Depending on the munition employed, the range of the M1985/1991 is approximately 40-60 km. Both systems can fire a single salvo in 45 seconds, and take approximately ten minutes to reload.

70 km

The MARS II/MLRS-E together with the guided GMLRS UNITARY artillery rocket forms a system which, with its outstanding range of over 70 km, completes tasks with the necessary precision and desired effect under any operating conditions.

BM-21 "Grad"	
Muzzle velocity	690 m/s (2,264 ft/s)
Maximum firing range	0.5–52 km
Sights	PG-1M panoramic telescope
Engine	V8 gasoline ZiL-375 180 hp (130 kW)

29 more rows

Type 81 assault rifle

Type 81	
Action	Short stroke gas piston, rotating bolt
Rate of fire	Approx. 700–720 rounds/min
Muzzle velocity	750 m/s (2,461 ft/s) 760 metres per second (2,493 feet per second) (CS/LR14)
Effective firing range	400 m (1,300 ft)+ 400–500 m (1,300–1,600 ft)400-500 (CS/LR14)

Type 63 multiple rocket launcher

Type 63 107mm rocket launcher	
Elevation	−3° to +57°

Traverse	32°
Muzzle velocity	385 m/s (1,260 ft/s)
Maximum firing range	8.05 km (5 mi)

21 more rows

https://youtu.be/MAOtK4OCZs0

https://youtu.be/6oN_XD69vZA

Protection

Multiple Rocket Launchers have been nerfed from their prior stats :

They have the longest range of all artilleries, and have no direct counter (in terms of artillery). The best strategy against them is "close combat".

Mobile artillery do better damage output than them if you close the distance.
They have the longest range of all artilleries,

Mobile artillery do better damage

https://www.youtube.com/watch?v=RxIxrwIvj0I

How effective are multiple rocket launchers?

A multiple rocket launcher helps compensate for this with its ability to launch multiple rockets in rapid succession, which, coupled with the large kill zone of each warhead, can easily deliver saturation fire over a target area.

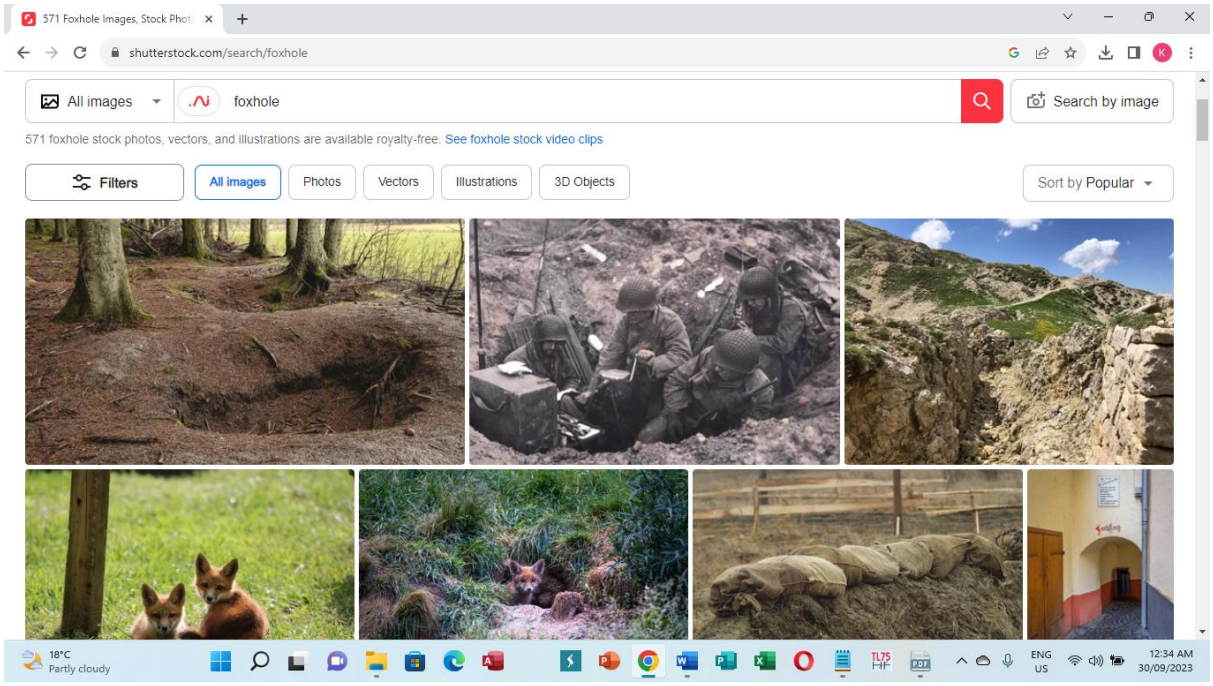
You may find this old post of mine about , and related discussion, interesting.

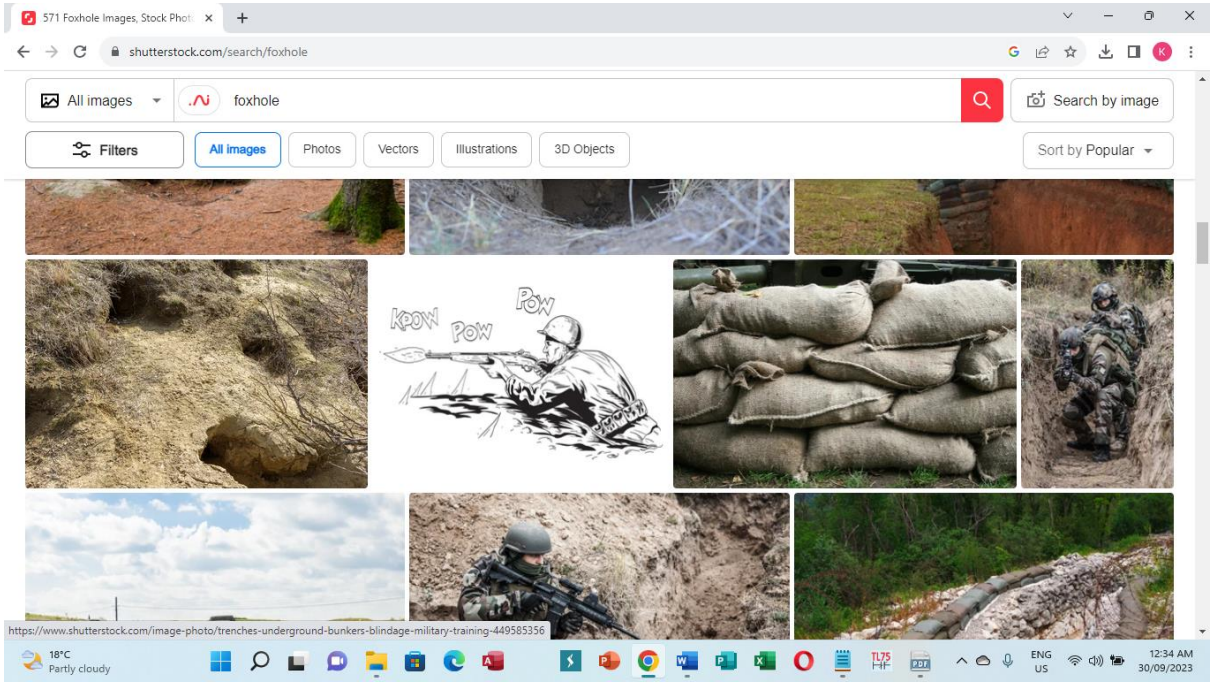
The relevant part is this table from a 1980s Finnish study on the impact of fortifications, which shows the effective target area a 152 (or 155) mm artillery shell would need to hit to produce casualties against infantry. For Reasons that have to do with planning calculations,

this is expressed in square meters, but if you want, you can calculate a rough assumption of "casualty-producing distance" *r* by assuming that the target area is a circle with a radius of *r*.

Trenches are more open than foxholes, so the effective target area is somewhat larger, but there's still a big difference between being protected and out in the open.

Type of target	**Fuzing**	**Effective area (m^2)**
Unprotected infantry in forest	Superquick	300...880
Infantryman firing from an uncovered foxhole in forest	Superquick/quick	180...520
Infantryman taking cover in an uncovered foxhole in forest	Superquick/quick	65...130
Two-man covered foxhole in sandy soil	Slow	18...28
Two-man foxhole from light prefabricated elements	Slow	about 10
Two-man foxhole from heavy prefabricated elements	Slow	about 7.5





A modern addendum to the other answers is that there now exist artillery shells specifically designed to attack occupants in trenches. Air-bursting charges detonate some height above the ground and are designed to project fragments downward over a large area. These can largely reduce the effectiveness of trenches in battle. The solution here is to provide overhead cover as well, but constructing overhead cover in a trench system is time consuming.

FM 5-103: Survivability says that infantry with overhead cover are 10 times more protected than infantry without overhead cover. Clearly that's a rough estimate, but it suggests that trenches may be up to 90% less effective in protecting infantry against overhead fragmentation bursts.

Edit: And I should say that by modern I mean this technique has been in use since WW2. Most nations tried to get this to work by using timed fuzes, but the US proximity fuze really allowed this technique to work well.