such devices are cylindrical, and the first number should be treated sort of like the caliber of the device.

Burn Time: This is how long the signal burns, in seconds. Smoke signals generally take triple that time to totally disperse; chaff devices have a second number under the Burn Time that shows how long the dispersion of the chaff makes the radar return useless.

Burst: The first number listed here is the "direct burst" radius; i.e. how wide an area is directly illuminated. The second number shows how far away the flare or star can be seen for signaling purposes; this will usually say something like "4K" meaning "4 kilometers." Some of the signals listed will have three entries under the Burst entry; this means that the signal has some other effect such as chaff or a whistle, and that third number is the range at which that signal can be heard, picked up on radar, etc.

Altitude: This is the maximum altitude the signal will reach when fired, provided the signal is fired straight up. Trigonometry fans, have fun here; I was a History major and will just guess at other angles of fire. In some cases, the signal is not designed to be fired straight up; in this case, the Altitude rating is more like a "Range" rating.

SIGNAL PISTOLS AND LAUNCHING DEVICES

Caliber: This is the caliber of the signal pistol or launcher in millimeters, measured by the bore size. Like most firearms, the bore size of the signal pistols are not necessarily exactly the same as the nominal caliber, but they are close enough to launch the nominal bore size shells of appropriate size. Though some launchers, particularly pen-type launchers (where the launcher is simply

a small tube and the round screws or latches in the end of the launcher) have a proprietary design, in general, signal pistols of similar nominal caliber can launch shells of the same rough caliber, regardless of origin. Some particular examples include 26.5mm signal pistols, which can generally launch shells of 25-27mm; and 37mm and 38mm signal pistols, which can launch shells of 37mm-38mm. Note that virtually no signal pistols can launch grenade launcher rounds, even those that are 40mm, though certain 37mm, 38mm, and 40mm signal rounds can be fired by grenade launchers of the appropriate caliber.

ROF: This is the rate of fire by *Twilight 2000* v2.2 rules; this will almost always be SS (Single Shot).

AND NOW YOU WANT TO USE YOUR SIGNAL DEVICE AS A WEAPON

The problem is that *Twilight 2000* is an RPG and not a movie. I'll grant you that both have a large element of unreality, but for purposes of these rules, we'll try to throw in as much reality as possible (and then translate it into game terms).

The problem with the typical signal device (even shells fired from a signal pistol or launcher) is that they fire low-velocity rounds that take a long time to arm and actuate. Thus, unlike you might see on movies or TV, they are unlikely to hit your opponent and then ignite him into a blossom of fire or even go off when they hit him. They are equally unlikely to even penetrate the clothing or even skin of the typical human being. Therefore, the best you might hope for is to hit your opponent hard enough to knock the wind out of him, or hit him in the head hard enough to crack his skull.

So here's a quick and dirty rule that will suffice for most such cases: take the caliber of the device, divide it by 10, round off, and that's the number of *points* of damage your opponent will take if you shoot him. Body armor of any type will prevent any damage from being done. (Even if your opponent is wearing a backpack and you hit him there, the projectile will just bounce off and not hurt him.) Range for the shot is equal to the Altitude figure, again divided by 10; in addition, all shots are one level more difficult at short range and two levels more difficult at any greater range.

An exception to this rule is hand-held flares. These can be waved at an opponent; they will cause damage to the opponent equal to the caliber divided again, but in *dice*, not *points*; this is burn damage. Hit probability is calculated using Melee Combat (Armed) rules, but hit rolls are one level more difficult. They are also 25% likely to ignite the opponent's clothing on fire. Unfortunately, they tend to go out rather quickly...

Condor SS-603 Hand-Held Signal Star

Origin: Brazil

Notes: This is a fairly-typical sort of pyrotechnic signaling device, which is a simple tube with a propelling charge that fires a star-type signal. The SS-603 comes in white, green, or red, with the tube being the same color as the star cluster. The user removes the lower end cap, which reveals a cord. At this point, you will want to be holding the SS-603 over your head, because once the cord is forcefully pulled, the star cluster fires immediately.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Condor SS-603	33x207mm	0.14 kg	7	(B1/4K)	90	\$23

Condor SS-604 Hand-Held Signal Flare

Origin: Brazil

Notes: Unlike the SS-603 above, this is a flare and not a star. It is designed for downed airmen or other surface or ground troops to signal aircraft, and does launch into the air; in a way it is sort of a professional version of a Roman Candle. The SS-604 produces an intense red flare light, and sparks can be shed that can ignite dry tinder in the immediate area. Actuation of the SS-604 is otherwise identical to the SS-603 above.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Condor SS-604	44x242mm	0.58 kg	60	(B24/8K)	Nil	\$19

Condor SS-605 Day/Night Signal Device

Origin: Brazil

Notes: The SS-605 is actually two devices in one, held together with red tape – a night signal firing a high-intensity red flare, and a day device which is essentially an orange smoke grenade. They are not meant to be used while still attached to each other (and in fact, the design prevents this), but the unused half of the SS-605 can be kept for later use. Each part of the unit is set off by removing an end-cap and pulling a cord forcefully.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Condor SS-605 Flare	44x126mm	0.27 kg	25	(B24/4K)	125	\$15
Condor SS-605 Smoke	44x116mm	0.24 kg	25	C0 B8	Nil	\$7

Condor SS-606 Hand-Held Parachute Flare

Origin: Brazil

Notes: The SS-606 is a large-tube parachute flare with a very bright light and a parachute to slow its fall back to earth by a factor of about 5. Like most Condor signaling devices, it comes in the form of a plastic tube, and is actuated by the removal of an end-cap and a firm pull on an igniter cord. The SS-606, however, is known for the kick produced by its strong propelling charge; therefore, the ignition has a 2-second delay to allow the user to get a firm hold on the tube before the propelling charge ignites.

Device	Size	Weight	Burn Time	Burst	Altitude	Price

Condor SS-606	44x325mm	0.49 kg	40	(B24/15K)	300	\$39
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Condor SS-607 Hand-Held Five-Star Rocket

Origin: Brazil

Notes: Unlike most of Condor's signaling devices, the SS-607 is contained within a tube of thin aluminum. This is due to the power of the launching charge, and because instead of a single star, it launches a star cluster consisting of five stars instead of one. The stars may be red, green or white, and when the cluster detonates, it busts in a star pattern so that each star goes in a different direction. At one end of the SS-607 is a plastic end-cap, which is removed to reveal a cord that is pulled firmly to launch the star cluster. There is an ignition delay of 2 seconds, due to the kick and temperature of the propelling charge.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Condor SS-607	44x329mm	0.51kg	5	(B6/3K)	300	\$42

Condor SS-608 40mm Signaling Cartridge

Origin: Brazil

Notes: Not a self-firing device, the SS-608 is a cartridge for use in any 37mm, 38mm, or 40mm flare or signaling gun, and is the sort of cartridge that might be issued to pilots if they happen to get shot down. The SS-608 fires a short-burn time flare to minimize the downed pilot's exposure, or to minimize the time of compromise of ground troops. SS-608 cartridges may be green, red, or white.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Condor SS-608	43x96mm	0.14 kg	6	(B1/8K)	80	\$12

V-81 Signal Cartridge

Origin: Bulgaria

Notes: The V-81 is a signal star cartridge for use in 26.5mm signal flare pistols. They have cardboard tubes of the color of the star(s) and metal rimmed bases. The V-81 comes in white, green or red, and one, two, of three-star versions. The V-81 is offered for export worldwide.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
V-81 (One Star)	26.5x79mm	0.1 kg	10	(B1/3K)	90	\$4
V-81 (Two Stars)	26.5x79mm	0.12 kg	10	(B1/3K)	90	\$5
V-81 (Three Stars)	26.5x79mm	0.14 kg	10	(B1/3K)	90	\$6

V-83 Signal Rocket

Origin: Bulgaria

Notes: This is a hand-held signal device that launches a single star shell of a 2- or 3-star cluster. The body of the cartridge is

cardboard, but the bottom end is sheathed in thin aluminum to protect the user's hand. V-83s are available with one, two, or three stars, all of which are the same color. That color may be white, green, or red. A rocket-assisted version of the V-83 is also available, but this version comes only in white-star versions. Launching is actuated using a striker cap – the end of the rocket is slammed against a hard surface, with no delay between hitting the bottom of the cartridge and launching of the star. The rocket-assisted V-83 is actuated using a pull cord and has a delay of 2 seconds.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
V-83 (One Star)	30x226mm	0.16 kg	9	(B1/3K)	110	\$14
V-83 (Two Stars)	30x226mm	0.18 kg	9	(B1/3K)	110	\$17
V-83 (Three Stars)	30x226mm	0.2 kg	9	(B1/3K)	110	\$21
V-83 (Rocket-Assisted, One Star)	30x226mm	0.24 kg	9	(B1/5K)	150	\$20
V-83 (Rocket-Assisted, Two Stars)	30x226mm	0.26 kg	9	(B1/5K)	150	\$24
V-83 (Rocket-Assisted, Three Stars)	30x226mm	0.28 kg	9	(B1/5K)	150	\$30

CXT-87 Chemical Attack Warning Rocket

Origin: Bulgaria

Notes: Though designed specifically to provide warning of chemical attack, the CXT-87 could be used for general signaling purposes as well. The rocket, like many such Bulgarian devices, is contained in a cardboard tube with a length of the bottom of the tube sheathed in light aluminum to protect the user's hand. The CXT-87 can be ignited by a pull cord after removing an end cap, or ignited electrically after installation on a vehicle. Once fired, the rocket emits a bright yellow light and a loud hissing noise until it burns out.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
CXT-87	40x264mm	0.45 kg	30	(B12/8K)	400	\$28

NORINCO Type 57 Signal Pistol

Origin: China

Notes: Like most flare guns, the Type 57 is a single-shot, break-open pistol designed specifically for launching flares or star signaling devices. The Type 57 is a very simple pistol consisting of only 30 parts, most of which are in the trigger mechanism. The hammer is single-action and must be cocked before the Type 57 can be fired. The Type 57 is based on the Russian SPSH-2 signal pistol, and is rugged and easy to maintain.

Device	Caliber	ROF	Weight	Bulk	SS	Price

Type 57	26.65mm	SS	0.9 kg	1	2	\$238
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NORINCO 27mm Signal Cartridge

Origin: China

Notes: Useable in both 26.5mm and 27mm flare guns, this cartridge launches a bright flare which may be red, green, white, or yellow. The cartridge is contained in a plastic case with a brass endcap. The burn time is short, but during this time these cartridges are visible from a long distance due to their intensity. Unfortunately, this is mitigated somewhat by the low altitude at which they detonate.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
NORINCO 27mm	26.65x79mm	0.06 kg	7	B4/13K	90	\$8

NORINCO 11mm Pyrotechnic Pistol

Origin: China

Notes: Not a conventional pistol in design, the 11mm Pyrotechnic Pistol is a single-shot device that looks more like a pen gun-type weapon than anything else. It is designed to be a compact signaling device for downed airmen and for survival packs used by crews whose ships have sunk. The cartridges are 22mm long, and are screwed into the top end of the device. A knob is then pulled back to cock it, with the knob's extension dropping into a detent. It is striker fired, and the user simply pushes the firing knob out of its detent. It is a short-range device firing a small flare, just enough to get the attention of someone close by.

Device	ROF	Weight	Bulk	SS	Price
11mm Pyrotechnic Pistol	SS	0.06 kg	0	1	\$118

Device	Size	Weight	Burn Time	Burst	Altitude	Price
11mm Pyrotechnic Cartridge	11x22mm	0.01 kg	4	B1/2K	30	\$1

Maadi Abu Redis Signal Pistol

Origin: Egypt

Notes: This is another sign gun that is based on the ubiquitous Russian SPSH-2 signal pistol. As such, it is a break-open device which is very robust in construction, simple to maintain, and easy to use. Unlike most such pistols, the Abu Redis has no trigger guard, or a conventional trigger; instead, a trigger bar is set against the pistol grip. The pistol grip is rather elongated and has a lanyard loop on the butt. The hammer is single-action and must be cocked before firing the Abu Redis.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Abu Redis	26.5mm	SS	0.92 kg	1	2	\$250

Lacroix Type 252 Day/Night Distress Signal

Origin: France

Notes: Though the Type 252 is a signal device, it not designed to be launched into the air – it is to be held up and used to signal

from the ground. The Type 252 is a small device with a percussion igniter at each end, so it must be hit against a solid object to actuate. It can be held in the hand once ignited, since it does not produce enough heat to burn the user. One end of the Type 252 produces thick orange smoke for daytime use, and the other end produces a red flame for night use. The night end is very bright and can be seen a surprising distance away. Once one end is used, the Type 252 must be discarded, as the other end becomes unusable. The Type 252 is watertight, and the night side can be used underwater down to a depth of 70 meters. Note that the both the prices below are for the complete device; one does not double the prices to obtain the full price for the Type 252; likewise, do not double the weight figures to arrive at the weight of the entire Type 252, or the size for the final size of the Type 252.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Type 252 (Day)	38x126mm	0.14 kg	30	C0 B12	Nil	\$24
Type 252 (Night)	38x126mm	0.14 kg	15	B6/12K	Nil	\$24

Lacroix Mle F-1 Hand Signaling Device

Origin: France

Notes: The Mle F-1 consists of a family of signaling devices, all within almost identical containers. The containers are not only marked with their type – the markings are embossed, allowing identification of the type of Mle F-1 by touch (for those familiar with the markings). The all come in plastic tubes with plastic endcaps; when these are removed, they reveal a cord which is a pull-friction device, actuated by a firm pull. They all fire after a 3-second delay.

There are basically two sorts of Mle F-1 devices – standard star signals and parachute star signals. Each use single stars. The stars may be white, green or red. Burnout is roughly twice as long for parachute stars as for standard stars. The containers of the parachute stars are much longer than the standard stars.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Mle F-1 (Standard)	28.5x146mm	0.09 kg	7	B1/3K	90	\$8
Mle F-1 (Parachute)	28.5x273mm	0.16 kg	15	B1/5K	90	\$15

Lacroix Type 328 Distress Signal Kit

Origin: France

Notes: The Type 328 is a kit of small flare devices contained in a waterproof resealable plastic bag. The Type 328 kit consists of four F-428 red flares, two Type 328 radar-reflecting red flares, and a snap-together launcher and grip. Designed primarily as rescue aids, they are quite bright and the radar-reflective flares are visible on radar from a good distance away. The Type 328 radar-reflective flares are interesting in that, in addition to deploying a bright red flare, they also release a cloud of chaff to help friendly radar-equipped aircraft to find those who need to be rescued.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
F-428 Flare	20x70mm	0.06 kg	5	B1/6K	150	\$2
Type 328 Radar Reflecting Flare	20x70mm	0.09 kg	5/10	B4/6K/13K	150	\$6
Total Kit	20x70x300mm	0.52 kg	N/A	N/A	N/A	\$109

Device	Caliber	ROF	Weight	Bulk	SS	Price
Type 328 Grip-Launcher	20mm	SS	0.1 kg	0	1	\$89

Lacroix Type 428 Distress Signal Kit

Origin: France

Notes: This is a simple package of six small red flares and a hand launcher, contained in a waterproof plastic resealable bag. The kit is quite small and easily carried by persons who have little room for gear, like pilots or special operations personnel. Though the flares are not bright (about 5000 candlepower), the rocket booster fires the flare to almost half a kilometer. The launcher itself consists of a tube; most of it is a handle for the user; the flare clips into the well as the end of the launcher, and the flares are short metal tubes with rounded ends. Inside the kit, the flares clip into a plastic holder, with the flare holder, launcher, and plastic bag held together by a dummy cord.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Type 428 Flare	15x70mm	0.02 kg	11	B1/4K	400	\$1
Total Kit	15x70x140mm	0.25 kg	N/A	N/A	N/A	\$40

Device	Caliber	ROF	Weight	Bulk	SS	Price
Type 428 Grip Launcher	15mm	SS	0.12 kg	0	0	\$38

Lacroix 40mm Signal Cartridges

Origin: France

Notes: Despite the caliber, these cartridges are designed for 40mm signal pistols and not for grenade launchers. The signal stars come (in order of brightness) in green, red, or white. Though the burn time is short, this is enough for the star to ignite while the shell is still traveling upwards and not burn out until it is about 15 meters above the ground, assuming the cartridge is fired straight up.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Lacroix 40mm (Green)	40x100mm	0.13 kg	7	B3/10K	100	\$11
Lacroix 40mm (Red)	40x100mm	0.13 kg	7	B3/15K	100	\$13
Lacroix 40mm (White)	40x100mm	0.13 kg	7	B4/27K	100	\$18

Lacroix ASATOX Chemical Attack Warning Device

Origin: France

Notes: The ASATOX is a hand-held rocket in a tube of thin aluminum with a twist-grip at the end to ignite the rocket (one twists the grip and pulls it sharply). The ASATOX is specifically meant to alert nearby units of chemical attack, but can be used for other signaling purposes. The rocket ignites after a 1.5-second delay; as the rocket flies into the air, it ejects several white star signals and emits a loud whistle (139 decibels). All stars deploy within 5 seconds after launch. To work properly, the ASATOX must be pointed vertically upwards or at the near-vertical. It should be noted that there are three burst radii listed below instead of the normal two; the third is the audible radius of the whistle, assuming there are no other interfering loud noises. There are also two

burn times; the second is the duration of the whistle.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
ASATOX	47.5x347mm	0.69 kg	20/10	B5/12K/500	200	\$52

Lacroix Type F-2 Short-Range Illumination Rocket

Origin: France

Notes: This is technically not a signaling device, as it is designed to produce battlefield illumination rather than for signals use. It is a tube similar in appearance to the ASATOX above, and it is actuated in the same fashion – by turning the handgrip at the rear and then pulling it downward sharply. The rocket fires, then deploys a high-intensity parachute flare. There is no launch delay because the F-2 uses a soft-launch device and the flare does not eject until the rocket has reached 140 meters.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Lacroix F-2	40x323mm	0.58 kg	25	B300/76K	140	\$69

Heckler & Koch P-2A1 Signal Pistol

Origin: Germany

Notes: The P-2A1 is a standard break-open-type signal pistol which can also fire certain riot control cartridges. The unit is very simple, with a single barrel and a pistol grip/trigger unit. Safeties ensure that the hammer cannot fall with the P-2A1 broken open, nor can a cartridge fire with the P-2A1 in that state. When the weapon is broken open, any cartridge in the chamber (whether spent or not) is partially ejected, allowing the user to pull the cartridge or case out of the pistol. The hammer of the P-2A1 must be manually cocked before the pistol will fire, but there are no other safeties that function while the breech is closed. Maintenance is simple, as is operation.

Device	Caliber	ROF	Weight	Bulk	SS	Price
P-2A1	26.5mm	SS	0.52 kg	1	4	\$182

Heckler & Koch Emergency Flare Kit

Origin: Germany

Notes: This device is sort of handle/trigger unit without a barrel, magazine-fed and loaded with 19mm DM-13 signal cartridges. The firing unit has simple selector switch for safe and fire. The device has an effective fire rate in *Twilight 2000 v2.2* of "BA," as before each shot the firing unit must be switched from fire to safe and back again to cock the weapon. The unit is compact and easy to place in survival kits.

The DM-13 stars and their 5-round magazine are likewise quite compact. The DM-13 stars are usually red, but may also be had in white, green, or yellow.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
DM-13 Star	19x37mm	0.4 kg	5	B1/3K	65	\$1

Device	Caliber	ROF	Weight	Bulk	SS	Price
Launcher Unit	19mm	BA	0.23 kg	0	1	\$54

Nicosignal Flare Kit

Origin: Germany

Notes: This is an interesting device – a simple grip loaded with six cartridges, which fires semiautomatically by means of a trigger bar on the side. The grip also has a selector switch allowing for safe and fire options. The flares may be red, green or white, and are loaded onto the grip as a cylindrical magazine atop the device. The Nicosignal also has a dummy cord to prevent its loss. Cartridges come in the cylindrical magazines only and cannot be loaded separately.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Nicosignal Flares	(Flare) 16x45mm; (Magazine) 50x45mm	0.09 kg	6	B2/8K	80	(Magazine) \$6

Device	Caliber	ROF	Weight	Bulk	SS	Price
Nicosignal Launcher	16mm	SA	0.23 kg	0	0	\$33

Comet Signal Cartridge

Origin: Germany

Notes: Designed for 26.5mm or 27mm signal pistols, Comet Signal Cartridges deliver a flare, a smoke signal (the same color as the flare), and a loud bang when they detonate. They are therefore effective at day, night, and in places where potential rescuers cannot see the sky or are not looking in the right direction. This also means that their visibility radius is not reduced during daylight hours as are flares and star signals. They are contained in aluminum casings and can be identified by their markings or by touch, as they have notches on the rim specific to the color and type of Comet cartridge. Comet cartridges (of any type) are very common in the West and elsewhere, and have also enjoyed wide sales to civilians. Comet Signal Cartridges may have red, white, green, or yellow flares and smoke.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Comet Signal Cartridge	26.5x80mm	0.06 kg	8	B8/19K (Flare) C0 B8 (Smoke)	120	\$8

Comet Parachute Signal Cartridge

Origin: Germany

Notes: Comet Parachute Signal Cartridges fire a flare suspended on a parachute, and are usable as signals or for battlefield illumination. They are quite long and will come close to filling the barrel most 26.5mm or 27mm signal pistols. Two versions are available; the standard type uses an ordinary rocket motor which will leave a smoke trail, and a smokeless propellant type which will not leave a smoke trail, thus protecting the shooter from having his position traced back to source by following that smoke trail. The flares may be red or white.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Comet Parachute Signal Cartridge	26.5x170mm	0.12 kg	30	B16/61K	300	\$11

Comet Smoke Signal Cartridge

Origin: Germany

Notes: This signal cartridge emits thick smoke (either purple or orange, though Comet will make it in other colors upon request)

which burning when it reaches the vertex of its flight and then continues to emit smoke for the duration of its burn time. Like the Parachute Signal Cartridge, the Smoke Signal Cartridge is quite long and almost fills the barrel of the typical 26.5mm or 27mm signal pistol. Though the Smoke Signal Cartridge is designed primarily to test wind conditions for incoming helicopters and aircraft, it can also be used for general signaling as well as to mark targets for air or artillery strikes.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Comet Smoke Signal Cartridge	26.5x148mm	0.09 kg	7	C0 B8	120	\$7

Comet Color Signal Rocket

Origin: Germany

Notes: This is a hand-held tube that fires a rocket after the user removes the endcap and pulls the cord that is attached to the end of the rocket. The device ejects a parachute-suspended flare or a standard flare cluster. They are designed for signaling, but can also be used for battlefield illumination.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Comet Color Signal Rocket (Red, Parachute)	45x270mm	0.44 kg	40	B8/30K	300	\$38
Comet Color Signal Rocket (Green, Parachute)	45x270mm	0.44 kg	30	B16/61K	300	\$76
Comet Color Signal Rocket (Red, Cluster)	45x270mm	0.44 kg	40	B12/45K	300	\$57
Comet Color Signal Rocket (Green, Cluster)	45x270mm	0.44 kg	30	B24/91K	300	\$114

Comet White Parachute Signal Rocket

Origin: Germany

Notes: These hand-held devices are meant primarily for battlefield illumination, but are also useful as signaling devices. They are contained in aluminum tubes with plastic endcaps. There are three types: The Type 1234 and 1236 are for the most part the same design, but differ in caliber. The Type 1260 is a more powerful version of the Type 1234. The Type 1234 and 1236 are actuated by removing the plastic base, then giving the looped wire underneath a sharp pull. The more powerful Type 1260 has a much larger plastic endcap; actuation requires the user to pull a safety pin, then twist the endcap sharply. All three use smokeless propellants for their rockets and there is no smoke trail to trace back to the user.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Type 1234	45x270mm	0.44 kg	30	B35/13K	300	\$36
Type 1236	33x295mm	0.3 kg	30	B10/8K	300	\$22
Type 1260	45x300mm	0.55 kg	30	B45/17K	500	\$40

Comet Type 1315 Day/Night Signal

Origin: Germany

Notes: The Type 1315 is designed for use by night or day; it is a hand-held device that is not launched, but simply held in the hand. The Type 1315 uses a white plastic tube with a brown endcap at one end and a red endcap at the other. When the user

removes the brown cap and pulls the igniting wire, a cloud of orange smoke is produced. When the red endcap is pulled and the igniting wire pulled, a red flare is produced. The Type 1315 is watertight to 30 meters, and up to this depth the flare may still be used. Both ends may be used, as different times as necessary; using one end does not affect the use of the other end. The price, weight and size listed below are for a complete unit on both lines of the table; do not add the two sizes, weights or costs together.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Type 1315 (Smoke)	30x190mm	0.17 kg	20	C0 B10	Nil	\$17
Type 1315 (Flare)	30x190mm	0.17 kg	20	B30/11K	Nil	\$17

Comet Type 1219 Signal Pistol

Origin: Germany

Notes: The Type 1219 is a common, ordinary type of signal pistol, robustly built of steel with plastic grip plates. However, the hammer is not required to be cocked before a shot; instead, the Type 1219 has a safety switch. Like most such pistols, it is loaded and unloaded by a break-open barrel.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Type 1219	26.5mm	SS	1 kg	1	2	\$150

IOF 16mm Signal Cartridges

Origin: India

Notes: These cartridges are small flares fired from a pen-gun-type device. The cartridges are screwed into the end of the launcher and readied for firing by cocking a spring-loaded knob, with firing done by pushing a switch just below the front end of the launcher. Flares may be red, green or white, and are short-range and have a short burn time.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
IOF 16mm Flare	16x40mm	0.06 kg	4	B1/5K	60	\$1

Device	Caliber	ROF	Weight	Bulk	SS	Price
IOF 16mm Launcher	16mm	SS	0.13 kg	0	0	\$41

IOF 38mm Signal Cartridges

Origin: India

Notes: Designed for 38mm signal pistols and grenade launchers, these are short-range flare rounds with a relatively short burn time. The cartridges are light in weight and are contained in cardboard tubes with an aluminum base.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
IOF 38mm Flare	38x133mm	0.08 kg	8	B3/12K	90	\$13

Pindad 25.4mm Illuminating Cartridge

Origin: Indonesia

Notes: Designed for 25.4mm (1-inch) signal pistols, these cartridges will not work with their larger 26.5mm or 27mm cousins, despite the fact that the complete cartridge has a diameter of 27.2mm. The Pindad cartridges use aluminum casings with older-type Berdan primers, and instead of modern propellants use blackpowder to propel their flares. These cartridges fire red, white or green flares.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pindad 25.4mm Flare	25.4x57mm	0.05 kg	4	B2/3K	60	\$2

DIO Hoshdar Multipurpose Pistol

Origin: Iran

Notes: These two signal pistols, the Hoshdar 1 and 2, are essentially identical in form and function except for their caliber and the resulting size. Both are described by the manufacturer as "multipurpose pistols," as they are able to fire riot-control munitions as well as signal cartridges. Like most such pistols, the Hoshdar is a break-open pistol, but has a rather large securing latch atop the device to ensure the breech stays shut. The Hoshdar has a rather short and narrow pistol grip and a trigger with a trigger safety that ensures that the trigger must be fully pulled to the rear of the trigger guard before it will fire.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Hoshdar 1	26.5mm	SS	0.81 kg	1	2	\$194
Hoshdar 2	38mm	SS	0.95 kg	2	3	\$294

Bernardelli PS-023 Signal Pistol

Origin: Italy

Notes: Sort of a rare caliber for a signal pistol, the PS-023 can fire any sort of 37mm pyrotechnic cartridge, including certain types of smoke rounds designed for larger grenade launchers used for riot-control purposes. The PS-023 is a simple device which breaks open for loading and unloading. Atop the device are prominent metal latches, one of which is used to latch the breech, and the other which is pulled to unlatch the breech. Other than the rather short barrel, it is a conventional sort of signal pistol.

Device	Caliber	ROF	Weight	Bulk	SS	Price
PS-023	37mm	SS	1 kg	1	3	\$224

SIMAD Signal Cartridges

Origin: Italy

Notes: These are two essentially similar shells, separated only by their caliber. They are star shells designed specifically for signaling. Each shell has a pair of star signals in an aluminum case sealed with a weatherproof disk at the bottom of the shell. Identification of color and type is possible with markings by day and indentations which can be felt at night. The SIMAD Cartridges come in white, red, green, and yellow. Though designed specifically for a US Navy contract for use with their standard Mod 8 Signal Pistol, the 1.57-inch star shells can be used by any 40mm signal pistol; likewise, the 1-inch shells are designed specifically for the ubiquitous Very Pistol, but can be fired from any 26.5 or 27mm signal pistol.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
SIMAD 1.57" Star	39.5x97.5mm	0.08 kg	7	B2/10K	80	\$11
SIMAD 1" Star	27x66.7mm	0.05 kg	5	B1/6K	80	\$3

SIMA MGP-S2 Convertible Signal Pistol

Origin: Peru

Notes: Is it a signal pistol, or a survival pistol? Well, it's both, really. The MGP-S2 appears to be a small but conventional signal pistol at first, but it has an unusual wrinkle – if one breaks open the barrel and then inserts a special drop-in barrel, it can also fire .38 Special revolver ammunition, converting it to a short-range survival pistol. The standard signal cartridge for the MGP-S2 is a small, 12-gauge flare (it cannot fire conventional 12-gauge ammunition). The drop-in barrel is simply inserted into the breech of the signal barrel, then an endcap is screwed onto the muzzle to lock the barrel in place. In either case, the MGP-S2 automatically ejects the spent casing once the breech is opened again. The barrel is locked shut during firing with a device derived from the Webley stirrup lock, after which the hammer must be cocked manually.

Device	Caliber	ROF	Weight	Bulk	SS	Price
MGP-S2	12 Gauge (Flare); .38 Special (Pistol Barrel)	SS	0.59 kg + 0.2 kg Pistol Barrel	1	3	\$147

Device	Size	Weight	Burn Time	Burst	Altitude	Price
MGP-S2 Flare	18.59x33mm	0.03 kg	3	B1/4K	50	\$1

Weapon	ROF	Damage	Pen	Bulk	SS	Burst	Range
MGP-S2 (.38)	SS	2	Nil	1	5	Nil	11

SPSh-2

Origin: Russia

Notes: The SPSH-2 is a much-simplified (mostly for manufacturing purposes) version of the older LP-1, which is itself a close copy of a World War 2 Walther signal pistol. Most Eastern-Bloc signal pistols are also, to a greater or lesser degree, based on the SPSH-2. The SPSH-2 built primarily of steel stampings, and is a standard sort of break-open signal pistol. It is capable of firing both Eastern and Western 26.5mm and 27mm cartridges. The SPSH-2 has no trigger guard, only a trigger bar, but the device cannot be fired until the hammer is cocked and a safety switched is moved to the fire position. Until then, the trigger is recessed into the pistol grip and cannot be pulled. The hammer must be cocked and the trigger switched to fire before the barrel can be loaded, as the barrel release is at the bottom of the trigger bar – but the breech cannot be locked again until the hammer is forward again and the device set to safe again. Simpler for production, but more cumbersome in use. The SPSH-2 is no longer in production, but it was produced and exported in such large numbers, both to military and civilians, and it can still be found almost anywhere.

Device	Caliber	ROF	Weight	Bulk	SS	Price
SPSh-2	26.65mm	SS	0.9 kg	1	2	\$238

PG-431 Illuminating Rocket

Origin: Russia

Notes: This is similar to other such devices made by other countries, but much more powerful. The kick from this device is so great that Russian doctrine calls for the user to hold the PG-431 against the barrel with the end of the PG-431 braced against the handguard, set the butt in the ground, then launch it as a 45-degree angle instead of straight up. (It can be fired straight up or by hand, however.) The PG-431 deploys a flare that is said to be almost blinding if you look at it. Contained in a thin steel tube, the PG-431 is actuated by unscrewing the base, then pulling a lanyard with a pull-ring on it. A variant of the PG-431 is designed to warn of NBC attack; it fires a bright red star instead, and emits a piercing whistle for 9 seconds.

Two other variations of the PG-431 also exist: a 40mm model with a longer flare-burn time, and a 50mm version with a two-stage rocket to greatly boost the flare's maximum altitude. These two do not have NBC alarm versions.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
PG-431 Flare	30x225mm	0.19 kg	9	B19/29K	450	\$27
PG-431 NBC Alarm	30x225mm	0.19 kg	9	B5/7K/1K	450	\$20
PG-431 Flare	40x225mm	0.25 kg	20	B12/19K	300	\$32
PG-431 Flare	50x300mm	0.31 kg	30	B19/29K	1200	\$99

CPI 1.5-Inch (38mm) Signal Cartridges

Origin: Singapore

Notes: Designed for use in most standard 38mm and 40mm signal pistols, these CPI Cartridges are star-signal shells (except for one) that use a brass case visible at a good distance. The red, green, and white cartridges are single signal stars, while the yellow cartridge is a flare.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
CPI 1.5" Star Shell	39.7x100mm	0.09 kg	8	B2/11K	120	\$10
CPI 1.5" Flare	39.7x100mm	0.09 kg	8	B4/22K	120	\$10

Swartklip 37mm Cartridges

Origin: South Africa

Notes: These are standard sorts of flare and star signal shells designed for firing from 37mm and 38mm signal pistols. The different types of cartridges can be identified both by markings and by markings on the base. Star signals come in red, green, and yellow; the flare shell is a white illuminating flare. Cases are cardboard with brass end caps.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Swartklip 37mm Star Shell	38.7x97mm	0.12 kg	6	B2/10K	100	\$10
Swartklip 37mm Flare	38.7x97mm	0.12 kg	6	B4/20K	100	\$10

Swartklip 15mm Signal Cartridges

Origin: South Africa

Notes: These small flares are designed for the type of launcher often called a "pencil launcher;" in other words, a pen-gun-type launcher which is small and simple in operation. To use this device, one screws a flare cartridge onto the 15mm end of launcher (the flares are actually wider), cocks the launcher by pulling back the operating knob and locking it, and then pushing an injector-type of disc at the back end of the launcher to release the spring-loaded firing pin. The flares for the Swartklip launcher come in red, green, and white, and have both visual markings and tactile markings on the cartridge for identification. For the most part, construction is of plastic, except for two parts in the launcher and certain elements in the flares.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Swartklip 15mm Signal Launcher	15mm	SS	0.12 kg	0	0	\$38

Device	Size	Weight	Burn Time	Burst	Altitude	Price
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Swartklip 15mm Flare	24x40mm	0.1 kg	6	B2/8K	100	\$2
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Swartklip Hand Rocket Flare

Origin: South Africa

Notes: This rocket-powered flare is designed primarily for battlefield illumination, but can also be used for signaling. Unlike most such hand-fired flares, the Swartklip Hand Rocket Flare is spin-stabilized to ensure a stable trajectory; this also allows for the use of a smaller rocket motor. The flare is easy to operate; one simply removes the end cap and a safety pin inside the cap, and a small trigger springs open on the side. When the trigger is pressed, the flare is fired with no delay. The high-intensity flare is parachute-suspended and has a relatively long burn time. (A training version is also available; this operates in the same manner, but fires a reduced-charge inert cartridge.)

The Swartklip Hand Rocket Signal Flare is similar in form, but the opposite in intent – they are designed primarily for signaling with a secondary use as battlefield illumination. Operation is the same, and the rockets are spin-stabilized. Two versions of the Hand Rocket Signal Flare – the PARA, which is parachute suspended, and the STAR, which is not. The PARA comes in Red, green, yellow, and illumination (white). The STAR does not have a white version.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Swartklip Hand Rocket Flare	48x267mm	0.35 kg	35	B50/76K	200	\$82
Swartklip PARA (Red)	48x267mm	0.27 kg	35	B15/23K	250	\$53
Swartklip PARA (Green)	48x267mm	0.27 kg	35	B7/11K	250	\$27
Swartklip PARA (Yellow)	48x267mm	0.27 kg	35	B20/30K	250	\$77
Swartklip STAR (Red)	48x267mm	0.27 kg	10	B100/152K	250	\$164
Swartklip STAR (Green)	48x267mm	0.27 kg	10	B35/53K	250	\$57
Swartklip STAR (Yellow)	48x267mm	0.27 kg	10	B108/163K	250	\$177

EXPAL Red Parachute Flare

Origin: Spain

Notes: This hand-launched rocket-boosted flare is designed primarily for signaling, and is suspended on a parachute along with having a very long burn time. The rocket is gyroscopically stabilized, leading to a very accurate flight path. If the user is in the water, he can actuate the device and then throw it into the water, and the flare will right itself, float, and fire. The EXPAL red parachute flare has a launch delay of 2 seconds. The device's tube is plastic as is the end cap; one removes the end cap, then pulls a cord at the bottom of the device to actuate it.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
EXPAL Red Parachute Flare	45x245mm	0.42 kg	45	B12/19K	200	\$49

EXPAL Red Hand Flare

Origin: Spain

Notes: This is a compact red flare projector, designed primarily for signaling. It is a compact plastic cylinder with an end cap, also

of plastic. To actuate the flare, the end cap is removed, reversed and screwed back into the device (forming a hand hold), then the ignition ring is pulled. The EXPAL Red Hand Flare does not have any launching device; it is simply held in the hand. One should not simply throw it onto the ground if there is any dry materials around, as a fire *will* start almost immediately.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
EXPAL Red Hand Flare	35x122mm	0.11 kg	45	B6/7K	N/A	\$10

Helios Illumination Rocket

Origin: Sweden

Notes: This hand-fired rocket is designed primarily for battlefield illumination, and is very bright and intense. The flare is suspended on a parachute and has a long burn time. The Helios is contained inside a metal tube, and is fired by removing the end cap, pulling a safety ring, and then pushing the trigger lever.

The Horizon is similar in concept and design, but is longer and more powerful, with a brighter flare. Internal construction is also somewhat different due to the more powerful booster rocket.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Helios	45x270mm	0.55 kg	30	B20/289K	170	\$72
Horizon	45x400mm	0.75 kg	30	B25/342K	250	\$107

Pains-Wessex Hand-Held Illumination Rocket

Origin: UK

Notes: Also produced under license by SME Ordnance of Malaysia, this rocket is designed primarily for battlefield illumination or search area illumination. These rockets are in common use by the British, US, and many countries worldwide, both by military and civilians. The rocket and payload are contained in a waterproof cardboard sleeve, and actuated by removal of the top and bottom caps and a safety pin. When the bottom cap is removed, a trigger lever is revealed, and a simple press fires the rocket. There is no delay. The resulting flare is suspended on a parachute.

The Radasound and Radaflare rockets are similar in form and function, but the Radasound deploys five small packages of chaff instead of a flare. The Radaflare deploys four small packages of chaff and one red star signal. They can be used to indicate location to friendly radars, decoy enemy radars, and radar testing and calibration. The Burn Time indicates the time in minutes that the chaff will be visible on a typical radar; for the Radaflare, the first number is the star signal burnout (in seconds, as is normal) and the second the chaff visibility.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pains-Wessex Illumination Rocket	48x267mm	0.35 kg	30	B40/61K	300	\$41
Pains-Wessex Radasound	48x268mm	0.35 kg	19	B0/10K	300	\$41
Pains-Wessex Radaflare	48x268mm	0.39 kg	11/15	Star: B3/11K; Chaff: B0/8K	300	\$62

Pains-Wessex Day/Night Distress Signal

Origin: UK

Notes: Not designed to be launched, this consists of an orange smoke dispenser for day use, and a red flare for night use. The device is contained in a plastic tube, with raised ribs identifying the flare end for identification in darkness. The signal is waterproof and floats until opened. One simply unscrews the appropriate end and pulls the ignition cord. The flare will light underwater if necessary. Both ends may be used, whether or not one end has already been used.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pains-Wessex Day/Night	42.5x139mm	0.23 kg	18/20	Smoke: C0 B4/3K; Flare B3/4K	N/A	\$33

Manroy Signal Pistols

Origin: UK

Notes: The Manroy Signal Pistol is built similar to the Very-type pistol, and is a standard sort of break-open device requiring the hammer to be cocked for the pistol to fire. Construction is generally of steel with plastic grip plates, and is otherwise of standard construction for such a device. The Manroy Signal Pistol comes in a 25mm version, generally used by civilians, and a 26.5mm version, generally used by the military.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Manroy Signal Pistol	25mm	SS	0.82 kg	1	2	\$207
Manroy Signal Pistol	26.5mm	SS	0.87 kg	1	2	\$218

Pains-Wessex 38mm Signaling System

Origin: UK

Notes: Not as complicated as it sounds, this is simply a signal pistol along with flares designed specifically for (but not restricted to) the same pistol. In addition, the Pains-Wessex 28mm Signal Pistol can fire any 37mm or 38mm signal cartridge. Construction is mostly of lightweight phosphated steel, with plastic grip plates. Under the pistol grip is a lanyard loop. Operation is similar to most such pistols – break it open and cock the hammer to fire the device. Unlike most such pistols, the barrel swings open to either side for loading instead of breaking from front to rear.

The flares come in red, green, white, and a white flare that is designed specifically for battlefield illumination. They are contained in aluminum cases, with both visual markings and tactile markings.

Device	Caliber	ROF	Weight	Bulk	SS	Price
Pains-Wessex Signal Pistol	38mm	SS	1.4 kg	2	2	\$294

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pains-Wessex Flare (Red)	38x70mm	0.09 kg	8	B6/42K	100	\$7
Pains-Wessex Flare (Green)	38x70mm	0.09 kg	8	B3/25K	100	\$4
Pains-Wessex Flare (White)	38x70mm	0.09 kg	8	B6/42K	100	\$7
Pains-Wessex Flare (Illumination)	38x70mm	0.09 kg	8	B12/91K	100	\$15

Pains-Wessex Miniflare No 1 Mk 3 Kit

Origin: UK

Notes: The No 1 Mk 3 Kit consists of a pen-type launcher and eight small screw-on star signal cartridges. The kit is contained in a waterproof plastic case that seals watertight when the lid is closed. The star signals may be red, green, or white, and may be a mix of colors in one kit. Cartridges are aluminum-cased with threading on one end; the pen-gun-type firing device is of aluminum alloy with a threaded cup on one end. A simple trigger launches the flares.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pains-Wessex Miniflare (Red/White)	32.5x16.7mm	0.02 kg	7	B2/2K	100	\$1
Pains-Wessex Miniflare (Green)	32.5x16.7mm	0.02 kg	7	B1/1K	100	\$1

Device	Size	Weight	Burn Time	Burst	Altitude	Price
<i>Pains-Wessex Miniflare Projector</i>	22mm	SS	0.02 kg; (Kit) 0.22 kg	0	3	\$53; (Kit) \$92

Pains-Wessex 51mm Illuminating Rocket

Origins: UK

Notes: This device is designed to provide brilliant battlefield illumination with a decent illumination period. It is contained in an aluminum tube with an endcap revealing a pull cord. The Pains-Wessex 51mm is suspended on a parachute. There is a 2-second delay before firing.

The Pains-Wessex 51mm can also be placed on a small tripod and ignited electrically. The tripod is 3.9 kilograms, but is preferred since the Pains-Wessex 51mm can produce quite a whomp of recoil when hand-held (it's best steadied on the ground), and the placement on a tripod allows for a number of the devices to be set up and fired quickly when necessary. When electrically ignited, there is no launch delay, and the firing angle is 32 degrees.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
Pains-Wessex 51mm	55x385mm	1.02 kg	30	B60/228K	250	\$153

WDS Lightweight 57mm Signal Rocket Launcher

Origin: UK

Notes: The WDS (Wallop Defence Systems) Signal Rocket Launcher is not designed for hand-held use, and in fact cannot be used in such a manner. The rocket is fired from a reusable, folding, lightweight launching stand designed to be carried and used by one man. This stand has rudimentary sights and leveling bubbles, both of which glow for night use. A family of rockets are available for the WDS Launcher, including illumination flares, signal flares (red, green, or yellow), and a maroon flare with an audible signal (at 140 decibels). The rockets can be launched at a variety angles including straight up to as little as 30 degrees, and each rocket come in five different fuze versions to allow for different ranges and burst altitudes. (Note that these are not variable fuzes, and I have called these range bands below.) Ignition can be by a pull cord, electrical, or induction, and the rockets can be set in advance and fired singly or in groups from one igniter if electrical ignition is chosen.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
WDS 57mm Illumination Flare (Range Band 1)	57x300mm	1.8 kg	6	B50/190K	600	\$128

WDS 57mm Illumination Flare (Range Band 2)	57x300mm	1.8 kg	9	B50/190K	800	\$171
WDS 57mm Illumination Flare (Range Band 3)	57x300mm	1.8 kg	12	B50/190K	1000	\$214
WDS 57mm Illumination Flare (Range Band 4)	57x300mm	1.8 kg	14	B50/190K	1200	\$257
WDS 57mm Illumination Flare (Range Band 5)	57x300mm	1.8 kg	17	B50/190K	1800	\$386
WDS 57mm Signal Flare (Range Band 1)	57x300mm	1.8 kg	6	B13/48K	600	\$64
WDS 57mm Signal Flare (Range Band 2)	57x300mm	1.8 kg	9	B13/48K	800	\$86
WDS 57mm Signal Flare (Range Band 3)	57x300mm	1.8 kg	12	B13/48K	1000	\$107
WDS 57mm Signal Flare (Range Band 4)	57x300mm	1.8 kg	14	B13/48K	1200	\$129
WDS 57mm Signal Flare (Range Band 5)	57x300mm	1.8 kg	17	B13/48K	1800	\$193
WDS 57mm Audible Flare (Range Band 1)	57x300mm	1.8 kg	6	B13/48K/3K	600	\$80
WDS 57mm Audible Flare (Range Band 2)	57x300mm	1.8 kg	9	B13/48K/3K	800	\$108
WDS 57mm Audible Flare (Range Band 3)	57x300mm	1.8 kg	12	B13/48K/3K	1000	\$134
WDS 57mm Audible Flare (Range Band 4)	57x300mm	1.8 kg	14	B13/48K/3K	1200	\$161
WDS 57mm Audible Flare (Range Band 5)	57x300mm	1.8 kg	17	B13/48K/3K	1800	\$241

Device	Caliber	ROF	Weight	Bulk	SS	Price
WDS Lightweight Launcher Device	57mm	½	2.5 kg	3/5	N/A	\$196

38mm Colored Signal Cartridge

Origin: Yugoslavia

Notes: These are standard sorts of signal cartridges, firing a star signal. They are aluminum-cased and marked with both visual and tactile markings. They can be fired not only from signal pistols, but from 38mm grenade launchers.

Device	Size	Weight	Burn Time	Burst	Altitude	Price

38mm Signal Cartridge (Red/White)	38x80mm	0.11 kg	6	B3/42K	100	\$8
38mm Signal Cartridge (Green)	38x80mm	0.11 kg	6	B2/27K	100	\$7

38mm Single-Star Illuminating Cartridge

Origin: Yugoslavia

Notes: The name of this cartridge is somewhat confusing, as it is a *very bright* star, designed for battlefield illumination. It is otherwise similar to the Colored Signal Cartridges above. A similar cartridge, the Triple-Star Illuminating Cartridge, is similar but emits three stars.

Device	Size	Weight	Burn Time	Burst	Altitude	Price
38mm Single-Star Illumination	38x80mm	0.12 kg	6	B6/91K	80	\$13
38mm Triple-Star Illumination	38x90mm	0.15 kg	5	B9/137K	80	\$20